



# LAND USE SERVICES DEPARTMENT PLANNING COMMISSION STAFF REPORT

**HEARING DATE:** February 5, 2015

**AGENDA ITEM:** 2

Project Description:

Vicinity Map N↑

<b>APNs:</b>	<b>0315-231-17 &amp; 0315-085-28</b>
<b>Applicant:</b>	Munem Maida
<b>Community:</b>	Erwin Lake/Third Supervisorial District
<b>Location:</b>	East/southeast corner of State Highway 38 and State Lane
<b>Project No.:</b>	P201300086/CUP
<b>Staff:</b>	Oxso Shahriari, Planner
<b>Rep.:</b>	Steen Design Studio
<b>Proposal:</b>	A Conditional Use Permit to establish a 6,793 square foot convenience store, a gas station, and a caretaker residence on 0.90 acre



**827 Hearing Notices Sent On:** January 22, 2015

**Report Prepared By:** Oxso Shahriari

## **SITE INFORMATION:**

Parcel Size: 0.90 Acre

Terrain: Nearly flat

Vegetation: Moderately dense forest community with sporadic indigenous vegetation

## **SURROUNDING LAND DESCRIPTION:**

AREA	EXISTING LAND USE	LAND USE ZONING/OVERLAY DISTRICTS
Site	Vacant	General Commercial (CG) Biological Resources & Fire Safety Overlay (FS-1) Overlays
North	Vacant	General Commercial (CG) Biological Resources & Fire Safety Overlay (FS-1) Overlays
South	Single Family Residence (South & Southeast)	Single Residential (RS) Biological Resources & Fire Safety Overlay (FS-1) Overlays
East	Vacant and Single Family Residences	Single Residential (RS) Biological Resources & Fire Safety Overlay (FS-1) Overlays
West	Vacant	General Commercial (CG) Biological Resources & Fire Safety Overlay (FS-1) Overlays

## **AGENCY**

City Sphere of Influence: N/A  
Water Service: Big Bear City Community Services District  
Septic/Sewer Service: Big Bear City Community Services District

## **COMMENT**

None  
Will Serve  
Will Serve

**STAFF RECOMMENDATION:** That the Planning Commission **APPROVE** a Conditional Use Permit to establish a 6,793 square-foot convenience store, gas station, and caretaker residence on 0.90 ac.

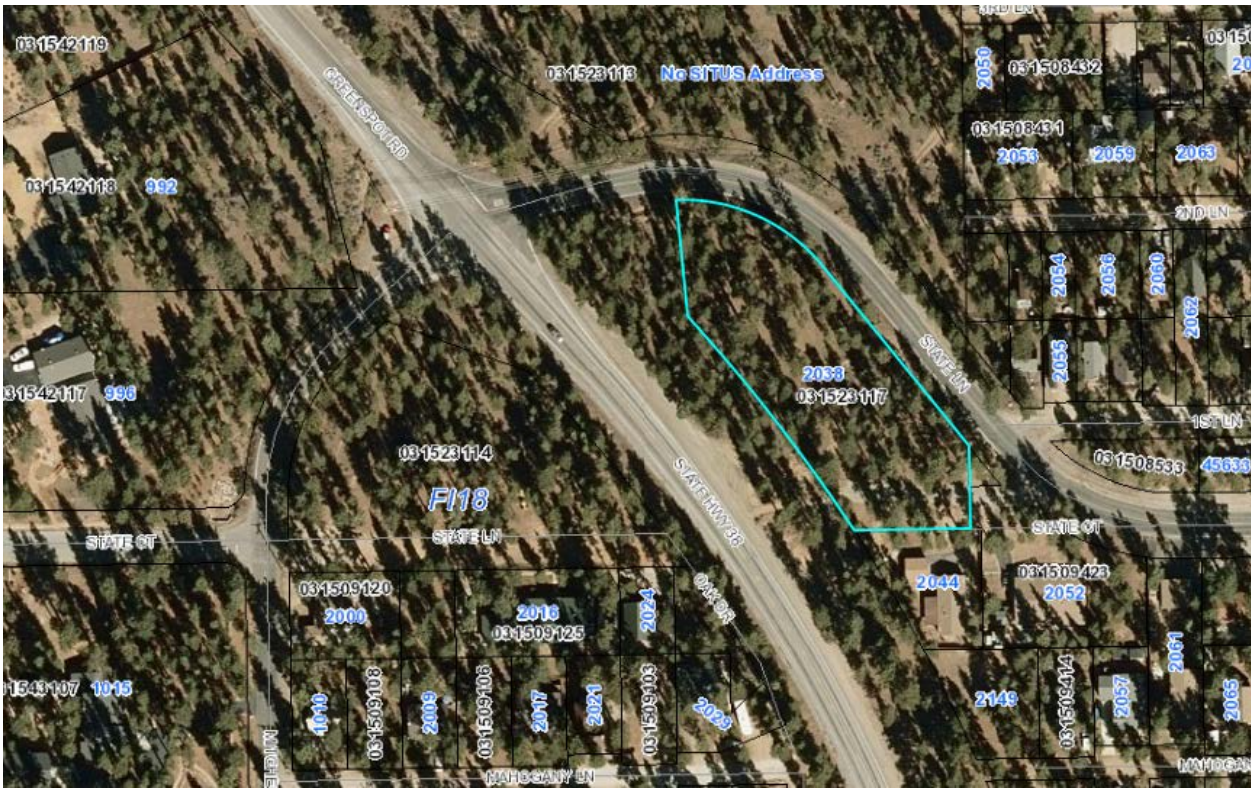
In accordance with Section 86.08.010 of the Development Code, this action may be appealed to the Board of Supervisors.

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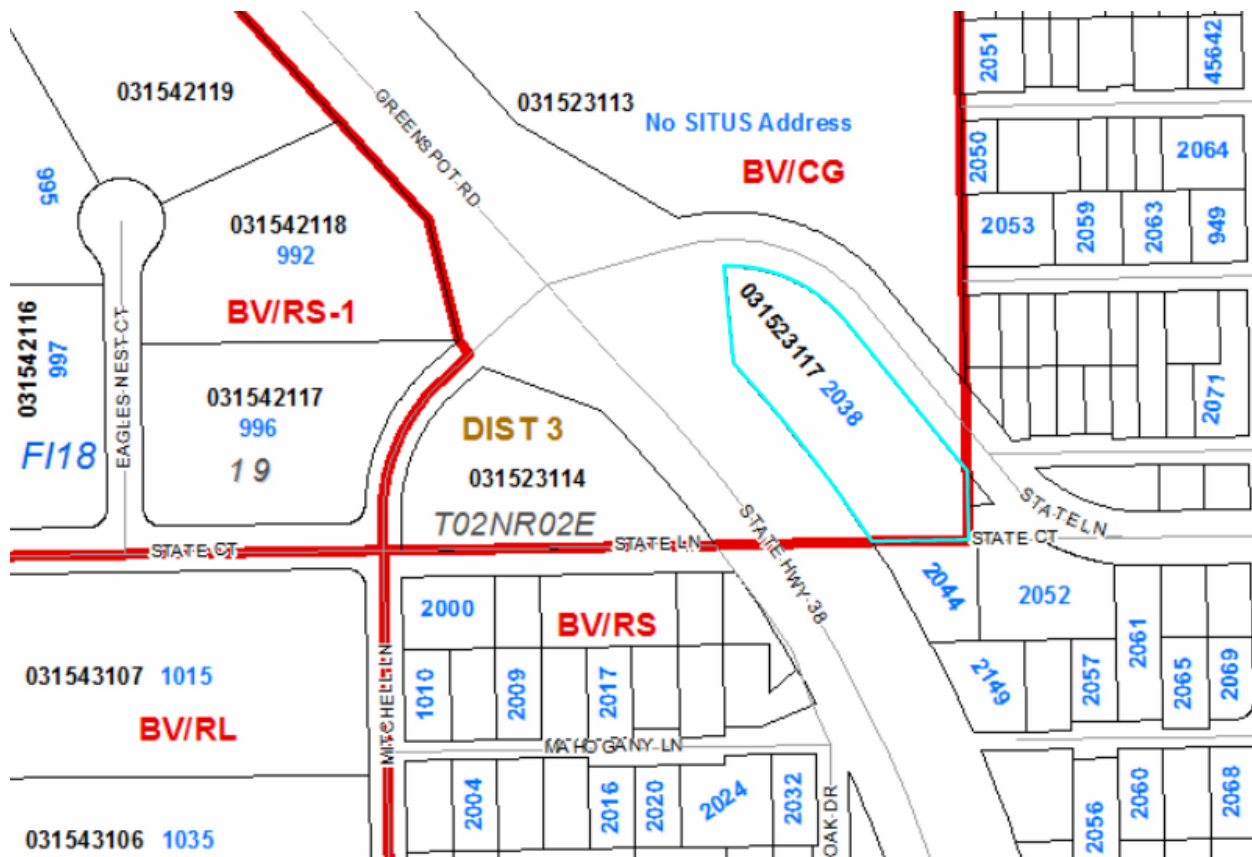
## VICINITY MAP (Regional)



AERIAL MAP

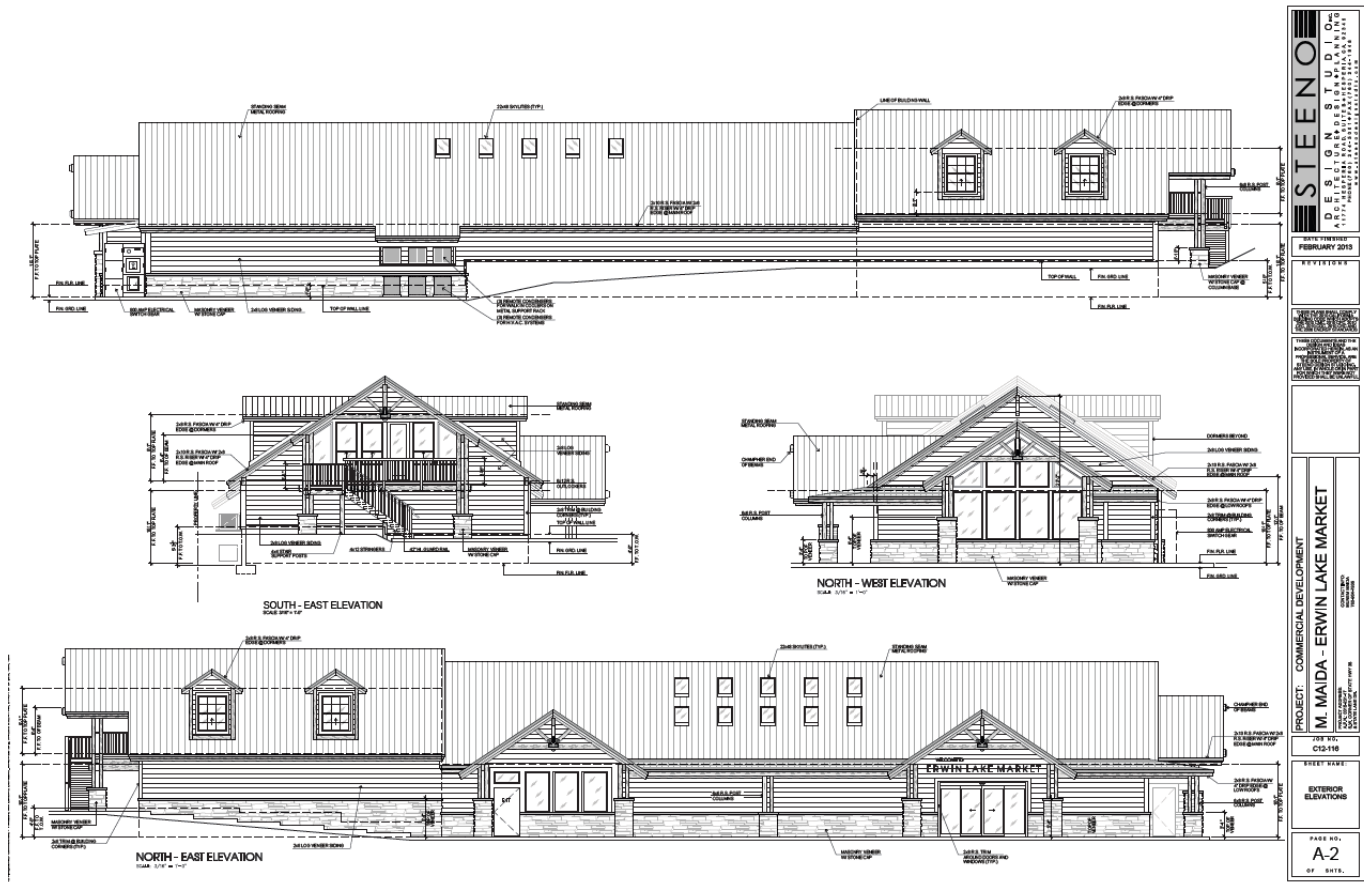


# OFFICIAL LAND USE DISTRICT MAP

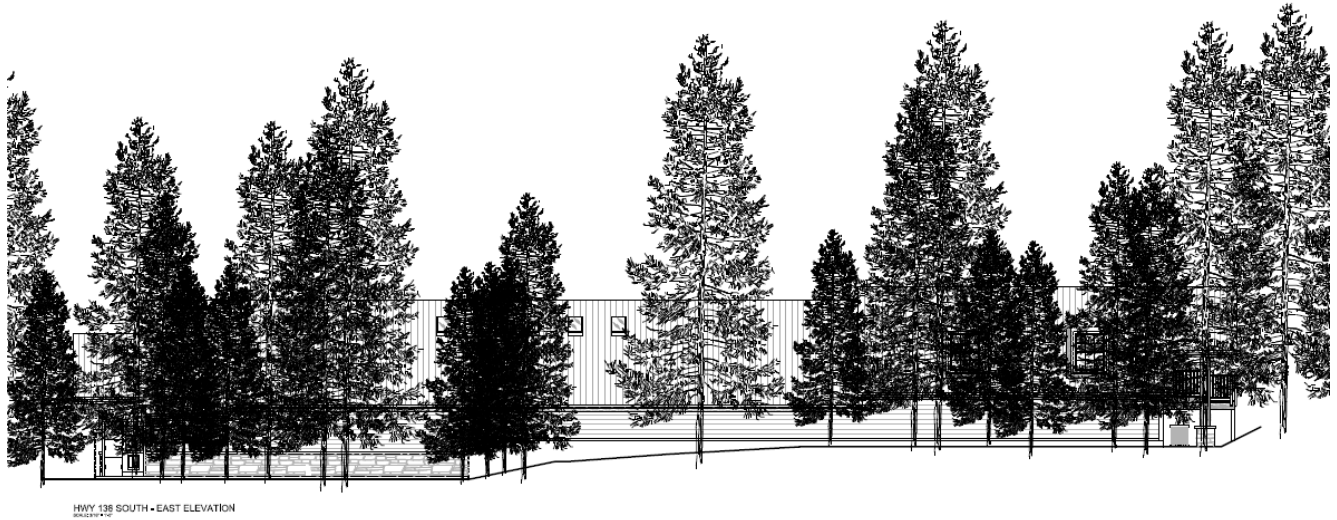




PROJECT RENDERINGS  
Elevations



## PROJECT RENDERINGS View from State Highway 38



## SITE PHOTOS



Looking east from within the project site with  
State HWY 38 in the background



Looking north from within the project site



Looking west from within the project site with  
State Highway 38 to the left



Looking west from northbound State Highway 38,  
the project site is located 130 feet to the right

### **PROJECT DESCRIPTION AND BACKGROUND:**

The proposed project (Project) is a Conditional Use Permit (CUP) to establish a convenience store, gas station, and a caretaker residence on 0.90 acre. The Project includes a 5,641 square-foot convenience store, a 1,152 square-foot caretaker residence on the upper level and four gas dispensing stations (eight pumps total) under a 2,400 square-foot canopy. The balance of the nearly one-acre parcel is set aside for landscaping and parking requirements.

The Project site is zoned General Commercial (CG) and is located in the unincorporated area of the County's Mountain Region, approximately 2 miles south of Erwin Lake. The Project site is located at the southeast corner of State Highway 38 (SR-38) and State Lane, which will provide legal and physical access to the site. The Project is within Fire Safety Overlay District (FS-1). This Project proposal is consistent with the permitted uses in CG zoning district, subject to approval of a CUP application and meeting the development standards.

The Project was originally introduced to the Planning Commission on April 17, 2014. The Planning Commission continued the item to May 22, 2014, to allow time to respond to comments received from the California Department of Fish and Wildlife (CDFW) on April 16, 2014. Additional analysis and clarification were provided by the applicant's biologist addressing potential impacts to Biological Resources, and a revised Initial Study was prepared based on the new analysis.

### **ANALYSIS:**

**DEVELOPMENT STANDARDS.** The Project complies with development standards of the CG zone as set forth in Chapter 82.05 of the Development Code, including building height and setback requirements, parking and landscaping. The Project zoning requires 20% landscaping; the Project provides 24.3%. The Project meets its parking requirements by providing 27 parking spaces, including one disabled parking space and one loading space.

**PUBLIC COMMENT.** The Project notice has been sent to 45 surrounding property owners within 300 feet of the Project site, as required by Development Code Section 84.27.070. Other interested parties, both in support of and opposed to the Project, have contacted the Planning Division; and have been provided Project information and related reports. Comments in support of and against the Project have been received in various forms: mail, email, signed petition, electronic petition, and fax. The County has received 79 comments in support and 703 (including 683 electronic signatures) in opposition to the Project. Staff has responded to the inquiries to provide additional Project information, and answered questions about the Project. A total of 827 Notices of Hearing were sent through various media to the surrounding property owners and those who expressed interest in attending the Public Hearing.

**VISUAL IMPACT.** The Project will not have a substantial adverse effect on a scenic vista because the site is separated from the highway and the traveling public by the Caltrans right-of-way. The right-of-way contains indigenous trees that buffer the site from view. No protected trees are identified on the site. However, as a Condition of Approval, the applicant must obtain an approved Tree or Plant Removal Permit from the Planning Division in compliance with Section 88.01.050 (Tree or Plant Removal Requirements), before the removal of any regulated trees and plants. The Project will retain over 20% of the site in a natural undeveloped vegetated or re-vegetated condition, sufficient to ensure vegetative coverage for a forest environment. Many trees (fifty-seven Jeffrey Pines and three Cypress trees six inches in diameter or wider) will be retained on site as regulated native trees. These trees, along with the newly planted landscaping, will minimize any potential visual impact to a level below significance.

The Project includes architectural features, as depicted on the conditionally approved site plan and elevations that reflect the mountain character of the surrounding areas. The proposed development provides aesthetic qualities of a mountain lodge that blends well with the surrounding area. The Project will use low intensity lamps. All lighting shall be hooded and designed with sharp-cutoff luminaires to

reflect away from adjoining properties and public thoroughfares. A lighting plan is required, subject to review and approval by Planning Division, which requires that all Project light sources be placed and designed so as not to cause glare or excessive light spillage into neighboring sites or public roadways. Consistent with County Development Code Chapter 83.07: Glare and Outdoor Lighting, this approval does not allow installation or use of any artificial light source that will be emitted into the night sky. The Project will not be a source of substantial light or glare, therefore, no mitigation measures are deemed necessary. The Project as proposed meets County's goals in conserving scenic qualities. Therefore, no potentially significant impact is anticipated and no mitigation measures are deemed necessary.

**BIOLOGICAL RESOURCES.** The Project site is a vacant parcel. A 2013 General Biological Resources Assessment, and a subsequent revised 2014 assessment, were prepared by RCA Associates, LLC. The Assessment included a site survey and literature review, a search of U.S. Fish and Wildlife Service and CDFW data bases, and a search of the California Natural Diversity Database. While the site has been identified as being located within the distribution of the California spotted owl, southern rubber boa and flying squirrel, the assessment found none of these sensitive wildlife species present during the survey. The assessment also identified the bald eagle and unarmored Threespine Stickleback fish, both of which have potential habitat two miles to the north. An amendment letter to the original General Biological Resources Assessment dated February 3, 2014, was received from RCA Associates to further address concerns raised on potential off-site impacts to the unarmored Threespine Stickleback fish as a result of a potential oil spill or seepage associated with this Project. The amendment finds that although population of the stickleback fish may be present two miles north of the Project site, it is unlikely the species would be affected by any potential onsite leakage or seepage. Any seepage/spillage from the site would likely be contained before any gasoline or diesel fuel reaches the intermittent channels of Shay Creek. The letter continues that any leakage or seepage from the underground tanks will be immediately reported and mitigation measures, if needed, will be implemented. Therefore, the assessment does not propose any mitigation measures for stickleback fish at this time as potential impacts of the Project are deemed less than significant.

Additionally, no sensitive habitats (i.e., streams, wetlands, etc.) or wildlife corridors exist on the Project site, nor were any such habitats noted in adjacent areas. The site supports a moderately dense Ponderosa Pine community with some Pinyon Pines and California Junipers. However, the assessment did not identify any blue line streams during the field investigation, nor were any wildlife corridors found to cross the property. The assessment finds that "no sensitive species are expected to occur on the site based on the results of the field investigation and the location of the 0.90-acre parcel in an area which has been disturbed due to past development activities". The General Biological Assessment finds that while some wildlife species will be displaced into adjacent areas, the cumulative impacts are not expected to be significant given the amount of similar vegetation in adjacent areas and the relatively small size of the property.

**TRAFFIC AND CIRCULATION.** A Traffic Study was performed by Hall & Foreman, Inc. to address traffic impacts of the Project and the expected trip generation. The study encompasses the area streets and specifically the intersection of State Lane and State Highway 38, which provides local and regional access to the study area.

In addition, the Traffic Study considered impacts resulting from the Project and other projected area growth to consider cumulative impacts and traffic conditions up to 2035. The Traffic Study also considered the existing and projected traffic volumes and turning movements at peak hours of 7:00 am to 9:00 am and 4:00 pm to 6:00 pm; as well as a 24-hour intersection volume count at the intersection of Highway 38 and State Lane. These counts were conducted in December of 2012. The volume at State Lane and First Lane (an unpaved road providing access to two properties east of the Project site) were also observed.

A traffic signal warrant analysis was conducted at the intersection of Highway 38 and State Lane to determine if the installation of a traffic control signal would improve the overall safety and/or operation of the intersection. Consideration was given to the geometrics of each approach, the number of lanes, and accident history rates for the intersection. It was determined that a traffic signal was not warranted.

Additional analysis was requested by Caltrans to consider potential impacts to the Project area traffic. Caltrans initially cleared the Project in August 28, 2013, stating that all of its concerns had been addressed. In June 02, 2014, and based on the revised Traffic Report dated September 19, 2013, Caltrans requested truck turning templates for the northbound SR-38 right-turn onto State Lane and additional analysis for a left-turn pocket from the southbound SR-38 onto State Lane. On August 5, 2014, Caltrans approved the Project to proceed with encroachment permits. Final approval of SR-38 traffic improvements remain subject to approval by Caltrans and shall meet not only Caltrans Highway Design Manual (HDM) and Access Management Plan standards, but also the Federal Highway Administration's Intersection Design Standards.

The Traffic Division has reviewed the Project, related site plan, intersection geometrics and the referenced Traffic Studies and found the Project to be consistent with County development standards for providing access and improvements needed for the proposed use.

AIR QUALITY. The Project site is located within the jurisdiction of the South Coast Air Quality Management District (SCAQMD). An Air Quality Impact Analysis was prepared for this Project by Urban Crossroads to analyze emissions from short term construction activities and long term operational activities.

The study finds that short-term construction-source emissions would be temporary and intermittent in nature and would not result in persistent impacts that would affect substantial numbers of people. The study finds that Project construction-source emissions would not conflict with the applicable Air Quality Management Plan (AQMP). Air quality mitigation measures for dust control have been required as conditions of approval. Application of these mitigation measures will address potential short-term impacts related to construction equipment operations. Therefore these potential short-term impacts are considered less than significant. Potential long-term operational impacts of the Project were also analyzed by the referenced Air Quality Study. The study finds that the proposed Project would not cause a "hotspot" as a result of the Project related activities and increased traffic during the ongoing operations, nor would the Project result in a significant adverse health impact. Project operational-source emissions would not conflict with the AQMP. The study continues to find that for regional emissions, the Project would not exceed the numerical thresholds of significance established by the SCAQMD.

INITIAL STUDY. An Initial Study has been prepared for the Project in compliance with the California Environmental Quality Act (CEQA). Letters and emails were received from concerned citizens and agencies. These communications raised concerns regarding potential impacts on biological resources, traffic and air quality. Professional reports prepared for this Project have addressed all concerns. The findings of these reports conclude that no significant impact is anticipated, and that any potential impact will be less than significant. The Initial Study reiterates these findings and concludes that the proposed Project would not have any significant adverse impacts with application of the proposed mitigation measures. Therefore, a Mitigated Negative Declaration is proposed for adoption by the Planning Commission. The revised Initial Study was made available for public review and comment; through submittal to the State Clearinghouse on November 21, 2014. The Initial Study was also published online, and comments were recieved.

**RECOMMENDATION:** That the Planning Commission:

- 1) **ADOPT** the Mitigated Negative Declaration, based on a finding that the Initial Study was completed in compliance with CEQA, that it has been reviewed and considered prior to approval of the Project, and that the Initial Study/Mitigated Negative Declaration reflects the independent judgment of the County of San Bernardino;
- 2) **ADOPT** the Findings as contained in the Staff Report;
- 3) **APPROVE** the Conditional Use Permit to establish a convenience store, gas station, and a caretaker residence on 0.90 acre, subject to the recommended Conditions of Approval; and
- 4) **FILE** a Notice of Determination.

**ATTACHMENTS:**

EXHIBIT A: Findings

EXHIBIT B: Conditions of Approval

EXHIBIT C: Initial Study 2014

EXHIBIT D: Revised General Biological and Desert Tortoise Reports; RCA Associates; 2014

EXHIBIT E: Biological Letter; RCA Associates; 2014

EXHIBIT F: Preliminary Hydrology Study; Jerry L. Miles, P.E.; 2013

EXHIBIT G: Preliminary Water Quality Management Plan; Jerry L. Miles, P.E.; 2013

EXHIBIT H: Supplemental Preliminary Hydrology Analysis of Off-Site Flows 2014

EXHIBIT I: Revised Traffic Report: Hall & Foreman, Inc.; 2014 with Appendices (Exhibit-A 6-27-2014, Winter Weekend Traffic Analysis 01-15-2014, and Response to Caltrans Letter 06-23-2014)

EXHIBIT J: Air Quality Impact Analysis; Urban Cross Roads; 2014

## **EXHIBIT A**

### **Findings**

### **FINDINGS: Conditional Use Permit**

Conditional Use Permit (CUP) to establish a 6,793 square-foot convenience store, gas station, and a caretaker residence (Project) on 0.90 acre.

1. The site for the proposed use is adequate in landscaping, parking, and open space needs. Additionally, the proposed facility is required, either by design or by application of Conditions of Approval, to comply with all requirements pertaining to a CUP application, including required setbacks. The proposed Project is consistent with County development standards and the designated zoning of General Commercial (CG).
2. The site for the proposed use has adequate access, which means that the site design incorporates appropriate street and highway characteristics to serve the proposed use because the proposed convenience store and gas station will have adequate legal and physical access by utilizing State Lane, along the east/southeast of the Project site. The County Public Works Department/Traffic Division has reviewed the site plan and its proposed driveway access, and has found that the site has adequate access to support the proposed use and related activities. Caltrans has reviewed and requires additional improvements at the intersection of State Highway 38 and State Lane. Final improvements at the intersection of State Highway 38 and State Lane shall meet not only Caltrans Highway Design Manual (HDM) and Access Management Plan standards, but also the Federal Highway Administration's Intersection Design Standards.
3. The proposed use will not have a substantial adverse effect on abutting property or the allowed use of the abutting property, which means that the use will not generate excessive noise, traffic, vibration, or other disturbance because the proposed use is permitted in CG Zoning District, subject to approval of a CUP and meeting the requirements set forth by the Conditions of Approval. The proposed Project has been reviewed for traffic, noise, air quality and waste management impacts. As determined by licensed professionals, this use will not generate excessive disturbances and any impact will be less than significant. In addition, the use will not substantially interfere with the present or future ability to use solar energy systems because the use and its proposed structure will not cast significantly large, sun-blocking shadows across a potential site for such solar energy system.
4. The proposed use and manner of development are consistent with the goals, policies, standards and maps of the County General Plan because the proposed facility will provide services typically considered beneficial to neighboring residences. The proposed development together with the provisions for its design and improvement are consistent with the goals and policies of the General Plan. Specifically, the proposed use is consistent with:

GOAL LU 1 which states that, "the County will have a compatible and harmonious arrangement of land uses by providing a type and mix of

functionally well-integrated land uses that are fiscally viable and meet general social and economic needs of the residents.”

The proposed Gas Station and Convenience store is located within the CG zoning district, which is set aside and intended to provide opportunities for small to medium sized commercial development beneficial to the surrounding property owners. This Project will serve the surrounding community by providing a neighborhood facility currently not available in the immediate vicinity.

5. There is supporting infrastructure, existing or available, consistent with the intensity of development, to accommodate the proposed development without significantly lowering service levels because the Project site is sufficiently served by State Lane, which is connected to the State Highway 38, located only 150 feet west of the site. The intensity of the proposed use has been determined to minimally increase service demands. Neither the short-term construction activities nor the long-term operational activities will cause level of service for traffic to fall below the required standards, as depicted in the Traffic Study performed by Hall and Foreman, LLC. The Project water and sewer needs will be served by Big Bear City Community Service District as will-serve letters are on file.
6. The lawful conditions stated in the approval are deemed necessary to protect the public health, safety and general welfare because the Conditions of Approval incorporate mitigation measures intended to reduce any potential impacts in the area of noise, biological resources and air quality associated with the Project. The other conditions, when implemented, will protect the public health, safety and welfare by providing adequate site improvements.
7. The design of the site has considered the use of solar energy systems and passive or natural heating and cooling opportunities, in that adequate space is made available through the site design for future installation of such systems.
8. The Project is consistent with the California Environmental Quality Act (CEQA) because an Initial Study has been prepared in compliance with CEQA, which represents the independent judgment of the County acting as the lead agency for the Project. The Initial Study contains mitigation measures recommended to minimize potential impacts on biological resources, air quality, and noise levels. The Initial Study and the draft Mitigated Negative Declaration were posted and made available for public review as required by law. Based on the referenced Initial Study, the proposed Project would not have significant adverse impacts with application of the proposed mitigation measures. Therefore, a Mitigated Negative Declaration is proposed.

## **EXHIBIT B**

### **Conditions of Approval**

**CONDITIONS OF APPROVAL**  
Conditional Use Permit  
**MUNEM MAIDA**  
**GENERAL REQUIREMENTS**  
**Conditions of Operation and Procedures**

LAND USE SERVICES – Planning (909) 387-8311

1. Project Approval Description. This Conditional Use Permit is approved subject to these Conditions of Approval to establish a 6,793 square foot convenience store, gas station, and a care-taker residence on 0.90 acre at the east/southeast corner of State highway 38 and State Lane, within the community of Erwin lake in the Third Supervisorial District; Assessor Parcel Numbers: 0315-231-17 & 0315-085-28; Project Number: P201300086.
2. Development Standards. The Developer shall identify and meet all applicable development standards. This project is located in the General Commercial (CG) Zoning District and is subject to all development standards such as building setbacks, maximum building height, minimum required landscaping, and all other applicable requirements.
3. Revisions. Any alteration or expansion of these facilities, a proposed change of use, any change to proposed parking allocation, or increase in the developed area of the site from that shown on the approved site plan shall require additional land use review and relevant application(s) at the time such revision is being considered.
4. Continuous Effect. All of the conditions of this Conditional Use Permit are continuously in effect throughout the operative life of the project for the use approved. Failure of the Developer to comply with any or all of the conditions at any time may result in a public hearing and revocation of the MUP, provided adequate notice, time and opportunity is provided to the property owner or other party to correct the non-complying situation.
5. Development Impact Fees. Additional fees may be required prior to issuance of development permits. Fees shall be paid as specified in adopted fee ordinances.
6. Indemnification. In compliance with SBCC §81.01.070, the Developer shall agree, to defend, indemnify, and hold harmless the County or its "indemnitees" (herein collectively the County's elected officials, appointed officials (including Planning Commissioners), Zoning Administrator, agents, officers, employees, volunteers, advisory agencies or committees, appeal boards or legislative body) from any claim, action, or proceeding against the County or its indemnitees to attack, set aside, void, or annul an approval of the County by an indemnitee concerning a map or permit or any other action relating to or arising out of County approval, including the acts, errors or omissions of any person and for any costs or expenses incurred by the indemnitees on account of any claim, except where such indemnification is prohibited by law. In the alternative, the Developer may agree to relinquish such approval.

Any condition of approval imposed in compliance with the County Development Code or County General Plan shall include a requirement that the County acts reasonably to promptly notify the Developer of any claim, action, or proceeding and that the County cooperates fully in the defense. The Developer shall reimburse the County and its indemnitees for all expenses resulting from such actions, including any court costs and attorney fees, which the County or its indemnitees may be required by a court to pay as a result of such action.

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The County may, at its sole discretion, participate at its own expense in the defense of any such action, but such participation shall not relieve the Developer of their obligations under this condition to reimburse the County or its indemnitees for all such expenses.

This indemnification provision shall apply regardless of the existence or degree of fault of indemnitees. The Developer's indemnification obligation applies to the indemnitees' "passive" negligence but does not apply to the indemnitees' "sole" or "active" negligence or "willful misconduct" within the meaning of Civil Code Section 2782.

7. Expiration. This Conditional Use Permit approval shall become null and void if it is not exercised within three years of the effective date of this approval, unless an extension of time is approved. The permit is deemed exercised when either:

- The permittee has commenced actual construction or alteration under a validly issued building permit or
- The permittee has substantially commenced the approved land use or activity on the project site, for those portions of the project not requiring a building permit (SBCC §86.06.060)

PLEASE NOTE: This will be the ONLY notice given of the expiration date. The developer is responsible for initiation of any Extension of Time application.

8. Extension of Time/CUP. Extensions of time to the expiration date (listed above or as otherwise extended) may be granted in increments each not to exceed an additional three years beyond the current expiration date. An application to request consideration of an extension of time may be filed with the appropriate fees no less than 30 days before the expiration date. Extensions of time may be granted base on a review of the application, which includes a justification of the delay in construction and a plan of action for completion. The granting of such an extension request is a discretionary action that may be subject to additional or revised conditions of approval or site plan modifications. (§SBCC 86.06.060)
9. Project Account. The actual-cost project number for this project is P201300086. The Developer shall maintain a positive account balance at all times during pre- and post-approval stages of this land use review application including, Condition Compliance activities, file closure and any other required follow-on work (e.g. landscape performance review). All fees required for processing shall be paid in full prior to final inspection and authorization of occupancy and operation.
10. Condition Compliance. In order to obtain grading, building and occupancy permits, the Developer shall process a Condition Compliance Review with all affected County agencies and coordinate with County Planning in accordance with the directions stated in the Approval letter. A minimum balance of \$1,000.00 must be in the project account P201300086 at the time the Condition Compliance Review is initiated. Sufficient funds shall be made available by the Developer during all stages of this land use review.
11. Enforcement. If any County enforcement activities are required to enforce compliance with the conditions of approval, the Developer shall be charged for such enforcement activities in accordance with the San Bernardino County Code Schedule of Fees.
12. Sign Lighting. All signs proposed by this project may only be lit by steady, stationary, shielded light directed at the sign, by light inside the sign, by direct stationary neon lighting or by an alternating lighting system that changes no more than once per hour. The glare from the luminous source shall not exceed one-half (0.5) foot-candle.
13. Follow-on Permits. The applicant shall ascertain and comply with the requirements of all Federal, State, County and Local agencies as are applicable to the proposed use and the project area. These include, but are not limited to: a) FEDERAL: None; b) STATE: Regional Water Quality Control, and Southern Coast Air Quality Management District, c) COUNTY: Departments of Public

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Health; Environmental Health Services, Land Use Services (Planning, Building and Safety, Code Enforcement, etc.), Public Works; and 4) LOCAL: Big Bear City Fire Department.

14. Continuous Maintenance. The project Developer shall enforce architectural controls to ensure on-going compatibility of colors, materials and theme. The property will be maintained so that it is visually attractive and not dangerous to the health and welfare of its own occupants & the surrounding properties. The Owner shall ensure that all facets of the development are regularly maintained and inspected so that they are kept in continual good repair. The following shall be met:
  - a. All structures, fencing, walks, parking lots, driveways, signs, water features, outside furniture and fixtures shall be kept in good repair and condition.
  - b. All trash, storage and loading areas shall be kept neatly and in orderly manner.
  - c. All graffiti and debris shall be removed daily.
  - d. There shall be no metal storage containers allowed unless specifically approved by this or subsequent land use approvals, as detailed in Project Description herein.
  - e. Landscaping shall be kept in thriving condition. Drought-resistant, fire retardant vegetation shall be used where applicable for any replacement landscaping and erosion control to reduce water consumption and promote slope stability.
  - f. All landscaped areas shall be irrigated in a manner designed to conserve water.
  - g. Annual maintenance shall be conducted for proper structural, electrical and mechanical safety, and properly operating irrigation system.
  - h. Annual maintenance shall include repainting faded or stained surfaces and re-glazing windows.
  - i. Mechanical equipment and roof top mechanical equipment shall be screened from public view. Such screens shall be maintained to be visually attractive and in good repair.
  - j. The Developer shall ensure that all traffic circulation surfaces and markings shall be clearly defined, regularly repainted and maintained in good operating conditions at all times. These markings include but are not limited to painted parking spaces, curb painting directional designations, "No Parking" designations and "Fire Lane" designations. In cases where non-asphaltic surfaces are allowed, free-standing signs (subject to Planning review and approval) to accomplish here-stated circulation markings and guidance shall be required.
15. Weed Abatement. The applicant shall comply with San Bernardino County weed abatement regulations and periodically clear the site of all non-complying vegetation. This includes removal of all Russian Thistle (tumbleweeds).
16. Performance Standards. The approved land uses shall operate in compliance with the general performance standards listed in the SBCC Chapter 83.01, regarding air quality, electrical disturbance, fire hazards (storage of flammable or other hazardous materials), heat, noise, vibration, and the disposal of liquid waste. In addition to these, none of the following shall be perceptible without instruments at any point outside the project boundaries at adjoining property lines:
  - Odors: No offensive or objectionable odor.
  - Smoke: No smoke of a greater density than that described in No. 2 on the Ringelman Chart, as published currently by the United State Bureau of Mines, shall be emitted from any project source.
  - Radiation: No dangerous amount of radioactive emissions.
  - Toxic Gasses: No emission of toxic, noxious or corrosive fumes or gases.
  - Glare: No intense glare that is not effectively screened from view at any point outside the project boundary.
17. The Developer shall ensure that the development operates in conformity with the following performance standards:
  - a. No use shall involve vibration perceptible without instruments at project site's property lines.
  - b. Project noise levels shall not exceed County Noise Standards of 55 dB(A) where the project abuts single family residences from 7am-10pm, as measured at the project site's property lines.

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- c. Project noise levels after 10pm shall not exceed 45 dB(A) where the project site abuts single family residences, as measured at the project site's property lines. Compliance with San Bernardino County Noise Standard(s) and Development Code is mandatory and is subject to Department of Environmental Health Services review and approval (DEHS).
  - d. No use shall emit offensive or objectionable odor perceptible at project site's property lines.
  - e. No use shall create smoke from any source shall emit a greater density described in No. 2 on the Ringelmann Chart as published by the United States Bureau of Mines.
  - f. No use shall emit toxic, noxious or corrosive fumes of gases.
  - g. No use shall emit/cause dirt, dust, fly ash, and other forms of particulate matter.
  - h. No use shall involve dangerous amount of radioactive emissions.
  - i. Every operation producing intense glare or heat shall be conducted in a manner as to effectively screen the glare from view at any point on the lot line of the lot in which the use is located and to dissipate the heat so that it is not perceptible without instruments.
  - j. All uses shall conform to the provisions of the San Bernardino County Hazardous Waste Management Plan.
18. Air Quality – Operations. The Developer shall submit for review and obtain approval from County Planning of a signed letter agreeing to include as a condition of all construction contracts/subcontracts requirements to reduce vehicle and equipment emissions and other impacts to air quality by implementation of State Regulations such as AB1493 (Pavley I and II) that will reduce emissions from the employees' automobiles and light duty trucks, anticipated to come into effect prior to 2020, Executive Order S-1-07 (Low Carbon Fuel Standard) and submitting documentation of compliance. The Developer shall further state that the proposed project shall comply with all applicable regulations promulgated to meet the State's AB-32 goals and regulations adopted by the California Air Resources Board (i.e. the tire pressure program, low rolling resistance tire, low friction engine oils, goods movement efficiency measures, heavy duty vehicle aerodynamic efficiency, and medium and heavy duty vehicle hybridization). Operation of all off-road and on-road diesel vehicles/equipment shall comply with the County Diesel Exhaust Control Measures [SBCC §83.01.040 (c)] including but not limited to:
- a. Equipment/vehicles shall not be left idling in excess of five minutes.
  - b. Engines shall be maintained in good working order to reduce emission.
  - c. On-site electrical power connections shall be made available where feasible.
  - d. Ultra low-sulfur diesel fuel shall be utilized.
  - e. Electric and gasoline powered equipment shall be substituted for diesel powered equipment where feasible.
  - f. Signs shall be posted requiring all vehicle drivers and equipment operators to turn off engines when not in use.
  - g. All on-road diesel trucks shall not idle more than five minutes per truck trip or per day on the project site.
19. Air Quality – HRA Revisions. If there is any future change in land use that includes sensitive receptors as defined by SCAQMD, then a Health Risk Assessment (HRA) shall be prepared, submitted for review and approval obtained from County Planning to demonstrate that a significant health risk will not be posed at the time revisions are being considered.

#### LAND USE SERVICES – BUILDING AND SAFETY (909) 387-8311

- 20. Building Occupancy. Any building without specified tenants and uses may receive final inspection for construction purposes only. A Tenant Improvement or a Tenant Review that identifies the tenant and proposed uses shall be submitted and approved prior to occupancy being granted.
- 21. Provide disabled parking in each parking area to serve each accessible building or area.

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COUNTY FIRE (760) 995-8190

22. Jurisdiction. The above referenced project is under the jurisdiction of the San Bernardino County Fire Department herein ("Fire Department"). Prior to any construction occurring on any parcel, the applicant shall contact the Fire Department for verification of current fire protection requirements. All new construction shall comply with the current Uniform Fire Code requirements and all applicable statutes, codes, ordinances and standards of the Fire Department.
23. Construction Permits. Construction permits, including Fire Condition Letters, shall automatically expire and become invalid unless the work authorized by such permit is commenced within 180 days after its issuance, or if the work authorized by such permit is suspended or abandoned for a period of 180 days after the time the work is commenced. Suspension or abandonment shall mean that no inspection by the Department has occurred within 180 days of any previous inspection. After a construction permit or Fire Condition Letter, becomes invalid and before such previously approved work recommences, a new permit shall be first obtained and the fee to recommence work shall be one-half the fee for the new permit for such work, provided no changes have been made or will be made in the original construction documents for such work, and provided further that such suspension or abandonment has not exceeded one year. A request to extend the Fire Condition Letter or Permit may be made in writing PRIOR TO the expiration date justifying the reason that the Fire Condition Letter should be extended.

COUNTY FIRE – Hazardous Material (909) 386-8401

24. Business Emergency Plan. Prior to occupancy, operator shall submit disclosure information using the California Environmental Reporting System (CERS) for emergency release or threatened release of hazardous materials and wastes or apply for exemption from hazardous materials laws and regulations. Contact Office of the Fire Marshal, Hazardous Materials Division at (909) 386-8401.
25. Hazardous Material Permits. Prior to occupancy, applicant shall be required to apply for one or more of the following: a Hazardous Materials Handler Permit, a Hazardous Waste Generator Permit, an Aboveground Storage Tank Permit, and/or an Underground Storage Tank Permit. For information, Office of the Fire Marshal, Hazardous Materials Division at (909) 386-8463.

PUBLIC HEALTH – Environmental Health Services (800) 442-2283

26. Noise. Noise level shall be maintained at or below County Standards, Development Code Section 83.01.080.
27. Refuse. All refuse generated at the premises shall at all times be stored in approved containers and shall be placed in a manner so that environmental public health nuisances are minimized. All refuse not containing garbage shall be removed from the premises at least 1 time per week, or as often as necessary to minimize public health nuisances. Refuse containing garbage shall be removed from the premises at least 2 times per week, or as often as necessary to minimize public health nuisances, by a permitted hauler to an approved solid waste facility in conformance with San Bernardino County Code Chapter 8, Section 33.0830 et. seq.

PUBLIC WORKS – Solid Waste Management (909) 386-8701

28. Recycling Storage Capacity. The developer shall provide adequate space and storage bins for both refuse and recycling materials. This requirement is to assist the County in compliance with the recycling requirements of AB 2176.
29. Mandatory Commercial Recycling. Beginning July 1, 2012 all businesses defined to include a commercial or public entity that generates 4 or more cubic yards of commercial solid waste a week

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or is a multi-family residential dwelling of 5 units or more to arrange for recycling services. The County is required to monitor business recycling and will require the business to provide recycling information. This requirement is to assist the County in compliance with the recycling requirements of AB 341.

#### PUBLIC WORKS – Traffic (909) 387-8186

30. Caltrans Review. Caltrans Review and approval of the project is required. The Traffic Study prepared and revised (on September 19, 2013) by Hall and Foreman, Inc. has been reviewed and approved by Caltrans to address project's traffic issues at the intersection of Highway 38 and State Lane.
31. Vehicle Back Out. The project vehicles shall not back out into the public roadway.
32. Right-turn In Only. The northwesterly project driveway along State Lane shall be restricted to right-turn in only.

#### CALTRANS DISTRICT 8 (909) 388-7017

33. Infrastructure Improvements. Based on the revised Traffic Report dated June 27, 2014, and the Highway Design Manual (HDM) Topic 405 Intersection Design Standards the developer shall provide:
  - A left-turn pocket on the SR 38 southbound at the intersection of State Lane shall be designed according to the HMD Topic 405 Intersection Design Standards.
  - A widening of the existing shoulder at the southeast corner of SR 38 and State Lane to accommodate the north to east right turn movement for trucks.
34. Additional Requirements. Additional requirements not decipherable from the proposed conceptual geometrics may be required when final construction/street improvement plans are submitted to the Office of Encroachment Permits.

#### LAND USE SERVICES – Land Development – Roads (909) 387-8311

35. Road Standards. All required street improvements shall comply with latest San Bernardino County Road Planning and Design Standards and the San Bernardino County Standard Plans.

#### LAND USE SERVICES – Land Development – Drainage (909) 387-8311

36. FEMA Flood Zone. The project is located within Flood Zone D according to FEMA Panel Number 8035H dated 08/28/2008. Flood hazards are undetermined in this area, but possible.
37. Tributary Drainage. Adequate provisions should be made to intercept and conduct the tributary off site - on site drainage flows around and through the site in a manner, which will not adversely affect adjacent or downstream properties at the time the site is developed.
38. Natural Drainage. The natural drainage courses traversing the site shall not be occupied or obstructed.
39. Additional Drainage Requirements. In addition to drainage requirements stated herein, other "on-site" and/or "off-site" improvements may be required which cannot be determined from tentative plans at this time and would have to be reviewed after more complete improvement plans and profiles have been submitted to this office.

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40. Continuous BMP Maintenance. The property owner/Developer is required to provide periodic and continuous maintenance of all Best Management Practices (BMP) devices/facilities listed in the County approved Water Quality Management Plan (WQMP) for the project. This includes but is not limited to, filter material replacement and sediment removal, as required to assure peak performance of all BMPs. Furthermore, such maintenance activity will require compliance with all Local, State, or Federal laws and regulations, including those pertaining to confined space and waste disposal methods in effect at the time such maintenance occurs.
41. BMP Enforcement. In the event the property owner or the Developer (including any successors or assigns) fails to accomplish the necessary BMP maintenance within five (5) days of being given written notice by County LAND USE SERVICES, then the County shall cause any required maintenance to be done. The entire cost and expense of the required maintenance shall be charged to the property owner and/or the Developer, including administrative costs, attorney's fees and interest thereon at the rate authorized by the County Code from the date of the original notice to the date the expense is paid in full.

**PRIOR TO ISSUANCE OF GRADING PERMITS  
OR A LAND DISTURBING ACTIVITY  
THE FOLLOWING SHALL BE COMPLETED**

LAND USE SERVICES – Planning (909) 387-8311

42. GHG – Construction Performance Standards. The Developer shall submit for County planning review and approval a signed letter agreeing to include as a requirement for all construction contracts/subcontracts to reduce potential GHG impacts. The Developer and contractors shall adhere to the following:
- a. Implement both the approved Dust Control and Coating Restriction Plans.
  - b. Selection of construction equipment will be based on low-emissions factors and high-energy efficiency. All diesel/gasoline-powered construction equipment shall be replaced, where possible, with equivalent electric or CNG equipment.
  - c. Use low-sulfur fuel for stationary equipment. (SCAQMD Rules 431.1 and 431.2)
  - d. Trucks/equipment shall not be left idling on site in excess of 5 minutes
  - e. Grading plans shall include the following statements verbatim:
    - "All construction equipment shall be tuned and maintained in accordance with the manufacturer's specifications".
    - "All construction equipment (including electric generators) shall be shut off by work crews when not in use and shall not idle for more than 5 minutes."
  - f. Minimize vehicles and equipment operating at the same time.
  - g. Reduce daily equipment operation hours during smog season (May-October).
  - h. Schedule construction traffic ingress/egress to not interfere with peak-hour traffic and to minimize traffic obstructions. Queuing of trucks on and off site shall be prevented. A flag person shall be retained to maintain efficient traffic flow and safety adjacent to existing roadways.
  - i. Recycle and reuse construction and demolition waste (e.g. soil, vegetation, concrete, lumber, metal, and cardboard) per County Solid Waste procedures.
  - j. The construction contractor shall support and encourage ridesharing and transit incentives for the construction crew and educate all construction workers about the required waste reduction and the availability of recycling services.
43. Tree and Plant Removal Plan. A Tree or Plant Removal Plan shall be presented to the County Planning for review and approval. A signed letter shall be submitted to Planning agreeing to the following:
- a. Any removal of regulated trees and/or plants shall be consistent with the County Development Code Section 88.01.050.

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- b. Adequate number of the existing trees six inches in diameter or wider shall remain on the project site. Fifty-seven Jeffrey Pines and three cypress trees are proposed and are hereby required to remain on the project site.

- 44. Air Quality – Dust Control Plan. The developer shall submit to County Planning a Dust Control Plan (DCP) consistent with SCAQMD guidelines and a letter agreeing to include in any construction contracts and/or subcontracts a requirement that the contractors adhere to the requirements of the DCP. The DCP shall include these elements to reduce dust production:
  - a. Exposed soil shall be kept continually moist through a minimum of twice daily waterings to reduce fugitive dust during all grading and construction activities.
  - b. Street sweeping shall be conducted when visible soil accumulations occur along site access roadways to remove dirt dropped by construction vehicles.
  - c. Site access driveways and adjacent streets shall be washed daily, if there are visible signs of any dirt track-out at the conclusion of any workday.
  - d. Tires of vehicles will be washed before the vehicles leave project site and enter a paved road.
  - e. Any truck hauling dirt away from the site shall be covered
  - f. During high wind conditions (i.e., wind speeds exceeding 25 mph), areas with disturbed soil shall be watered hourly and activities on unpaved surfaces shall be terminated until wind speeds no longer exceed 25 mph.
  - g. Storage piles that are to be left in place for more than three working days shall either be sprayed with a non-toxic soil binder, or covered with plastic or revegetated.[Mitigation Measure III-1]
- 45. Air Quality – Construction Plan. Developer shall submit written verification that all construction contracts and sub-contracts for the project contain provisions that require adherence to the following standards to reduce impacts to air quality. During construction, each contractor and subcontractor shall implement the following, whenever feasible:
  - a. Suspend use of all construction equipment operations during second stage smog alerts. For daily forecast, call (800) 367-4710 (San Bernardino and Riverside counties).
  - b. Trucks/equipment shall not be left idling on site for periods in excess of 10 minutes.
  - c. Provide temporary traffic control during all phases of construction.
  - d. Substitute diesel-powered equipment with electric and gasoline-powered equipment.
  - e. Onsite electrical power hook-ups shall be provided for electric construction tools to eliminate the need for diesel-powered electronic generators.
  - f. Install storm water control systems to prevent mud deposition onto paved areas during construction.
  - g. Contractors shall use low sulfur fuel for stationary construction equipment as required by AQMD Rules 431.1 and 431.2 to reduce the release of undesirable emissions.[Mitigation Measure III-2]
- 46. Air Quality – Coating Restriction Plan. The developer shall submit a letter agreeing to these Coating Restrictions and to include in any construction contracts and/or subcontracts a requirement that the contractors adhere to these requirements. These shall include, but are not be limited to:
  - a. Architectural coating volume shall not exceed the significance threshold for ROG, which is 75 lbs./day and the combined daily ROC volume of architectural coatings and asphalt paving shall not exceed the significance threshold for ROC of 75 lbs. per day
  - b. Architectural coatings with Reactive Organic Compounds (ROC) shall not have a content greater than 100 g/l.
  - c. High-Volume, Low Pressure (HVLP) spray guns will be used to apply coatings.[Mitigation Measure III-3]
- 47. Cultural Resources. The Developer shall prepare, submit for review and obtain approval of a letter agreeing to adhere to the following requirements and to include in all construction

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*contracts/ subcontracts a requirement that project contractors adhere to the following requirements:*

*If archaeological, paleontological and/or historical resources are uncovered during ground disturbing activities, all work in that area shall cease immediately until written clearance by County Planning is provided indicating that satisfactory mitigation has been implemented. A qualified expert (e.g. archaeologist or paleontologist), as determined by County Planning in consultation with the County Museum shall be hired to record the find and recommend any further mitigation. The Developer shall implement any such additional mitigation to the satisfaction of County Planning. If human remains are uncovered during ground disturbing activities, the San Bernardino County Coroner shall be contacted within 24 hours of the find. If the remains or cultural artifacts are determined to be of Native American origin, the local Native American representative shall also be notified.*

*[Mitigation Measure V1]*

48. *Construction Noise.* *The “developer” shall submit for review and obtain approval of an agreement letter that stipulates that all construction contracts/subcontracts contain as a requirement that the following noise attenuation measures be implemented:*

- a. Exterior construction activities shall be limited between 7 a.m. and 7 p.m. There shall be no exterior construction activities on Sundays or National Holidays.*
- b. Interior construction activities may occur on any day and any time provided they comply with the County noise standards. (SBCC 83.01.080).*
- c. Construction equipment shall be muffled per manufacturer’s specifications.*
- d. All stationary construction equipment shall be placed in a manner so that emitted noise is directed away from sensitive receptors nearest the project site.*

*[Mitigation Measure XI-1]*

49. *Construction Noise.* *The “developer” shall submit for review and obtain approval of an agreement letter that stipulates that all construction contracts/subcontracts contain as a requirement that the following noise attenuation measures be implemented:*

- e. Exterior construction activities shall be limited between 7 a.m. and 7 p.m. There shall be no exterior construction activities on Sundays or National Holidays.*
- f. Interior construction activities may occur on any day and any time provided they comply with the County noise standards. (SBCC 83.01.080).*
- g. Construction equipment shall be muffled per manufacturer’s specifications.*
- h. All stationary construction equipment shall be placed in a manner so that emitted noise is directed away from sensitive receptors nearest the project site.*

*[Mitigation Measure XI-1]*

50. *Construction Noise.* *The “developer” shall submit for review and obtain approval of an agreement letter that stipulates that all construction contracts/subcontracts contain as a requirement that the following noise attenuation measures be implemented:*

- i. Exterior construction activities shall be limited between 7 a.m. and 7 p.m. There shall be no exterior construction activities on Sundays or National Holidays.*
- j. Interior construction activities may occur on any day and any time provided they comply with the County noise standards. (SBCC 83.01.080).*
- k. Construction equipment shall be muffled per manufacturer’s specifications.*
- l. All stationary construction equipment shall be placed in a manner so that emitted noise is directed away from sensitive receptors nearest the project site.*

*[Mitigation Measure XI-1]*

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51. Construction Noise. *The “developer” shall submit for review and obtain approval of an agreement letter that stipulates that all construction contracts/subcontracts contain as a requirement that the following noise attenuation measures be implemented:*
- m. Exterior construction activities shall be limited between 7 a.m. and 7 p.m. There shall be no exterior construction activities on Sundays or National Holidays.*
  - n. Interior construction activities may occur on any day and any time provided they comply with the County noise standards. (SBCC 83.01.080).*
  - o. Construction equipment shall be muffled per manufacturer’s specifications.*
  - p. All stationary construction equipment shall be placed in a manner so that emitted noise is directed away from sensitive receptors nearest the project site.*
- [Mitigation Measure XI-1]*

#### LAND USE SERVICES – Building and Safety (909) 387-8311

- 52. A preconstruction inspection, tree removal plan and permit in compliance with the County's Plant Protection and Management Ordinance, shall be approved prior to any land disturbance and/or removal of any trees or plants.
- 53. An erosion and sediment control plan and permit shall be submitted to and approved by the Building Official prior to any land disturbance.
- 54. Prior to issuance of building permits, erosion control devices must be installed at all perimeter openings and slopes. No sediment is to leave the job site.
- 55. All runoff must be held to pre-development levels per Section 82.13.080 of the San Bernardino County Development Code.
- 56. If grading exceeds fifty (50) cubic yards, approved plans will be required. Grading plans shall be submitted to Building and Safety for review and approval prior to grading/land disturbance.

#### PUBLIC WORKS – Surveyor (909) 387-8149

- 57. A Site Plan shows bearings and distances which are not of record. A Record of Survey is required per Section 8762 of the Business & Professions Code.
- 58. If any activity on this project will disturb **any** land survey monumentation, including but not limited to vertical control points (benchmarks), said monumentation shall be located and referenced by or under the direction of a licensed land surveyor or registered civil engineer authorized to practice land surveying **prior** to commencement of any activity with the potential to disturb said monumentation, and a corner record or record of survey of the references shall be filed with the County Surveyor (Section 8771(b) Business and Professions Code).

#### LAND USE SERVICES – Land Development – Drainage (909) 387-8311

- 59. Drainage Improvement. A Registered Civil Engineer shall investigate and design adequate drainage facilities to intercept and conduct the off-site and on-site drainage flows around and through the site in a manner, which will not adversely affect adjacent or downstream properties. Submit drainage study for review and obtain approval. A \$520 deposit for drainage review will be collected upon submittal to the Land Development Division.

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60. FEMA Flood Zone. The project is located within Flood Zone D according to FEMA Panel Number 8035H dated 08/28/2008. Flood hazards are undetermined in this area, but possible.
61. Topo Map. A topographic map shall be provided to facilitate the design and review of necessary drainage facilities.
62. Grading Plans. Grading plans shall be submitted for review and approval obtained. A \$520 deposit for grading plan review will be collected upon submittal to the Land Development Division.
63. Natural Drainage. The natural drainage courses traversing the site shall not be occupied or obstructed.
64. Permit. A permit, or authorized clearance, shall be obtained from the Land Development Division prior to issuance of a grading permit by County Building and Safety.
65. WQMP. A completed Water Quality Management Plan (WQMP) shall be submitted for review and approval obtained. A \$2,500 deposit for WQMP review will be collected upon submittal to the Land Development Division. Copies of the WQMP guidance and template can be found at: (<http://www.sbcounty.gov/dpw/land/npdes.asp>)
66. WQMP Inspection Fee. The Developer shall deposit an inspection fee for WQMP in the amount of \$3,600 to Land Development Division.

PUBLIC HEALTH – Environmental Health Services (800) 442-2283

67. Vectors. The project area has a high probability of containing vectors. DEHS Vector Control Section will determine the need for vector survey and any required control programs. A vector clearance letter shall be submitted to DEHS/Land Use.

COUNTY FIRE (760) 995-8190

68. Fire Fee. The required fire fees are due at time of submittal; and paid to the San Bernardino County Fire Department/Community Safety Division. This fee is in addition to fire fees that are paid to other City or County offices. [F40]
69. Water System Commercial. A water system approved and inspected by the Fire Department is required. The system shall be operational, prior to any combustibles being stored on the site. All fire hydrants shall be spaced no more than three hundred (300) feet apart (as measured along vehicular travel-ways) and no more than three hundred [300] feet from any portion of a structure. [F54]
70. Primary Access Paved. Prior to building permits being issued to any new structure, the primary access road shall be paved or an all-weather surface and shall be installed as specified in the General Requirement conditions (Fire # F-9), including width, vertical clearance and turnouts, if required. [F89]
71. Building Plans. Not less than three (3) complete sets of Building Plans shall be submitted to the Fire Department for review and approval. [F42]

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**PRIOR TO ISSUANCE OF BUILDING PERMITS  
THE FOLLOWING SHALL BE COMPLETED**

**LAND USE SERVICES – Planning (909) 387-8311**

72. Lighting Plan. All lighting shall be consistent with the County Development Code Chapter 83.07: Glare and Outdoor Lighting. The Developer shall submit a Lighting Plan for review and obtain approval from County Planning prior to the issuance of a building permit. The following shall apply:
- Project's artificial light sources shall not emit light into the night sky.
  - Project's artificial light sources shall not cause glare or spill beyond project site's boundaries.
  - All outdoor lighting shall be hooded and designed with sharp-cutoff luminaires to reflect away from adjoining properties and public thoroughfares.
  - All light fixtures are to be concealed except for pedestrian-oriented safety and accent lights.
  - Security lighting shall be shielded and not project beyond property boundaries
  - Security lighting shall not be considered as replacement for other required lighting.
  - Lighting shall be required on all new development for the purpose of providing illumination to ensure public safety and security. Lighting fixtures shall be functional, coordinated and visually attractive. Lighting shall be required at the following locations:
    - Pedestrian walkways, building entries, driveway entries and parking.
    - Hazardous locations such as changes of grade and stairways shall be well-lit with lower-level supplemental lighting or additional overhead units.
  - Low intensity lamps shall be used especially at the development edge.
  - All parking lot and driveway lighting shall provide uniform illumination at a minimum level of 0.5 foot candle.
  - Exterior wall-mounted floodlights are expressly prohibited except for security lighting.
  - All illuminated signs are to be internally illuminated.
  - Lighting of building faces is permitted so long as such lighting will not cause glare or spillage.
  - Lighting fixtures and their structural support shall be compatible with onsite structures in design and construction.
  - Parking lot and pedestrian lighting fixtures shall be reviewed and approved by County Planning.
  - Lighting shall be used to ensure public safety. Shatter-proof coverings are recommended on low-level fixtures.
73. Landscape and Irrigation Plan. Landscape and Irrigation Plans shall be prepared in conformance with Chapter 83.10, Landscaping Standards, of the County Development Code. The Developer shall submit four copies of a landscape and irrigation plan to County Planning.
74. Signs & Lighting. When future signs are proposed, a signage program shall be provided to County planning for review and approval and shall include building elevations (and sign elevations and plan in case of a monument sign as an example), and a plan showing onsite improvements along with proposed sign's location(s), dimensions, lettering type(s), overall size in sq. ft., and color(s). The program shall depict the mechanism, sources, and placement of lighting. The signage shall be uniform and shall comply with the County Development Code's Chapter 83.13: Sign Regulations.

**LAND USE SERVICES – Building and Safety (909) 387-8311**

75. Any building, sign, trash enclosure or structure to be constructed or located on site will require professionally prepared plans, subject to approval by the Building and Safety Division.
76. Submit plans and obtain separate building permits for any required walls, retaining walls or trash enclosures.

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77. Submit plans and obtain permits for all fences greater than six feet (6') in height and any walls required by Planning.
78. All new buildings shall be designed to include the "Green Building Measures" as outlined in the California Green Building Standards Code.
79. Occupancy separation between the fuel dispensing station and the "M" occupancy group(s) shall comply with the Building Code.
80. Provide van accessible parking for the disabled. One in every eight accessible spaces, but not less than one, shall be served by an access aisle 96 inches wide and shall be designated "Van Accessible". The words "NO PARKING" shall be painted on the ground within each eight-foot loading area as specified in the California Building Code.
81. Provide a path of travel from the disabled person accessible parking spaces to the primary entrances to the building.

#### LAND USE SERVICES – Code Enforcement (909) 387-8311

82. Sign Registration. Prior to installation of any freestanding, wall, roof, projecting or monument sign, an approved sign registration application is required subject to review and approval by County Code Enforcement.

#### COUNTY FIRE – Community Safety (760) 995-8190

83. Fire Flow Test. Your submittal did not include a flow test report to establish whether the public water supply is capable of meeting your project fire flow demand. You will be required to either produce a current flow test report from your water purveyor demonstrating that the fire flow demand is satisfied or you must install an approved fire sprinkler system. This requirement shall be completed prior to combination inspection by Building and Safety. [F05B]

#### PUBLIC HEALTH – Environmental Health Services (800) 442-2283

84. Water. Water purveyor shall be EHS approved.
85. Verification Letter – Water. Applicant shall procure a verification letter from the water agency with jurisdiction. This letter shall state whether or not water connection and service shall be made available to the project by the water agency. This letter shall reference the Assessor's Parcel Number. For projects with current active water connections, a copy of water bill with project address may suffice.
86. Sewage. Method of sewage disposal shall be EHS approved.
87. Verification Letter – Sewage. Applicant shall procure a verification letter from the sewerage agency with jurisdiction. This letter shall state whether or not sewer connection and service shall be made available to the project by the sewerage agency. The letter shall reference the Assessor's Parcel Number.

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88. Noise Level. Submit preliminary acoustical information demonstrating that the proposed project maintains noise levels at or below San Bernardino County Noise Standard(s), San Bernardino Development Code Section 83.01.080. The purpose is to evaluate potential future on-site and/or adjacent off-site noise sources. If the preliminary information cannot demonstrate compliance to noise standards, a project specific acoustical analysis shall be required. Submit information/analysis to the DEHS for review and approval.
89. Food Plans. Plans for food establishments shall be reviewed and approved by DEHS.

#### SPECIAL DISTRICTS (909) 387-5940

90. Street Lighting Plans. This parcel lies within the boundaries of County Service Area SL-1, a street light district. Street lights are required. The Developer shall submit street lighting plans and plan check fees to County Special Districts Department for review and approval at 157 West 5<sup>th</sup> Street, 2<sup>nd</sup> Floor; San Bernardino, CA 92415-0450. For further information, contact Special Districts at: (909) 316-7307.

#### LAND USE SERVICES – Land Development - Roads (909) 387-8311

91. Road Dedication/Improvement. The Developer shall submit for review and obtain approval from the Land Use Services Department the following dedications, plans and permits for the listed required improvements, designed by a Registered Civil Engineer (RCE), licensed in the State of California. These shall be submitted to the Land Use Services Department, located at 385 N. Arrowhead Ave, San Bernardino CA 92415-0187. Phone: (909) 387-8311.

##### **State Lane (Mountain Secondary Highway – 60')**

- Street Improvements. Design A.C. dike with match up paving 22 feet from centerline.
  - Driveway Approach. Design driveway approach per San Bernardino County Standard 129B, and located per Standard 130.
92. Road Design. Road sections shall be designed and constructed to Mountain Road Standards of San Bernardino County, and to the policies and requirements of the County Department of Public Works and in accordance with the Master Plan of Highways.
  93. Street Improvement Plans. The developer shall submit for review and obtain approval of street improvement plans prior to construction.
  94. Utilities. Final plans and profiles shall indicate the location of any existing utility facility or utility pole which would affect construction, and any such utility shall be relocated as necessary without cost to the County.
  95. Encroachment Permits. Prior to installation of road and drainage improvements, a permit is required from County Public Works, Transportation Operations Division, Permit Section, (909) 387-8039, as well as other agencies prior to work within their jurisdiction.
  96. Soils Testing. Any grading within the road right-of-way prior to the signing of the improvement plans shall be accomplished under the direction of a soils testing engineer. Compaction tests of embankment construction, trench back fill, and all sub-grades shall be performed at no cost to San Bernardino County and a written report shall be submitted to the Transportation Operations Division, Permits Section of County Public Works, prior to any placement of base materials and/or paving.

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97. Open Roads/Cash Deposit. Existing County roads, which will require reconstruction, shall remain open for traffic at all times, with adequate detours, during actual construction. A cash deposit shall be made to cover the cost of grading and paving prior to issuance of road encroachment permit. Upon completion of the road and drainage improvement to the satisfaction of the Department of Public Works, the cash deposit may be refunded.
98. Transitional Improvements. Right-of-way and improvements (including off-site) to transition traffic and drainage flows from proposed to existing, shall be required as necessary.
99. Street Gradients. Road profile grades shall not be less than 0.5% unless the engineer at the time of submittal of the improvement plans provides justification to the satisfaction of County Public Works confirming the adequacy of the grade.
100. Caltrans Approval. Obtain comments, approval and permits from Caltrans for access requirements and working within their right-of-way

#### PUBLIC WORKS – Traffic (909) 387-8186

101. Street Improvements (Replace Warning Signs). Based on the Traffic Study (revised) dated June 27, 2014 from Hall and Foreman, Inc., the applicant shall submit street improvement plans and obtain approval from the Department of Public Works for the replacement of the existing Reverse Turn (W1-3) signs on State Lane with a combination Horizontal Alignment/Intersection warning signs for eastbound and westbound traffic.

#### CALTRANS DISTRICT 8 (909) 388-7017

102. Infrastructure Improvements. Based on the revised Traffic Report dated June 27, 2014, and the Highway Design Manual (HDM) Topic 405 Intersection Design Standards, the developer shall gain Caltrans' approval and signoff for installation of the following improvements:
  - A left-turn pocket on the SR-38 southbound at the intersection of State Lane shall be designed according to the HMD Topic 405 Intersection Design Standards.
  - A widening of the existing shoulder at the southeast corner of SR-38 and State Lane to accommodate the north-to-east right turn movement for trucks.
103. Additional Requirements. Additional requirements not decipherable from the proposed conceptual geometrics may be required when final construction/street improvement plans are submitted to the Office of Encroachment Permits.

#### PUBLIC WORKS – Solid Waste Management (909) 386-8701

104. The C&D Plan – Part 1. The developer shall prepare, submit, and obtain approval from Solid Waste Management Division (SWMD) of a "Construction Waste Management Recycling Plan (C&D Plan), Part I" for each phase of the project. The C&D Plan shall list the types and volumes of solid waste materials expected to be generated from grading and construction. The Plan shall include options to divert from landfill disposal materials for reuse or recycling by a minimum of 50% of total volume. Forms can be found on our website at [www.sbcounty.gov/dpw/solidwaste](http://www.sbcounty.gov/dpw/solidwaste).

Upon completion of construction, the developer shall complete SWMD's C&D Plan Part 2 and shall provide documentation of diversion of materials including but not limited to receipts or letters documenting material types and weights from diversion facilities or certification reuse of materials on site.

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**PRIOR TO FINAL INSPECTION OR OCCUPANCY  
THE FOLLOWING SHALL BE COMPLETED**

**LAND USE SERVICES – Planning (909) 387-8311**

105. Parking and On-site Circulation. Parking and on-site circulation requirements shall be installed as follows:
- All vehicular access drives shall be surfaced with all-weather paving with a minimum two (2) inches of asphalt and six (6) inches of base or greater.
  - All primary vehicular access drives shall be twenty-six feet (26') wide or greater.
  - All parking lot vehicular aisle width shall be twenty-four feet (24') wide or greater.
  - All paved parking stalls shall be clearly striped and permanently maintained.
  - All paved access drives shall have all circulation markings clearly painted and permanently maintained including arrows painted to indicate direction of traffic flow.
  - All crosswalks will be delineated with a minimum 3" white or yellow painted line.
  - All internal parking lot stops shall be installed with a painted limit line and shall have either a breakaway pole sign and/or painted "STOP" lettering on the paving.
  - Other markings for bike & motorcycles stands, etc. shall be painted and permanently maintained.
  - No parking shall be allowed along the project entry drives, except in designated spaces.
103. Disabled Access. Disabled access parking spaces shall be provided and permanently set aside for use by the disabled per Section 83.11.060 of the County Development Code and all ADA Standards. These parking spaces shall be clearly marked and said markings shall be maintained in good condition at all times.
104. Wheel Stops. All back-in truck trailer parking spaces shall have a wheel stop or other physical barrier twelve feet from any wall, fence or building to prevent damage. All other vehicle spaces shall have wheel stops installed when adjacent to public roadways, fences, walls or buildings; and when facing structures, these shall be three feet (3') away from such structures.
105. Screen Rooftop. All roof top mechanical equipment is to be screened from ground vistas.
106. Screen Dumpsters. All trash receptacles shall be screened from public view.
107. Landscaping Installed. All landscaping shown on the approved landscaping plan and all walls/fencing (as delineated on the approved landscape plan) shall be completed.
108. Landscaping Survival Surety. Surety in a form and manner determined acceptable to County Counsel and the Land Use Services Director shall be required for all landscape planting and irrigation systems to ensure that the landscaping remains in a healthy thriving condition for a minimum of three (3) full years and that the irrigation system continues to function properly for a minimum of three (3) full years. As a minimum this surety shall be in an amount equal to 120% of the cost estimate by a licensed landscape architect and must include material and labor for each landscaped area. Failure to accomplish the screening and other landscape objectives listed in the landscaping conditions for this proposed use shall require additional/replacement plantings or other corrective measures as determined necessary by the County Code Enforcement.

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#### LAND USE SERVICES – Code Enforcement (909) 387-8311

109. Special Use Permit (SUP) – Landscaping. The Developer shall submit an SUP application with the appropriate fees and obtain approval for the confirmation inspections and administration of the surety to guarantee the installation, proper maintenance, and thriving condition of the required landscaping.

#### LAND USE SERVICES – Building and Safety (909) 387-8311

110. Any building without specified tenants and uses may receive final inspection for construction purposes only. A Tenant Improvement or an Tenant Review that identifies the tenant and proposed uses shall be submitted and approved prior to occupancy being granted
111. Provide van accessible parking spaces for the disabled. One in every eight accessible spaces, but not less than one, shall be served by an access aisle 96 inches wide and shall be designated Van Accessible. The words “NO PARKING” shall be painted on the ground within each eight-foot loading area as specified in the California Building Code.
112. Submit an outdoor lighting plan and obtain permits prior to installation of lighting standards.
113. Sign lighting shall comply with California Energy regulations.
114. Prior to occupancy all Planning Division requirements and sign offs shall be completed.

#### COUNTY FIRE (760) 995-8190

115. Commercial Addressing. Commercial and industrial developments of 100,000 sq. ft or less shall have the street address installed on the building with numbers that are a minimum six (6) inches in height and with a three quarter (3/4) inch stroke. The street address shall be visible from the street. During the hours of darkness, the numbers shall be electrically illuminated (internal or external). Where the building is two hundred (200) feet or more from the roadway, additional non-illuminated contrasting six (6) inch numbers shall be displayed at the property access entrances.
116. Additional Requirements. In addition to the Fire requirements stated herein, other on-site and off-site improvements may be required which cannot be determined from tentative plans at this time and would have to be reviewed after more complete improvement plans and profiles have been submitted to this office.

#### COUNTY FIRE – Hazardous Material (909) 386-8401

117. Business Emergency Plan. Prior to occupancy, the operator shall submit either a Business Emergency/Contingency Plan for emergency release or threatened release of hazardous materials and wastes or a letter of exemption. Contact County Office of the Fire Marshall/Hazardous Materials Division/Emergency Response and Enforcement Section at: (909) 386-8401.
118. Hazardous Material Permits. Prior to occupancy, applicant shall be required to apply for one or more of the following: a Hazardous Materials Handler Permit, a Hazardous Waste Generator Permit, an Aboveground Storage Tank Permit and/or an Underground Storage Tank Permit.

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**LAND USE SERVICES – Land Development - Roads (909) 387-8311**

119. Road Improvements. All required on-site and off-site improvements shall be completed by the applicant, inspected and approved by County Land Use Services.
120. Structural Section Testing. A thorough evaluation of the structural road section, to include parkway improvements, from a qualified materials engineer, shall be submitted to County Public Works.
121. Parkway Planting. Trees, irrigation systems, and landscaping required to be installed on public right-of-way shall be approved by County Land Use Services and Current Planning and shall be maintained by the adjacent property owner or other County-approved entity.

**LAND USE SERVICES – Land Development - Drainage (909) 387-8311**

122. Drainage and WQMP Improvements. All required drainage and WQMP improvements shall be completed by the applicant, inspected and approved by County Land Use Services.
123. WQMP Final File. An electronic file of the final and approved WQMP shall be submitted to Land Development Division, Drainage Section.

**PUBLIC WORKS – Traffic (909) 387-8186**

124. Street Improvements Installed (Replace Warning Signs). The applicant shall replace the existing Reverse Turn (W1-3) signs on State Lane with a combination Horizontal Alignment/Intersection warning signs for eastbound and westbound traffic per the street improvement plans, which were submitted and approved prior to issuance of building permits.

**PUBLIC WORKS – Solid Waste Management (909) 386-8701**

125. The C&D Plan – Part 2. The developer shall complete SWMD's C&D Plan Part 2". This summary shall provide documentation of actual diversion of materials including but not limited to receipts or letters from diversion facilities or certification reuse of materials on site. The C&D Plan – Part 2 shall provide evidence to the satisfaction of County Solid Waste that demonstrates that the project has diverted from landfill disposal materials for reuse or recycling by a minimum of 50% of total volume of all construction waste.

**END OF CONDITIONS**

## **EXHIBIT C**

### **Initial Study 2014**

**SAN BERNARDINO COUNTY  
INITIAL STUDY ENVIRONMENTAL CHECKLIST FORM**

This form and the descriptive information in the application package constitute the contents of Initial Study pursuant to County Guidelines under Ordinance 3040 and Section 15063 of the State CEQA Guidelines.

**PROJECT LABEL:**

<p><b>APN: 0315-231-17 &amp; 0315-085-28</b></p> <p><b>APPLICANT:</b> MUNEM MAIDA</p> <p><b>PROPOSAL:</b> A CONDITIONAL USE PERMIT TO ESTABLISH A 6,793 SQUARE FOOT CONVENIENCE STORE, GAS STATION, AND A CARETAKER RESIDENCE ON 0.90 ACRE</p> <p><b>COMMUNITY:</b> ERWIN LAKE/3RD SUPERVISORIAL DISTRICT</p> <p><b>LOCATION:</b> EAST/SOUTHEAST CORNER OF STATE HIGHWAY 38 AND STATE LANE</p> <p><b>PROJECT NO.:</b> P201300086/CUP</p> <p><b>REP('S):</b> STEENO DESIGN STUDIO</p> <p><b>STAFF:</b> OXSO SHAHRIARI, PLANNER</p>
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**USGS Quad:** MOON RIDGE

**T, R, Section:** T 2n R 2E Sec.19 NE ¼

**Thomas Bros.:** 4812-H1

**Community:** ERWIN LAKE

**LUD:** General Commercial (CG)

**Overlays:** Biological Resources and Fire Safety (FS-1)  
Overlays

**PROJECT CONTACT INFORMATION:**

**Lead Agency:** County of San Bernardino  
Land Use Services Department – Planning Division  
385 North Arrowhead Avenue; First Floor  
San Bernardino, CA 92415-0187

**Contact Person:** Oxso Shahriari, Planner

**Phone No:** (909) 387-8311

**Fax No:** (909) 387-3223

**E-mail:** [oxso.shahriari@lus.sbcounty.gov](mailto:oxso.shahriari@lus.sbcounty.gov)

**Project Sponsor:** Steeno Design Studio for Munem Maida  
11774 Hesperia Road, Suite B1  
Hesperia, CA 92345  
(760) 244-5001

**PROJECT DESCRIPTION:**

The proposed project is a Conditional Use Permit to establish a 6,793 square foot convenience store, gas station, and a caretaker residence on .90 acre, with the balance of the site set aside for customer and employee parking, circulation, and required landscaping.

**ENVIRONMENTAL/EXISTING SITE CONDITIONS:**

The project is located on the east/southeast corner of State Highway 38 and State Lane; in the community of Erwin Lake, approximately 2 miles south of the Baldwin Lake. The site is zoned General Commercial (CG) and is surrounded by similarly zoned parcels to the north and west. To the east and south/southwest the zoning is residential. The project site supports a moderately dense community of evergreens, but no protected trees have been identified. The project site is in Fire Safety Overlay (FS-1) and Biological Resources overlays, for which the project has been reviewed and conditioned through this land use application.

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AREA	EXISTING LAND USE	LAND USE ZONING/OVERLAY DISTRICTS
Site	Vacant	General Commercial (CG) Biological Resources & Fire Safety Overlay (FS-1) Overlays
North	Vacant	General Commercial (CG) Biological Resources & Fire Safety Overlay (FS-1) Overlays
South	Single Family Residence (South & Southeast)	Single Residential (RS) Biological Resources & Fire Safety Overlay (FS-1) Overlays
East	Vacant and Single Family Residences	Single Residential (RS) Biological Resources & Fire Safety Overlay (FS-1) Overlays
West	Vacant	General Commercial (CG) Biological Resources & Fire Safety Overlay (FS-1) Overlays

Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement):

Federal: None; State of California: Regional Water Quality Control Board, Fish and Wildlife; County of San Bernardino: Land Use Services – Code Enforcement; Building and Safety, Public Health-Environmental Health Services, Special Districts, Public Works; Local: Big Bear Fire Department.

## **EVALUATION FORMAT**

This initial study is prepared in compliance with the California Environmental Quality Act (CEQA) Guidelines. This format of the study is presented as follows. The project is evaluated based upon its effect on eighteen (18) major categories of environmental factors. Each factor is reviewed by responding to a series of questions regarding the impact of the project on each element of the overall factor. The Initial Study Checklist provides a formatted analysis that provides a determination of the effect of the project on the factor and its elements. The effect of the project is categorized into one of the following four categories of possible determinations:

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant	No Impact
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Substantiation is then provided to justify each determination. One of the four following conclusions is then provided as a summary of the analysis for each of the major environmental factors.

1. Therefore, no impacts are identified or anticipated and no mitigation measures are required.
2. Therefore, no significant adverse impacts are identified or anticipated and no mitigation measures are required.
3. Possible significant adverse impacts have been identified or anticipated and the following mitigation measures are required as a condition of project approval to reduce these impacts to a level below significant. The required mitigation measures are: (List mitigation measures)
4. Significant adverse impacts have been identified or anticipated. An Environmental Impact Report (EIR) is required to evaluate these impacts, which are (Listing the impacts requiring analysis within the EIR).

At the end of the analysis the required mitigation measures are restated and categorized as being either self- monitoring or as requiring a Mitigation Monitoring and Reporting Program.

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**ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:**

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Aesthetics               | <input type="checkbox"/> Agriculture & Forest Resources | <input type="checkbox"/> Air Quality                        |
| <input type="checkbox"/> Biological Resources     | <input type="checkbox"/> Cultural Resources             | <input type="checkbox"/> Geology /Soils                     |
| <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Hazards & Hazardous Materials  | <input type="checkbox"/> Hydrology / Water Quality          |
| <input type="checkbox"/> Land Use/ Planning       | <input type="checkbox"/> Mineral Resources              | <input type="checkbox"/> Noise                              |
| <input type="checkbox"/> Population / Housing     | <input type="checkbox"/> Public Services                | <input type="checkbox"/> Recreation                         |
| <input type="checkbox"/> Transportation/Traffic   | <input type="checkbox"/> Utilities / Service Systems    | <input type="checkbox"/> Mandatory Findings of Significance |

**DETERMINATION:** (To be completed by the Lead Agency)

On the basis of this initial evaluation, the following finding is made:

- ☐ The proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☒ Although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ The proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ The proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ Although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

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Signature (prepared by): Oxso Shahriari, Planner

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Date: 11/21/2014

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Signature: Dave Prusch, Supervising Planner

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Date: 11/21/2014

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**I. AESTHETICS** - Would the project

- a) Have a substantial adverse effect on a scenic vista?

Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- b) Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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- c) Substantially degrade the existing visual character or quality of the site and its surroundings?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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- d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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**SUBSTANTIATION** (Check ☒ if project is located within the view-shed of any Scenic Route listed in the General Plan):

- I a) **Less Than Significant Impact.** The project will not have a substantial adverse effect on a scenic vista because the site is separated from the State Highway 38 and the traveling public by the state owned land, containing indigenous trees that buffer the site from view. The project facilitates architectural features, as depicted on the conditionally approved site plan and elevations that complements the mountainous character of the surrounding areas. The proposed development provides aesthetic qualities of a mountain lodge that blends well with the surrounding vistas. As a condition of approval, all the agreed-upon design/architectural components and the required landscaping shall be installed and kept in optimum conditions during the life of the project. The project as proposed meets County's goals in conserving the scenic qualities of this route. Therefore, no potentially significant impact is anticipated and no mitigation measures are deemed necessary
- I b) **Less Than Significant Impact.** The project will not substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway because these resources will not be substantially compromised as a result of this project. No rock outcroppings or historic buildings have been identified on the site. No protected trees are identified on the site. However, as a Condition of Approval, a Tree or Plant Removal Plan shall be presented to the County Planning for review and approval, issued in compliance with Section 88.01.050 (Tree or Plant Removal Requirements), for the removal of regulated trees and plants. The project will retain 20% of the site in a natural undeveloped vegetated or re-vegetated condition sufficient to ensure vegetative coverage for a forest environment. Adequate number of trees (Fifty seven Jeffrey Pines, 3 cypress trees 6 inches in diameter or wider) shall be remained on site as regulated native trees. These along with the newly planted landscaping will minimize any potential visual impact to a level below significance. These trees along with those on the public land along state highway and to the west/southwest to the site will buffer the development from the traveling public's view traveling along the State Highway. Therefore, no potentially significant impact is anticipated in this area of concern and no mitigation measures are deemed necessary.

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- I c) **Less Than Significant Impact.** The proposed project does not have the potential to substantially degrade the existing visual character or quality of the site and its surroundings because the site is separated from the State Highway 38 and the traveling public by the state owned land, containing indigenous trees that buffer the site from view. The project is conditioned to provide adequate landscaping and screening to minimize any potential impact to its surroundings. The proposed development provides aesthetic qualities of a mountain lodge that blends well with the surrounding vistas. As a condition of approval, all the agreed-upon design/architectural components and the required landscaping shall be installed and kept in optimum conditions during the life of the project. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- I d) **Less Than Significant Impact.** The proposed project's onsite lighting will be designed in accordance with standards defined in the County Development Code to shield away all light sources from the street, night sky, and the surrounding residential properties. All signs proposed by this project may only be lit by steady, stationary and shielded light sources, and the glare from the luminous source shall not exceed one-half (0.5) foot-candle. A lighting plan is required, subject to review and approval by Planning which requires that all project light sources be placed and designed so as not to cause glare or excessive light spillage into neighboring sites, night sky, or public roadways. As Consistent with County Development Code Chapter 83.07: Glare and Outdoor Lighting, this approval does not allow installation or use of any artificial light source that will be emitted into the night sky. The project is conditioned to use low intensity lamps especially at the development boundaries. All lighting shall be hooded and designed with sharp-cutoff luminaries to reflect away from adjoining properties and public thoroughfares. The project will not be a source of substantial light or glare, therefore, no potentially significant impact is anticipated in this area of concern and no mitigation measures are deemed necessary.

**Therefore, no significant adverse impacts are identified or anticipated and no mitigation measures are required.**

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	Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
<b>II. AGRICULTURE AND FOREST RESOURCES</b> - In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project, and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forestland or conversion of forestland to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of farmland, to non-agricultural use or conversion of forestland to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**SUBSTANTIATION** (Check ☐ if project is located in the Important Farmlands Overlay):

- II a) **No Impact.** The subject property is not identified or designated as Prime Farmland, Unique Farmland, or Farmland of Statewide importance on the maps prepared, pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. Therefore, proposed development will not negate or hamper any agricultural uses on the site.
- II b) **No Impact.** The proposed project does not conflict with existing zoning for agricultural use or a Williamson Act contract because the subject property is not zoned for agricultural use.
- II c) **No Impact.** The project does not conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)) because the project is not identified as a timberland resources. Therefore, no potential for such rezoning or conversion of the resources exists due to this development.
- II d) **Less Than Significant Impact.** The proposed use does not result in the loss of forestland or conversion of forestland to non-forest use because the project is conditioned to retain 20% of the site in a natural undeveloped vegetated OR re-vegetated condition sufficient to ensure vegetative coverage for a forest environment, as outlined in 88.01.050 (f) (2) (II). As a Condition of Approval, a Tree or Plant Removal Permit shall be presented to the County Planning, issued in compliance with Section 88.01.050 (Tree or Plant Removal Requirements), for the removal of regulated trees and plants to ensure adequate number regulated native trees shall remain on the project site. Adequate number of trees—Fifty seven Jeffrey Pines, 3 cypress trees—6 inches in diameter or wider are kept on the grounds. Therefore, no potential impact is anticipated in this area of concern and no mitigation measures are deemed necessary.
- II e) **Less Than Significant Impact.** The proposed use does not involve other changes in the existing environment, which, due to their location or nature, could result in conversion of farmland, to non-agricultural use or conversion of forestland to non-forest use because the project site does not meet the definitions of farmland. Forest land character of the site shall be sustained as described in II-d, above. Therefore, no potential impact is anticipated in this area of concern and no mitigation measures are deemed necessary.

**Therefore, no significant adverse impacts are identified or anticipated and no mitigation measures are required.**

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Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
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**III. AIR QUALITY** - Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

- |  |                          |                                     |                                     |                          |
|--|--------------------------|-------------------------------------|-------------------------------------|--------------------------|
| a) Conflict with or obstruct implementation of the applicable air quality plan?  | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?   | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)? | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Expose sensitive receptors to substantial pollutant concentrations?   | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| e) Create objectionable odors affecting a substantial number of people?  | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**SUBSTANTIATION** (Discuss conformity with the South Coast Air Quality Management Plan, if applicable):

- III a) **Less Than Significant Impact.** The project is within the South Coast Air Basin and under the jurisdiction of the South Coast Air Quality Management District. The South Coast Air Quality Management District is responsible for maintaining and ensuring compliance with its Air Quality Management Plans. A project is non-conforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. The project will not conflict with or obstruct implementation of the South Coast Air Quality Management Plan, because the project is conditioned to follow all the District's rules and regulation as these measures are mandatory requirements. A project may also be non-conforming if it, as examples, increases the gross number of dwelling units, increases the number of trips, and/or increases the overall vehicle miles traveled in an affected area relative to applicable land use plans. The project is anticipated to lead to a net decrease in traffic because it will serve the Highway 38 traffic which is both entering and leaving the Big Bear Valley, as well as providing the first service station in the south Erwin Lake area, thereby allowing local residents to obtain gasoline and convenience store products without having to travel into Big Bear City or Big Bear Lake. , therefore reducing the miles traveled for similar products and services. While the project will minimally generate additional vehicle trips from service and delivery vehicles servicing the site, the existence of the gas station is expected to serve the local residents and reduce vehicle miles currently traveled to reach the same products and services not currently available on or near the project site. This 6,793 square foot convenience store, gas station, and a caretaker residence is consistent with the growth projections and associated emissions used in the adopted County of San Bernardino Greenhouse Gas Emission Reduction Plan because it is smaller in size than the sample Gas Station/Convenience store of 7,200 square feet used for the referenced study. Therefore the project is expected to fall short of 3000 metric tons of Carbon Dioxide Equivalent (CO<sub>2</sub>e) per year for the proposed use.

An Air Quality Report has been prepared by Urban Crossroads for this project and finds that the "Project would not exceed the numerical thresholds of significance established by the South Coast Air Quality Management District (SCAQMD)." The study also finds that "Project construction-source emissions would not conflict with the applicable Air Quality Management Plan (AQMP)." Although not required, the study recommends that best available control measures (BACM AQ-1 and BACM AQ-2) are implemented to further reduce the impacts during the construction. Therefore, no significant impact is anticipated and no mitigation measure is deemed necessary.

III b) **Less Than Significant Impact.** The project is not expected to violate any air quality standard or contribute substantially to an existing or projected air quality violation, because the proposed use does not exceed thresholds of concern, as established by the District for this category of use. The project's construction and operational emissions are expected to fall short of 3000 metric tons of Carbon Dioxide Equivalent (CO<sub>2</sub>e) per year for this use type. However, some impact is identified during project construction, therefore mitigation measures III-1, III-2 and III-3 are imposed to further limit or control potential fugitive dust and regulate construction activities. The aforementioned study prepared by Urban Crossroads finds that "Project construction-source emissions would not conflict with the applicable Air Quality Management Plan (AQMP)." The study finds that "construction-source odor emissions would be temporary, short-term, and intermittent in nature and would not result in persistent impacts that would affect substantial numbers of people. Potential construction-source odor impacts are therefore considered less-than-significant." Although not required, the study recommends that Best Available Control Measures (BACM AQ-1 and BACM AQ-2) are implemented to further reduce the impacts during the construction. Upon completion, the site will be paved and landscaped which will mean little or no wind-blown dust or particulate matter will leave the site. Temporary potential significant impacts are anticipated during construction, therefore mitigation measures III-1, III-2 and III-3 are required as conditions of approval to reduce any potential impact to a level below significance.

III c) **Less Than Significant Impact With Mitigation Incorporated.** The aforementioned study prepared by Urban Crossroads finds that "the Project area is designated as an extreme non-attainment area for ozone, and a non-attainment area for PM<sub>10</sub> and PM<sub>2.5</sub>". The study continues: "The SCAQMD has recognized that there is typically insufficient information to quantitatively evaluate the cumulative contributions of multiple projects because each project applicant has no control over nearby projects. With regard to determining the significance of the contribution from the Project, the SCAQMD recommends that any given project's potential contribution to cumulative impacts should be assessed using the same significance criteria as for project-specific impacts. Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also not cause a commutatively considerable increase in emissions for those pollutants for which the Basin is nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable. As previously noted, the project will not exceed the applicable SCAQMD regional threshold for construction and operational-source emissions. As such, the project will result in a cumulatively less than significant impact."

The project will not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors), because the proposed uses do not exceed established thresholds of concern for this use category. This 6,793 square foot convenience store, gas station, and a caretaker residence is consistent with the growth projections and associated emissions used in the County of San Bernardino Emission

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Reduction Plan because it is less in size than sample Gas Station/Convenience store of 7,200 square feet, and therefore it is expected to fall short of 3000 metric tons of Carbon Dioxide Equivalent (CO<sub>2</sub>e) per year for this use type. Operation and the related equipment proposed for this use do not generate identifiable criteria pollutants is most likely not to approach the threshold of potentially significant Greenhouse Gas (GHG) emissions set forth for the proposed use.

- III d) **Less Than Significant Impact.** The project will not expose sensitive receptors to substantial pollutant concentrations, because the construction or operation of this facility does not involve identified concentrations of substantial pollutants. The aforementioned Air Quality Impact Analysis has also considered potential impact of project-generated air pollutant emissions at sensitive receptors which can include uses such as long term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, child care centers, and athletic facilities can also be considered as sensitive receptors.

The analysis indicates that the project will not exceed the SCAQMD Localized Significance Thresholds (LSTs) during construction with Best Available Control Measures (BACMs). Therefore sensitive receptors would not be subject to a significant air quality impact during project construction. As relates to operational impacts, the aforementioned LST analysis indicates that the project will not exceed the SCAQMD localized significance thresholds during operational activities. The proposed project would not result in a Carbon Monoxide or Nitrogen Dioxide “hotspots” as a result of project related traffic during ongoing operations, nor would the project result in a significant adverse health impact, due to the ongoing operations.

Per the referenced Air Quality analysis; a very conservative (overstating rather than understating potential impacts) estimate, toxic air contaminants (TACs) “have the potential to contribute to health risk in the project vicinity”. However, the project will remain under SCAQMD’s Rule 461 (Gasoline Transfer and Dispensing) and shall be required to meet and maintain standards. Based on the screening procedure using methodology presented in the document “Gasoline Service Station Industry-wide Risk Assessment Guidelines” published by the California Air Pollution Control Officers Association (CAPCOA), it is anticipated that no sensitive receptors in the project vicinity will be exposed to a cancer risk. In fact the risk is less than half of the applicable threshold. The study concludes: “The project would not result in a significant health risk impact due to toxic air contaminants (TACs) associated with gasoline dispensing activities.” Thus, any potential impact to sensitive receptors will be less than significant due to operational activities of the project.

- III e) **Less Than Significant Impact.** The project will not create odors affecting a substantial number of people because there are no identified potential uses that will result in the production of objectionable odors due to ongoing operation of the project. Any potential objectionable odor that may result from construction are temporary and intermittent, therefore mitigation measures III-1, III-2 and III-3 are required to reduce any potential impact to a level below significance. Therefore, no potentially significant impact is anticipated.

**Possible significance adverse impacts have been identified or anticipated and the following mitigation measures are required as conditions of project approval to reduce these impacts to a level below significant.**

## **MM# Mitigation Measures**

- III-1** **Air Quality – Dust Control Plan.** The developer shall submit to County Planning a Dust Control Plan (DCP) consistent with SCAQMD guidelines and a letter agreeing to include in any construction contracts and/or subcontracts a requirement that the contractors adhere to the requirements of the DCP. The DCP shall include these elements to reduce dust production:
- Exposed soil shall be kept continually moist through a minimum of twice daily waterings to reduce fugitive dust during all grading and construction activities
  - Street sweeping shall be conducted when visible soil accumulations occur along site access roadways to remove dirt dropped by construction vehicles.
  - Site access driveways and adjacent streets shall be washed daily, if there are visible signs of any dirt track-out at the conclusion of any workday.
  - Tires of vehicles will be washed before vehicle leave project site and enter a paved road.
  - Any truck hauling dirt away from the site shall be covered
  - During high wind conditions (i.e., wind speeds exceeding 25 mph), areas with disturbed soil shall be watered hourly and activities on unpaved surfaces shall be terminated until wind speeds no longer exceed 25 mph.
  - Storage piles that are to be left in place for more than three working days shall either be sprayed with a non-toxic soil binder, or covered with plastic or revegetated.
- [Mitigation Measure III-1]

- III-2** **Air Quality – Construction Plan.** Developer shall submit written verification that all construction contracts and sub-contracts for the project contain provisions that require adherence to the following standards to reduce impacts to air quality. During construction, each contractor and subcontractor shall implement the following, whenever feasible:
- Suspend use of all construction equipment operations during second stage smog alerts. For daily forecast, call (800) 367-4710 (San Bernardino and Riverside counties).
  - Trucks/equipment shall not be left idling on site for periods in excess of 10 minutes.
  - Provide temporary traffic control during all phases of construction.
  - Substitute diesel-powered equipment with electric and gasoline-powered equipment.
  - Onsite electrical power hook-ups shall be provided for electric construction tools to eliminate the need for diesel-powered electronic generators.
  - Install storm water control systems to prevent mud deposition onto paved areas during construction.
  - Contractors shall use low sulfur fuel for stationary construction equipment as required by AQMD Rules 431.1 and 431.2 to reduce the release of undesirable emissions.
- [Mitigation Measure III-2]

- III-3** **Air Quality – Coating Restriction Plan.** The developer shall submit a letter agreeing to these Coating Restrictions and to include in any construction contracts and/or subcontracts a requirement that the contractors adhere to these requirements. These shall include, but are not be limited to:
- Architectural coatings with Reactive Organic Compounds (ROC) shall not have a content greater than 100 g/l.
  - Architectural coating volume shall not exceed the significance threshold for ROG, which is 75 lbs./day and the combined daily ROC volume of architectural coatings and asphalt paving shall not exceed the significance threshold for ROC of 75 lbs. per day
  - High-Volume, Low Pressure (HVLP) spray guns will be used to apply coatings.
- [Mitigation Measure III-3]

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Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
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#### IV. BIOLOGICAL RESOURCES - Would the project:

- |  |                          |                          |                                     |                          |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a) Have substantial adverse effects, either directly or through habitat modifications, on any species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?   | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc...) through direct removal, filling, hydrological interruption, or other means?   | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?   | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan?  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**SUBSTANTIATION** (Check if project is located in the Biological Resources Overlay or contains habitat for any species listed in the California Natural Diversity Database ☒):

- IV a) **Less Than Significant Impact.** This project will not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service, because the site is not expected to support any sensitive species, sensitive habitats, or wildlife corridors based on the General Biological Resources Assessment report prepared for this site by the RCA Associates, LLC. in 2013. The site was evaluated for the presence of sensitive plant and animal species as well as potential habitat for these sensitive species that included flying squirrel, rubber bar, and California spotted owl as well as 24-sensitive plant species documented in the surrounding region, primarily in associate with Baldwin Lake, which is located about two miles to the north of the project site. The study finds that the .91-acre project site is near developed portion of the Big Bear Lake area and "is not expected to support any sensitive species". The study finds that "no sensitive habitats (i.e.

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streams, wetlands, etc.) or wildlife corridors were observed, nor were any such habitats noted in the adjacent areas. In response to the expressed community opposition concerned with potential impacts to the biological resources—and specifically as related to potential impact on the Unarmored three-spine stickleback fish, the applicant's biologist has performed additional biological surveys on April 28, 2014; which has resulted in an updated May 2014 report. The site was further evaluated to assess the drainage channel directly west and north of the site, existing site conditions, and potential impacts to stickleback populations. The field investigation was performed on April 28, 2014 from 7AM to 3:30 PM; and reconfirmed that the site "does not support any sensitive habitats such as streams and wetlands, nor were any wildlife corridors identified on the property". The study finds that the USGS Moonridge Quadrangle does not show any blue line channels on the site and no drainage channels or streams bisect the site based on field work conducted in April 2014. A small swale about 30 feet in length and about six inches wide does occur along the western edge of the site; however, this swale does not connect with any off-site channels nor does it direct any significant water flows on-site.

A letter dated February 3, 2014 was prepared by RCA Associates LLC to address comments raised regarding potential impacts to the unarmored threespine stickleback fish. RCA Associates reviewed existing information on the species from the California Natural Diversity Data Base (CNDDDB, 2013) and U.S. Fish and Wildlife Service (USFWS, 2009). According to the letter provided to Planning, and based on the review of available information, the nearest documented population of the stickleback species is approximately 0.9 miles north of the project site and is associated with Shay Creek and Shay Pond. The species was observed in 1995 in Shay Creek which is a tributary to Baldwin Lake, which is directly east of Big Bear City. This population is assumed to still be present in Shay Creek and Shay Pond; although surveys for the stickleback fish have not been conducted since 2009. Two small intermittent channels of Shay Creek are also located about 0.5 miles northeast and northwest of the project site. The study finds that "although population of the stickleback may be present north of the project site, it is unlikely that the species would be affected by any potential onsite leakage or seepage problems" because "operation of the proposed fuel dispensers will be properly maintained and kept in good operating conditions at all times as per State of California requirements". The study continues: "any leakage or seepage from the underground tanks will be immediately reported and mitigation measures, if needed, will be implemented.

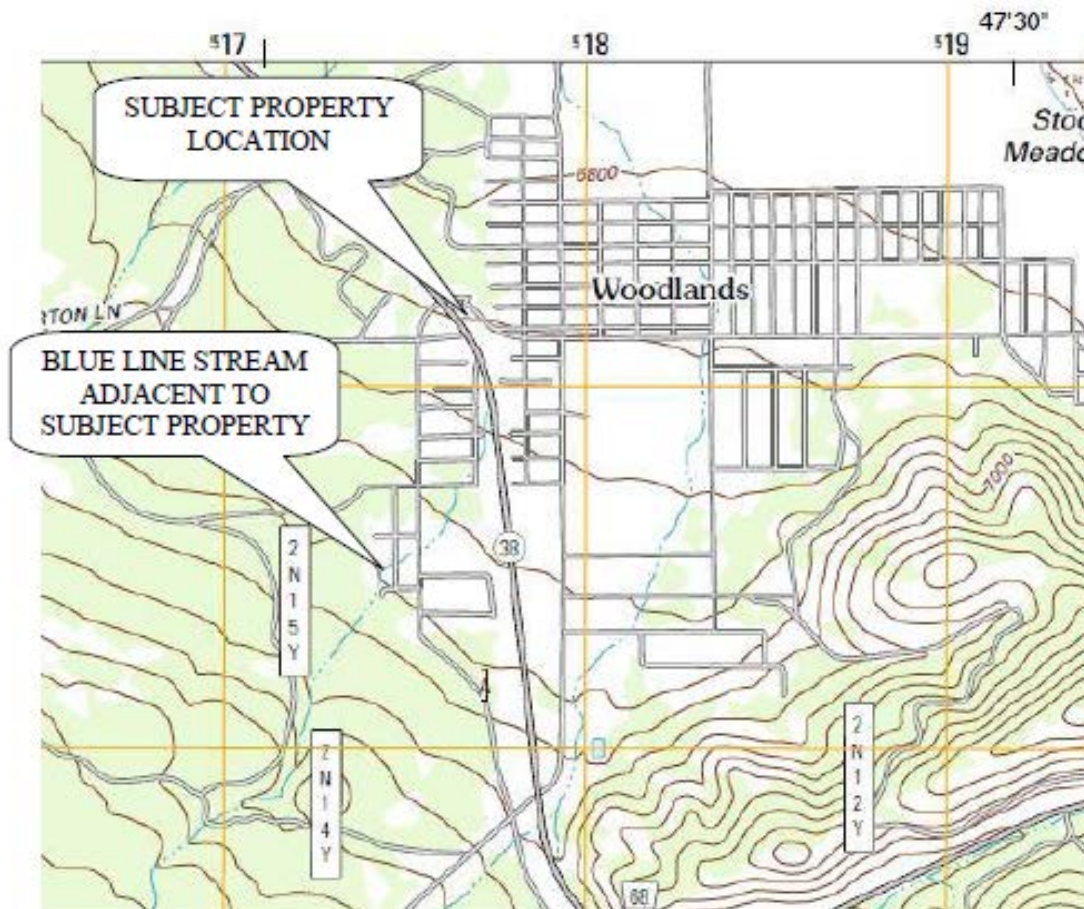
"Cumulative impacts to the biological resources in the area are expected to be negligible" based on the existing habitats on the 0.9-acre site, as documented in the referenced 2013 and 2014 General Biological Reports. The RCA states that: "the site supports a relatively undisturbed ponderosa pine community typical of the area. Loss of 0.9-acres of this habitat is not expected to generate adverse cumulative impacts to regional biological resources due to the small size of the potential habitat loss". In addition, development of the site as proposed is not expected to generate any adverse cumulative impacts to any sensitive species in the area. As previously noted the site does not support any populations of sensitive species; although, populations of the Unarmored Threespine Stickleback are located about 0.9 miles north of the project site". The project will be designed in order to meet all local, State, and Federal Best Management Practices requirements in order to maintain all on-site water flows within the boundaries of the property. The RCA also states that: "any on-site spills of gasoline or other toxic substances will be contained on the site and will not enter into any of the drainage channels near the site through the use of a concrete swale on the property"; and concludes: "based on the existing project design and proposed implementation of various protection measures, cumulative impacts to the stickleback from the proposed project are expected to be negligible." Therefore, potential impacts to the biological resources will be less than significant.

- IV b) **Less Than Significant Impact.** This project will not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service because no riparian habitat or sensitive natural community are identified on the project site. The 2013 and 2014 General Biological Reports prepared by RCA found no sensitive habitats, stream, wetlands or wildlife corridors on the project site to potentially support riparian habitat.

A 2014 Supplemental Preliminary Hydrology Analysis was prepared in response to a response letter from the State of California, Department of Fish and Wildlife, dated April 16, 2014.

This response letter questions the potential impacts of the proposed subject development on the stream drainage along State Highway 38 (identified by Fish and Wildlife as "Shay Creek") for the proposed hydrologic and hydraulic issues of the project site. The study finds that a "blue line" stream is shown on the USGS quadrangle topographic map and ends at Highway 38 south of the subject site (see image titled OFF-SITE TOPOGRAPHY, below).

## OFF-SITE TOPOGRAPHY



The hydrology analysis states: "This stream extends south and slight west for approximately 2.5 miles. The subject stream flow intersects the west side of State Highway 38 south of the subject site. These flows are contained in a ditch along the west side of highway and conducted north to a catch basin just south of the intersection with State Lane (see Photos with captures: *Ditch along the west side of highway* and *Catch basin just south of the intersection with State Lane*). The stream flows are then conducted under the highway in a storm drain pipe to the east side of the highway to a ditch that crosses the highway right-of-way northeasterly to the south side of the State Lane right-of-way.



*Ditch along the west side of highway*



*Catch basin just south of the intersection of Highway 38 and State Lane*

These flows then cross northerly State Lane in a culvert pipe and continue northeasterly. It appears that off-site stream flows do not enter or cross the subject site. As it relates to the onsite drainage flow, onsite flows will be contained on site and treated by onsite Best Management Practices (BMP's) in an effort to contain pollutants, trash and sediments generated by the proposed use. The onsite 100-year 1-hour storm generated will be captured and contained in an off-site BMP underground retention basin and allowed to percolate. A proposed concrete swale along the subject site's westerly boundary will conduct any off-site flows northerly, to keep off-site flows from entering the site. Based on the information provided in the revised Biological Assessment and the Supplemental Preliminary-Hydrology Analysis of Off-site Flows, any potential significant impact to the biological resources due to the project will be less than significant.

- IV c) **Less Than Significant Impact.** This project will not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means because the project is not located within an identified protected wetland because the 2013 and 2014 Biological Assessments mentioned above find no sensitive habitats, stream, wetlands or wildlife corridors on this site. Therefore, any potential significant impact to the biological resources due to the project will be less than significant.
- IV d) **Less Than Significant Impact.** This project will not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites, because the site is not expected to support any sensitive species, sensitive habitats, wildlife nursery, or wildlife corridors, based on the 2013 and 2014 General Biological Assessments prepared for this site by the RCA Associates, LLC. Therefore, any potential significant impact to the biological resources due to the project will be less than significant.

- IV e) **Less Than Significant Impact.** This project will not conflict with any local policies or ordinances protecting biological resources because such ordinances take effect when protected tree species are present on a given site. No protected species of trees has been identified on this parcel. The management and well-being of the native regulated tree falls under Chapter 88.01: Plant Protection and Management, discussed separately under Agriculture and Forest Resources, II-d. Therefore, any potential significant impact to the biological resources due to the project will be less than significant.
- IV f) **Less Than Significant Impact.** This project will not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan because no such plan has been identified on this project site, based on the 2013 & 2014 General Biological Assessments prepared by the RCA Associates, LLC. Therefore, any potential significant impact to the biological resources due to the project will be less than significant.

**Therefore, no significant adverse impacts are identified or anticipated and no mitigation measures are required.**

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Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
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## V. CULTURAL RESOURCES - Would the project

- a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

☐ ☐ ☒ ☐

- b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

☐ ☐ ☒ ☐

- c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

☐ ☐ ☒ ☐

- d) Disturb any human remains, including those interred outside of formal cemeteries?

☐ ☐ ☒ ☐

**SUBSTANTIATION** (Check if the project is located in the Cultural ☐ or Paleontologic ☐ Resources overlays or cite results of cultural resource review):

- V a) **Less Than Significant Impact.** This project will not cause a substantial adverse change in the significance of a historical resource, because there are no such resources identified on or in the vicinity of the project. To further reduce the potential for impacts, a precautionary mitigation shall be added to the project conditions of approval that requires the developer to contact the County Museum for determination of appropriate excavation and recovery actions, if any finds are made during project grading and construction.
- V b) **Less Than Significant Impact.** This project will not cause a substantial adverse change to an archaeological resource, because there are no such resources identified in the vicinity of the project. To further reduce the potential for impacts, a precautionary mitigation shall be added to the project conditions of approval that requires the developer to contact the County Museum for determination of appropriate excavation and recovery actions, if any finds are made during project grading and construction.
- V c) **Less Than Significant Impact.** This project will not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, because there are no such resources identified in the vicinity of the project. To further reduce the potential for impacts, a precautionary mitigation shall be added to the project conditions of approval that requires the developer to contact the County Museum for determination of appropriate excavation and recovery actions, if any finds are made during project grading and construction.
- V d) **Less Than Significant Impact.** This project will not disturb any human remains, including those interred outside of formal cemeteries, because there are no such burial grounds that have been identified in the vicinity of the project. To further reduce the potential for impacts, if any human remains are discovered, during grading and construction of this project, the developer is required to contact the County Coroner and County Museum for determination of appropriate excavation and recovery actions; and a Native American representative, if the remains are determined to be of Native American origin.

Therefore, no significant adverse impacts are identified or anticipated. As a precautionary measure to further reduce any potential for impacts, the following requirement will apply:

**MM# Mitigation Measures**

- V-1** Cultural Resources. The “developer” shall prepare, submit for review and obtain approval of a letter agreeing to adhere to the following requirements and to include in any construction contracts/subcontracts a requirement that project contractors adhere to the following requirements:  
*If archaeological, paleontological and/or historical resources are uncovered during ground disturbing activities, all work in that area shall cease immediately until written clearance by County Planning is provided indicating that satisfactory resource excavation and recovery has been implemented. A qualified expert (e.g. archaeologist or paleontologist), as determined by County Planning in consultation with the County Museum shall be hired to record the find and recommend appropriate actions. The developer shall implement any such additional action to the satisfaction of County Planning and the County Museum. If human remains are uncovered during ground disturbing activities, the San Bernardino County Coroner shall be contacted within 24 hours of the find. If the remains or cultural artifacts are determined to be of Native American origin, the local Native American representative shall also be notified.*  
[Mitigation Measure V-1]

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## VI. GEOLOGY AND SOILS - Would the project:

- a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

- i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map Issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42

Potentially  
Significant  
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Less than  
Significant with  
Mitigation  
Incorp.

Less than  
Significant

No  
Impact

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- ii) Strong seismic ground shaking?

☐ ☐ ☒ ☐

- iii) Seismic-related ground failure, including liquefaction?

☐ ☐ ☒ ☐

- iv) Landslides?

☐ ☐ ☒ ☐

- b) Result in substantial soil erosion or the loss of topsoil?

☐ ☐ ☒ ☐

- c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off site landslide, lateral spreading, subsidence, liquefaction or collapse?

☐ ☐ ☒ ☐

- d) Be located on expansive soil, as defined in Table 181-B of the California Building Code (2001) creating substantial risks to life or property?

☐ ☐ ☒ ☐

- e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

☐ ☐ ☒ ☐

**SUBSTANTIATION** (Check ☐ if project is located in the Geologic Hazards Overlay District):

- VI a) **Less Than Significant Impact.** (i-iv) The project will not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving; i) rupture of a known earthquake fault, ii) strong seismic ground shaking, iii) Seismic-related ground failure, including liquefaction or iv) Landslides, because there are no such geologic hazards identified in the immediate vicinity of the project site. The project and its existing and/or proposed structures shall be reviewed and conditioned by County Building & Safety Division; and subsequently confirmed in compliance or constructed with appropriate seismic standards.

- VI b) **Less Than Significant Impact.** The project will not result in substantial soil erosion or the loss of topsoil because the scope of construction activities proposed will not require further substantial disturbance of the site. The project and related grading and construction activities shall be reviewed and conditioned by County Building & Safety Division; and subsequently confirmed in compliance or constructed with appropriate seismic standards. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- VI c) **Less Than Significant Impact.** The project is not identified as being located on a geologic unit or soil that has been identified as being unstable or having the potential to result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. The project and related grading and construction activities shall be reviewed and conditioned by County Building & Safety Division; and subsequently confirmed in compliance or constructed with appropriate seismic standards. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- VI d) **Less Than Significant Impact.** The project site is not located in an area that has been identified as having the potential for expansive soils; therefore it will not create substantial risks to life or property. The project and related grading and construction activities shall be reviewed and conditioned by County Building & Safety Division; and subsequently confirmed in compliance or constructed with appropriate seismic standards. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- VI e) **Less Than Significant Impact.** The proposed development will not have wastewater disposal needs; therefore no significant impact is anticipated. The project and related grading and construction activities shall be reviewed and conditioned by County Building & Safety Division; and subsequently confirmed in compliance or constructed with appropriate seismic standards. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.

**Therefore, no significant adverse impacts are identified or anticipated and no mitigation measures are required.**

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	Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
<b>VII. GREENHOUSE GAS EMISIONS - Would the project:</b>				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**SUBSTANTIATION** (Check ☐ if project is located within the Mineral Resource Zone Overlay):

- VII a, b) **Less Than Significant Impact.** Operational emissions of the proposed project would not exceed criteria or GHG emissions thresholds because this 6,793 square foot convenience store, gas station, and a caretaker residence is consistent with the growth projections and associated emissions used in the adopted County of San Bernardino Greenhouse Gas Emission Reduction Plan because it is smaller in size than the sample Gas Station/Convenience store of 7,200 square feet used for the referenced study, therefore the project is expected to fall short of 3000 metric tons of Carbon Dioxide Equivalent (CO<sub>2</sub>e) per year for the proposed use.

As discussed in Air Quality section of this document, An Air Quality Report has been prepared by Urban Crossroads for this project and finds that the "Project would not exceed the numerical thresholds of significance established by the South Coast Air Quality Management District (SCAQMD)." The study also finds that "project construction-source emissions would not conflict with the applicable Air Quality Management Plan (AQMP)." Although not required, the study recommends that best available control measures (BACM AQ-1 and BACM AQ-2) are implemented to further reduce the impacts during the construction. Therefore, no significant impact is anticipated and no mitigation measure is deemed necessary.

The Air Quality – Construction Mitigation condition will address the air quality and GHG emission concerns for construction activities including equipment and trucks visiting the site.

Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.

**Therefore, no significant adverse impacts are identified or anticipated and no mitigation measures are required.**

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	Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
<b>VII. HAZARDS AND HAZARDOUS MATERIALS - Would the project:</b>				
a) Create a significant hazard to the public or the Environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**SUBSTANTIATION**

- VII a) **Less Than Significant Impact.** The project will not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, because the use proposed is not anticipated to involve such activities. If such uses are proposed on-site in the future, they will be subject to permit and inspection by the Hazardous Materials Division of the County Fire Department, and in some instances, to additional land use review. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- VII b) **Less Than Significant Impact.** The project will not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment, because any proposed use or construction activity that might use hazardous materials is subject to permit and inspection by the Hazardous Materials Division of the County Fire Department. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- VII c) **Less Than Significant Impact.** The project uses will not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, because the project does not propose the use of hazardous materials and all existing and proposed schools are more than one-quarter mile away from the project site. If such uses are proposed in the future on this site, they will be subject to permit and inspection by the Hazardous Materials Division of the County Fire Department and in some instances additional land use review. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- VII d) **Less Than Significant Impact.** The project site is not included on a list of hazardous materials sites.
- VII e) **Less Than Significant Impact.** The project site is not located within an airport land use plan; therefore, the project cannot result in a safety hazard for people residing or working in the project area.
- VII f) **Less Than Significant Impact.** The project site is not within the vicinity or approach/departure flight path of a private airstrip.
- VII g) **Less Than Significant Impact.** The project will not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan, because the project has adequate access from State Highway 38.
- VII h) **Less Than Significant Impact.** The project will not expose people or structures to a significant risk of loss, injury or death involving wildland fires, because the proposed facility and its associated structures shall be reviewed by County Fire for approval. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.

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	Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
<b>VIII. HYDROLOGY AND WATER QUALITY - Would the project:</b>				
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level, which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create or contribute runoff water, which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h) Place within a 100-year flood hazard area structure that would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**SUBSTANTIATION**

- VIII a) **Less Than Significant Impact.** The project will not violate any water quality standards or waste discharge requirements, because the proposed mechanisms that provide water and discharge systems shall be reviewed by County EHS to ensure compliance with both water quality and waste discharge requirements. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- VIII b) **Less Than Significant Impact.** The project will not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level, because the project proponent is required to provide EHS with documentations that substantiate water availability, of acceptable quality, to serve the development. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- VIII c) **Less Than Significant Impact.** The project will not substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site because only minimal grading is associated with project; and there are no rivers or streams on site. The project is conditioned not alter or occupy natural drainage courses. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- VII d) **Less Than Significant Impact.** The project will not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site because no river or stream has been identified on the project site. A Water Quality Management Plan has been reviewed by County Land Use Services Drainage Section to ensure surface runoff will either be entirely handled on site, or that the overflow will not impede on surrounding properties and or road infrastructure. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- VIII e) **Less Than Significant Impact.** The project will not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff because a Water Quality Management Plan has been reviewed by County Land Use Services Drainage Section to ensure surface runoff will either be entirely handled on site, or that the overflow will not impede on surrounding properties or stormwater drainage infrastructure. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- VIII f) **Less Than Significant Impact.** The project will not otherwise substantially degrade water quality, because appropriate measures for water quality protection and erosion control have been required. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- VIII g) **Less Than Significant Impact.** The project will not place unprotected housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map because the project is not within an area with determined flood hazard and it does not involve residential housing development. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.

- VIII h) **Less Than Significant Impact.** The project will not place within a 100-year flood hazard area structures that would impede or redirect flood flows because the project site is not identified by the County Land Use Services Drainage Section to be within a 100-year flood hazard area. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- VIII i) **Less Than Significant Impact.** The project will not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, because the project site is not within any identified path of a potential inundation flow that might result in the event of a dam or levee failure or that might occur from a river, stream, lake or sheet flow situation. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- VIII j) **Less Than Significant Impact.** The project will not be impacted by inundation by seiche, tsunami, or mudflow, because the project is not adjacent to any body of water that has the potential of seiche or tsunami nor is the project site in the path of any potential mudflow. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.

**Therefore, no significant adverse impacts are identified or anticipated and no mitigation measures are required.**

	Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
<b>IX. LAND USE AND PLANNING - Would the project:</b>				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### SUBSTANTIATION

- IX a) **Less Than Significant Impact.** The project will not physically divide an established community, because the project is a logical and orderly extension of the planned land uses. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- IX b) **Less Than Significant Impact.** The project will not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect, because the project is consistent with all applicable land use policies and regulations of the County Code and General Plan as the proposed use is consistent with its designated zoning. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- IX c) **Less Than Significant Impact.** The project will not conflict with any applicable habitat conservation plan or natural community conservation plan, because there is no habitat conservation plan or natural community conservation plan within the area surrounding the project site and no habitat conservation lands are required to be purchased as mitigation for the proposed project. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.

**Therefore, no significant adverse impacts are identified or anticipated and no mitigation measures are required.**

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Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
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**X. MINERAL RESOURCES** - Would the project:

- |   |                          |                          |                                     |                          |
|---|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?                                | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**SUBSTANTIATION** (Check ☐ if project is located within the Mineral Resource Zone Overlay):

- X a) **Less Than Significant Impact.** The project will not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state because there are no identified important mineral resources on the project site. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- X b) **Less Than Significant Impact.** The project will not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan, because there are no identified locally important mineral resources on the project site. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.

**Therefore, no significant adverse impacts are identified or anticipated and no mitigation measures are required.**

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# **XI. NOISE - Would the project:**

	Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**SUBSTANTIATION** (Check if the project is located in the Noise Hazard Overlay District ☐ or is subject to severe noise levels according to the General Plan Noise Element ☐):

XI a-c) **Less Than Significant Impact.** The proposed project will not include uses that will exceed San Bernardino County Noise Standards and those of County Development Code. The “developer” as defined in the Conditions of Approval will be required to ensure that the noise generated by the ongoing operations, and the associate groundborne noise, shall not exceed County Noise Standards. Because the project abuts residential development, the project is conditioned to monitor its noise levels to ensure project noise will not exceed County Noise Standards of 55 dB(A) for residential areas from 7am-10pm, as measured at the project’s property boundaries. Noise levels after 10pm shall not exceed 45 dB(A) where the project site abuts single family residences. Therefore, no potentially significant impact is anticipated in this area.

XI d) **Less Than Significant Impact With Mitigation Incorporated.** The project may generate substantial temporary or periodic increase in ambient noise levels above levels existing without the project due to construction activities which may include excavations, grading, and building erection/modification on the project site. Mitigation measure XI-1 as stated below will reduce any potential noise impact of this temporary construction. Therefore, no potentially long term significant impact is anticipated in this area.

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XI e) **No Impact.** The project site is not located within an airport land use plan; therefore, the project cannot result in a safety hazard for people residing or working in the project area.

XI f) **No Impact.** The project is not within the vicinity of a private airstrip; therefore, the project cannot result in a safety hazard for people residing or working in the project area.

**Possible significance adverse impacts have been identified or anticipated and the following mitigation measures are required as conditions of project approval to reduce these impacts to a level below significant.**

#### **MM# Mitigation Measures**

**XI-1** Noise Mitigation. The “developer” shall submit for review and obtain approval of an agreement letter that stipulates that all construction contracts/subcontracts contain as a requirement that the following noise attenuation measures be implemented:

- a) Exterior construction activities shall be limited between 7 a.m. and 7 p.m. There shall be no exterior construction activities on Sundays or National Holidays.
- b) Interior construction activities may occur on any day and any time provided they comply with the County noise standards. (SBCC 83.01.080).
- c) Construction equipment shall be muffled per manufacturer’s specifications.
- d) All stationary construction equipment shall be placed in a manner so that emitted noise is directed away from sensitive receptors nearest the project site.

[Mitigation Measure XI-1]

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Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
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## XII. POPULATION AND HOUSING - Would the project:

- |   |                          |                          |                          |                                     |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

### SUBSTANTIATION

- XII a) **No Impact.** The project will not induce population growth in the area either directly or indirectly because the project is not proposing any new residential development and will make use of the existing roads and infrastructure. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- XII b) **No Impact.** The proposed use will not displace substantial numbers of existing housing units, necessitating the construction of replacement housing because the project does not propose demolition of any existing housing to necessitate the construction of replacement housing. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- XII c) **No Impact.** The proposed use will not displace substantial numbers of people because the project uses does not proposes to displace any number of people. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.

**Therefore, no significant adverse impacts are identified or anticipated and no mitigation measures are required.**

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Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
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### XIII. PUBLIC SERVICES

- a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

Fire Protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Police Protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other Public Facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### SUBSTANTIATION

- XIII a) **Less Than Significant Impact.** The proposed project will not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services, including fire and police protection, schools, parks or other public facilities because the proposed development is expected to contribute to overall business tax revenues to provide a source of funding for such governmental facilities and public services which is deemed sufficient to offset any demand increases by this project. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.

**Therefore, no significant adverse impacts are identified or anticipated and no mitigation measures are required.**

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Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
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#### XIV. RECREATION

- |  |                          |                          |                                     |                          |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?                       | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

#### SUBSTANTIATION

- XIV a) **Less Than Significant Impact.** This project will not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated because of the project does not involve residential development and will not cause impacts associated with an increase in populations. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- XIV b) **Less Than Significant Impact.** This project does not include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment because the proposed development will not result in an increased demand for recreational facilities. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.

**Therefore, no significant adverse impacts are identified or anticipated and no mitigation measures are required.**

Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
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**XV. TRANSPORTATION/TRAFFIC - Would the project:**

- |   |                          |                          |                                     |                          |
|---|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?   | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e) Result in inadequate emergency access?   | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| f) Result in inadequate parking capacity?   | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

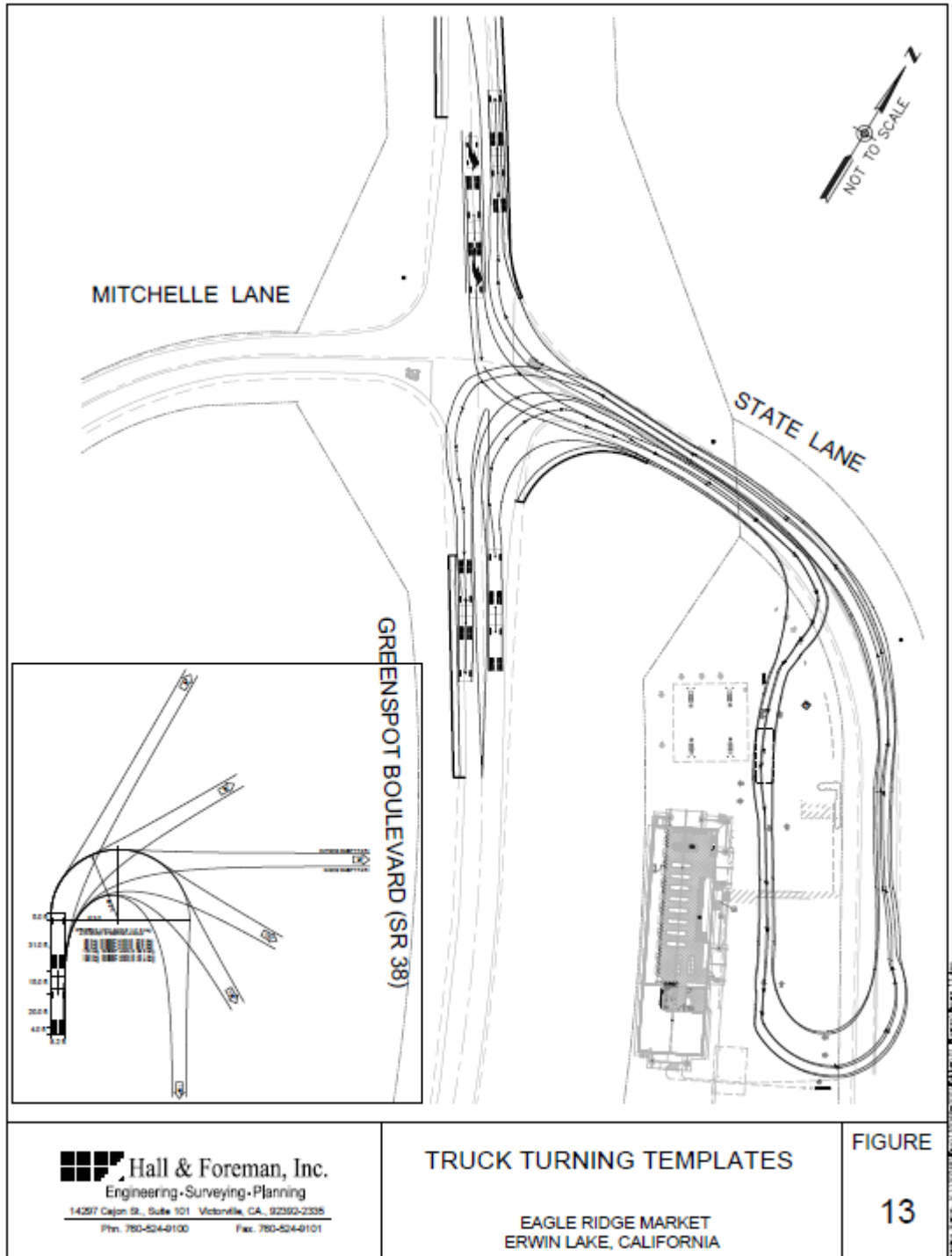
**SUBSTANTIATION**

XV a-b) **Less Than Significant Impact.** The proposed project will not cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system, i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections, because a 2013 Traffic Report prepared by Hall & Foreman, Inc. has concluded that the project traffic "will not cause any significant negative impact to the surrounding street system".

As a result of community opposition, Caltrans required additional analysis from the applicant, leading to preparation of the revised 2014 Traffic Analysis by Hall & Foreman. The revised report further examines the traffic impacts of the project and presents recommended traffic improvements. Based on the proposed traffic distribution and patterns, project trip generation and intersection capacity analyses were conducted to assess the estimated project impacts. Also considered were design of the intersections and project driveways.

Additionally, truck turning templates were applied to the existing intersection geometries at Highway 38 and State Lane, Truck Turning templates were applied to the existing geometrics. These turn movements included northbound right, southbound left and westbound left and right turns. A custom fuel tanker was modeled to represent the model vehicle with dimensions and specifications. The truck turning templates are provided in *Figure 13*. As illustrated some widening of the shoulder at the southeast corner of the intersection will be needed to accommodate the north to east right turn movement.

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The revised 2014 Traffic Report also performed a left turn warrant analysis using Caltrans' recently recommended "Access Management" document, specifically the "Criteria for Left-Turn Declaration Lanes on Rural Two-Lane Highways". While the un-signalized intersections of Highway 38 and State Lane, and State Lane and First Lane/project Driveway are anticipated to continue to operate at Level of Service (LOS) "C" or better, the applicant has proposed – and as accepted by Caltrans – a left-turn lane from southbound Highway 38 into State Lane.

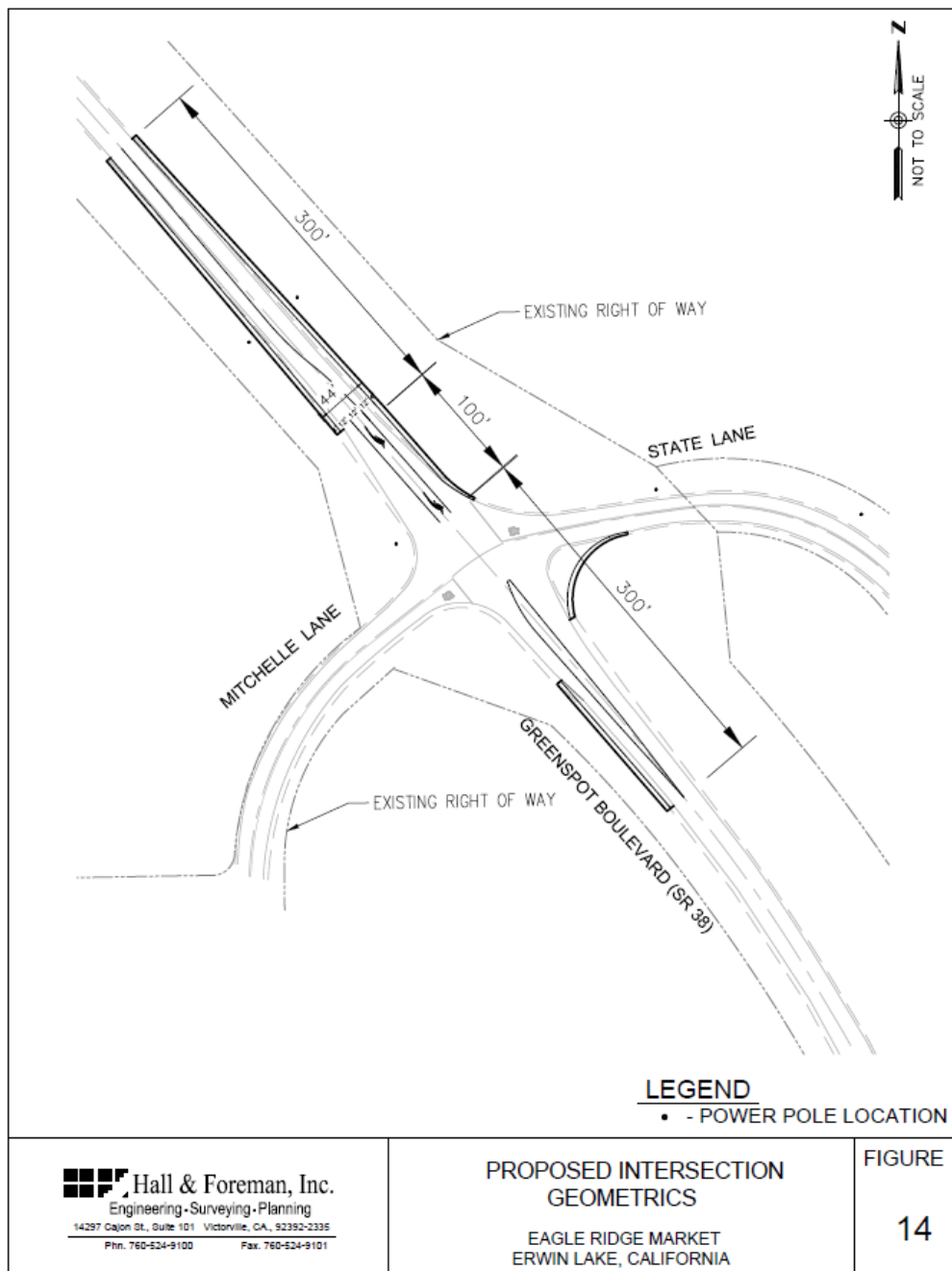
Based on the aforementioned 2014 Traffic Report, the following improvements shall be met:

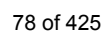
Intersection Improvement Mitigations

- a) Widening of the intersection of Greenspot Blvd/Hwy 38 and State Lane/ Mitchell Lane to accommodate a southbound 100 foot left turn lane and north to east right turn movement. (see Figure 14)

Site Improvement Mitigations

- a) Driveway Number 1 is to be constructed as right turn in only.  
 b) Driveway Number 2 is to be constructed as full access, adjacent First Lane. The intersection will be Two Way Stop Controlled (TWSC) at the driveway and First Lane.  
 c) The curb and gutter along State Lane, project frontage, will be constructed.  
 d) Upgrading the existing warning signage along State lane.  
 (see Figure 15)





- XV c) **Less Than Significant Impact.** The project will not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks, because there are no anticipated notable impacts on air traffic volumes by passengers or freight generated by the proposed use and no new air traffic facilities are proposed. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- XV d) **Less Than Significant Impact.** The project will not substantially increase hazards due to a design feature or incompatible uses, because the project site is adjacent to or near established roads, State Highway 38 and State Lane which provide adequate physical access with appropriate sight distance and properly controlled intersections with the newly recommended improvements discussed under XV a-b which has resulted in Mitigation Measure XV-1.
- XV e) **Less Than Significant Impact.** The project will not result in inadequate emergency access, because the project will be conditioned to provide adequate access points, designed to accommodate emergency vehicles. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- XV f) **Less Than Significant Impact.** The project will not result in inadequate parking capacity, because the project parking needs for project visitors and employees has been analyzed and deemed satisfactory. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- XV g) **Less Than Significant Impact.** The project will not conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks), because the scope the proposed project is deemed appropriately serviced with the improvements made to the existing infrastructure by implementing Mitigation Measure XV-1.

**Possible significance adverse impacts have been identified or anticipated and the following mitigation measure is required as a condition of project approval to reduce these impacts to a level below significant.**

*MM# Mitigation Measures*

*XV-1 Traffic. The “developer” shall meet the following mitigation measure to the satisfaction of Caltrans:*

*Intersection Improvement Mitigations*

*b) Widening of the intersection of Greenspot Blvd/Hwy 38 and State Lane/ Mitchell Lane to accommodate a southbound 100 foot left turn lane and north to east right turn movement.*

*Site Improvement Mitigations*

*e) Driveway Number 1 is to be constructed as right turn in only.*

*f) Driveway Number 2 is to be constructed as full access, adjacent First Lane. The intersection will be Two Way Stop Controlled (TWSC) at the driveway and First Lane.*

*g) The curb and gutter along State Lane, project frontage, will be constructed.*

*h) Upgrading the existing warning signage along State lane.*

*[Mitigation Measure XV-1]*

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	Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
<b>XVI. UTILITIES AND SERVICE SYSTEMS - Would the project:</b>				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Be served by a landfill(s) with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### SUBSTANTIATION

- XVI a) **Less Than Significant Impact.** The proposed project will not exceed wastewater treatment requirements of the Regional Water Quality Control Board as determined by County Public Health – Environmental Health Services (EHS); therefore any impact will be less than significant in this area. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- XVI b) **Less Than Significant Impact.** The proposed project will not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities because the project water and sewage disposal need shall be subject to the County Environmental Health Services' (EHS) review and approval. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.

- XVI c) **Less Than Significant Impact.** The proposed project will not require or result in the construction of new storm water drainage facilities or expansion of existing facilities that cause significant environmental effects because the project will use the existing storm water and drainage infrastructure. The project's hydrology and drainage conditions have been review by County Drainage Section, based on the Preliminary Hydrology Study and a Preliminary Water Quality Management Plan prepared by Jerry L. Miles, P.E. The County Drainage Section is in support of the project subject to Conditions of Approval. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- XVI d) **Less Than Significant Impact.** The proposed project will have sufficient water supplies available to serve its operation from existing entitlements and resources because the project will either be served by an established water purveyor, or conditioned to have its onsite water source reviewed and approved by EHS. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- XVI e) **Less Than Significant Impact.** The proposed project's wastewater treatment system shall be reviewed for approval by County EHS. Therefore onsite handling of wastewater shall be continually monitored to ensure compliance. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- XVI f) **Less Than Significant Impact.** The proposed project's solid waste disposal needs shall be serviced by an approved solid waste facility in conformance with the San Bernardino County Code Chapter 8, Section 33.0830, subject to County EHS review and approval. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.
- XVI g) **Less Than Significant Impact.** The proposed project is required to comply with federal, state, and local statutes and regulations related to solid waste. The proposed project's solid waste disposal needs shall be serviced by an approved solid waste facility in conformance with the San Bernardino County Code Chapter 8, Section 33.0830, subject to County EHS review and approval. Therefore, no potentially significant impact is anticipated in this area and no mitigation measures are deemed necessary.

**Therefore, no significant adverse impacts are identified or anticipated and no mitigation measures are required.**

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Potentially Significant Impact	Less than Significant with Mitigation Incorp.	Less than Significant	No Impact
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## XVII. MANDATORY FINDINGS OF SIGNIFICANCE:

- a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

☐ ☐ ☒ ☐

- b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

☐ ☐ ☒ ☐

- c) Does the project have environmental effects, which will cause Substantial adverse effects on human beings, either directly Or indirectly?

☐ ☐ ☒ ☐

## SUBSTANTIATION

- XVII a) **Less Than Significant Impact.** The project will not have the potential to significantly degrade the overall quality of the region's environment or substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory because the project's potential impacts have been reviewed by RCA Associates, LLC through performance of a General Biological Resources Assessment which finds that the site is not expected to support any sensitive species, sensitive habitats, or wildlife corridors. In response to the expressed community opposition concerned with potential impacts to the biological resources—and specifically as related to potential impact on the Unarmored three-spine stickleback fish, the applicant's biologist has performed additional biological surveys on April 28, 2014; which has resulted in an updated May 2014 report. The site was further evaluated to assess the drainage channel directly west and north of the site, existing site conditions, and potential impacts to stickleback populations. The field investigation was performed on April 28, 2014 from 7AM to 3:30 PM; and reconfirmed that the site "does not support any sensitive habitats such as streams and wetlands, nor were any wildlife corridors identified on the property". The study finds that the USGS Moonridge Quadrangle does not show any blue line channels on the site and no drainage channels or streams bisect the site based on field work conducted in April 2014. A small swale about 30 feet in length and six inches wide does occur along the western edge of the site; however, this swale does not connect with any off-site channels nor does it direct any significant water flows on-site.

A letter dated February 3, 2014 was prepared by RCA Associates LLC to address comments raised regarding potential impacts to the unarmored threespine stickleback fish. RCA Associates reviewed existing information on the species from the California Natural Diversity Data Base (CNDDB, 2013) and U.S. Fish and Wildlife Service (USFWS, 2009). According to the letter provided to Planning, and

based on the review of available information, the nearest documented population of the stickleback species is approximately 0.9 miles north of the project site and is associated with Shay Creek and Shay Pond. The species was observed in 1995 in Shay Creek which is a tributary to Baldwin Lake, which is directly east of Big Bear City. This population is assumed to still be present in Shay Creek and Shay Pond; although surveys for the stickleback fish have not been conducted since 2009. Two small intermittent channels of Shay Creek are also located about 0.5 miles northeast and northwest of the project site. The study finds that “although population of the stickleback may be present north of the project site, it is unlikely that the species would be affected by any potential onsite leakage or seepage problems” because “operation of the proposed fuel dispensers will be properly maintained and kept in good operating conditions at all times as per State of California requirements”. The study continues: “any leakage or seepage from the underground tanks will be immediately reported and mitigation measures, if needed, will be implemented.

"Cumulative impacts to the biological resources in the area are expected to be negligible" based on the existing habitats on the 0.9-acre site, as documented in the referenced 2013 and 2014 General Biological Reports. The RCA states that: “the site supports a relatively undisturbed ponderosa pine community typical of the area. Loss of 0.9-acres of this habitat is not expected to generate adverse cumulative impacts to regional biological resources due to the small size of the potential habitat loss”. In addition, development of the site as proposed is not expected to generate any adverse cumulative impacts to any sensitive species in the area. As previously noted the site does not support any populations of sensitive species; although, populations of the Unarmored Threespine Stickleback are located about 0.9 miles north of the project site”. The project will be designed in order to meet all local, State, and Federal Best Management Practices requirements in order to maintain all on-site water flows within the boundaries of the property. The RCA also states that: “any on-site spills of gasoline or other toxic substances will be contained on the site and will not enter into any of the drainage channels near the site through the use of a concrete swale on the property”; and concludes: “based on the existing project design and proposed implementation of various protection measures, cumulative impacts to the stickleback from the proposed project are expected to be negligible.” Therefore, potential impacts to the biological resources will be less than significant.

The 2013 and 2014 General Biological Reports prepared by RCA find that the proposed project will not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service because no riparian habitat or sensitive natural community are identified on the project site.

The study This project will not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means because the project is not located within an identified protected wetland. The Assessments mentioned above finds no sensitive habitats, stream, wetlands or wildlife corridors on this site. No protected species of trees has been identified on this parcel. The management and well-being of the native regulated tree falls under Chapter 88.01: Plant Protection and Management—discussed separately under Agriculture and Forest Resources, II-d. The reference study by RCA Associates, LLC. also finds that the project will not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan because no such plan has been identified on this project site. No potentially significant impact to biological resources is anticipated and no mitigation measures are deemed necessary.

Operational emissions of the proposed project would not exceed criteria or GHG emissions thresholds because this 6,793 square foot convenience store, gas station, and a caretaker residence is consistent with the growth projections and associated emissions used in the adopted County of San Bernardino Greenhouse Gas Emission Reduction Plan because it is smaller in size

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than the sample Gas Station/Convenience store of 7,200 square feet used for the referenced study, therefore the project is expected to fall short of 3000 metric tons of Carbon Dioxide Equivalent (CO<sub>2</sub>e) per year for the proposed use.

An Air Quality Report has been prepared by Urban Crossroads for this project and finds that the "Project would not exceed the numerical thresholds of significance established by the South Coast Air Quality Management District (SCAQMD)." The study also finds that "Project construction-source emissions would not conflict with the applicable Air Quality Management Plan (AQMP)." Although not required, the study recommends that best available control measures (BACM AQ-1 and BACM AQ-2) are implemented to further reduce the impacts during the construction.

As discussed in Air Quality section of this document, the proposed project's primary contribution to air emissions is attributable to construction activities. The project's construction and operational emissions are expected to fall short of 3000 metric tons of Carbon Dioxide Equivalent (CO<sub>2</sub>e) per year for this use type. However, some impact is identified during project construction due to construction activities, equipment emissions, and emissions from construction workers personal vehicles traveling to and from the construction site, therefore mitigation measures III-1, III-2 and III-3 are imposed to further limit or control potential fugitive dust and regulate construction activities. The aforementioned study prepared by Urban Crossroads finds that "project construction-source emissions would not conflict with the applicable Air Quality Management Plan (AQMP)." The study finds that "construction-source odor emissions would be temporary, short-term, and intermittent in nature and would not result in persistent impacts that would affect substantial numbers of people. Potential construction-source odor impacts are therefore considered less-than-significant." Although not required, the study recommends that Best Available Control Measures (BACM AQ-1 and BACM AQ-2) are implemented to further reduce the impacts during the construction. Upon completion, the site will be paved and landscaped which will mean little or no wind-blown dust or particulate matter will leave the site. Temporary potential significant impacts are anticipated during construction, therefore mitigation measures III-1, III-2 and III-3 are required as conditions of approval to reduce any potential impact to a level below significance. Operational emissions of the proposed project would not exceed criteria or GHG emissions thresholds because this 6,793 square foot convenience store, gas station, and a caretaker residence is consistent with the growth projections and associated emissions used in the adopted County of San Bernardino Greenhouse Gas Emission Reduction Plan because it is smaller in size than the sample Gas Station/Convenience store of 7,200 square feet used for the referenced study, therefore the project is expected to fall short of 3000 metric tons of Carbon Dioxide Equivalent (CO<sub>2</sub>e) per year for the proposed use. As it relates to operational impacts, the aforementioned LST Air Quality Analysis indicates that the project will not exceed the SCAQMD localized significance thresholds during operational activities. The proposed project would not result in a Carbon Monoxide or Nitrogen Dioxide "hotspots" as a result of project related traffic during ongoing operations, nor would the project result in a significant adverse health impact, due to the ongoing operations.

There are no identified historic or prehistoric resources identified on this site. If any archaeological or paleontological resources are identified during land disturbance and/or project construction, the project is conditioned to stop and identify appropriate authorities, which will properly record and/or remove for classification any such finds.

- XVII b) **Less Than Significant Impact.** The project does not have impacts that are individually limited, but cumulatively considerable. The other project sites in the area to which this project would add cumulative impacts have either existing or planned infrastructure that is sufficient for all planned uses. These sites are capable of absorbing such uses without generating any cumulatively significant impacts.

- XVII c) **Less Than Significant Impact.** The project will not have other environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly, as there are no such impacts identified by the studies conducted for this project or identified by review of the design of the proposed project. The project will be conditioned to ensure that all necessary mitigation measures are followed prior to occupancy.

**Therefore, no significant adverse impacts are identified or anticipated and no mitigation measures are required.**

### **XVIII. MITIGATION MEASURES**

(Any mitigation measures, which are not 'self-monitoring shall have a Mitigation Monitoring and Reporting Program prepared and adopted at time of project approval)

**SELF MONITORING MITIGATION MEASURES:**(Condition compliance will be verified by existing procedure)

#### **MM# Mitigation Measures**

- III-1** Air Quality – Dust Control Plan. The developer shall submit to County Planning a Dust Control Plan (DCP) consistent with SCAQMD guidelines and a letter agreeing to include in any construction contracts and/or subcontracts a requirement that the contractors adhere to the requirements of the DCP. The DCP shall include these elements to reduce dust production:
- Exposed soil shall be kept continually moist through a minimum of twice daily waterings to reduce fugitive dust during all grading and construction activities.
  - Street sweeping shall be conducted when visible soil accumulations occur along site access roadways to remove dirt dropped by construction vehicles.
  - Site access driveways and adjacent streets shall be washed daily, if there are visible signs of any dirt track-out at the conclusion of any workday.
  - Tires of vehicles will be washed before vehicles leave project site and enter a paved road.
  - Any truck hauling dirt away from the site shall be covered
  - During high wind conditions (i.e., wind speeds exceeding 25 mph), areas with disturbed soil shall be watered hourly and activities on unpaved surfaces shall be terminated until wind speeds no longer exceed 25 mph.
  - Storage piles that are to be left in place for more than three working days shall either be sprayed with a non-toxic soil binder, or covered with plastic or revegetated.
- [Mitigation Measure III-1]
- III-2** Air Quality – Construction Plan. Developer shall submit written verification that all construction contracts and sub-contracts for the project contain provisions that require adherence to the following standards to reduce impacts to air quality. During construction, each contractor and subcontractor shall implement the following, whenever feasible:
- Suspend use of all construction equipment operations during second stage smog alerts. For daily forecast, call (800) 367-4710 (San Bernardino and Riverside counties).
  - Trucks/equipment shall not be left idling on site for periods in excess of 10 minutes.
  - Provide temporary traffic control during all phases of construction.
  - Substitute diesel-powered equipment with electric and gasoline-powered equipment.
  - Onsite electrical power hook-ups shall be provided for electric construction tools to eliminate the need for diesel-powered electronic generators.
  - Install storm water control systems to prevent mud deposition onto paved areas during construction.
  - Contractors shall use low sulfur fuel for stationary construction equipment as required by AQMD Rules 431.1 and 431.2 to reduce the release of undesirable emissions.
- [Mitigation Measure III-2]

**III-3** *Air Quality – Coating Restriction Plan.* *The developer shall submit a letter agreeing to these Coating Restrictions and to include in any construction contracts and/or subcontracts a requirement that the contractors adhere to these requirements. These shall include, but are not be limited to:*

- a. Architectural coating volume shall not exceed the significance threshold for ROG, which is 75 lbs./day and the combined daily ROC volume of architectural coatings and asphalt paving shall not exceed the significance threshold for ROC of 75 lbs. per day*
  - b. Architectural coatings with Reactive Organic Compounds (ROC) shall not have a content greater than 100 g/l.*
  - c. High-Volume, Low Pressure (HVLP) spray guns will be used to apply coatings.*
- [Mitigation Measure III-3]*

**V-1** *Cultural Resources.* *The “developer” shall prepare, submit for review and obtain approval of a letter agreeing to adhere to the following requirements and to include in any construction contracts/ subcontracts a requirement that project contractors adhere to the following requirements:*

*If archaeological, paleontological and/or historical resources are uncovered during ground disturbing activities, all work in that area shall cease immediately until written clearance by County Planning is provided indicating that satisfactory resource excavation and recovery has been implemented. A qualified expert (e.g. archaeologist or paleontologist), as determined by County Planning in consultation with the County Museum shall be hired to record the find and recommend appropriate action. The developer shall implement any such additional action to the satisfaction of County Planning and the County Museum. If human remains are uncovered during ground disturbing activities, the San Bernardino County Coroner shall be contacted within 24 hours of the find. If the remains or cultural artifacts are determined to be of Native American origin, the local Native American representative shall also be notified.*

*[Mitigation Measure V-1]*

**XI-1** *Noise Mitigation.* *The “developer” shall submit for review and obtain approval of an agreement letter that stipulates that all construction contracts/subcontracts contain as a requirement that the following noise attenuation measures be implemented:*

- a. Exterior construction activities shall be limited between 7 a.m. and 7 p.m. There shall be no exterior construction activities on Sundays or National Holidays.*
- b. Interior construction activities may occur on any day and any time provided they comply with the County noise standards. (SBCC 83.01.080).*
- c. Construction equipment shall be muffled per manufacturer’s specifications.*
- d. All stationary construction equipment shall be placed in a manner so that emitted noise is directed away from sensitive receptors nearest the project site.*

*[Mitigation Measure XI-1]*

**XV-1** *Traffic.* *The “developer” shall meet the following mitigation measure to the satisfaction of Caltrans:*  
*Intersection Improvement Mitigations*

- a) Widening of the intersection of Greenspot Blvd/Hwy 38 and State Lane/ Mitchell Lane to accommodate a southbound 100 foot left turn lane and north to east right turn movement.*

*Site Improvement Mitigations*

- a) Driveway Number 1 is to be constructed as right turn in only.*
- b) Driveway Number 2 is to be constructed as full access, adjacent to First Lane. The intersection will be Two Way Stop Controlled (TWSC) at the driveway and First Lane.*
- c) The curb and gutter along State Lane, project frontage, will be constructed.*
- d) Upgrading the existing warning signage along State lane.*

*[Mitigation Measure XV-1]*

**GENERAL REFERENCES**

- Alquist-Priolo Special Studies Zone Act Map Series (PRC 27500)
- California Department of Water Resources Bulletin #118 (Critical Regional Aquifers), 1975
- CEQA Guidelines, Appendix G
- California Standard Specifications, July 1992
- County Museum Archaeological Information Center
- County of San Bernardino Development Code, 1998
- County of San Bernardino General Plan, adopted 1989, revised 1998
- County of San Bernardino Hazard Overlay Map FH 27
- County of San Bernardino Identified Hazardous Materials Waste Sites List, April 1998
- County of San Bernardino, Countywide Integrated Waste Management Plan, March 1995
- County of San Bernardino, June 2004, *San Bernardino County Stormwater Program, Model Water Quality Management Plan Guidance*.
- County of San Bernardino Road Planning and Design Standards
- Environmental Impact Report, San Bernardino County General Plan, 1989
- Federal Emergency Management Agency Flood Insurance Rate Map and Flood Boundary Map
- South Coast Air Quality Management District, CEQA Air Quality Handbook, November 1993

**PROJECT SPECIFIC STUDIES:**

General Biological Resources Assessment; RCA Associates, LLC.; January 2013  
Updated Biological Resources Assessment; RCA Associates, LLC. May, 2014  
Amended Biological Letter re: Stickleback Fish; RCA Associates LLC; February 2014  
Supplemental Preliminary Hydrology Analysis of Off-Site Flows; JERRY L. MILES, P.E.; May, 2014  
Revised Traffic Report; Hall & Foreman, Inc.; June 2014 with Appendices (Exhibit-A 6-27-2014, Winter Weekend Traffic Analysis 01-15-2014, and Response to Caltrans Letter 06-23-2014)  
Preliminary Water Quality Management Plan; Jerry L. Miles, P.E.; February 2013  
Preliminary Hydrology Study; Jerry L. Miles, P.E.; February 2013  
Air Quality Report Eagle Ridge Market; Urban Crossroads; February 25, 2014

## **EXHIBIT D**

### **Revised General Biological and Desert Tortoise Reports; RCA Associates**

# **BIOLOGICAL ASSESSMENT**

**EAGLE RIDGE MARKET  
P201200304; APN 0315-231-17**

**SAN BERNARDINO COUNTY, CALIFORNIA**  
(USGS Moonridge, CA Quad.; Township 2 North, Range 2 East, Section 19)

*Prepared for:*

**Steen Design Studio  
11774 Hesperia Road, Suite B1  
Hesperia, CA 92345  
(760) 244-5001**

*Prepared by:*

**RCA Associates, LLC  
15555 Main Street, #D4-235  
Hesperia, California 92345  
Randall C. Arnold, Jr., Principal Investigator  
(760) 956-9212  
Project No: RCA#2012-86C**

**Report Prepared by Randall C. Arnold, Jr.**

**May 9, 2014**

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## EXECUTIVE SUMMARY

Concerns have been raised by California Department of Fish and Wildlife (CDFW) in a letter dated April 16, 2014 regarding potential impacts on the Unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) (UTS). The UTS is listed as a Federal and State endangered species. Populations of the species have been documented approximately 0.9 miles north of the proposed project; however, populations of the species may be present in other channels and ponds closer to the site during above-average precipitation years (USFWS, 1999). The following sections provide a discussion of the impact analysis performed for this project as it related to the UTS.

The proponent is requesting approval of a proposed project which will include a convenience store (6,793 square feet), gas station, and a care-taker residence. The site is 0.9-acres in size and is located at the southeast corner of State Highway 38 (Greenspot Blvd.) and State Lane in San Bernardino County (Township 2 North, Range 2 East, Section 19). The site supports a moderately dense forest community dominated by ponderosa pine (*Pinus ponderosa*), with a few pinyon pines (*P. monophylla*) and California juniper (*Juniperus californica*) also scattered throughout the property. Dominant annuals included bluegrass (*Poa glauca*), rock cress (*Arabis sp.*), and wire grass (*Juncus sp.*).

In order to address the concerns and comments of CDFW, as well as the local residents, the site was further evaluated to assess the drainage channel directly west and north of the site, existing site conditions, and potential impacts to stickleback populations. The field investigations were performed on April 28, 2014 from approximately 0700 to 1530 hours. The site, which is 0.9-acres in size and is located in a developed portion of the Big Bear Lake area, does not support any sensitive habitats such as streams and wetlands, nor were any wildlife corridors identified on the property.

## 1.0 PROJECT AND PROPERTY DESCRIPTION

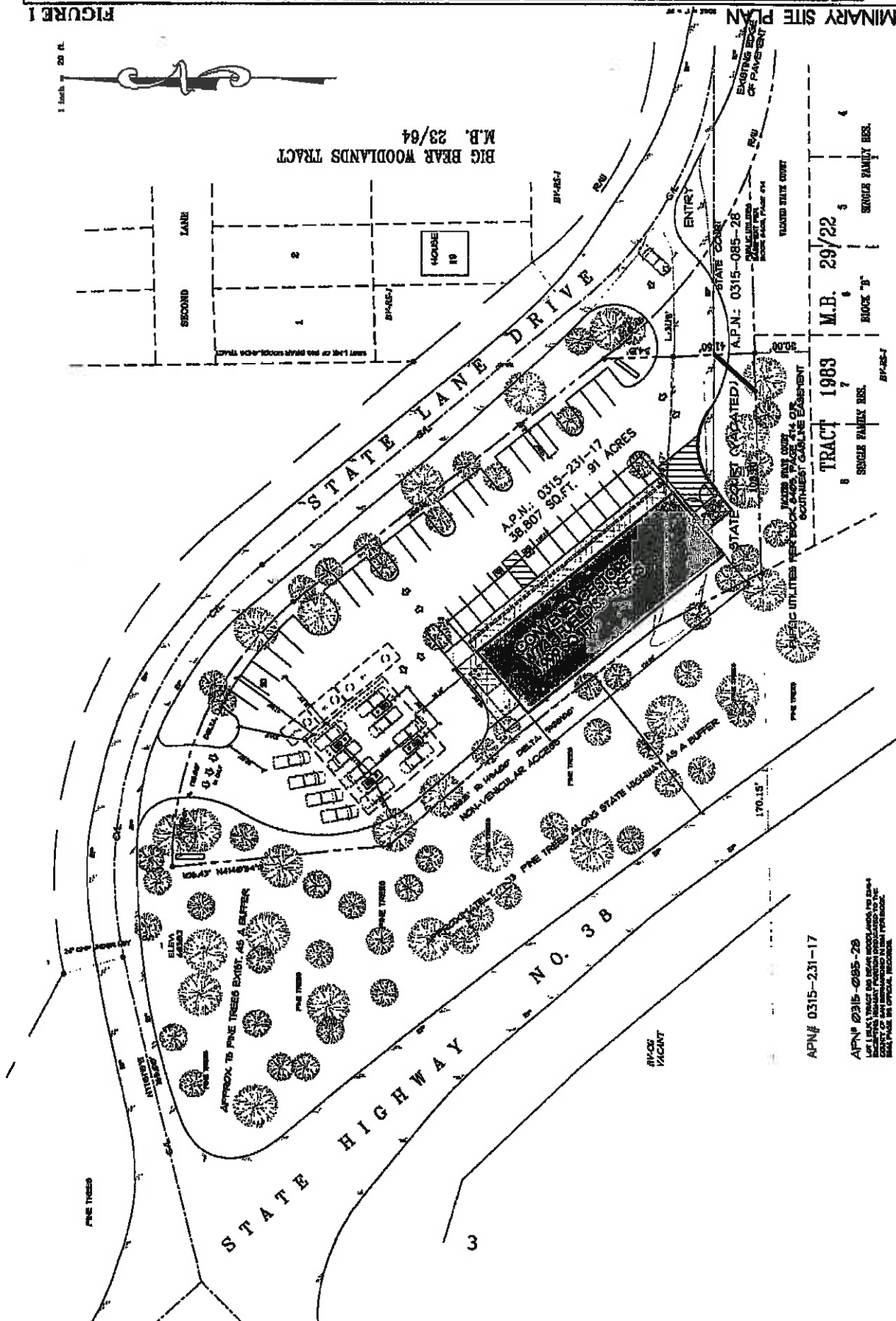
The proponent is requesting approval of a proposed convenience store (6,793 square feet), gas station, and care-taker residence on a 0.9-acre parcel at the southeast corner of State Highway 38 (Greenspot Blvd.) and State Lane Drive (The SE ¼ of the SE ¼ of the NE ¼ of Section 19, Township 2 North, Range 2 West, of the SBM, State of California) located in San Bernardino County (Figures 1, 2, and 3). The property is located at an elevation of approximately 6,800 feet (MSL) with a slight slope to the east. An initial survey was conducted in January 2013; however, additional biological surveys were performed on April 28, 2014 to further evaluate the site and to assess potential impacts. No other alternative sites were evaluated by the project proponent.

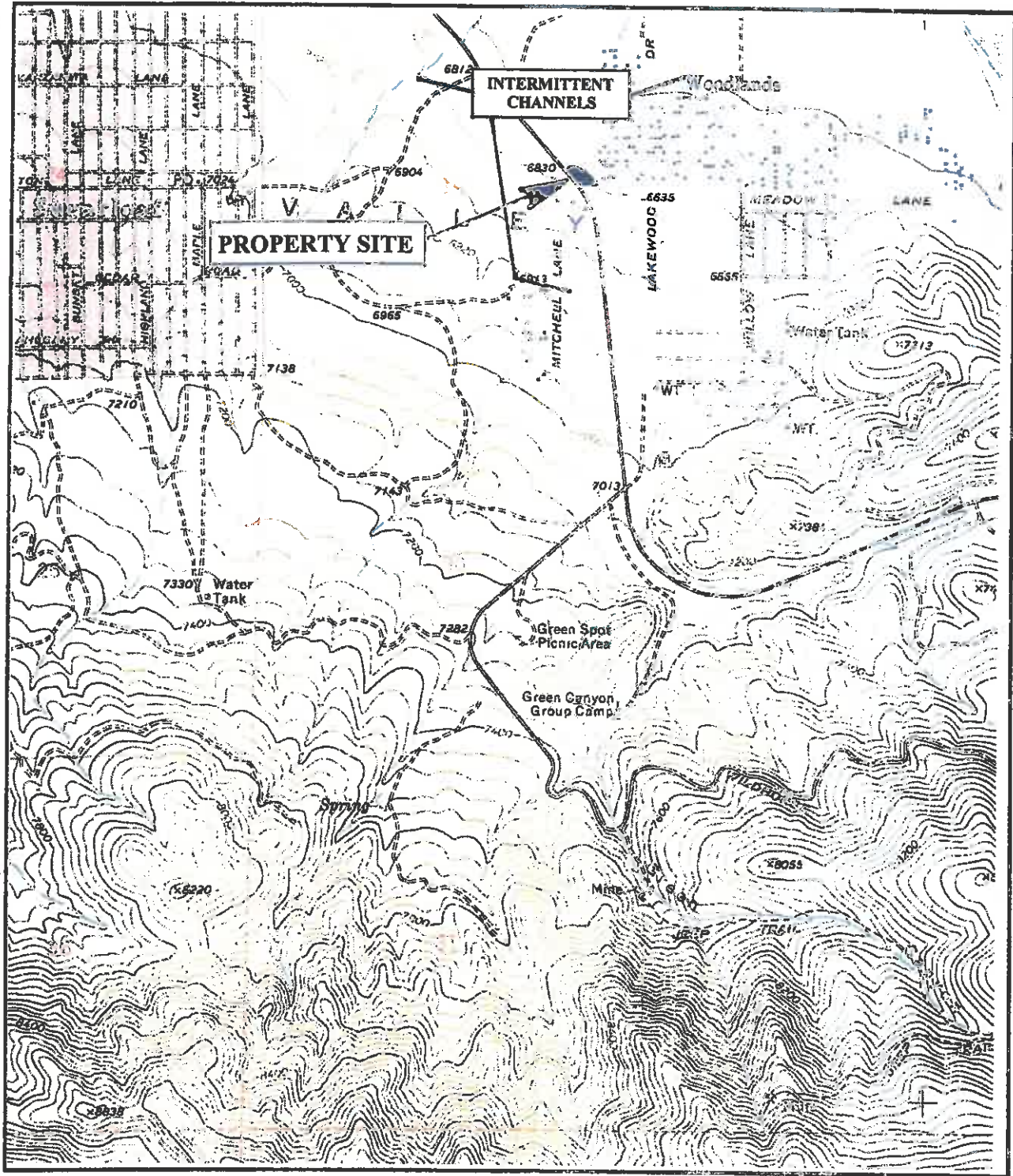
Soils consisted of sandy loam with a few gravels and small rocks present. The site is bordered on the west by State Highway 38, on the south and east by existing single family dwellings, and on the north by vacant land (Figure 4). The USGS Moonridge Quadrangle does not show any blueline channels on the site and no drainage channels or streams bisect the site based on field work conducted in April 2014. A small swale about 30 feet in length and about six inches does occur along the western edge of the site; however, this swale does not connect with any off-site channels nor does it direct any significant water flows on-site.

A blueline stream channel is located west of the site and ends at Highway 38 south of the subject property (Figure 2). The stream flows intersect Highway 38 and are contained in a ditch along the west side of the highway. Water flows are directed in a northerly direction and enter a catch basin located immediately south of the intersection of Highway 38 and State Lane which directs water under Highway via a culvert. Water flows from the culvert under Highway 38 for a distance of about 120 feet within the highway right of way, and is directed into another culvert located under State Lane. This culvert directs water in a northerly direction into a channel north of the subject property. Off-site stream flows do not enter or cross the site. Based on the absence of any stream channels on the site and the fact that no off-site channels will be altered by the proposed project, a Lake and Stream Alteration Permit (LSA) will not be required by CDFW.

No wildlife corridors bisect the property and no sensitive wildlife species were observed during the biological surveys conducted on January 17, 2013 or during the updated field investigations performed on April 28, 2014. Weather conditions during the April 2014 surveys consisted of winds of 0 to 5 mph, temperatures ranging from the mid 50's to mid 70's (°F), with 0 to 5 percent cloud coverage. The site is undisturbed and supports a moderately dense ponderosa pine (*Pinus ponderosa*) community with some pinyon pines (*P. monophylla*) and California junipers (*Juniperus californica*) also present (Figure 3). A few shrubs were also noted including sagebrush (*Artemisia tridentata*), rabbitbrush (*Chrysothamnus* sp.), cinquefoil (*Potentilla* sp.), and grasses such as brome (*Bromus* sp.), and bluegrass (*Poa* sp.). Table 2 provides compendium of all plant species observed during the field investigations. See Section 4.0 for discussion of the general biological resources.

**FIGURE 1**





**FIGURE 2**  
**PROJECT LOCATION**  
 (Erwin Lake Market)  
 (Source: USGS: Moonridge, CA Quad., 1970)





CENTER OF SITE LOOKING EAST



CENTER OF SITE LOOKING NORTH

FIGURE 3  
SITE PHOTOGRAPHS  
(EAGLE RIDGE MARKET)



CENTER OF SITE LOOKING WEST



CENTER OF SITE LOOKING SOUTH

FIGURE 3, cont.  
SITE PHOTOGRAPHS  
(EAGLE RIDGE MARKET)

## 2.0 BACKGROUND DATA REVIEW

### 2.1 UNARMORED THREESPINE STICKLEBACK (*Gasterosteus aculeatus williamsoni*)

The following overview for the stickleback has been excerpt from the 5-Year Review Plan prepared by the U.S. Fish and Wildlife Service (USFWS) in 2009 (USFWS, 2009)

#### Species Overview

Threespine stickleback (*Gasterosteus aculeatus*) are mostly freshwater anadromous fish found throughout much of the Northern Hemisphere, and are streamlined fish, usually not exceeding 6 cm (2.4 in) standard length (USFWS, 2009; Moyle, 2002). Miller and Hubbs (1969) recognized three subspecies of threespine stickleback on the Pacific Coast of North America including: (1) fully plated threespine stickleback (*Gasterosteus aculeatus*), (2) low or partially plated threespine stickleback (*Gasterosteus aculeatus microcephalus*), and (3) unplated or unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*).

The UTS is distinguished from other sticklebacks by the number of lateral plates, and other characters used to distinguish the UTS from other threespine sticklebacks include: short dorsal and pelvic spines, rounded pectoral and caudal fins, a less streamlined body, reduced denticulation of the spines, and reduced size of the ascending branch of the pelvic girdle (Baskin 1974). The UTS was first described by Girard (1854) based on a collection from "Williamson's Pass," known today as Soledad Canyon, Los Angeles County, California. The UTS inhabits slow-moving reaches or quiet-water microhabitats of streams and rivers, and it feeds primarily on benthic insects, small crustaceans and snails, and to a lesser degree on flatworms, nematodes, and terrestrial insects (Moyle 2002). The UTS reproduces throughout the year, with the least breeding activity occurring from October to January (Baskin 1974). Reproduction occurs in areas with adequate aquatic vegetation (e.g. watercress) (*Rorippa spp.*) and filamentous algae (*Cladophora spp.*) and slow-moving water, where males establish and vigorously defend territories.

In 2008, approximately 8 acres of property at Shay Meadows (including Motorcycle Pond and areas connecting it to Shay Pond) was acquired through a 2002 Section 6 recovery land acquisition grant and are currently held in conservation by CDFW (USFWS, 1999). The Department of Water and Power, City of Big Bear Lake (DWP) and the Big Bear Community Services District (CSD) acquired approximately 2 acres underlying Shay Pond, referred to as "Shay Creek UTS preservation lands" (USFWS, 1999). As a term and condition of a special use permit for Water Collection and Conveyance Facilities in the Baldwin Lake Watershed, San Bernardino National Forest, San Bernardino County, California, CSD is contractually obligated to provide water to maintain a minimum 20-gallon-per-minute outflow from Shay Pond (USFWS, 1999).

### Location of Unarmored Threespine Stickleback in Project Area

Based on data from the USFWS (2009) and from the CDFW Natural Diversity Data Base (CNDDB, 2014), populations of stickleback have historically inhabited Shay Creek in a spring area (i.e., Motorcycle Pond) near the corner of Cascade Street and Hatchery 10 Road extending down to Baldwin Lake which is connected to Shay Pond via Shay Creek (USFWS, 2009). Shay Creek is generally a perennial stream, which is fed by several springs. The UTS were discovered in Shay Creek after the species was listed as endangered (U.S. Forest Service, 2001). The Shay Creek vicinity includes Shay Pond, Sugarloaf Pond, Juniper Springs, Motorcycle Pond, Shay Creek, Wiebe Pond, and Baldwin Lake (See Figures [back of report] for population locations.). The Shay Creek vicinity population is unique in that it occurs at a high elevation, about 6,700 ft above sea level, while all other UTS populations inhabit streams below 3,000 ft.

The Shay Creek populations undergo major fluctuations due to expansions and contractions of their habitat due to frequent drought conditions in Southern California. The U.S. Forest Service documented a catastrophic reduction in population levels in Shay Creek and Baldwin Lake in 1985 and 1986 due to reduction in water levels (USFS, 2001). Some UTS did survive this episode in Shay Pond and Wiebe Pond. However, by 1990, UTS were thought to only exist in Shay Pond according to Malcolm (1992) since Shay Pond is maintained by supplemental water from the Big Bear City Community Service District. Above average rainfall in the mid-1990's helped re-establish water in Baldwin Lake which helped in the expansion of populations of UTS beyond Shay Creek and Shay Pond.

## **2.2 OTHER SENSITIVE SPECIES**

Based on a literature review, a search of USFWS and CDFW data bases, and a search of the California Natural Diversity Database (CNDDB), it was determined that the site is located within the distribution of other sensitive wildlife species including California spotted owl (*Strix occidentalis occidentalis*), southern rubber boa (*Charina umbratica*), and flying squirrel (*Glaucomys sabrinus*). In addition, bald eagles (*Haliaeetus leucocephalus*) have been observed in association with Baldwin Lake about two miles to the north (CNDDB, 2013). There are numerous sensitive habitats located throughout the Big Bear Lake area, and numerous sensitive plants have also been recorded in the region. According to the CNDDB (2014), there are twenty-four sensitive plants within a five mile radius of the property; although, the 0.9-acre site is not expected to support any sensitive plants. Scientific nomenclature for this report is based on the following references: Hickman (1993), Munz (1974), Stebbins (2003), Sibley (2000) and Whitaker (1980). Table 1 (Appendix A) provides a detailed summary of the sensitive species listed above and Section 5.0 provides a discussion of potential impacts to these sensitive species.

### **3.0 METHODOLOGIES**

#### **Vegetation and Wildlife**

General biological surveys were conducted on April 28, 2014 during which Randall C. Arnold, Jr. (Senior Biologist, RCA Associates LLC) and Patricia Moore (Senior Botanist, RCA Associate LLC) walked meandering transects (i.e., “transects of opportunity”) throughout the site and in adjacent areas (i.e., zone of influence) from 0700 to 1530 hours. During the surveys, data was collected on the plant species present on the site and in the immediate surrounding area and the wildlife observed were recorded. Plants were identified in the field; however, those species that were not identifiable were collected and taken back to the lab for further identification. Birds were identified by visual observations and sound; whereas, mammals occurring in the area were identified by scats, tracks, burrows, or direct observations. All plants and animals detected during the field investigations were recorded and are provided in compendium Tables 2 & 3 (Appendix A). During the field investigations the site was also evaluated for the presence of any sensitive habitats (e.g., wetlands, streams, etc.) and wildlife corridors.

The surrounding area was also evaluated for the presence of drainage channels which could potentially collect any water flows from the site and direct water to the north where populations of the stickleback are located. In addition to the biological assessment performed by RCA Associates, LLC, a hydrological analysis was performed by Mr. Jerry Miles in order to address the hydrological concerns raised in the CDFW letter of April 16, 2014, and has been submitted under separate cover. The results of the hydrological study are also summarized in Section 5.0.

#### 4.0 GENERAL BIOLOGICAL SURVEY RESULTS

The site supports a pine forest typical of the area dominated by ponderosa pine (*Pinus ponderosa*) with a few California junipers (*Juniperus californica*) and pinyon pine (*P. monophylla*) also present. Shrubs were limited to a few Great Basin sagebrush (*Artemisia tridentata*), cinquefoil (*Potentilla* sp.), and rabbitbrush (*Chrysothamnus* sp.). Dominant annuals included bluegrass (*Poa glauca*), rock cress (*Arabis* sp.), and wire grass (*Juncus* sp.). A few other perennials and annuals were noted along the edge of the site and are provided in Table 2.

Birds observed during the field investigations were limited to ravens (*Corvus corax*) and stellar jays (*Cyanocitta stelleri*). Common mammals occurring in the area included cottontail (*Sylvilagus bachmani*) and Merriam's chipmunk (*Eutamias merriami*). Tables 2 and 3 (Appendix A) provide a compendium of the species observed and those species which are common to the area. No distinct wildlife corridors were identified on the site or in the immediate surrounding area. Some nesting activity was noted among the stellar jays observed on the site; however, no nests were identified in any of the on-site trees. Figure 4 provides an aerial view of the site and the surrounding area.

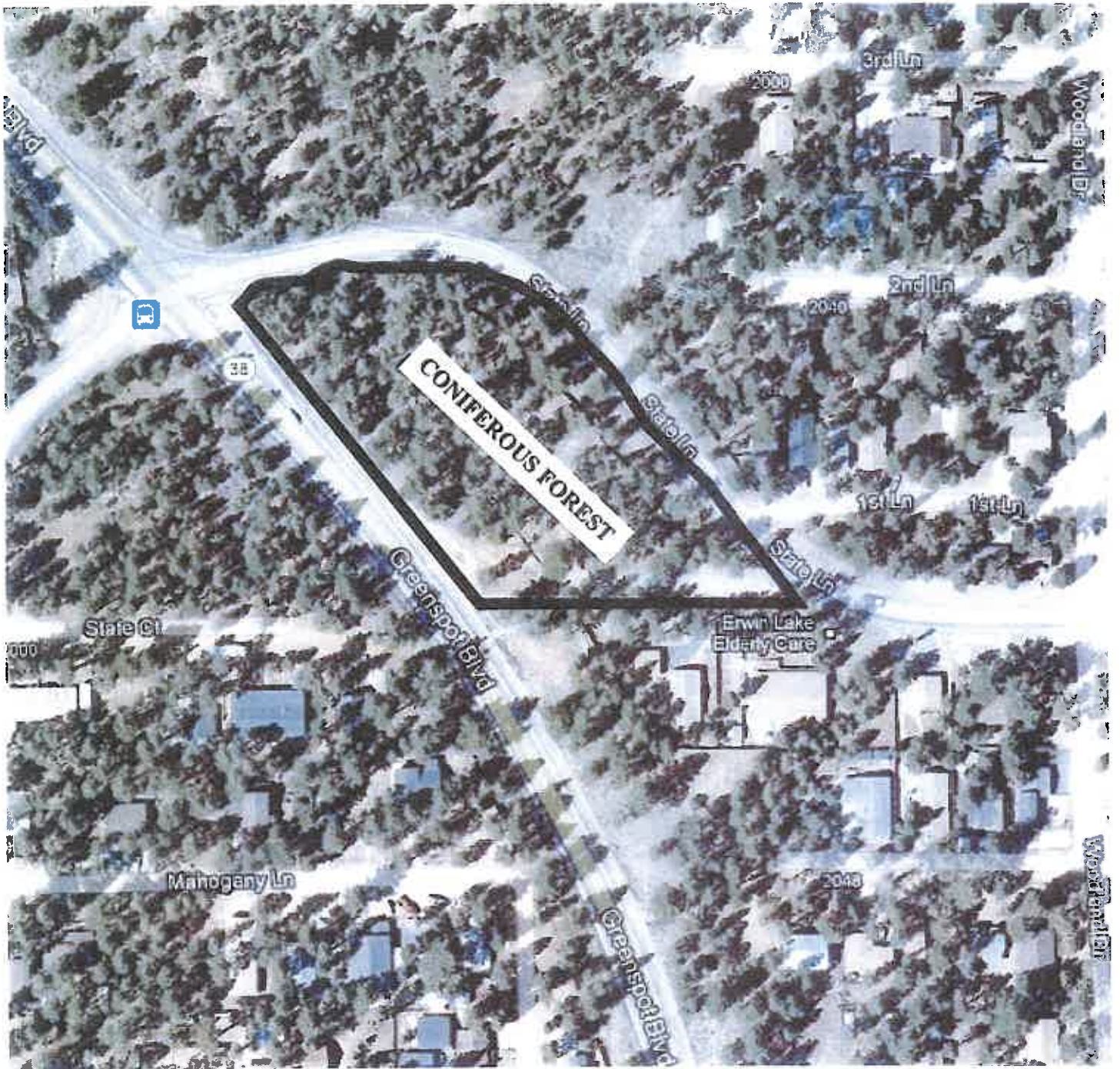


Figure 4  
Biological Resources Map  
(Eagle Ridge Market, P201200304)



## **5.0 IMPACTS**

A hydrological study was performed by J. Miles, P.E. for the project and has been submitted under separate cover. However, some of the analysis presented in the hydrological study has been utilized in analyzing potential impacts to the UTS.

### **5.1 Potential Impacts to the Unarmored Threespine Stickleback**

One of the main concerns is potential impacts to the UTS due to potential pollution of off-site channels. However, according to the hydrological study (Miles, 2014), "On-site flows will be contained on-site and treated by on-site BMP's in an effort to contain pollutants, trash and sediments generated by the proposed use. The on-site 100 year 1-hour storm flows generated will be captured and contained in an off-site BMP underground retention basin and allowed to percolate. A proposed concrete swale along the subject site's westerly boundary will conduct any off-site flows northerly, in an effort to keep off-site flows from entering the site" (Miles, 2014). Based on the analysis conducted by Miles (2014), on-site flows will be contained and will not enter the off-site channel north of the site. By controlling on-site water flows, as well as preventing off-site flows from entering the site during storm events, the possibility of any on-site contaminants (i.e., gasoline leaks, fuel spills) entering the channel to the north and eventually impacting UTS north of the site is expected to be negligible.

In addition, controlling all on-site water flows and using on-site BMP's to contain all pollutants, trash, and sediments, the proposed project is not expected to have any impacts in altering hydrologic flows in the area. Consequently, the habitat suitability of the wet meadow system downstream of the site, which supports populations of the UTS, will not be impacted by the proposed project.

### **Toxic Spills Along Roadways**

Concerns have also been raised regarding possibility of toxic spills along the various roadways in the area surrounding the subject property due to traffic accidents. Any spills which may occur due to accidents, etc. along Highway 38, State Lane Drive, or other roads in the immediate area could have a direct impact on UTS populations if any toxic substances manage to reach the existing UTS populations. However, such occurrences are beyond the control of the project proponent. In addition, impacts which may occur to the local hydrology and groundwater during such accidents are beyond the scope of this report. As discussed above, the proponent will implement all necessary State, Federal and local requirements to control all on-site contaminants.

### **Threats Specific to Shay Creek**

The encroachment of emergent wetland vegetation has been gradually reducing open-

water habitat in Shay Pond and may be limiting the UTS population (USFWS, 1999). The pond has been cleaned out at irregular intervals by personnel from the Service, U.S. Forest Service, and CDFW. In addition, Shay Creek and its pools, including Shay Pond, are located in close proximity to developed areas and near an unpaved road; consequently, this location is potentially threatened by eutrophication and/or pollution from nuisance flows contaminated by horse manure (USFWS, 1999). Development of properties continues in areas adjacent to the creek and its pools, and this activity could potentially result in the eventual the loss of the creek (USFWS, 1999).

The UTS also continues to be threatened by agricultural, industrial, and municipal water pollution; channelization and other habitat modifications associated with urbanization; stream flow alterations caused by water diversion; groundwater pumping; introduction of competing and predatory species; hybridization with partially armored threespine stickleback; drought; and stochastic extinction (USFWS, 1999). Consequently, UTS continues to be threatened with extinction throughout all or a significant portion of its range.

## **5.2 Impacts to Other Sensitive Species**

There are several other sensitive species which have been documented in the general area and these species are discussed below.

### **Southern Rubber Boa**

The Southern rubber boa is typically found in association with active streams and wet meadows in the Big Bear area. There are no documented populations in the immediate area surrounding the property, and the species is not expected to occur on the site based on the absence of suitable habitat. In addition, the species is unlikely to inhabit the channel directly north of the site since the channel infrequently has water present. The proposed project is not expected to impact the species. (Note: Specific location information has been suppressed by CDFW in the interest of protecting the species.).

### **Flying Squirrel**

Flying squirrels are year-long residents of coniferous habitat and the species has been documented in the general area (CDFW, 1990). The species, which utilizes tree cavities for nesting, is typically found in habitats close to water since squirrels normally require drinking water, especially during summer months (CDFW, 1990). The trees present on the site were evaluated for the presence of any cavities which could be utilized by squirrels; however, no such cavities were observed nor were any squirrels seen during the April 2014 field investigations. Based on the results of the investigations, the proposed project will not impact any populations of the flying squirrel.

### **California Spotted Owl**

Spotted owls inhabit dense, old growth forest and in Southern California the species is normally found in association with oak and oak-conifer habitats (CDFW, 1990). Owls use multi-layered canopy cover for roosting and locates its nests in tree cavities or in the tops of large trees. Spotted owls are not expected to inhabit the site. This conclusion is based on the small size of the site, its presence in a developed area, and the absence of suitable habitat (oak-conifer habitat) and suitable nesting cavities.

### **Bald Eagle**

Bald Eagles occur in the Big Bear area primarily as winter migrants (CDFW, 1990). Eagles typically require large bodies of water where their main prey (fish) is readily available. Eagles normally nest in large, old growth trees with open branchwork (CDFW, 1990). Numerous observations of bald eagles have been documented in the area, primarily in relation to Big Bear Lake and Baldwin Lake (CNDDB, 2014). The site does not provide suitable nesting trees or roosting areas for the species, and the proposed project is not expected to have any impact on the species.

### **Sensitive Plants**

There are numerous sensitive plants which have been documented in the Big Bear area, and the majority of these species are normally found in wet meadows, along streams and lakes, and in certain upland habitats (e.g., sagebrush, pinyon-juniper habitats, etc.) (CNDDB, 2014). As mentioned above, about twenty-five sensitive plants have been documented within about 5-miles of the site; however, site does not support habitats typically associated with most of the sensitive plants in the region. Therefore, it is very unlikely any sensitive plant species inhabit the site and the project is not expected to impact any sensitive species.

## **5.3 Cumulative Impacts**

The proposed project is not expected to have any adverse cumulative impacts on the biological resources in the general area based on the existing conditions on the property. The site does not support any sensitive species nor are there any riparian habitats, wetlands, or any other aquatic habitats present on the site. There are no wildlife corridors bisecting the property, and no sensitive habitats are present in immediate adjacent areas. The various rare communities in the region (e.g., wet meadows, streams, lakes, ponds, etc.) are not expected to be indirectly or directly impacted by the project. There are no rare communities immediately adjacent to the site and as noted above, the project will meet all required regulations to minimize potential impacts to the surrounding natural communities and sensitive species.

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**TABLES**  
**CNDDB Sensitive Species List**

**Table 1 - Federal and State Listed Species and State Species of Special Concern Occurring Within Approximately Five Miles of the Site.** (Fed; E = Endangered; SSC = Species of special concern; S = Sensitive species; CNDDB = California Natural Diversity Data Base; CNPS: California Native Plant Society)

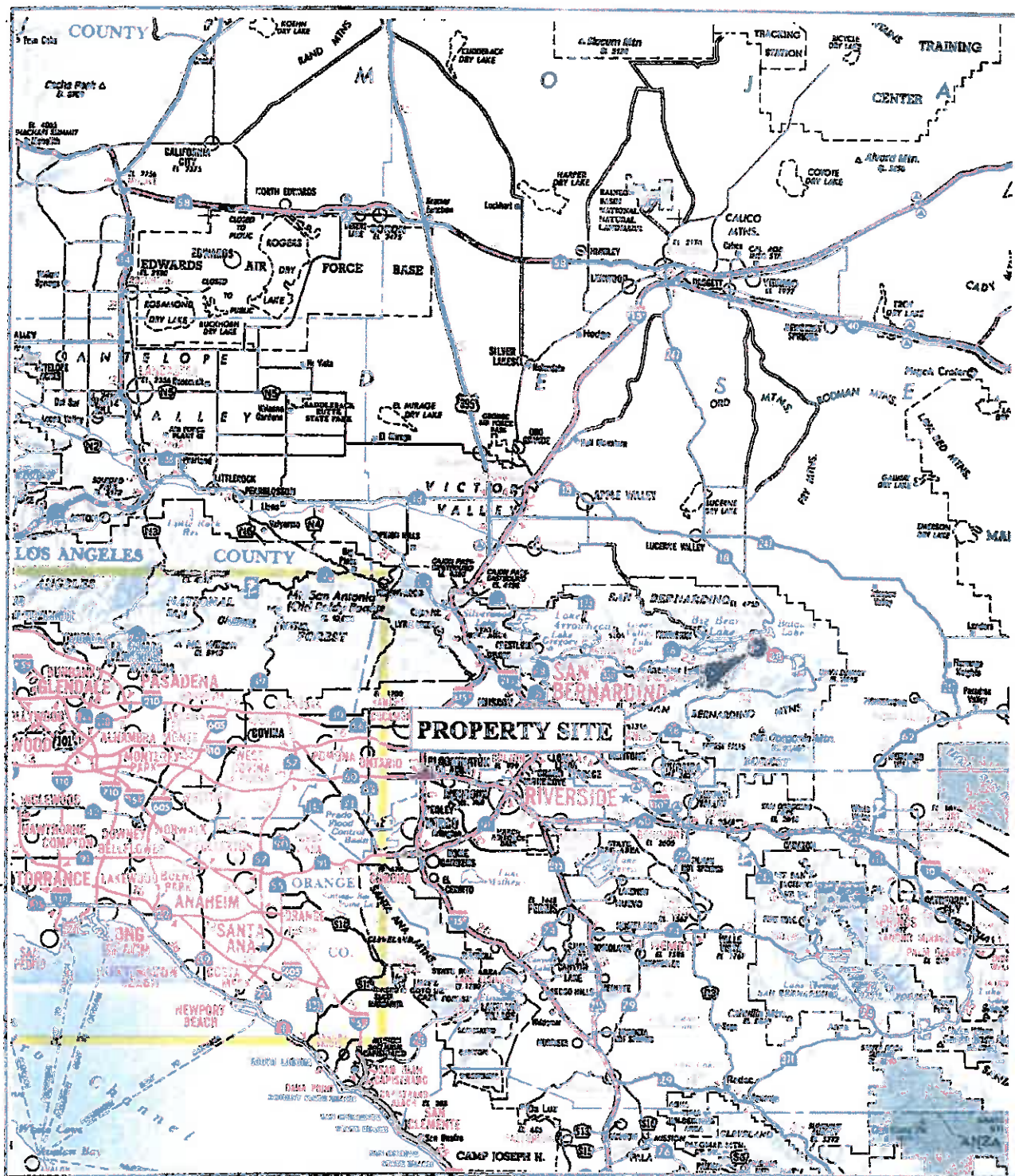
Name	Listing Status	Habitat Requirements	Presence/Absence	Comments
Southern rubber boa ( <i>Charina umbratica</i> )	Fed: None State: T	Coniferous forest	Site not expected to support any populations of the species due to its small size the absence of any documented populations in surrounding area.	No additional surveys or mitigations proposed.
Flying squirrel ( <i>Glaucomys sabrinus</i> )	Fed: None State: None CDFG: SSC	Coniferous forest	Site not expected to support populations of the species.	"
California spotted owl ( <i>Strix occidentalis occidentalis</i> )	Fed: None State: None CDFG: SSC	Coniferous forest	None observed during the surveys and site is not expected to support populations of the species.	"
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	Fed: Delisted State: E	Normally associated with lakes, rivers, and aquatic areas where prey is available.	None observed during the surveys and site is not expected to support any nesting/roosting activities due to small size and absence of aquatic habitats.	"
Unarmored threespine stickleback ( <i>Gasterosteus aculeatus williamsoni</i> )	Fed: E State: E	Lakes	Site does not support suitable habitat for the species.	"
Cushenbury milk-vetch ( <i>Astragalus albens</i> )	Fed: E State: None CNPS: List 1B.1	Gravelly soils; pinyon-juniper woodlands	Site not expected to support populations of species.	"
San Bernardino milk-vetch ( <i>Astragalus bernardinus</i> )	Fed: None State: None CNPS: 1B.1	Stony washes; pinyon-juniper woodlands.	Site not expected to support populations of the species.	"
Big Bear Valley milk-vetch ( <i>Astragalus lentiginosus</i> var. <i>sierra</i> )	Fed: None State: None CNPS: 1B.1	Sagebrush scrub	Site does not support suitable habitat	"
Big Bear Valley Woolypod ( <i>Astragalus leucolobus</i> )	Fed: None State: None CNPS: 1B.2	Sagebrush scrub	Site does not support suitable habitat.	"
Pinyon Rockress ( <i>Boechera dispar</i> )	Fed: None State: None CNPS: 2.34	Pinyon-juniper woodlands.	Site does not support suitable habitat.	"

Table 1: continued

Parish's Rockress ( <i>Boechera parishii</i> )	Fed: None State: None CNPS: 1B.2	Dry, rocky slopes.	Site does not support suitable habitat.	No additional surveys or mitigations proposed.
Shockley's Rockress ( <i>Boechera Shockleyi</i> )	Fed: None State: None CNPS: 2.2	Pinyon-juniper woodlands.	Site does not support suitable habitat for species.	
Palmer's mariposa lily ( <i>Calochortus palmeri</i> var. <i>palmeri</i> )	Fed: None State: None CNPS: 1B.2	Meadows and moist habitats.	Site does not support suitable habitat for species.	"
Ash-gray paintbrush ( <i>Castilleja cinerea</i> )	Fed: None State: None CNPS: 1B.2	Coniferous forest.	Site not expected to support populations of the species.	"
San Bernardino Mt. owl's clover ( <i>Castilleja lasiorhyncha</i> )	Fed: None State: None CNPS: 1B.2	Meadows; yellow-pine forests.	Site does not support suitable habitat for species.	"
San Bernardino Mountains dudleya ( <i>Dudleya abramsii</i> ssp. <i>affinis</i> )	Fed: None State: None CNPS: 1B.2	Chaparral to pine forests.	Site not expected to support populations of the species.	"
Big Bear Valley Sandwort ( <i>Eremogone ursina</i> )	Fed: T State: None CNPS: 1B.2	Pebble plains; pinyon-juniper woodlands.	Site does not support suitable habitat for species.	"
Parish's Daisy ( <i>Erigeron parishii</i> )	Fed: T State: None CNPS: 1B.1	Joshua tree woodlands.	Site does not support suitable habitat.	"
Southern Mountain Buckwheat ( <i>Eriogonum kennedyi</i> var. <i>austromontanum</i> )	Fed: T State: None CNPS: 1B.2	Gravelly slopes and ridges.	Site does not support suitable habitat for the species.	"
Baldwin Lake linanthus ( <i>Linanthus killipii</i> )	Fed: None State: None CNPS: 1B.2	Pinyon juniper woodland.	Site not expected to support the species.	"
San Bernardino Mtn. monkeyflower ( <i>Mimulus exiguus</i> )	Fed: None State: None CNPS: 1B.2	Moist habitats.	Site does not support suitable habitat for the species.	"
San Bernardino Ragwort ( <i>Packera bernardina</i> )	Fed: None State: None CNPS: 1B.2	Rocky slopes; yellow-pine forests.	Site does not support suitable habitat for species.	"
San Bernardino bluegrass ( <i>Poa atropurpurea</i> )	Fed: E State: None CNPS: 1B.2	Meadows and grassy slopes.	Site does not support suitable habitat for the species.	"
Bear Valley Pyrrocoma ( <i>Pyrrocoma uniflora</i> var. <i>gossypina</i> )	Fed: E State: None CNPS: 1B.2	Moist alkaline meadows.	Site does not support suitable habitat for the species.	"
Bird-fowl checkerbloom ( <i>Sidalcea pedata</i> )	Fed: E State: E CNPS: 1B.1	Wet meadows.	Site does not support suitable habitat for the species.	"
San Bernardino aster ( <i>Symphotrichum defoliatum</i> )	Fed: None State: None CNPS: 1B.2	Grasslands; disturbed areas.	Site does not support suitable habitat for species.	"

California dandelion ( <i>Taraxacum californicum</i> )	Fed: E State: None CNPS: 1B.1	Moist meadows.	Site does not support suitable habitat.	"
Slender-petaled thelypodium ( <i>Thelypodium stenopetalum</i> )	Fed: E State: E CNPS: 1B.1	Stony slopes.	Site does not support suitable habitat for the species.	No additional surveys or mitigations proposed.
Cushenbury Ovalifolium ( <i>Eriogonum ovalifolium</i> var. <i>vineum</i> )	Fed: E State: None CNPS: 1B.1	Sagebrush scrub; pinyon-juniper woodland.	Site does not support suitable habitat for the species.	"

## FIGURES

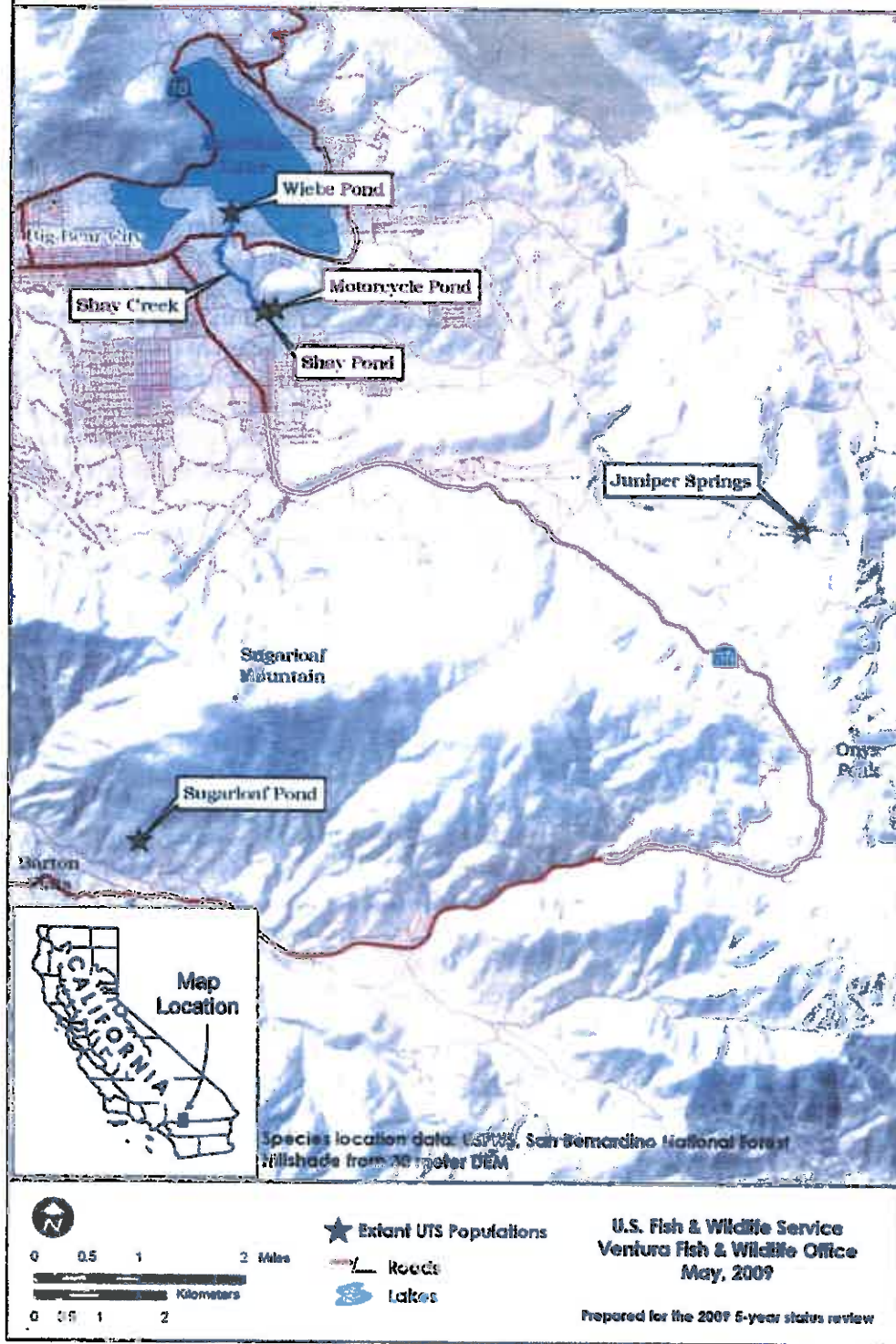


# VICINITY MAP

(Eagle Ridge Market; P201200304; APN 0315-231-17)  
 (Source: USGS Moonridge, CA Quadrangle, 1970)



# **Populations of Unarmored Threespine Sticklebacks in the Vicinity of Shay Creek**



## **SITE PHOTOGRAPHS**

15



**CULVERT UNDER HIGHWAY 38 LOOKING WEST**



**CATCH BASIN ALONG HIGHWAY 38 WEST OF SITE**

**PHOTOGRAPHS OF DRAINAGE CHANNELS IN AREA  
(EAGLE RIDGE MARKET)**



PHOTOGRAPH OF SMALL DRAINAGE SWELL ON SITE  
(EAGLE RIDGE MARKET)

**Appendix A**  
**Flora and Fauna Compendium Tables**

**Table 2 - Plants observed on the site in April 2014 and known to occur in the immediate surrounding area.**

Common Name	Scientific Name	Location
Ponderosa pine	<i>Pinus ponderosa</i>	On-site & off-site
California juniper	<i>Juniperus californica</i>	"
Pinyon pine	<i>Pinus monophylla</i>	"
Sagebrush	<i>Artemisia sp.</i>	"
Brome grass	<i>Bromus sp.</i>	"
Panicum grass	<i>Panicum sp.</i>	"
Cinquefoil	<i>Potentilla sp.</i>	"
Great basin sage	<i>Artemisia tridentata</i>	"
Antelope bush	<i>Purshia tridentata</i>	"
Blue spruce	<i>Picea pungens</i>	"
Bluegrass	<i>Poa glauca</i>	"
Rock cress	<i>Arabis sp.</i>	"
Wooly pod	<i>Astragalus sp.</i>	"
Phoeniculus	<i>Phoeniculus sp.</i>	"
Wire grass	<i>Juncus sp.</i>	"
Rabbitbrush	<i>Chrysothamnus sp.</i>	"
Alpine daisy	<i>Erigeron vagus</i>	"
Willow herb	<i>Epilobium sp.</i>	"
Cliff fendlerbush	<i>Fendlera rupicola</i>	"
Evening primrose	<i>Oenothera sp.</i>	"
Tansy mustard	<i>Descurainia</i>	"
Lupine	<i>Lupinus sp.</i>	"
Phlox	<i>Phlox sp.</i>	"
Yarrow	<i>Achillea lanulus</i>	"

**Table 3 - Wildlife observed on the site and those species expected to occur in surrounding area.**

Common Name	Scientific Name	Location
Common raven	<i>Corvus corax</i>	On-site and in the surrounding area.
Stellar jay	<i>Cyanocitta stelleri</i>	"
Cottontail	<i>Sylvilagus bachmani</i>	Tracks observed.
Merriam's chipmunk	<i>Eutamias merriami</i>	May occur in area.
California ground squirrel	<i>Spermophilus beecheyi</i>	"
Coyotes	<i>Canis latrans</i>	"
Song sparrow	<i>Melospiza melodia</i>	"
Rock dove	<i>Columba livia</i>	"
Great horned owl	<i>Bubo virginianus</i>	"
Mountain chickadee	<i>Poecile gambeli</i>	"
White-breasted nuthatch	<i>Sitta carolinensis</i>	"

Note: The above Tables are not comprehensive lists of every plant or animal species which may occur in the area, but are a list of those common species which were identified on the site during the one-day survey or which are known to occur in the region. It should also be noted, that the surveys were performed in January due to project time constraints.

**Appendix B**  
**Certification**

## CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits, present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Fieldwork conducted for this assessment was performed by me or under my direct supervision. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or applicant's representative and that I have no financial interest in the project.

Date: 5-9-2014

Signed:

  
Report Author

Field Work Performed By:

Randall Arnold  
Senior Biologist

Field Work Performed By:

Patricia Moore  
Senior Botanist

## **EXHIBIT E**

**Biological Letter; RCA Associates; 2014**



16410 84<sup>th</sup> Street NE, Suite D-413; Lake Stevens, WA 98258; (425) 387-6393  
rcaassociatesllc.com rca123@aol.com

February 3, 2014

Mr. Oxso Shahriari, Planner  
Land Use Services Department  
County of San Bernardino  
385 North Arrowhead Avenue, First Floor  
San Bernardino, CA 92415-0187

RE: Erwin Lake Market Project  
File #P201200304, APN 0315-231-17, San Bernardino County, California

Dear Mr. Shahriari:

I would like to address recent comments raised regarding potential impacts to the unarmored threespine stickleback fish (*Gasterosteus aculeatus williamsoni*) as a result of potential oil spillage or seepage associated with the Erwin Lake Market Project. The stickleback is a federal and state endangered species and has been documented in the general region north of the project site.

#### Background Information

The proponent is requesting approval of a proposed convenience store with fuel dispensers on a 0.91 acre site at the southeast corner of State Highway 38 (Greenspot Blvd.) and State Lane Drive (The SE  $\frac{1}{4}$  of the SE  $\frac{1}{4}$  of the NE  $\frac{1}{4}$  of Section 19, Township 2 North, Range 2 West, of the SBM, State of California) located in San Bernardino County (Figures 1 and 2). A 4,999 square foot structure would be constructed on the site along with fuel dispensers (4) and associated parking areas. The property is located at an elevation of approximately 6,800 feet (MSL) with a very slight slope to the east.

RCA Associates LLC reviewed existing information on the species from the California Natural Diversity Data Base (CNDDDB, 2013) and U.S. Fish and Wildlife Service (USFWS, 2009). According to USFWS (2009), there are about thirteen populations that have been previously documented in Southern California, and the majority of these populations are believed to still be present. Based on the review of available information, the nearest documented population of the stickleback species is approximately 0.9 miles north of the project site and is associated with Shay Creek and Shay Pond (CNDDDB, 2013). The species was observed in 1995 in Shay Creek which is a tributary to Baldwin Lake, which is directly east of Big Bear City. This population is assumed to still be present in Shay Creek and Shay Pond; although surveys for the stickleback

Mr. Oxso Shahriari, Planner  
Land Use Services Department  
County of San Bernardino  
Page 2

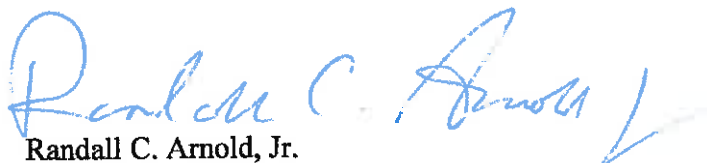
have not been conducted since 2009. Two small intermittent channels of Shay Creek are also located about 0.5 miles northeast and northwest of the project site as shown on Figure 2.

#### Project Impacts

Although populations of the stickleback may be present north of the project site, it is unlikely the species would be affected by any potential on-site leakage or seepage problems. The populations, if present, are at least 0.5 miles north of the site and any seepage/spillage from the site would likely be contained before any gasoline or diesel fuel reached the intermittent channels of Shay Creek. Furthermore, operation of the proposed fuel dispensers will be properly maintained and kept in good operating conditions at all times as per State of California requirements. Any leakage or seepage from the underground tanks will be immediately reported and mitigation measures, if needed, will be implemented.

Thank you for the opportunity to provide clarification of this issue and please feel free to contact me at (760) 956-9212 if you have any questions.

Sincerely,



Randall C. Arnold, Jr.  
Principal & Senior Wildlife Biologist

HDFile: #2012-86A

Mr. Oxso Shahrtiari, Planner  
Land Use Services Department  
County of San Bernardino  
Page 3

### Bibliography

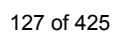
California Department of Fish and Game. 2013. Rarefind 3 Natural Diversity Database. Habitat and Data Analysis Branch. Sacramento, CA.

RCA Associates LLC. January 27, 2012. General Biological Resources Assessment, Eagle Ridge Market. 28 pp.

U.S. Fish and Wildlife Service. May 29, 2009. Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*), 5-Year Review: Summary and Evaluation. 36 pp.

## FIGURES





## **Exhibit F**

### **Preliminary Hydrology Study; Jerry L. Miles, P.E.; 2013**

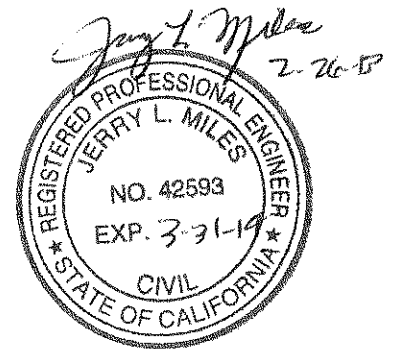
FEBRAURY 2013

# PRELIMINARY HYDROLOGY STUDY

FOR  
EAGLE RIDGE MARKET  
STATE LANE AND HIGHWAY 18  
IN  
ERWIN LAKE, CALIFORNIA  
(A.P.N. 03~~51~~<sup>15</sup>-231-17)

FOR  
STEENO DESIGN STUDIO  
11774 HESPERIA ROAD, SUITE B1  
HESPERIA, CA 92345  
760-244-5001

BY  
JERRY L. MILES, P.E.  
P.O. BOX 1861  
APPLE VALLEY, CA 92307  
(760) 956-5201



## **PURPOSE**

This off-site and on-site drainage evaluation was prepared for submittal of a site plan approval submittal package for the proposed Eagle Ranch Market at the southeast corner of State Highway 38 and State Lane in Erwin Lake. This evaluation is being performed to determine if off-site drainage flows that will affect the proposed development and provide a preliminary drainage evaluation for the proposed on-site facilities. All of the developed 100-year on-site generated drainage flows will be retained on-site.

## **DESCRIPTION OF DRAINAGE AREAS**

The subject lot is located at the southeast corner of State Highway 38 State Lane in Erwin Lake. The subject site is irregularly shaped and is approximately 0.9 net acres in size. The site is located near the top of a small ridge with moderately sloping to the northwest.

A field evaluation showed that no off-site natural drainage courses cross the site (see attached Aerial Photo and Off-Site Drainage Area Map). Most of the drainage flows collect along the northeastern site of the state highway and is directed to a culvert that crosses under State Lane. Developed land to the southeast collect on the southeast side of the highway and conducted to a culvert at the intersection. Therefore, little to no off-site flow enters the subject site.

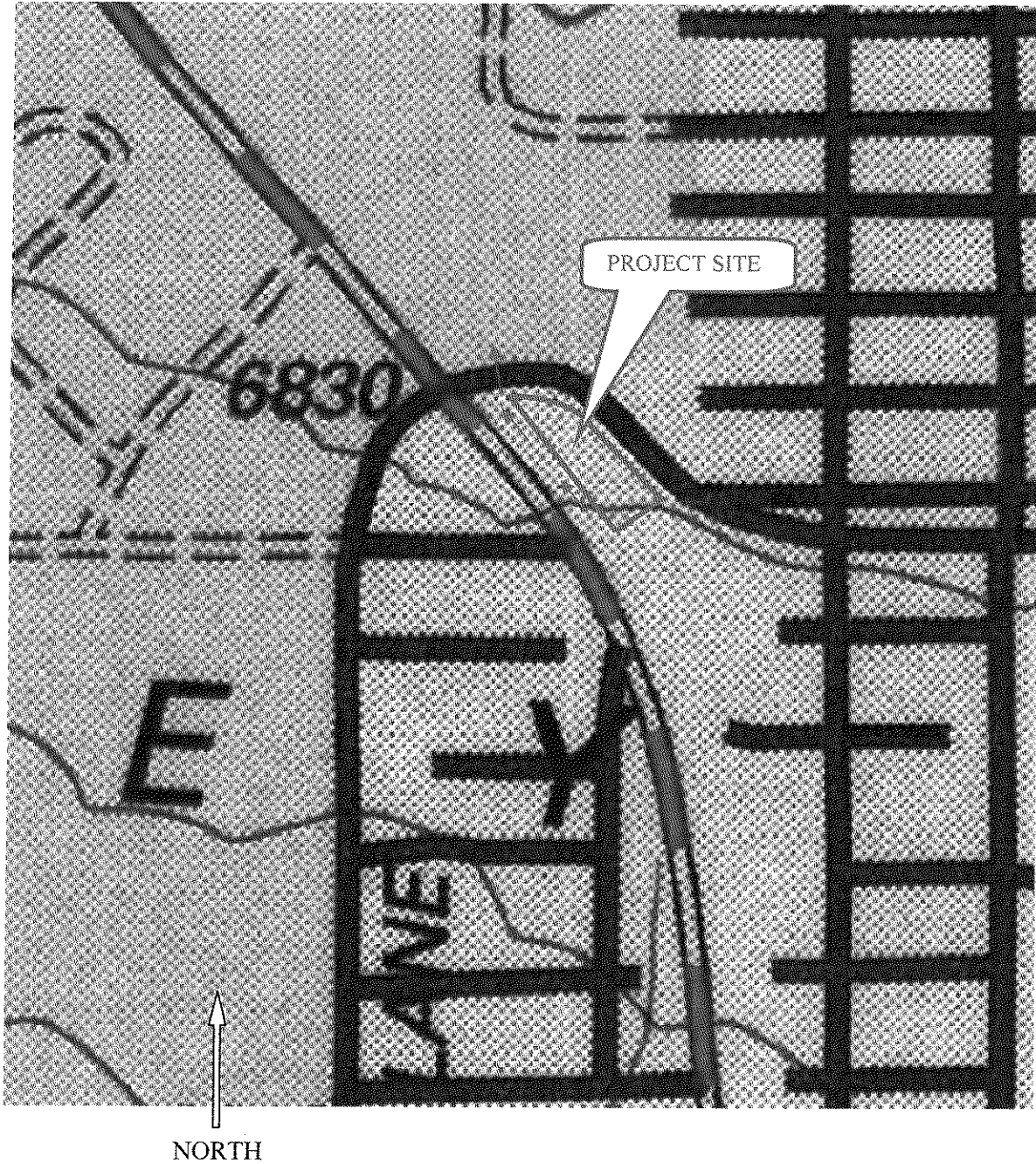
## **DESCRIPTION OF ON-SITE WATERSHED**

The existing site slopes moderately to the northwest and is vacant and undeveloped. The proposed development type will be commercial. The on-site watershed was assumed to have a soil Type "C" per the San Bernardino County Hydrology Manual. The proposed building pads will be elevated above the surrounding proposed driveways and the property adjacent to the state highway. A drainage swale along the rear of the building will conduct any off-site flows trying to enter the site northwesterly to the culvert under State Lane. Drainage swales will be constructed to conduct drainage flows to a storm drain inlet near the northwesterly corner of the proposed site, maintaining the natural pattern of drainage (see attached On-Site Drainage Area Map). Preliminary retention volumes were determined using a simplified hydrograph method. The proposed retention basin capacities exceed the calculated retention volumes generated by collect all of the 100-year on-site drainage flows. A final hydrology study will be needed to establish the exact on-site drainage facilities and the required retention volumes.

## **SUMMARY**

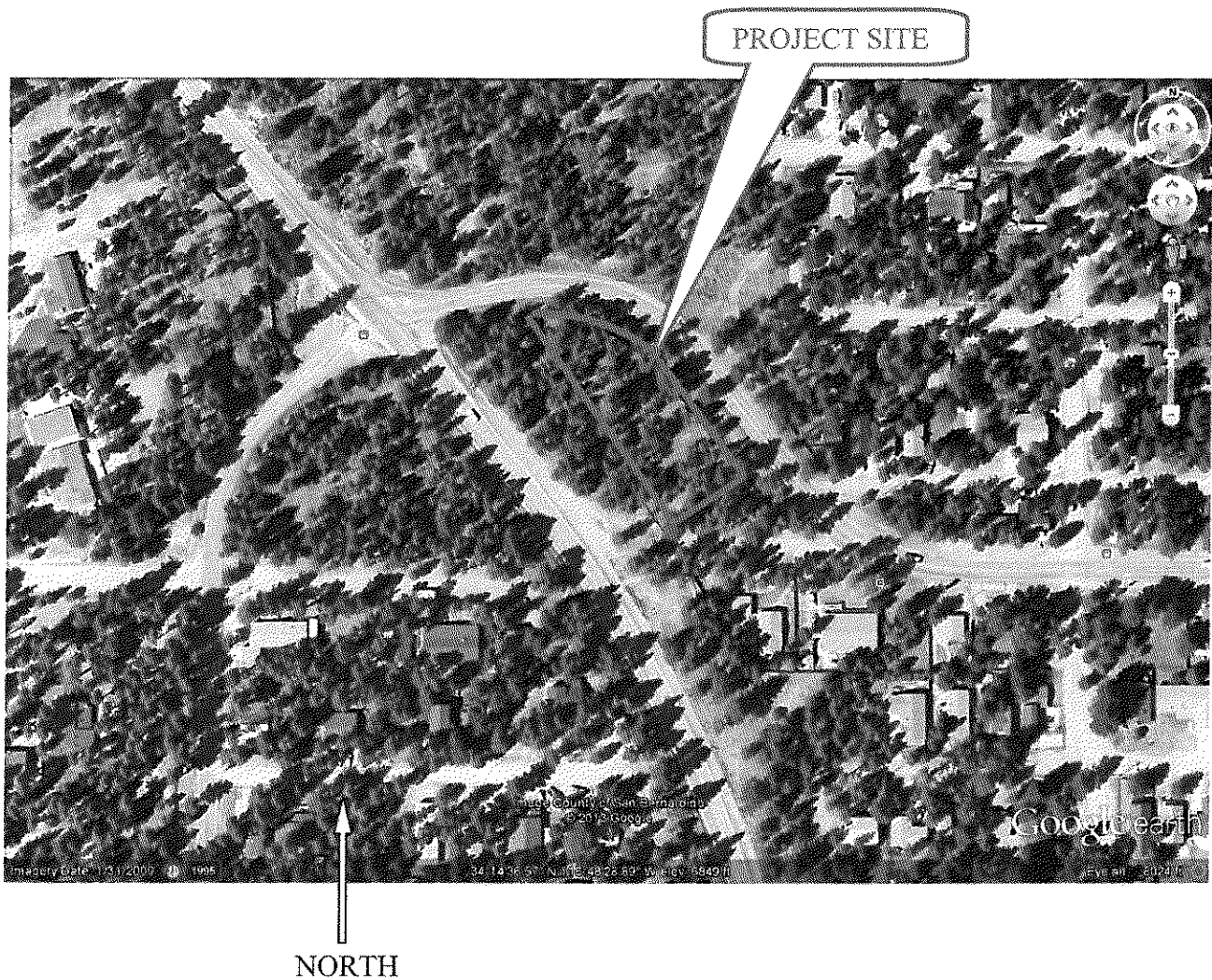
It was determined that off-site drainage flows do not enter the site and the proposed driveway and a drainage swale behind the building will assist in conducting off-site flows northwesterly prior to entering the site. All on-site drainage flows will be collected and directed to an underground retention basin. On-site retention volumes were established by assuming the collection of all on-site 100-year drainage flows and the retention basin capacities exceed those retention volume requirements.

## OFF-SITE DRAINAGE AREA MAP



EAGLE RIDGE MARKET  
STATE LANE & HWY 138, ERWIN LAKE, CA  
A.P.N. 0315-231-17

# AERIAL PHOTO



EAGLE RIDGE MARKET  
STATE LANE & HWY 138, ERWIN LAKE, CA  
A.P.N. 0315-231-17

# ON-SITE DRAINAGE CALCULATIONS

SEE LAST  
PAGE SCANNED  
ON-SITE DRAINAGE MAP

APN 0315-231-17

# SAN BERNARDINO COUNTY HYDROLOGY MANUAL

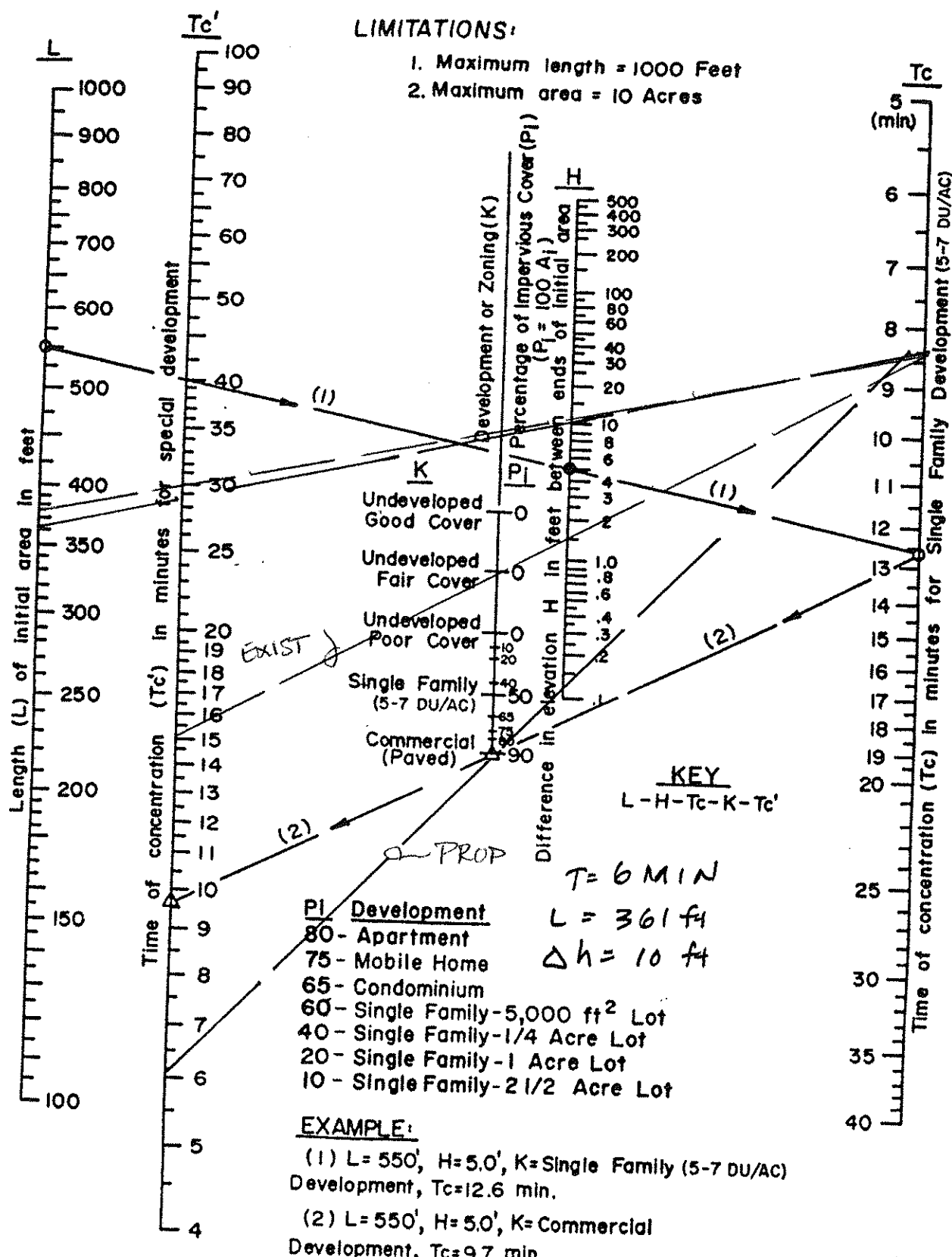
STUDY NAME: EAGLE RIDGE MARKET

1.0 - YEAR STORM 1-HOUR RAINFALL (INCH) = 1.00; SLOPE = 0.70

Calculated by JLM  
Checked by     

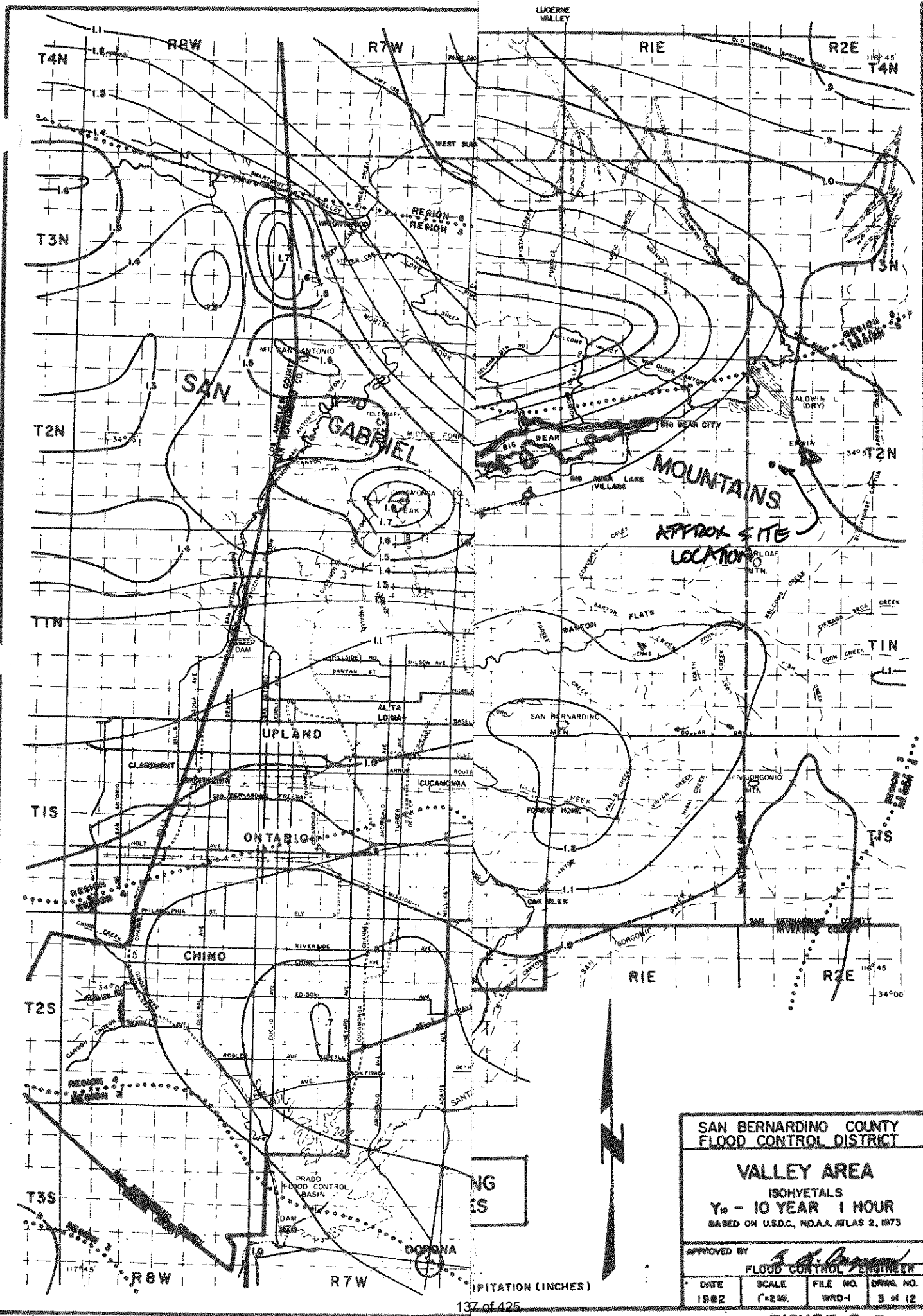
Date 2/19/13Page 1 of 2[illegible]





**SAN BERNARDINO COUNTY**  
 HYDROLOGY MANUAL

**TIME OF CONCENTRATION  
 NOMOGRAPH  
 FOR INITIAL SUBAREA**



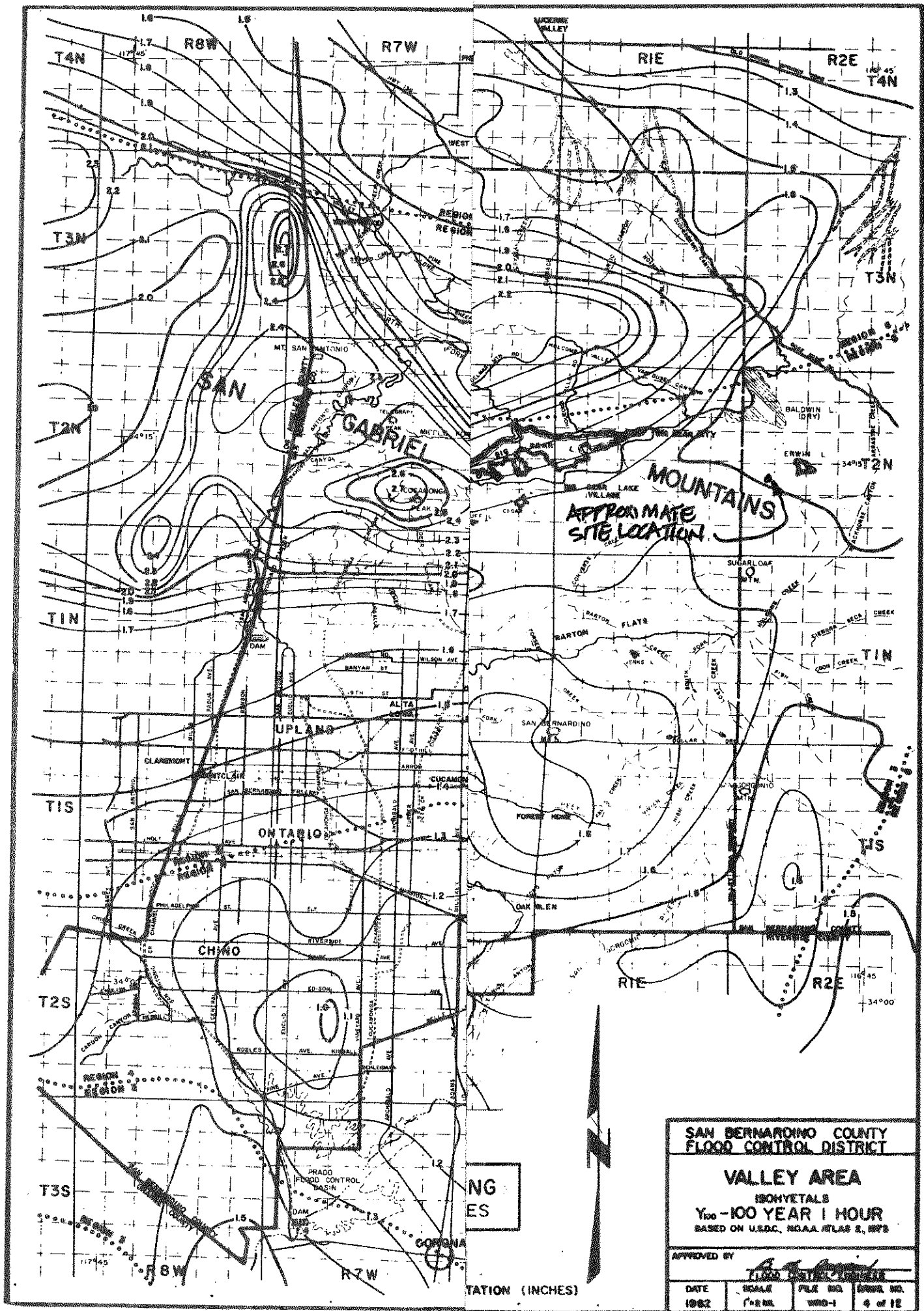
**SAN BERNARDINO COUNTY  
FLOOD CONTROL DISTRICT**

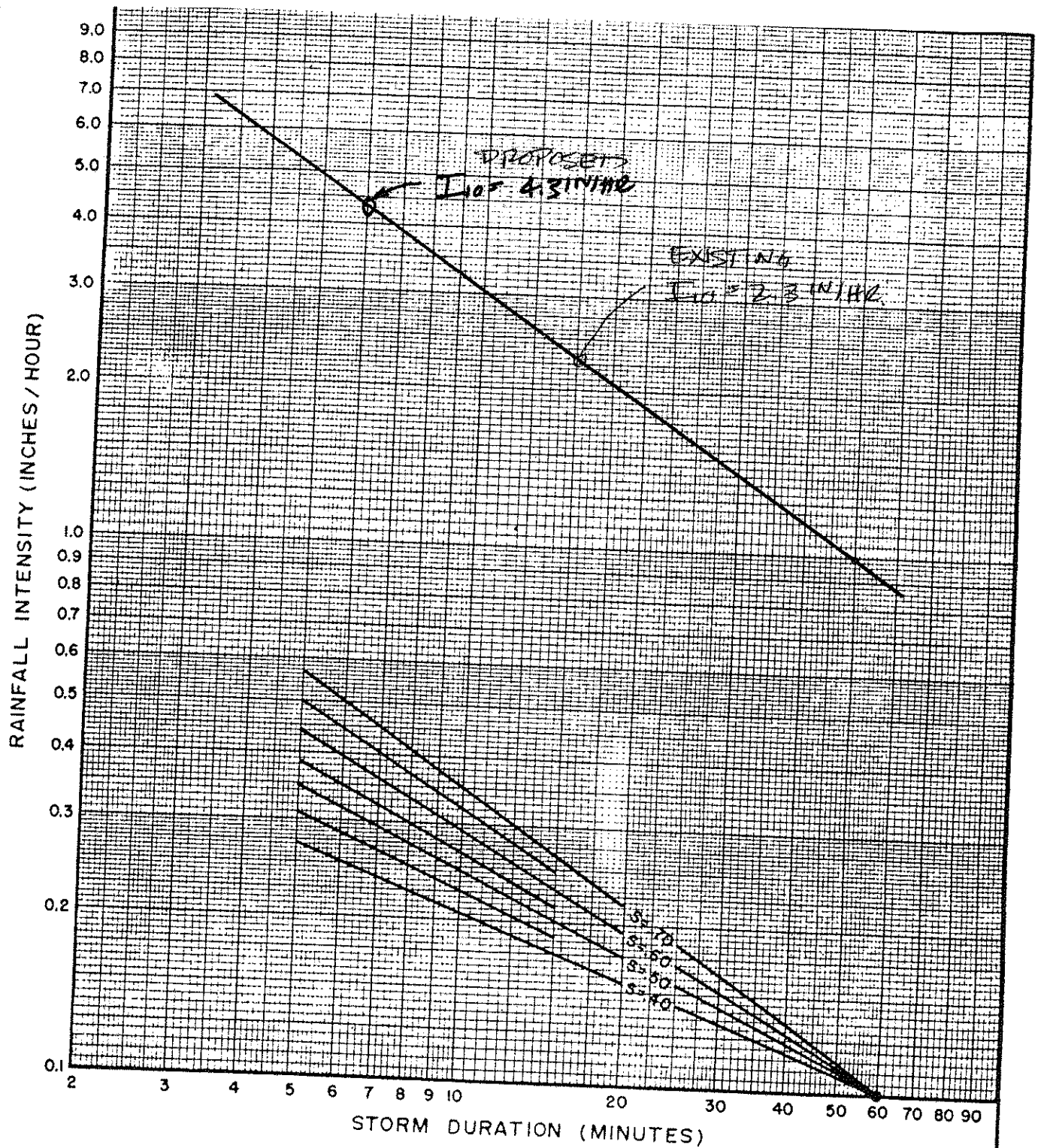
**VALLEY AREA**

ISOHYETALS  
**Y<sub>10</sub> - 10 YEAR 1 HOUR**  
 BASED ON U.S.D.C. NOAA ATLAS 2, 1973

APPROVED BY *[Signature]*  
**FLOOD CONTROL ENGINEER**

DATE 1982	SCALE 1"=2 MI.	FILE NO. WFO-1	DRAWING NO. 3 of 12
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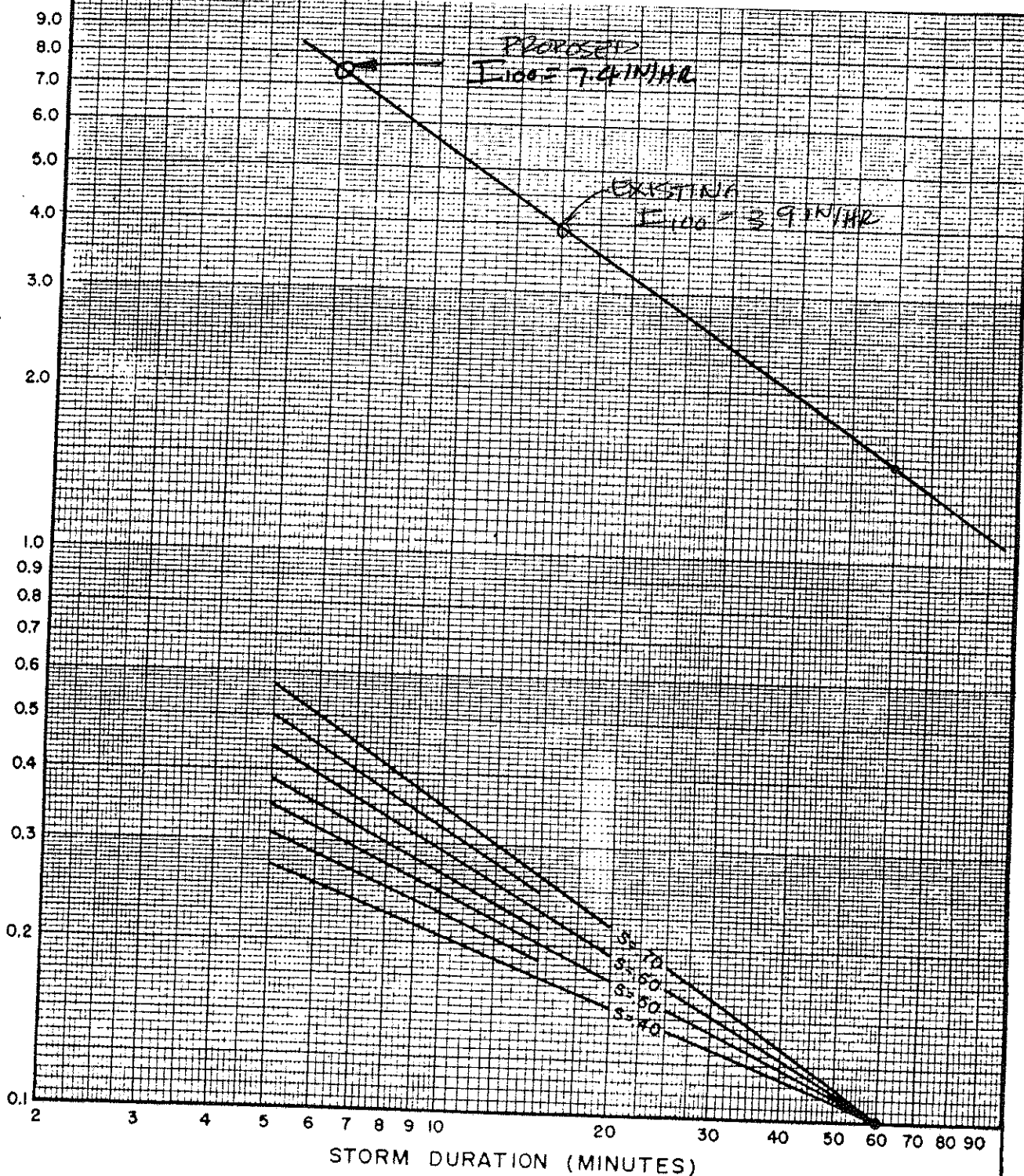


DESIGN STORM FREQUENCY = 10 YEARS  
 ONE HOUR POINT RAINFALL = 1.0 INCHES  
 LOG-LOG SLOPE = 0.70  
 PROJECT LOCATION = ERWIN LAKE

**SAN BERNARDINO COUNTY**  
 HYDROLOGY MANUAL

INTENSITY - DURATION  
 CURVES  
 CALCULATION SHEET

RAINFALL INTENSITY (INCHES / HOUR)



DESIGN STORM FREQUENCY = 100 YEARS  
 ONE HOUR POINT RAINFALL = 1.50 INCHES  
 LOG-LOG SLOPE = 0.70  
 PROJECT LOCATION = ERWIN LAKE

**SAN BERNARDINO COUNTY**  
 HYDROLOGY MANUAL

INTENSITY - DURATION  
 CURVES  
 CALCULATION SHEET

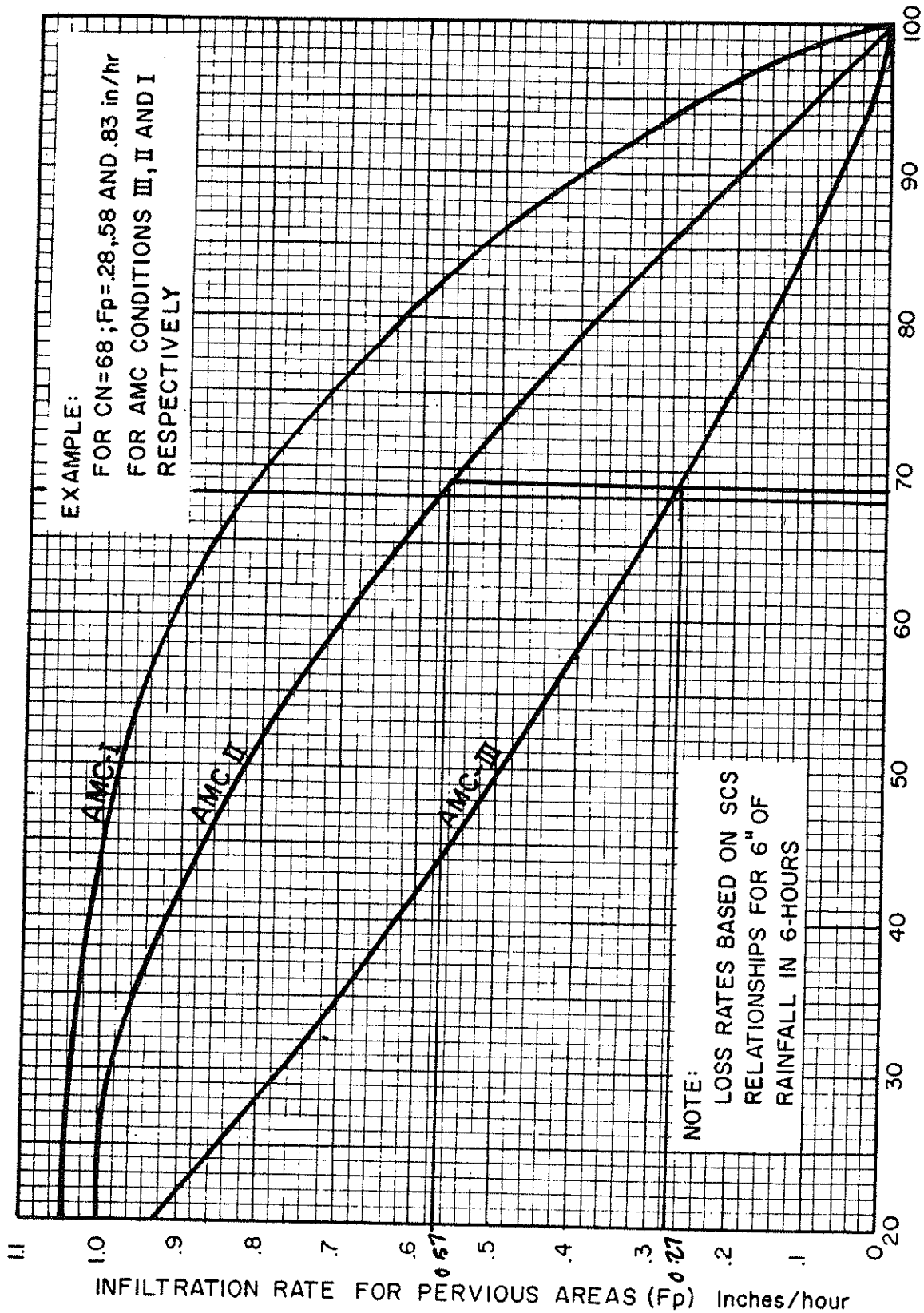
**Curve (I) Numbers of Hydrologic Soil-Cover Complexes For Pervious Areas-AMC II**

Cover Type (3)	Quality of Cover (2)	Soil Group			
		A	B	C	D
<b><u>NATURAL COVERS -</u></b>					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparral, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparral, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	71	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent.)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	25	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
<b><u>URBAN COVERS -</u></b>					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
<b><u>AGRICULTURAL COVERS -</u></b>					
Fallow (Land plowed but not tilled or seeded)		77	86	91	94

**SAN BERNARDINO COUNTY**  
**HYDROLOGY MANUAL**

**CURVE NUMBERS  
FOR  
PERVIOUS AREAS**

10YR:  $F_m = (0.57)(0.15) = 0.09$   
 100YR:  $F_m = (0.27)(0.15) = 0.04$



$F_m = F_p a_p$  : COMM DEV  $a_p = 0.15$

# SAN BERNARDINO COUNTY HYDROLOGY MANUAL

INFILTRATION RATE FOR  
 PERVIOUS AREAS VERSUS  
 SCS CURVE NUMBERS

# SIMPLIFIED UNIT HYDROGRAPH

ASSUME RETENTION OF ALL ON-SITE 100-YR STORM FLOWS

$$Q_{100} = 5.30 \text{ cfs} \quad T_c = 6 \text{ MIN}$$

## REQUIRED RETENTION VOLUME

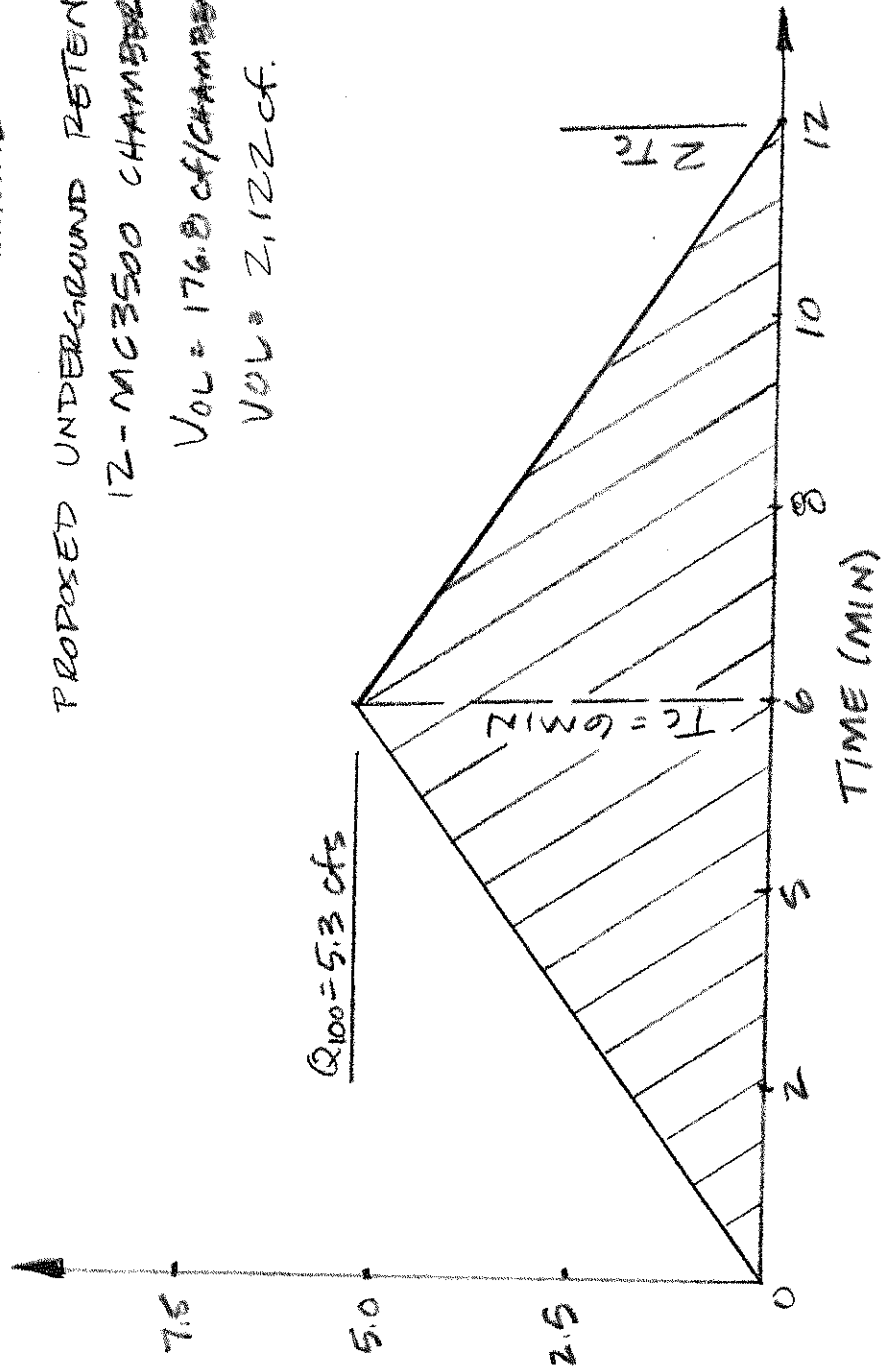
$$V_{\text{REQD}} = 5.30 \text{ cfs} \times 12 \text{ MIN} \times \frac{1}{2} \times 60 \text{ SEC/MIN} = 1.908 \text{ cfs}$$

## PROPOSED UNDERGROUND RETENTION

12-MC3500 CHAMBER

$$VOL = 176.8 \text{ cf/CHAMBER} \times 12$$

$$VOL = 2,122 \text{ cf}$$



## **Exhibit G**

### **Preliminary Water Quality Management Plan; Jerry L. Miles, P.E.; 2013**

~~**PRELIMINARY**~~  
**Water Quality Management Plan**

**For:**

**EAGLE RIDGE MARKET**

**A.P.N. 0315-231-17; PROJECT NO. P201300086**

**Prepared for:**

**MUNEM MIADA**

**13302 Ranchero Road**

**Oak Hills, CA 92344**

**760-964-7936**

**Prepared by:**

**JERRY L. MILES, P.E.**

**P.O. BOX 1861**

**APPLE VALLEY, CA 92307**

**760-488-2504**

**Approval Date:** \_\_\_\_\_

Preliminary WQMP is acceptable with stipulation of an additional chamber to accommodate the required volume.

Verify and Revise Calculations  
Provide Manufacturers excel spreadsheet for proper sizing and area requirements.

Provide all details requested on exhibit.

Redlines throughout.

Resubmit redlines with revised Final WQMP.

## Water Quality Management Plan (WQMP)

### Project Owner's Certification

This Water Quality Management Plan (WQMP) has been prepared for Munem Miada by Jerry L. Miles, P.E. The WQMP is intended to comply with the requirements of the San Bernardino County and the NPDES Areawide Stormwater Program requiring the preparation of a WQMP. The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with San Bernardino County's Municipal Storm Water Management Program and the intent of the NPDES Permit for San Bernardino County and the incorporated cities of San Bernardino County within the Santa Ana Region. Once the undersigned transfers its interest in the property, its successors in interest and the city/county shall be notified of the transfer. The new owner will be informed of its responsibility under this WQMP. A copy of the approved WQMP shall be available on the subject site in perpetuity.

"I certify under a penalty of law that the provisions (implementation, operation, maintenance, and funding) of the WQMP have been accepted and that the plan will be transferred to future successors."

Project Data			
Permit/Application Number(s):	P201300086	Grading Permit Number(s):	
Tract/Parcel Map Number(s):		Building Permit Number(s):	
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			A.P.N. 0315-231-17
Owner's Signature			
Owner Name: Munem Maida and Maida Maida			
Title	Owners		
Company			
Address	13302 Ranchero Road, Oak Hills, CA 92344		
Email	maida5150@gmail.com		
Telephone #	760-964-7936		
Signature		Date	



Owner's Certification

\_\_\_\_\_

### Preparer's Certification

Project Data			
Permit/Application Number(s):	P201300086	Grading Permit Number(s):	
Tract/Parcel Map Number(s):		Building Permit Number(s):	
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			A.P.N. 0315-231-17

**"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan were prepared under my oversight and meet the requirements of Regional Water Quality Control Board Order No. R8-2010-0036."**

<b>Engineer:</b> JERRY L. MILES		<p>PE Stamp Below</p>  
Title	OWNER/PRINCIPAL	
Company	JERRY L. MILES, P.E.	
Address	P.O. BOX 1861, APPLE VALLEY, CA 92307	
Email	jerrylm59@aol.com	
Telephone #	760-488-2504	
Signature		
Date		<div>Signature required.</div>

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## Water Quality Management Plan (WQMP)

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## Section 1 Discretionary Permit(s)

Form 1-1 Project Information					
Project Name		EAGLE RIDGE MARKET			
Project Owner Contact Name:		Munem Miada			
Mailing Address:	13302 Ranchero Road Oak Hills, CA 92344	E-mail Address:	None	Telephone:	760-964-7936
Permit/Application Number(s):		P201300086	Tract/Parcel Map Number(s):		
Additional Information/ Comments:					
Description of Project:		Construct a retail gasoline outlet with 7,715 s.f. convenience store and upper level residence (actual building footprint is 5,641 s.f.). Construct a 20'X29' (580 s.f.) roof cover for a trash enclosure and caretakers parking space. Install approximately 30,500 s.f. of impervious surface, with 27 parking stalls (1 space covered as noted above) and one (1) loading zone consisting of 4,857 s.f. driveways and sidewalks. Landscape area will consist of 9,532 s.f. of pervious surface. The impervious surface area is 75.7% of the lot total and landscape (pervious) area is 24.3% of the lot total.			
Provide summary of Conceptual WQMP conditions (if previously submitted and approved). Attach complete copy.		A WQMP shall be completed, approved and inspected. The property owner is required to provide periodic and continuous maintenance of all BMP's. The County has the right to require the owner to maintain all the BMP's.			

## Section 2 Project Description

### 2.1 Project Information

This section of the WQMP should provide the information listed below. The information provided for Conceptual/ Preliminary WQMP should give sufficient detail to identify the major proposed site design and LID BMPs and other anticipated water quality features that impact site planning. Final Project WQMP must specifically identify all BMP incorporated into the final site design and provide other detailed information as described herein.

The purpose of this information is to help determine the applicable development category, pollutants of concern, watershed description, and long term maintenance responsibilities for the project, and any applicable water quality credits. This information will be used in conjunction with the information in Section 3, Site Description, to establish the performance criteria and to select the LID BMP or other BMP for the project or other alternative programs that the project will participate in, which are described in Section 4.

Form 2.1-1 Description of Proposed Project					
<b>1</b> Development Category (Select all that apply):					
<input type="checkbox"/> Significant re-development involving the addition or replacement of 5,000 ft <sup>2</sup> or more of impervious surface on an already developed site	<input checked="" type="checkbox"/> New development involving the creation of 10,000 ft <sup>2</sup> or more of impervious surface collectively over entire site	<input type="checkbox"/> Automotive repair shops with standard industrial classification (SIC) codes 5013, 5014, 5541, 7532- 7534, 7536-7539	<input type="checkbox"/> Restaurants (with SIC code 5812) where the land area of development is 5,000 ft <sup>2</sup> or more		
<input type="checkbox"/> Hillside developments of 5,000 ft <sup>2</sup> or more which are located on areas with known erosive soil conditions or where the natural slope is 25 percent or more	<input type="checkbox"/> Developments of 2,500 ft <sup>2</sup> of impervious surface or more adjacent to (within 200 ft) or discharging directly into environmentally sensitive areas or waterbodies listed on the CWA Section 303(d) list of impaired waters.	<input checked="" type="checkbox"/> Parking lots of 5,000 ft <sup>2</sup> or more exposed to storm water	<input checked="" type="checkbox"/> Retail gasoline outlets that are either 5,000 ft <sup>2</sup> or more, or have a projected average daily traffic of 100 or more vehicles per day		
<input type="checkbox"/> Non-Priority / Non-Category Project <i>May require source control LID BMPs and other LIP requirements. Please consult with local jurisdiction on specific requirements.</i>					
<b>2</b> Project Area (ft <sup>2</sup> ):	35,800 S.F.	<b>3</b> Number of Dwelling Units:	N/A	<b>4</b> SIC Code:	5999 & 5541
<b>5</b> Is Project going to be phased? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> <i>If yes, ensure that the WQMP evaluates each phase as a distinct DA, requiring LID BMPs to address runoff at time of completion.</i>					
<b>6</b> Does Project include roads? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> <i>If yes, ensure that applicable requirements for transportation projects are addressed (see Appendix A of TGD for WQMP)</i>					

## 2.2 Property Ownership/Management

Describe the ownership/management of all portions of the project and site. State whether any infrastructure will transfer to public agencies (City, County, Caltrans, etc.) after project completion. State if a homeowners or property owners association will be formed and be responsible for the long-term maintenance of project stormwater facilities. Describe any lot-level stormwater features that will be the responsibility of individual property owners.

### Form 2.2-1 Property Ownership/Management

Describe property ownership/management responsible for long-term maintenance of WQMP stormwater facilities:

Property owner or any future property owners will own and operate development and all on-site BMP's. All road improvements ~~(including any drainage facilities-potential storm drain and inlet)~~ to be constructed with this project will be dedicated to the County of San Bernardino and will be the County's responsibility to maintain after dedication has occurred. Current property owner or any future property owner or assigned will be responsible for the long term maintenance of all on-site drainage facilities and BMP's. Storm water retention facilities will be underground, including a hydro-carbon filter for spill containment on the fueling pad. Infiltration testing has verified the feasibility of the underground retention - see ALR Engineering & Testing Infiltrometer Test.

Remove: General  
Statement

Improvements  
have been  
completed by the  
applicant and  
accepted by the  
county

## 2.3 Potential Stormwater Pollutants

Determine and describe expected stormwater pollutants of concern based on land uses and site activities (refer to Table 3-3 in the TGD for WQMP).

Form 2.3-1 Pollutants of Concern			
Pollutant	Please check: E=Expected, N=Not Expected		Additional Information and Comments
Pathogens (Bacterial / Virus)	E <input checked="" type="checkbox"/>	N <input type="checkbox"/>	Santa Ana River affected by pathogens.
Phosphorous	E <input checked="" type="checkbox"/>	N <input type="checkbox"/>	Neither Big Bear Lake nor Santa River affected. <b>These are nutrients which big bear lake is impaired.</b>
Nitrogen	E <input checked="" type="checkbox"/>	N <input type="checkbox"/>	Neither Big Bear Lake nor Santa River affected.
Sediment	E <input checked="" type="checkbox"/>	N <input type="checkbox"/>	Neither Big Bear Lake nor Santa River affected.
Metals	E <input checked="" type="checkbox"/>	N <input type="checkbox"/>	Big Bear Lake and Santa River affected.
Oil and Grease	E <input checked="" type="checkbox"/>	N <input type="checkbox"/>	Neither Big Bear Lake nor Santa River affected.
Trash/Debris	E <input checked="" type="checkbox"/>	N <input type="checkbox"/>	Neither Big Bear Lake nor Santa River affected.
Pesticides / Herbicides	E <input checked="" type="checkbox"/>	N <input type="checkbox"/>	Neither Big Bear Lake nor Santa River affected.
Organic Compounds	E <input checked="" type="checkbox"/>	N <input type="checkbox"/>	Neither Big Bear Lake nor Santa River affected.
Other:	E <input checked="" type="checkbox"/>	N <input type="checkbox"/>	<b>Noxious Aquatic Plants.</b>
Other:	E <input type="checkbox"/>	N <input type="checkbox"/>	<b>PCB's</b>
Other:	E <input type="checkbox"/>	N <input type="checkbox"/>	
Other:	E <input type="checkbox"/>	N <input type="checkbox"/>	
Other:	E <input type="checkbox"/>	N <input type="checkbox"/>	
Other:	E <input type="checkbox"/>	N <input type="checkbox"/>	

## 2.4 Water Quality Credits

A water quality credit program is applicable for certain types of development projects if it is not feasible to meet the requirements for on-site LID. Proponents for eligible projects, as described below, can apply for water quality credits that would reduce project obligations for selecting and sizing other treatment BMP or participating in other alternative compliance programs. Refer to Section 6.2 in the TGD for WQMP to determine if water quality credits are applicable for the project.

Form 2.4-1 Water Quality Credits			
<sup>1</sup> Project Types that Qualify for Water Quality Credits: <i>Select all that apply</i>			
<input type="checkbox"/> Redevelopment projects that reduce the overall impervious footprint of the project site. [Credit = % impervious reduced]	Higher density development projects <input type="checkbox"/> Vertical density [20%] <input type="checkbox"/> 7 units/ acre [5%]	<input type="checkbox"/> Mixed use development, (combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that demonstrate environmental benefits not realized through single use projects) [20%]	<input type="checkbox"/> Brownfield redevelopment (redevelop real property complicated by presence or potential of hazardous contaminants) [25%]
<input type="checkbox"/> Redevelopment projects in established historic district, historic preservation area, or similar significant core city center areas [10%]	<input type="checkbox"/> Transit-oriented developments (mixed use residential or commercial area designed to maximize access to public transportation) [20%]	<input type="checkbox"/> In-fill projects (conversion of empty lots & other underused spaces < 5 acres, substantially surrounded by urban land uses, into more beneficially used spaces, such as residential or commercial areas) [10%]	<input type="checkbox"/> Live-Work developments (variety of developments designed to support residential and vocational needs) [20%]
<sup>2</sup> Total Credit % 0% (Total all credit percentages up to a maximum allowable credit of 50 percent)			
Description of Water Quality Credit Eligibility (if applicable)	None.		

## Section 3 Site and Watershed Description

Describe the project site conditions that will facilitate the selection of BMP through an analysis of the physical conditions and limitations of the site and its receiving waters. Identify distinct drainage areas (DA) that collect flow from a portion of the site and describe how runoff from each DA (and sub-watershed DMAs) is conveyed to the site outlet(s). Refer to Section 3.2 in the TGD for WQMP. The form below is provided as an example.

Then complete Forms 3.2 and 3.3 for each DA on the project site. ***If the project has more than one drainage area for stormwater management, then complete additional versions of these forms for each DA / outlet.***

Form 3-1 Site Location and Hydrologic Features			
Site coordinates taken GPS measurement at appropriate location of site	Latitude: 34.2486	Longitude: -116.8078	Thomas Bros Map page 4812 H2
<sup>1</sup> San Bernardino County climatic region: <input type="checkbox"/> Valley <input checked="" type="checkbox"/> Mountain			
<sup>2</sup> Does the site have more than one drainage area (DA): Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If no, proceed to Form 3-2. If yes, then use this form to show a conceptual schematic describing DMAs and hydrologic feature connecting DMAs to the site outlet(s). An example is provided below that can be modified for proposed project or drawing clearly showing DMA and flow routing may be attached.			
Conveyance	Briefly describe on-site drainage features to convey runoff that is not retained within a DMA		
DA1 DMA A to Outlet 1	On-site flows will be conveyed in valley gutter to drain inlet and via storm drain pipe to U.G. detention basin.		

Form 3-2 Existing Hydrologic Characteristics for Drainage Area 1				
For Drainage Area 1's sub-watershed DMA, provide the following characteristics	DMA A	DMA B	DMA C	DMA D
<b>1</b> DMA drainage area (ft <sup>2</sup> )	40,032			
<b>2</b> Existing site Impervious area (ft <sup>2</sup> )	0			
<b>3</b> Antecedent moisture condition <i>For desert areas, use</i> <a href="http://www.sbcounty.gov/dpw/floodcontrol/pdf/20100412_map.pdf">http://www.sbcounty.gov/dpw/floodcontrol/pdf/20100412_map.pdf</a>	III			
<b>4</b> Hydrologic soil group <i>Refer to Watershed Mapping Tool –</i> <a href="http://sbcounty.permitrack.com/WAP">http://sbcounty.permitrack.com/WAP</a>	C Verified by borings.			
<b>5</b> Longest flowpath length (ft)	360			
<b>6</b> Longest flowpath slope (ft/ft)	.028			
<b>7</b> Current land cover type(s) <i>Select from Fig C-3 of Hydrology Manual</i>	Urban Covers			
<b>8</b> Pre-developed pervious area condition: <i>Based on the extent of wet season vegetated cover good &gt;75%; Fair 50-75%; Poor &lt;50% Attach photos of site to support rating</i>	Fair			

Provide Photos in final

Water Quality Management Plan (WQMP)

<b>Form 3-2 Existing Hydrologic Characteristics for Drainage Area 1</b> <b>(use only as needed for additional DMA w/in DA 1)</b>				
For Drainage Area 1's sub-watershed DMA, provide the following characteristics	DMA E	DMA F	DMA G	DMA H
<b>1</b> DMA drainage area (ft <sup>2</sup> )				
<b>2</b> Existing site impervious area (ft <sup>2</sup> )				
<b>3</b> Antecedent moisture condition <i>For desert areas, use</i> <a href="http://www.sbcounty.gov/dpw/floodcontrol/pdf/20100412_map.pdf">http://www.sbcounty.gov/dpw/floodcontrol/pdf/20100412_map.pdf</a>				
<b>4</b> Hydrologic soil group <i>Refer to Watershed Mapping Tool –</i> <a href="http://sbcounty.permitrack.com/WAP">http://sbcounty.permitrack.com/WAP</a>				
<b>5</b> Longest flowpath length (ft)				
<b>6</b> Longest flowpath slope (ft/ft)				
<b>7</b> Current land cover type(s) <i>Select from Fig C-3 of Hydrology Manual</i>				
<b>8</b> Pre-developed pervious area condition: <i>Based on the extent of wet season vegetated cover good &gt;75%; Fair 50-75%; Poor &lt;50% Attach photos of site to support rating</i>				

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Form 3-3 Watershed Description for Drainage Area	
<b>Receiving waters</b> <i>Refer to Watershed Mapping Tool -</i> <a href="http://sbcounty.permitrack.com/WAP">http://sbcounty.permitrack.com/WAP</a> <i>See "Drainage Facilities" link at this website</i>	<p align="center"><b>Big Bear Lake &amp; Santa Ana River</b></p>
<b>Applicable TMDLs</b> <i>Refer to Local Implementation Plan</i>	
<b>303(d) listed impairments</b> <i>Refer to Local Implementation Plan and Watershed Mapping Tool -</i> <a href="http://sbcounty.permitrack.com/WAP">http://sbcounty.permitrack.com/WAP</a> and State Water Resources Control Board website - <a href="http://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/index.shtml">http://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/index.shtml</a>	<p align="center"><b>Metals, Nutrients, Mercury, Noxious Aquatic Plants, Polychlorinated Biphenyls, Pathogens</b></p>
<b>Environmentally Sensitive Areas (ESA)</b> <i>Refer to Watershed Mapping Tool -</i> <a href="http://sbcounty.permitrack.com/WAP">http://sbcounty.permitrack.com/WAP</a>	<p align="center"><b>None</b></p>
<b>Unlined Downstream Water Bodies</b> <i>Refer to Watershed Mapping Tool -</i> <a href="http://sbcounty.permitrack.com/WAP">http://sbcounty.permitrack.com/WAP</a>	<p align="center"><b>Bear Creek</b></p>
<b>Hydrologic Conditions of Concern</b>	<input checked="" type="checkbox"/> <b>Yes Complete Hydrologic Conditions of Concern (HCOC) Assessment. Include Forms 4.2-2 through Form 4.2-5 and Hydromodification BMP Form 4.3-10 in submittal</b> <input type="checkbox"/> <b>No</b>
<b>Watershed-based BMP included in a RWQCB approved WAP</b>	<input type="checkbox"/> <b>Yes Attach verification of regional BMP evaluation criteria in WAP</b> <ul style="list-style-type: none"> <li>• <i>More Effective than On-site LID</i></li> <li>• <i>Remaining Capacity for Project DCV</i></li> <li>• <i>Upstream of any Water of the US</i></li> <li>• <i>Operational at Project Completion</i></li> <li>• <i>Long-Term Maintenance Plan</i></li> </ul> <input checked="" type="checkbox"/> <b>No</b>

## Section 4 Best Management Practices (BMP)

### 4.1 Source Control BMP

#### 4.1.1 Pollution Prevention

Non-structural and structural source control BMP are required to be incorporated into all new development and significant redevelopment projects. Form 4.1-1 and 4.1-2 are used to describe specific source control BMPs used in the WQMP or to explain why a certain BMP is not applicable. Table 7-3 of the TGD for WQMP provides a list of applicable source control BMP for projects with specific types of potential pollutant sources or activities. The source control BMP in this table must be implemented for projects with these specific types of potential pollutant sources or activities.

The preparers of this WQMP have reviewed the source control BMP requirements for new development and significant redevelopment projects. The preparers have also reviewed the specific BMP required for project as specified in Forms 4.1-1 and 4.1-2. All applicable non-structural and structural source control BMP shall be implemented in the project.

## Form 4.1-1 Non-Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
N1	Education of Property Owners, Tenants and Occupants on Stormwater BMPs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Owner Educational Materials included in WQMP, owner will provide educational materials and train employees. Owner is required to research updated educational materials annually
N2	Activity Restrictions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	No HOA to be formed, but no vehicle washing, maintenance or repairs will be allowed on-site. All trash bins lids will be required to be closed. No blowing, sweeping or hosing on debris (leaf litter, grass clippings, litter, etc.) into storm drain inlets will be permitted. Pesticide application must be performed by an applicator certified by the California Department of Pesticide Regulation.
N3	Landscape Management BMPs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing vegetation to be preserved as much as possible and landscaping to be depressed approximately 1" below curbs.
N4	BMP Maintenance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Owner will provide any new employees with educational materials, educate on activity restrictions and train them in maintenance of BMP's. Owner will maintain all on-site BMP's per the schedule provided in this WQMP.
N5	Title 22 CCR Compliance (How development will comply)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No HOA to be formed so no CCR compliance required
N6	Local Water Quality Ordinances	<input type="checkbox"/>	<input checked="" type="checkbox"/>	None.
N7	Spill Contingency Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Fuel pad drainage to be isolated and cut-off from the storm drainage inlets and underground retention basin by means of a hydro-carbon filter and contained in a impervious containment area.
N8	Underground Storage Tank Compliance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Owner to comply with all underground fuel storage requirements.

What are the requirements of fuel storage. State them here.

Form 4.1-1 Non-Structural Source Control BMPs			
N9	Hazardous Materials Disclosure Compliance	<input checked="checked" type="checkbox"/>	<input type="checkbox"/>
		Owner to provide disclosure for fuels and any other hazardous material stored on-site to the San Bernardino County Fire Hazard Division.	

### Form 4.1-1 Non-Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
N10	Uniform Fire Code Implementation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See architectural, landscaping and fire sprinkler plans for implementation and maintenance of fire sprinklers
N11	Litter/Debris Control Program	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Owner shall institute litter control plan to remove litter/debris on a daily basis or as needed.
N12	Employee Training	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Owner shall train every new employee on WQMP requirements with annually updated educational materials and hold employee training on WQMP requirements on a quarterly basis.
N13	Housekeeping of Loading Docks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No proposed loading docks.
N14	Catch Basin Inspection Program	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Owner shall have on-site catch basin inspections on a monthly basis.
N15	Vacuum Sweeping of Private Streets and Parking Lots	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Owner shall have on-site parking and driveways vacuum swept on a monthly basis.
N16	Other Non-structural Measures for Public Agency Projects	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not a public agency project.
N17	Comply with all other applicable NPDES permits	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No other applicable NPDES permits required

What details;  
Specify what you  
will be following in  
SD-13

## Form 4.1-2 Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
S1	Provide storm drain system stencilling and signage (CASQA New Development BMP Handbook SD-13)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Provide storm drainage stencilling at each on-site catch basin per CASQA SD-13 details. Stencilling shall say "NO DUMPING - FLOWS TO CREEK".
S2	Design and construct outdoor material storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-34)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No outside material storage areas proposed.
S3	Design and construct trash and waste storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-32)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	County and CASQA compliant trash enclosures to be provided with masonry walls to prevent outside drainage flows into enclosure, concrete floor (impervious), bins with lids and a roof or canopy structure.
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control (Statewide Model Landscape Ordinance; CASQA New Development BMP Handbook SD-12)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Efficient irrigation design and landscape design to be provided per landscape plans, including timed controller with rain shutoff device, drought tolerant plants, the use of wood chips or mulch, and reduced pressure shutoff valve. <b>SP</b>
S5	Finish grade of landscaped areas at a minimum of 1-2 inches below top of curb, sidewalk, or pavement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Landscape areas to be depressed a minimum of 1" below surrounding curbs.
S6	Protect slopes and channels and provide energy dissipation (CASQA New Development BMP Handbook SD-10)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No channels or channels on-site. <b>siopes?</b>
S7	Covered dock areas (CASQA New Development BMP Handbook SD-31)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No docks proposed.
S8	Covered maintenance bays with spill containment plans (CASQA New Development BMP Handbook SD-31)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No maintenance bays proposed.
S9	Vehicle wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No vehicle washing will be allowed on-site per activity restrictions.
S10	Covered outdoor processing areas (CASQA New Development BMP Handbook SD-36)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No outdoor processing areas proposed.

### Form 4.1-2 Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
S11	Equipment wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No equipment wash areas proposed and will be activity restricted.
S12	Fueling areas (CASQA New Development BMP Handbook SD-30)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Fueling area drainage to be isolated from other on-site drainage by grade breaks, swales and drainage inlets. Spill containment will be provided by a dedicated hydro-carbon filter stopping flows from fueling pad and contained in pipes and drainage basins.
S13	Hillside landscaping (CASQA New Development BMP Handbook SD-10)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No hillside areas on-site as site slopes are under 5%.
S14	Wash water control for food preparation areas	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No food preparation areas (restaurants) proposed.
S15	Community car wash racks (CASQA New Development BMP Handbook SD-33)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No carwash proposed and activity to be restricted.

See WQMP TGD for minimum implementations required to be implemented.

requires additional implementation measures.

#### 4.1.2 Preventative LID Site Design Practices

Site design practices associated with new LID requirements in the MS4 Permit should be considered in the earliest phases of a project. Preventative site design practices can result in smaller DCV for LID BMP and hydromodification control BMP by reducing runoff generation. Describe site design and drainage plan including:

- A narrative of site design practices utilized or rationale for not using practices
- A narrative of how site plan incorporates preventive site design practices
- Include an attached Site Plan layout which shows how preventative site design practices are included in WQMP

Refer to Section 5.2 of the TGD for WQMP for more details.

Form 4.1-3 Preventative LID Site Design Practices Checklist	
<b>Site Design Practices</b> <i>If yes, explain how preventative site design practice is addressed in project site plan. If no, other LID BMPs must be selected to meet targets</i>	
Minimize Impervious areas: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Explanation: Driveway and parking spaces sized per County minimum standards. Sidewalk minimized to provide accessible and pedestrian access to store and caretaker's residence.	
Maximize natural infiltration capacity: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Explanation: No hardscape proposed in landscape areas, native trees and vegetation to be preserved as much as possible. On-site proposed slopes do not allow drainage flow through landscape areas. All hardscape drainage will go to U.G. chambers.	
Preserve existing drainage patterns and time of concentration: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Explanation: On-site proposed grades and slopes require drainage flows to be concentrated into drainage swales, decreasing the time of concentration. U.G. retention system will greatly increase time of concentration.	
Disconnect Impervious areas: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Explanation: Drainage is not directed to pervious surface on-site but directed to underground retention chamber system.	
Protect existing vegetation and sensitive areas: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Explanation: Existing trees and vegetation will be preserved in the landscape areas as shown in landscaping plans.	
Re-vegetate disturbed areas: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Explanation: The disturbed area will consist primarily for impervious surface.	
Site design includes 24.3% landscaping	
Minimize unnecessary compaction in stormwater retention/infiltration basin/trench areas: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Explanation: Manufacturer of underground retention chambers required stabilized base and gravel under chambers.	
Utilize vegetated drainage swales in place of underground piping or imperviously lined swales: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Explanation: Size of development area does not allow for vegetated swales.	
Why doesn't it work? what is the alternative?	
Stake off areas that will be used for landscaping to minimize compaction during construction : Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Explanation: Landscape area will be staked off during grading to minimize compaction.	

## 4.2 Project Performance Criteria

The purpose of this section of the Project WQMP is to establish targets for post-development hydrology based on performance criteria specified in the MS4 Permit. These targets include runoff volume for water quality control (referred to as LID design capture volume), and runoff volume, time of concentration, and peak runoff for protection of any downstream waterbody segments with a HCOC. ***If the project has more than one outlet for stormwater runoff, then complete additional versions of these forms for each DA / outlet.***

Methods applied in the following forms include:

- For LID BMP Design Capture Volume (DCV), the San Bernardino County Stormwater Program requires use of the  $P_6$  method (MS4 Permit Section XI.D.6a.ii) – Form 4.2-1
- For HCOC pre- and post-development hydrologic calculation, the San Bernardino County Stormwater Program requires the use of the Rational Method (San Bernardino County Hydrology Manual Section D). Forms 4.2-2 through Form 4.2-5 calculate hydrologic variables including runoff volume, time of concentration, and peak runoff from the project site pre- and post-development using the Hydrology Manual Rational Method approach. For projects greater than 640 acres (1.0 mi<sup>2</sup>), the Rational Method and these forms should not be used. For such projects, the Unit Hydrograph Method (San Bernardino County Hydrology Manual Section E) shall be applied for hydrologic calculations for HCOC performance criteria.

Refer to Section 4 in the TGD for WQMP for detailed guidance and instructions.

Form 4.2-1 LID BMP Performance Criteria for Design Capture Volume (DA 1)		
1 Project area DA 1 (ft <sup>2</sup> ): 40032	2 Imperviousness after applying preventative site design practices (Imp%): 75.7%	3 Runoff Coefficient (Rc): 0.55 $R_c = 0.858(\text{Imp}\%)^{0.3} - 0.78(\text{Imp}\%)^{0.2} + 0.774(\text{Imp}\%) + 0.04$
4 Determine 1-hour rainfall depth for a 2-year return period $P_{2\text{yr-1hr}}$ (in): 0.718 <a href="http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html">http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html</a>		
5 Compute $P_6$ , Mean 6-hr Precipitation (inches): 1.371 $P_6 = \text{Item 4} * C_1$ , where $C_1$ is a function of site climatic region specified in Form 3-1 Item 1 (Valley = 1.4807; Mountain = 1.909; Desert = 1.2371)		
6 Drawdown Rate Use 48 hours as the default condition. Selection and use of the 24 hour drawdown time condition is subject to approval by the local jurisdiction. The necessary BMP footprint is a function of drawdown time. While shorter drawdown times reduce the performance criteria for LID BMP design capture volume, the depth of water that can be stored is also reduced.		24-hrs <input type="checkbox"/> 48-hrs <input checked="" type="checkbox"/>
7 Compute design capture volume, DCV (ft <sup>3</sup> ): 4,937 $\text{DCV} = 1/12 * [\text{Item 1} * \text{Item 3} * \text{Item 5} * C_2]$ , where $C_2$ is a function of drawdown rate (24-hr = 1.582; 48-hr = 1.963) Compute separate DCV for each outlet from the project site per schematic drawn in Form 3-1 Item 2		

## Water Quality Management Plan (WQMP)

### Form 4.2-2 Summary of HCOC Assessment (DA 1)

Does project have the potential to cause or contribute to an HCOC in a downstream channel: Yes ☒ No ☐

Go to: <http://sbcounty.permitrack.com/WAP>

If "Yes", then complete HCOC assessment of site hydrology for 2yr storm event using Forms 4.2-3 through 4.2-5 and insert results below  
(Forms 4.2-3 through 4.2-5 may be replaced by computer software analysis based on the San Bernardino County Hydrology Manual)

If "No," then proceed to Section 4.3 Project Conformance Analysis

Condition	Runoff Volume (ft <sup>3</sup> )	Time of Concentration (min)	Peak Runoff (cfs)
Pre-developed	<sup>1</sup> 4,863 <i>Form 4.2-3 Item 12</i>	<sup>2</sup> 15 <i>Form 4.2-4 Item 13</i>	<sup>3</sup> 1.21 <i>Form 4.2-5 Item 10</i>
Post-developed	<sup>4</sup> 3,260 <i>Form 4.2-3 Item 13</i>	<sup>5</sup> 6 <i>Form 4.2-4 Item 14</i>	<sup>6</sup> 2.31 <i>Form 4.2-5 Item 14</i>
Difference	<sup>7</sup> -1,766 <i>Item 4 - Item 1</i>	<sup>8</sup> -9 <span style="border: 1px solid red; padding: 2px;">9</span> <del>Item 5 - Item 2</del>	<sup>9</sup> 1.1 <i>Item 6 - Item 3</i>
Difference (as % of pre-developed)	<sup>10</sup> -36% <i>Item 7 / Item 1</i>	<sup>11</sup> -60% <span style="border: 1px solid red; padding: 2px;">Item 2-Item 5</span> <i>Item 8 / Item 2</i>	<sup>12</sup> 91% <i>Item 9 / Item 3</i>

60%

# Water Quality Management Plan (WQMP)

## Form 4.2-3 HCOC Assessment for Runoff Volume (DA 1)

Weighted Curve Number Determination for: Pre-developed DA	DMA A	DMA B	DMA C	DMA D	DMA E	DMA F	DMA G	DMA H
1a Land Cover type	Woodland							
2a Hydrologic Soil Group (HSG)	C							
3a DMA Area, ft <sup>2</sup> sum of areas of DMA should equal area of DA	40,032							
4a Curve Number (CN) use Items 1 and 2 to select the appropriate CN from Appendix C-2 of the TGD for WQMP	77							
Weighted Curve Number Determination for: Post-developed DA	DMA A	DMA B	DMA C	DMA D	DMA E	DMA F	DMA G	DMA H
1b Land Cover type	Urban							
2b Hydrologic Soil Group (HSG)	C							
3b DMA Area, ft <sup>2</sup> sum of areas of DMA should equal area of DA	40,032							
4b Curve Number (CN) use Items 5 and 6 to select the appropriate CN from Appendix C-2 of the TGD for WQMP	69							
5 Pre-Developed area-weighted CN: 77	7 Pre-developed soil storage capacity, S (in): 2.99 $S = (1000 / \text{Item 5}) - 10$					9 Initial abstraction, I <sub>a</sub> (in): .60 $I_a = 0.2 * \text{Item 7}$		
6 Post-Developed area-weighted CN: 69	8 Post-developed soil storage capacity, S (in): 4.49 $S = (1000 / \text{Item 6}) - 10$					10 Initial abstraction, I <sub>a</sub> (in): .90 $I_a = 0.2 * \text{Item 8}$		
11 Precipitation for 2 yr, 24 hr storm (in): 3.54 Go to: <a href="http://hdsc.nws.noaa.gov/hdsc/pfds/so/sca_pfds.html">http://hdsc.nws.noaa.gov/hdsc/pfds/so/sca_pfds.html</a>								
12 Pre-developed Volume (ft <sup>3</sup> ): 4,863 $V_{pre} = (1 / 12) * (\text{Item sum of Item 3}) * [(\text{Item 11} - \text{Item 9})^2 / ((\text{Item 11} - \text{Item 9} + \text{Item 7}))]$								
13 Post-developed Volume (ft <sup>3</sup> ): 3,261 $V_{pre} = (1 / 12) * (\text{Item sum of Item 3}) * [(\text{Item 11} - \text{Item 10})^2 / ((\text{Item 11} - \text{Item 10} + \text{Item 8}))]$								
14 Volume Reduction needed to meet HCOC Requirement, (ft <sup>3</sup> ): -1,765 $V_{HCOC} = (\text{Item 13} * 0.95) - \text{Item 12}$								

# Water Quality Management Plan (WQMP)

## Form 4.2-4 HCOC Assessment for Time of Concentration (DA 1)

Compute time of concentration for pre and post developed conditions for each DA (For projects using the Hydrology Manual complete the form below)

Variables	Pre-developed DA1 <i>Use additional forms if there are more than 4 DMA</i>				Post-developed DA1 <i>Use additional forms if there are more than 4 DMA</i>			
	DMA A	DMA B	DMA C	DMA D	DMA A	DMA B	DMA C	DMA D
<b>1</b> Length of flowpath (ft) <i>Use Form 3-2 Item 5 for pre-developed condition</i>	-375					361		
<b>2</b> Change in elevation (ft)	11					10		
<b>3</b> Slope (ft/ft), $S_o = \text{Item 2} / \text{Item 1}$	0.029					0.028		
<b>4</b> Land cover	Wood-land					Urban		
<b>5</b> Initial DMA Time of Concentration (min) <i>Appendix C-1 of the TGD for WQMP</i>	15					6		
<b>6</b> Length of conveyance from DMA outlet to project site outlet (ft) <i>May be zero if DMA outlet is at project site outlet</i>	0					0		
<b>7</b> Cross-sectional area of channel (ft <sup>2</sup> )								
<b>8</b> Wetted perimeter of channel (ft)								
<b>9</b> Manning's roughness of channel (n)								
<b>10</b> Channel flow velocity (ft/sec) $V_{fps} = (1.49 / \text{Item 9}) * (\text{Item 7}/\text{Item 8})^{0.67} * (\text{Item 3})^{0.5}$	0					0		
<b>11</b> Travel time to outlet (min) $T_t = \text{Item 6} / (\text{Item 10} * 60)$	0					0		
<b>12</b> Total time of concentration (min) $T_c = \text{Item 5} + \text{Item 11}$	15					6		
<b>13</b> Pre-developed time of concentration (min): 15 <i>Minimum of Item 12 pre-developed DMA</i>								
<b>14</b> Post-developed time of concentration (min): 6 <i>Minimum of Item 12 post-developed DMA</i>								
<b>15</b> Additional time of concentration needed to meet HCOC requirement (min): -9.3 $T_{C-HCOC} = (\text{Item 14} * 0.95) - \text{Item 13}$								

8.25

## Form 4.2-5 HCOC Assessment for Peak Runoff (DA 1)

Compute peak runoff for pre- and post-developed conditions

Variables	Pre-developed DA to Project Outlet (Use additional forms if more than 3 DMA)			Post-developed DA to Project Outlet (Use additional forms if more than 3 DMA)								
	DMA A	DMA B	DMA C	DMA A	DMA B	DMA C						
<b>1</b> Rainfall Intensity for storm duration equal to time of concentration $t_{peak} = 10^{(LOG \text{ Form 4.2-1 Item 4} - 0.6 \text{ LOG Form 4.2-4 Item 5} / 60)}$	1.65			2.86								
<b>2</b> Drainage Area of each DMA (ft <sup>2</sup> ) For DMA with outlet at project site outlet, include upstream DMA (Using example schematic in Form 3-1, DMA A will include drainage from DMA C)	40,032 0.92 AC			40,032 0.92 AC								
<b>3</b> Ratio of pervious area to total area For DMA with outlet at project site outlet, include upstream DMA (Using example schematic in Form 3-1, DMA A will include drainage from DMA C)	1.00			0.243								
<b>4</b> Pervious area infiltration rate (in/hr) Use pervious area CN and antecedent moisture condition with Appendix C-3 of the TGD for WQMP	0.19			0.27								
<b>5</b> Maximum loss rate (in/hr) $F_m = \text{Item 3} * \text{Item 4}$ Use area-weighted $F_m$ from DMA with outlet at project site outlet, include upstream DMA (Using example schematic in Form 3-1, DMA A will include drainage from DMA C)	0.19			0.06								
<b>6</b> Peak Flow from DMA (cfs) $Q_p = \text{Item 2} * 0.9 * (\text{Item 1} - \text{Item 5})$	1.21			2.31								
<b>7</b> Time of concentration adjustment factor for other DMA to site discharge point Form 4.2-4 Item 12 DMA / Other DMA upstream of site discharge point (If ratio is greater than 1.0, then use maximum value of 1.0)	DMA A	n/a		n/a								
	DMA B		n/a		n/a							
	DMA C		n/a			n/a						
<b>8</b> Pre-developed $Q_p$ at $T_c$ for DMA A: 1.21 $Q_p = \text{Item } 6_{DMAA} + [\text{Item } 6_{DMAB} * (\text{Item } 1_{DMAA} - \text{Item } 5_{DMAB}) / (\text{Item } 1_{DMAB} - \text{Item } 5_{DMAB}) * \text{Item } 7_{DMAA/2}] + [\text{Item } 6_{DMAC} * (\text{Item } 1_{DMAA} - \text{Item } 5_{DMAC}) / (\text{Item } 1_{DMAC} - \text{Item } 5_{DMAC}) * \text{Item } 7_{DMAA/3}]$	<b>9</b> Pre-developed $Q_p$ at $T_c$ for DMA B: 0 $Q_p = \text{Item } 6_{DMAB} + [\text{Item } 6_{DMAA} * (\text{Item } 1_{DMAB} - \text{Item } 5_{DMAA}) / (\text{Item } 1_{DMAA} - \text{Item } 5_{DMAA}) * \text{Item } 7_{DMAB/1}] + [\text{Item } 6_{DMAC} * (\text{Item } 1_{DMAB} - \text{Item } 5_{DMAC}) / (\text{Item } 1_{DMAC} - \text{Item } 5_{DMAC}) * \text{Item } 7_{DMAB/3}]$			<b>10</b> Pre-developed $Q_p$ at $T_c$ for DMA C: 0 $Q_p = \text{Item } 6_{DMAC} + [\text{Item } 6_{DMAA} * (\text{Item } 1_{DMAC} - \text{Item } 5_{DMAA}) / (\text{Item } 1_{DMAA} - \text{Item } 5_{DMAA}) * \text{Item } 7_{DMAC/1}] + [\text{Item } 6_{DMAB} * (\text{Item } 1_{DMAC} - \text{Item } 5_{DMAB}) / (\text{Item } 1_{DMAB} - \text{Item } 5_{DMAB}) * \text{Item } 7_{DMAC/3}]$								
<b>10</b> Peak runoff from pre-developed condition confluence analysis (cfs): 1.21 Maximum of Item 8, 9, and 10 (including additional forms as needed)												
<b>11</b> Post-developed $Q_p$ at $T_c$ for DMA A: 2.31 Same as Item 8 for post-developed values	<b>12</b> Post-developed $Q_p$ at $T_c$ for DMA B: 0 Same as Item 9 for post-developed values			<b>13</b> Post-developed $Q_p$ at $T_c$ for DMA C: 0 Same as Item 10 for post-developed values								
<b>14</b> Peak runoff from post-developed condition confluence analysis (cfs): 2.31 Maximum of Item 11, 12, and 13 (including additional forms as needed)												
<b>15</b> Peak runoff reduction needed to meet HCOC Requirement (cfs): 0.99 $Q_{p-HCOC} = (\text{Item } 14 * 0.95) - \text{Item } 10$												

### 4.3 Project Conformance Analysis

Complete the following forms for each project site DA to document that the proposed LID BMPs conform to the project DCV developed to meet performance criteria specified in the MS4 Permit (WQMP Template Section 4.2). For the LID DCV, the forms are ordered according to hierarchy of BMP selection as required by the MS4 Permit (see Section 5.3.1 in the TGD for WQMP). The forms compute the following for on-site LID BMP:

- Site Design and Hydrologic Source Controls (Form 4.3-2)
- Retention and Infiltration (Form 4.3-3)
- Harvested and Use (Form 4.3-4) or
- Biotreatment (Form 4.3-5).

At the end of each form, additional fields facilitate the determination of the extent of mitigation provided by the specific BMP category, allowing for use of the next category of BMP in the hierarchy, if necessary.

The first step in the analysis, using Section 5.3.2.1 of the TGD for WQMP, is to complete Forms 4.3-1 and 4.3-3 to determine if retention and infiltration BMPs are infeasible for the project. For each feasibility criterion in Form 4.3-1, if the answer is "Yes," provide all study findings that includes relevant calculations, maps, data sources, etc. used to make the determination of infeasibility.

Next, complete Forms 4.3-2 and 4.3-4 to determine the feasibility of applicable HSC and harvest and use BMPs, and, if their implementation is feasible, the extent of mitigation of the DCV.

If no site constraints exist that would limit the type of BMP to be implemented in a DA, evaluate the use of combinations of LID BMPs, including all applicable HSC BMPs to maximize on-site retention of the DCV. If no combination of BMP can mitigate the entire DCV, implement the single BMP type, or combination of BMP types, that maximizes on-site retention of the DCV within the minimum effective area.

If the combination of LID HSC, retention and infiltration, and harvest and use BMPs are unable to mitigate the entire DCV, then biotreatment BMPs may be implemented by the project proponent. If biotreatment BMPs are used, then they must be sized to provide sufficient capacity for effective treatment of the remainder of the volume-based performance criteria that cannot be achieved with LID BMPs (TGD for WQMP Section 5.4.4.2). **Under no circumstances shall any portion of the DCV be released from the site without effective mitigation and/or treatment.**

## Water Quality Management Plan (WQMP)

Form 4.3-1 Infiltration BMP Feasibility (DA 1)	
Feasibility Criterion – Complete evaluation for each DA on the Project Site	
<b>1</b> Would infiltration BMP pose significant risk for groundwater related concerns? <i>Refer to Section 5.3 2.1 of the TGD for WQMP</i>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If Yes, Provide basis: (attach)	
<b>2</b> Would installation of infiltration BMP significantly increase the risk of geotechnical hazards? (Yes, if the answer to any of the following questions is yes, as established by a geotechnical expert): <ul style="list-style-type: none"><li>• The location is less than 50 feet away from slopes steeper than 15 percent</li><li>• The location is less than eight feet from building foundations or an alternative setback.</li><li>• A study certified by a geotechnical professional or an available watershed study determines that stormwater infiltration would result in significantly increased risks of geotechnical hazards.</li></ul>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If Yes, Provide basis: (attach)	
<b>3</b> Would infiltration of runoff on a Project site violate downstream water rights?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If Yes, Provide basis: (attach)	
<b>4</b> Is proposed infiltration facility located on hydrologic soil group (HSG) D soils or does the site geotechnical investigation indicate presence of soil characteristics, which support categorization as D soils?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If Yes, Provide basis: (attach)	
<b>5</b> Is the design infiltration rate, after accounting for safety factor of 2.0, below proposed facility less than 0.3 in/hr (accounting for soil amendments)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
If Yes, Provide basis: (attach)	
<b>6</b> Would on-site infiltration or reduction of runoff over pre-developed conditions be partially or fully inconsistent with watershed management strategies as defined in the WAP, or impair beneficial uses? <i>See Section 3.5 of the TGD for WQMP and WAP</i>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If Yes, Provide basis: (attach)	
<b>7</b> Any answer from Item 1 through Item 3 is "Yes": Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> <i>If yes, Infiltration of any volume is not feasible onsite. Proceed to Form 4.3-4, Harvest and Use BMP. If no, then proceed to Item 9 below.</i>	
<b>8</b> Any answer from Item 4 through Item 6 is "Yes": Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> <i>If yes, infiltration is permissible but is not required to be considered. Proceed to Form 4.3-2, Hydrologic Source Control BMP. If no, then proceed to Item 9, below.</i>	
<b>9</b> All answers to Item 1 through Item 6 are "No": <i>Infiltration of the full DCV is potentially feasible, LID infiltration BMP must be designed to infiltrate the full DCV to the MEP. Proceed to Form 4.3-2, Hydrologic Source Control BMP.</i>	

### 4.3.1 Site Design Hydrologic Source Control BMP

Section XI.E. of the Permit emphasizes the use of LID preventative measures; and the use of LID HSC BMPs reduces the portion of the DCV that must be addressed in downstream BMPs. Therefore, all applicable HSC shall be provided except where they are mutually exclusive with each other, or with other BMPs. Mutual exclusivity may result from overlapping BMP footprints such that either would be potentially feasible by itself, but both could not be implemented. Please note that while there are no numeric standards regarding the use of HSC, if a project cannot feasibly meet BMP sizing requirements or cannot fully address HCOCs, feasibility of all applicable HSC must be part of demonstrating that the BMP system has been designed to retain the maximum feasible portion of the DCV. Complete Form 4.3-2 to identify and calculate estimated retention volume from implementing site design HSC BMP. Refer to Section 5.4.1 in the TGD for more detailed guidance.

Form 4.3-2 Site Design Hydrologic Source Control BMPs (DA 1)			
<b>1</b> Implementation of Impervious Area Dispersion BMP (i.e. routing runoff from impervious to pervious areas), excluding impervious areas planned for routing to on-lot infiltration BMP: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, complete Items 2-5; if no, proceed to Item 6	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type (Use additional forms for more BMPs)
<b>2</b> Total impervious area draining to pervious area (ft <sup>2</sup> )			
<b>3</b> Ratio of pervious area receiving runoff to impervious area			
<b>4</b> Retention volume achieved from impervious area dispersion (ft <sup>3</sup> ) $V = \text{Item 2} * \text{Item 3} * (0.5/12)$ , assuming retention of 0.5 inches of runoff			
<b>5</b> Sum of retention volume achieved from impervious area dispersion (ft <sup>3</sup> ):		$V_{\text{retention}} = \text{Sum of Item 4 for all BMPs}$	
<b>6</b> Implementation of Localized On-lot Infiltration BMPs (e.g. on-lot rain gardens): Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, complete Items 7-13 for aggregate of all on-lot infiltration BMP in each DA; if no, proceed to Item 14	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type (Use additional forms for more BMPs)
<b>7</b> Ponding surface area (ft <sup>2</sup> )			
<b>8</b> Ponding depth (ft)			
<b>9</b> Surface area of amended soil/gravel (ft <sup>2</sup> )			
<b>10</b> Average depth of amended soil/gravel (ft)			
<b>11</b> Average porosity of amended soil/gravel			
<b>12</b> Retention volume achieved from on-lot infiltration (ft <sup>3</sup> ) $V_{\text{retention}} = (\text{Item 7} * \text{Item 8}) + (\text{Item 9} * \text{Item 10} * \text{Item 11})$			
<b>13</b> Runoff volume retention from on-lot infiltration (ft <sup>3</sup> ):		$V_{\text{retention}} = \text{Sum of Item 12 for all BMPs}$	

## Form 4.3-2 cont. Site Design Hydrologic Source Control BMPs (DA 1)

<b>14</b> Implementation of evapotranspiration BMP (green, brown, or blue roofs): Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, complete Items 15-20. If no, proceed to Item 21	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type (Use additional forms for more BMPs)
<b>15</b> Rooftop area planned for ET BMP (ft <sup>2</sup> )			
<b>16</b> Average wet season ET demand (in/day) Use local values, typical ~ 0.1			
<b>17</b> Daily ET demand (ft <sup>3</sup> /day) Item 15 * (Item 16 / 12)			
<b>18</b> Drawdown time (hrs) Copy Item 6 in Form 4.2-1			
<b>19</b> Retention Volume (ft <sup>3</sup> ) $V_{\text{retention}} = \text{Item 17} * (\text{Item 18} / 24)$			
<b>20</b> Runoff volume retention from evapotranspiration BMPs (ft <sup>3</sup> ): $V_{\text{retention}} = \text{Sum of Item 19 for all BMPs}$			
<b>21</b> Implementation of Street Trees: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, complete Items 20-2. If no, proceed to Item 24	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type (Use additional forms for more BMPs)
<b>22</b> Number of Street Trees			
<b>23</b> Average canopy cover over impervious area (ft <sup>2</sup> )			
<b>24</b> Runoff volume retention from street trees (ft <sup>3</sup> ) $V_{\text{retention}} = \text{Item 22} * \text{Item 23} * (0.05/12)$ assume runoff retention of 0.05 inches			
<b>25</b> Runoff volume retention from street tree BMPs (ft <sup>3</sup> ): $V_{\text{retention}} = \text{Sum of Item 24 for all BMPs}$			
<b>26</b> Implementation of residential rain barrels/cisterns: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, complete Items 27-28, If no, proceed to Item 29	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type (Use additional forms for more BMPs)
<b>27</b> Number of rain barrels/cisterns			
<b>28</b> Runoff volume retention from rain barrels/cisterns (ft <sup>3</sup> ) $V_{\text{retention}} = \text{Item 27} * 3$			
<b>29</b> Runoff volume retention from residential rain barrels/Cisterns (ft <sup>3</sup> ): $V_{\text{retention}} = \text{Sum of Item 28 for all BMPs}$			
<b>30</b> Total Retention Volume from Site Design Hydrologic Source Control BMPs: $\text{Sum of Items 5, 13, 20, 25 and 29}$			

### 4.3.2 Infiltration BMPs

Use Form 4.3-3 to compute on-site retention of runoff from proposed retention and infiltration BMPs. Volume retention estimates are sensitive to the percolation rate used, which determines the amount of runoff that can be infiltrated within the specified drawdown time. The infiltration safety factor reduces field measured percolation to account for potential inaccuracy associated with field measurements, declining BMP performance over time, and compaction during construction. Appendix D of the TGD for WQMP provides guidance on estimating an appropriate safety factor to use in Form 4.3-3.

If site constraints limit the use of BMPs to a single type and implementation of retention and infiltration BMPs mitigate no more than 40% of the DCV, then they are considered infeasible and the Project Proponent may evaluate the effectiveness of BMPs lower in the LID hierarchy of use (Section 5.5.1 of the TGD for WQMP)

If implementation of infiltrations BMPs is feasible as determined using Form 4.3-1, then LID infiltration BMPs shall be implemented to the MEP (section 4.1 of the TGD for WQMP).

•

# Water Quality Management Plan (WQMP)

## Form 4.3-3 Infiltration LID BMP - including underground BMPs (DA 1)

**1** Remaining LID DCV not met by site design HSC BMP (ft<sup>3</sup>): 4,937  $V_{unmet} = \text{Form 4.2-1 Item 7} - \text{Form 4.3-2 Item 30}$

**BMP Type** Use columns to the right to compute runoff volume retention from proposed infiltration BMP (select BMP from Table 5-4 in TGD for WQMP) - Use additional forms for more BMPs

DA DMA  
BMP Type

DA DMA  
BMP Type

DA DMA  
BMP Type  
(Use additional forms for more BMPs)

**2** Infiltration rate of underlying soils (in/hr) See Section 5.4.2 and Appendix D of the TGD for WQMP for minimum requirements for assessment methods

0.30

**3** Infiltration safety factor See TGD Section 5.4.2 and Appendix D

2

**4** Design percolation rate (in/hr)  $P_{design} = \text{Item 2} / \text{Item 3}$

0.15

**5** Ponded water drawdown time (hr) Copy Item 6 in Form 4.2-1

48

**6** Maximum ponding depth (ft) BMP specific, see Table 5-4 of the TGD for WQMP for BMP design details

5

**7** Ponding Depth (ft)  $d_{BMP} = \text{Minimum of } (1/12 * \text{Item 4} * \text{Item 5}) \text{ or Item 6}$

5

**8** Infiltrating surface area,  $SA_{BMP}$  (ft<sup>2</sup>) the lesser of the area needed for infiltration of full DCV or minimum space requirements from Table 5.7 of the TGD for WQMP

1,079

**9** Amended soil depth,  $d_{media}$  (ft) Only included in certain BMP types, see Table 5-4 in the TGD for WQMP for reference to BMP design details

**10** Amended soil porosity

**11** Gravel depth,  $d_{media}$  (ft) Only included in certain BMP types, see Table 5-4 of the TGD for WQMP for BMP design details

**12** Gravel porosity

**13** Duration of storm as basin is filling (hrs) Typical ~ 3hrs

3

**14** Above Ground Retention Volume (ft<sup>3</sup>)  $V_{retention} = \text{Item 8} * [\text{Item 7} + (\text{Item 9} * \text{Item 10}) + (\text{Item 11} * \text{Item 12}) + (\text{Item 13} * (\text{Item 4} / 12))]$

**15** Underground Retention Volume (ft<sup>3</sup>) Volume determined using manufacturer's specifications and calculations

4,958 (MH & pipe)  
4,935

Provide manufactures sizing spreadsheet for chamber area dimensioning as well as sizing.

Does not match calcs on exhibit. Provide additional chambers as well as the manufacturers excel spreadsheet for proper sizing.

**16** Total Retention Volume from LID Infiltration BMPs: 4,958 (Sum of Items 14 and 15 for all infiltration BMP included in plan)

**17** Fraction of DCV achieved with infiltration BMP: 100%  $\text{Retention\%} = \text{Item 16} / \text{Form 4.2-1 Item 7}$

**18** Is full LID DCV retained on-site with combination of hydrologic source control and LID retention and infiltration BMPs? Yes ☒ No ☒  
If yes, demonstrate conformance using Form 4.3-10; If no, then reduce Item 3, Factor of Safety to 2.0 and increase Item 8, Infiltrating Surface Area, such that the portion of the site area used for retention and infiltration BMPs equals or exceeds the minimum effective area thresholds (Table 5-7 of the TGD for WQMP) for the applicable category of development and repeat all above calculations.

Verify provide additional chambers

### 4.3.3 Harvest and Use BMP

Harvest and use BMP may be considered if the full LID DCV cannot be met by maximizing infiltration BMPs. Use Form 4.3-4 to compute on-site retention of runoff from proposed harvest and use BMPs.

Volume retention estimates for harvest and use BMPs are sensitive to the on-site demand for captured stormwater. Since irrigation water demand is low in the wet season, when most rainfall events occur in San Bernardino County, the volume of water that can be used within a specified drawdown period is relatively low. The bottom portion of Form 4.3-4 facilitates the necessary computations to show infeasibility if a minimum incremental benefit of 40 percent of the LID DCV would not be achievable with MEP implementation of on-site harvest and use of stormwater (Section 5.5.4 of the TGD for WQMP).

Form 4.3-4 Harvest and Use BMPs (DA 1)			
<b>1</b> Remaining LID DCV not met by site design HSC or infiltration BMP (ft <sup>3</sup> ): N/A $V_{\text{unmet}} = \text{Form 4.2-1 Item 7} - \text{Form 4.3-2 Item 30} - \text{Form 4.3-3 Item 15}$			
<b>BMP Type(s)</b> Compute runoff volume retention from proposed harvest and use BMP (Select BMPs from Table 5-4 of the TGD for WQMP) - Use additional forms for more BMPs	<b>DA</b> <b>DMA</b> BMP Type	<b>DA</b> <b>DMA</b> BMP Type	<b>DA</b> <b>DMA</b> BMP Type (Use additional forms for more BMPs)
<b>2</b> Describe cistern or runoff detention facility			
<b>3</b> Storage volume for proposed detention type (ft <sup>3</sup> ) Volume of cistern			
<b>4</b> Landscaped area planned for use of harvested stormwater (ft <sup>2</sup> )			
<b>5</b> Average wet season daily irrigation demand (in/day) Use local values, typical ~ 0.1 in/day			
<b>6</b> Daily water demand (ft <sup>3</sup> /day) Item 4 * (Item 5 / 12)			
<b>7</b> Drawdown time (hrs) Copy Item 6 from Form 4.2-1			
<b>8</b> Retention Volume (ft <sup>3</sup> ) $V_{\text{retention}} = \text{Minimum of (Item 3) or (Item 6 * (Item 7 / 24))}$			
<b>9</b> Total Retention Volume (ft <sup>3</sup> ) from Harvest and Use BMP <span style="float: right;">Sum of Item 8 for all harvest and use BMP included in plan</span>			
<b>10</b> Is the full DCV retained with a combination of LID HSC, retention and infiltration, and harvest and use BMPs? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, demonstrate conformance using Form 4.3-10. If no, then re-evaluate combinations of all LID BMP and optimize their implementation such that the maximum portion of the DCV is retained on-site (using a single BMP type or combination of BMP types). If the full DCV cannot be mitigated after this optimization process, proceed to Section 4.3.4.			

### 4.3.4 Biotreatment BMP

Biotreatment BMPs may be considered if the full LID DCV cannot be met by maximizing retention and infiltration, and harvest and use BMPs. A key consideration when using biotreatment BMP is the effectiveness of the proposed BMP in addressing the pollutants of concern for the project (see Table 5-5 of the TGD for WQMP).

Use Form 4.3-5 to summarize the potential for volume based and/or flow based biotreatment options to biotreat the remaining unmet LID DCV w. Biotreatment computations are included as follows:

- Use Form 4.3-6 to compute biotreatment in small volume based biotreatment BMP (e.g. bioretention w/underdrains);
- Use Form 4.3-7 to compute biotreatment in large volume based biotreatment BMP (e.g. constructed wetlands);
- Use Form 4.3-8 to compute sizing criteria for flow-based biotreatment BMP (e.g. bioswales)

Form 4.3-5 Selection and Evaluation of Biotreatment BMP (DA 1)			
<b>1</b> Remaining LID DCV not met by site design HSC, Infiltration, or harvest and use BMP for potential biotreatment (ft <sup>3</sup> ) <i>Form 4.2-1 Item 7 - Form 4.3-2 Item 30 - Form 4.3-3 Item 16- Form 4.3-4 Item 9</i>		List pollutants of concern <i>Copy from Form 2.3-1.</i>	
<b>2</b> Biotreatment BMP Selected  <i>(Select biotreatment BMP(s) necessary to ensure all pollutants of concern are addressed through Unit Operations and Processes, described in Table 5-5 of the TGD for WQMP)</i>	<b>Volume-based biotreatment</b> <i>Use Forms 4.3-6 and 4.3-7 to compute treated volume</i>		<b>Flow-based biotreatment</b> <i>Use Form 4.3-8 to compute treated volume</i>
	<input type="checkbox"/> Bioretention with underdrain <input type="checkbox"/> Planter box with underdrain <input type="checkbox"/> Constructed wetlands <input type="checkbox"/> Wet extended detention <input type="checkbox"/> Dry extended detention		<input type="checkbox"/> Vegetated swale <input type="checkbox"/> Vegetated filter strip <input type="checkbox"/> Proprietary biotreatment
<b>3</b> Volume biotreated in volume based biotreatment BMP (ft <sup>3</sup> ): <i>Form 4.3-6 Item 15 + Form 4.3-7 Item 13</i>	<b>4</b> Compute remaining LID DCV with implementation of volume based biotreatment BMP (ft <sup>3</sup> ): <i>Item 1 - Item 3</i>	<b>5</b> Remaining fraction of LID DCV for sizing flow based biotreatment BMP: % <i>Item 4 / Item 1</i>	
<b>6</b> Flow-based biotreatment BMP capacity provided (cfs): <i>Use Figure 5-2 of the TGD for WQMP to determine flow capacity required to provide biotreatment of remaining percentage of unmet LID DCV (Item 5), for the project's precipitation zone (Form 3-1 Item 1)</i>			
<b>7</b> Metrics for MEP determination: <ul style="list-style-type: none"> <li>• Provided a WQMP with the portion of site area used for suite of LID BMP equal to minimum thresholds in Table 5-7 of the TGD for WQMP for the proposed category of development: <input type="checkbox"/> <i>If maximized on-site retention BMPs is feasible for partial capture, then LID BMP implementation must be optimized to retain and infiltrate the maximum portion of the DCV possible within the prescribed minimum effective area. The remaining portion of the DCV shall then be mitigated using biotreatment BMP.</i></li> </ul>			

### Form 4.3-6 Volume Based Biotreatment (DA 1) – Bioretention and Planter Boxes with Underdrains

Biotreatment BMP Type (Bioretention w/underdrain, planter box w/underdrain, other comparable BMP)	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type (Use additional forms for more BMPs)
<b>1</b> Pollutants addressed with BMP <i>List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in Table 5-5 of the TGD for WQMP</i>			
<b>2</b> Amended soil infiltration rate <i>Typical ~ 5.0</i>			
<b>3</b> Amended soil infiltration safety factor <i>Typical ~ 2.0</i>			
<b>4</b> Amended soil design percolation rate (in/hr) $P_{design} = \text{Item 2} / \text{Item 3}$			
<b>5</b> Ponded water drawdown time (hr) <i>Copy Item 6 from Form 4.2-1</i>			
<b>6</b> Maximum ponding depth (ft) <i>see Table 5-6 of the TGD for WQMP for reference to BMP design details</i>			
<b>7</b> Ponding Depth (ft) $d_{BMP} = \text{Minimum of } (1/12 * \text{Item 4} * \text{Item 5}) \text{ or Item 6}$			
<b>8</b> Amended soil surface area (ft <sup>2</sup> )			
<b>9</b> Amended soil depth (ft) <i>see Table 5-6 of the TGD for WQMP for reference to BMP design details</i>			
<b>10</b> Amended soil porosity, $n$			
<b>11</b> Gravel depth (ft) <i>see Table 5-6 of the TGD for WQMP for reference to BMP design details</i>			
<b>12</b> Gravel porosity, $n$			
<b>13</b> Duration of storm as basin is filling (hrs) <i>Typical ~ 3hrs</i>			
<b>14</b> Biotreated Volume (ft <sup>3</sup> ) $V_{biotreated} = \text{Item 8} * [(\text{Item 7}/2) + (\text{Item 9} * \text{Item 10}) + (\text{Item 11} * \text{Item 12}) + (\text{Item 13} * (\text{Item 4} / 12))]$			
<b>15</b> Total biotreated volume from bioretention and/or planter box with underdrains BMP: <i>Sum of Item 14 for all volume-based BMPs included in this form</i>			

### Form 4.3-7 Volume Based Biotreatment (DA 1) – Constructed Wetlands and Extended Detention

Biotreatment BMP Type <i>Constructed wetlands, extended wet detention, extended dry detention, or other comparable proprietary BMP. If BMP includes multiple modules (e.g. forebay and main basin), provide separate estimates for storage and pollutants treated in each module.</i>	DA DMA BMP Type		DA DMA BMP Type <i>(Use additional forms for more BMPs)</i>	
	Forebay	Basin	Forebay	Basin
1 Pollutants addressed with BMP forebay and basin <i>List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in Table 5-5 of the TGD for WQMP</i>				
2 Bottom width (ft)				
3 Bottom length (ft)				
4 Bottom area (ft <sup>2</sup> ) $A_{bottom} = \text{Item 2} * \text{Item 3}$				
5 Side slope (ft/ft)				
6 Depth of storage (ft)				
7 Water surface area (ft <sup>2</sup> ) $A_{surface} = (\text{Item 2} + (2 * \text{Item 5} * \text{Item 6})) * (\text{Item 3} + (2 * \text{Item 5} * \text{Item 6}))$				
8 Storage volume (ft <sup>3</sup> ) <i>For BMP with a forebay, ensure fraction of total storage is within ranges specified in BMP specific fact sheets, see Table 5-6 of the TGD for WQMP for reference to BMP design details</i> $V = \text{Item 6} / 3 * [\text{Item 4} + \text{Item 7} + (\text{Item 4} * \text{Item 7})^{0.5}]$				
9 Drawdown Time (hrs) <i>Copy Item 6 from Form 2.1</i>				
10 Outflow rate (cfs) $Q_{BMP} = (\text{Item 8}_{forebay} + \text{Item 8}_{basin}) / (\text{Item 9} * 3600)$				
11 Duration of design storm event (hrs)				
12 Biotreated Volume (ft <sup>3</sup> ) $V_{biotreated} = (\text{Item 8}_{forebay} + \text{Item 8}_{basin}) + (\text{Item 10} * \text{Item 11} * 3600)$				
13 Total biotreated volume from constructed wetlands, extended dry detention, or extended wet detention : <i>(Sum of Item 12 for all BMP included in plan)</i>				

# Water Quality Management Plan (WQMP)

Form 4.3-8 Flow Based Biotreatment (DA 1)			
Biotreatment BMP Type <i>Vegetated swale, vegetated filter strip, or other comparable proprietary BMP</i>	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type <i>(Use additional forms for more BMPs)</i>
<b>1</b> Pollutants addressed with BMP <i>List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in TGD Table 5-5</i>			
<b>2</b> Flow depth for water quality treatment (ft) <i>BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details</i>			
<b>3</b> Bed slope (ft/ft) <i>BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details</i>			
<b>4</b> Manning's roughness coefficient			
<b>5</b> Bottom width (ft) $b_w = (\text{Form 4.3-5 Item 6} * \text{Item 4}) / (1.49 * \text{Item 2}^{1.67} * \text{Item 3}^{0.5})$			
<b>6</b> Side Slope (ft/ft) <i>BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details</i>			
<b>7</b> Cross sectional area (ft <sup>2</sup> ) $A = (\text{Item 5} * \text{Item 2}) + (\text{Item 6} * \text{Item 2}^2)$			
<b>8</b> Water quality flow velocity (ft/sec) $V = \text{Form 4.3-5 Item 6} / \text{Item 7}$			
<b>9</b> Hydraulic residence time (min) <i>Pollutant specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details</i>			
<b>10</b> Length of flow based BMP (ft) $L = \text{Item 8} * \text{Item 9} * 60$			
<b>11</b> Water surface area at water quality flow depth (ft <sup>2</sup> ) $SA_{top} = (\text{Item 5} + (2 * \text{Item 2} * \text{Item 6})) * \text{Item 10}$			

### 4.3.5 Conformance Summary

Complete Form 4.3-9 to demonstrate how on-site LID DCV is met with proposed site design hydrologic source control, infiltration, harvest and use, and/or biotreatment BMP. The bottom line of the form is used to describe the basis for infeasibility determination for on-site LID BMP to achieve full LID DCV, and provides methods for computing remaining volume to be addressed in an alternative compliance plan. If the project has more than one outlet, then complete additional versions of this form for each outlet.

Form 4.3-9 Conformance Summary and Alternative Compliance Volume Estimate (DA 1)	
1	Total LID DCV for the Project DA-1 (ft <sup>3</sup> ): 4,937 <i>Copy Item 7 in Form 4.2-1</i>
2	On-site retention with site design hydrologic source control LID BMP (ft <sup>3</sup> ): 0 <i>Copy Item 30 in Form 4.3-2</i>
3	On-site retention with LID infiltration BMP (ft <sup>3</sup> ): 4,956 <i>Copy item 16 in Form 4.3-3</i> <span style="border: 1px solid red; padding: 2px;">Revise</span>
4	On-site retention with LID harvest and use BMP (ft <sup>3</sup> ): 0 <i>Copy Item 9 in Form 4.3-4</i>
5	On-site biotreatment with volume based biotreatment BMP (ft <sup>3</sup> ): 0 <i>Copy Item 3 in Form 4.3-5</i>
6	Flow capacity provided by flow based biotreatment BMP (cfs): 0 <i>Copy Item 6 in Form 4.3-5</i>
7	<p>LID BMP performance criteria are achieved if answer to any of the following is "Yes":</p> <ul style="list-style-type: none"> <li>Full retention of LID DCV with site design HSC, infiltration, or harvest and use BMP: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>  <i>If yes, sum of Items 2, 3, and 4 is greater than Item 1</i></li> <li>Combination of on-site retention BMPs for a portion of the LID DCV and volume-based biotreatment BMP that address all pollutants of concern for the remaining LID DCV: Yes <input type="checkbox"/> No <input type="checkbox"/>  <i>If yes, a) sum of Items 2, 3, 4, and 5 is greater than Item 1, and Items 2, 3 and 4 are maximized; or b) Item 6 is greater than Form 4.3-5 item 6 and Items 2, 3 and 4 are maximized</i></li> <li>On-site retention and infiltration is determined to be infeasible and biotreatment BMP provide biotreatment for all pollutants of concern for full LID DCV: Yes <input type="checkbox"/> No <input type="checkbox"/>  <i>If yes, Form 4.3-1 Items 7 and 8 were both checked yes</i></li> </ul>
8	<p>If the LID DCV is not achieved by any of these means, then the project may be allowed to develop an alternative compliance plan. Check box that describes the scenario which caused the need for alternative compliance:</p> <ul style="list-style-type: none"> <li>Combination of HSC, retention and infiltration, harvest and use, and biotreatment BMPs provide less than full LID DCV capture: <input type="checkbox"/>  <i>Checked yes for Form 4.3-5 Item 7, Item 6 is zero, and sum of Items 2, 3, 4, and 5 is less than Item 1. If so, apply water quality credits and calculate volume for alternative compliance, <math>V_{alt} = (Item\ 1 - Item\ 2 - Item\ 3 - Item\ 4 - Item\ 5) * (100 - Form\ 2.4-1\ Item\ 2)\%</math></i></li> <li>An approved Watershed Action Plan (WAP) demonstrates that water quality and hydrologic impacts of urbanization are more effective when managed in at an off-site facility: <input type="checkbox"/>  <i>Attach appropriate WAP section, including technical documentation, showing effectiveness comparisons for the project site and regional watershed</i></li> </ul>

### 4.3.6 Hydromodification Control BMP

Use Form 4.3-10 to compute the remaining runoff volume retention, after LID BMP are implemented, needed to address HCOC, and the increase in time of concentration and decrease in peak runoff necessary to meet targets for protection of waterbodies with a potential HCOC. Describe hydromodification control BMP that address HCOC, which may include off-site BMP and/or in-stream controls. Section 5.6 of the TGD for WQMP provides additional details on selection and evaluation of hydromodification control BMP.

Form 4.3-10 Hydromodification Control BMPs (DA 1)	
<b>1</b> Volume reduction needed for HCOC performance criteria (ft <sup>3</sup> ): -1,766 (Form 4.2-2 Item 4 * 0.95) – Form 4.2-2 Item 1	<b>2</b> On-site retention with site design hydrologic source control, infiltration, and harvest and use LID BMP (ft <sup>3</sup> ): 4,958 Sum of Form 4.3-9 Items 2, 3, and 4 Evaluate option to increase implementation of on-site retention in Forms 4.3-2, 4.3-3, and 4.3-4 in excess of LID DCV toward achieving HCOC volume reduction
<b>3</b> Remaining volume for HCOC volume capture (ft <sup>3</sup> ): 0 Item 1 – Item 2	<b>4</b> Volume capture provided by incorporating additional on-site or off-site retention BMPs (ft <sup>3</sup> ): 0 Existing downstream BMP may be used to demonstrate additional volume capture (if so, attach to this WQMP a hydrologic analysis showing how the additional volume would be retained during a 2-yr storm event for the regional watershed)
<b>5</b> If Item 4 is less than Item 3, incorporate in-stream controls on downstream waterbody segment to prevent impacts due to hydromodification <input type="checkbox"/> Attach in-stream control BMP selection and evaluation to this WQMP	
<b>6</b> Is Form 4.2-2 Item 11 less than or equal to 5%: Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> If yes, HCOC performance criteria is achieved. If no, select one or more mitigation options below: <ul style="list-style-type: none"> <li>Demonstrate increase in time of concentration achieved by proposed LID site design, LID BMP, and additional on-site or off-site retention BMP <input checked="" type="checkbox"/>  <i>BMP upstream of a waterbody segment with a potential HCOC may be used to demonstrate increased time of concentration through hydrograph attenuation (if so, show that the hydraulic residence time provided in BMP for a 2-year storm event is equal or greater than the addition time of concentration requirement in Form 4.2-4 Item 15)</i> </li> <li>Increase time of concentration by preserving pre-developed flow path and/or increase travel time by reducing slope and increasing cross-sectional area and roughness for proposed on-site conveyance facilities <input type="checkbox"/></li> <li>Incorporate appropriate in-stream controls for downstream waterbody segment to prevent impacts due to hydromodification, in a plan approved and signed by a licensed engineer in the State of California <input type="checkbox"/></li> </ul>	
<b>7</b> Form 4.2-2 Item 12 less than or equal to 5%: Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> If yes, HCOC performance criteria is achieved. If no, select one or more mitigation options below: <ul style="list-style-type: none"> <li>Demonstrate reduction in peak runoff achieved by proposed LID site design, LID BMPs, and additional on-site or off-site retention BMPs <input checked="" type="checkbox"/>  <i>BMPs upstream of a waterbody segment with a potential HCOC may be used to demonstrate additional peak runoff reduction through hydrograph attenuation (if so, attach to this WQMP, a hydrograph analysis showing how the peak runoff would be reduced during a 2-yr storm event)</i> </li> <li>Incorporate appropriate in-stream controls for downstream waterbody segment to prevent impacts due to hydromodification, in a plan approved and signed by a licensed engineer in the State of California <input type="checkbox"/></li> </ul>	

Revise

Revise and provide

## 4.4 Alternative Compliance Plan (if applicable)

Describe an alternative compliance plan (if applicable) for projects not fully able to infiltrate, harvest and use, or biotreat the DCV via on-site LID practices. A project proponent must develop an alternative compliance plan to address the remainder of the LID DCV. Depending on project type some projects may qualify for water quality credits that can be applied to reduce the DCV that must be treated prior to development of an alternative compliance plan (see Form 2.4-1, Water Quality Credits). Form 4.3-9 Item 8 includes instructions on how to apply water quality credits when computing the DCV that must be met through alternative compliance. Alternative compliance plans may include one or more of the following elements:

- On-site structural treatment control BMP - All treatment control BMP should be located as close to possible to the pollutant sources and should not be located within receiving waters;
- Off-site structural treatment control BMP - Pollutant removal should occur prior to discharge of runoff to receiving waters;
- Urban runoff fund or In-lieu program, if available

Depending upon the proposed alternative compliance plan, approval by the executive officer may or may not be required (see Section 6 of the TGD for WQMP).

## Section 5 Inspection and Maintenance Responsibility for Post Construction BMP

All BMP included as part of the project WQMP are required to be maintained through regular scheduled inspection and maintenance (refer to Section 8, Post Construction BMP Requirements, in the TGD for WQMP). Fully complete Form 5-1 summarizing all BMP included in the WQMP. Attach additional forms as needed. The WQMP shall also include a detailed Operation and Maintenance Plan for all BMP and may require a Maintenance Agreement (consult the jurisdiction's LIP). If a Maintenance Agreement is required, it must also be attached to the WQMP.

Form 5-1 BMP Inspection and Maintenance (use additional forms as necessary)			
BMP	Responsible Party(s)	Inspection/ Maintenance Activities Required	Minimum Frequency of Activities
N14	Owner	80% of drainage facilities inspected, cleaned & maintained on annual basis with 100% of facilities included in a two year period.	Annually
S1	Owner	Inspect stenciling and/or signs and perform necessary maintenance as required	Annually
S3	Owner	Inspect/clean trash enclosure and perform maintenance as required	Quarterly
S4	Owner	Inspect/adjust/maintain irrigation system	Monthly
S12	Owner	Inspect Hydro-carbon filter for replacement and clean fuel pad and spill containment are as needed	Semi-annually
N1	Owner	Owner will update educational materials annually.	Annually
S5	Owner	Owner to inspect and perform maintenance as needed on an annual basis.	Annually

## Section 6 WQMP Attachments

### 6.1. Site Plan and Drainage Plan

Include a site plan and drainage plan sheet set containing the following minimum information:

- Project location
- Site boundary
- Land uses and land covers, as applicable
- Suitability/feasibility constraints
- Structural Source Control BMP locations
- Site Design Hydrologic Source Control BMP locations
- LID BMP details
- Drainage delineations and flow information
- Drainage connections

### 6.2 Electronic Data Submittal

Minimum requirements include submittal of PDF exhibits in addition to hard copies. Format must not require specialized software to open. If the local jurisdiction requires specialized electronic document formats (as described in their local Local Implementation Plan), this section will describe the contents (e.g., layering, nomenclature, geo-referencing, etc.) of these documents so that they may be interpreted efficiently and accurately.

### 6.3 Post Construction

Attach all O&M Plans and Maintenance Agreements for BMP to the WQMP.

### 6.4 Other Supporting Documentation

- BMP Educational Materials
- Activity Restriction – C, C&R's & Lease Agreements

# StormTech MC-4500 Chamber

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots thus maximizing land usage for commercial and municipal applications.



MC-4500 Chamber

## StormTech MC-4500 Chamber (not to scale)

### Nominal Chamber Specifications

Size (L x W x H)	52" (1321 mm) x 100" (2540 mm) x 60" (1524 mm)
Chamber Storage	106.5 ft <sup>3</sup> (3.01 m <sup>3</sup> )
Min. Installed Storage*	162.6 ft <sup>3</sup> (4.60 m <sup>3</sup> )
Nominal Weight	120 lbs (54.4 kg)

\* This assumes a minimum of 12" (305 mm) of stone above, 9" (229 mm) of stone below chambers, 9" (229 mm) of stone between chambers/end caps and 40% stone porosity

### Shipping

8 chambers/pallet

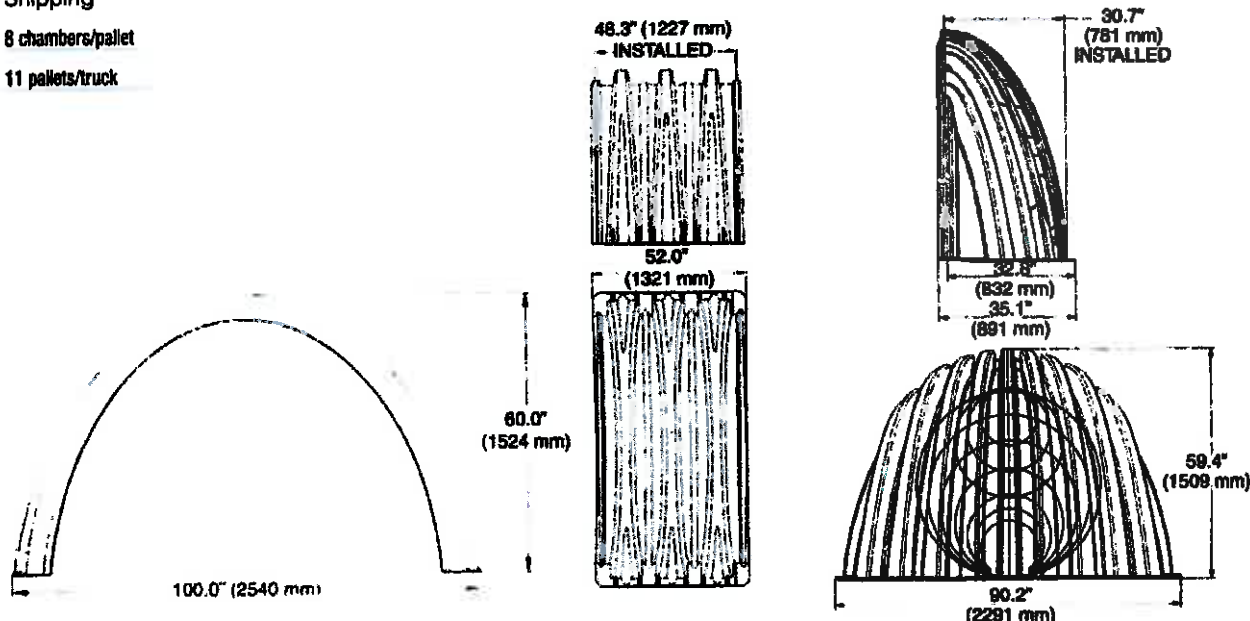
11 pallets/truck

## StormTech MC-4500 End Cap (not to scale)

### Nominal End Cap Specifications

Size (L x W x H)	35.1" (891 mm) x 90.2" (2291 mm) x 59.4" (1509 mm)
End Cap Storage	35.7 ft <sup>3</sup> (1.01 m <sup>3</sup> )
Min. Installed Storage*	108.7 ft <sup>3</sup> (3.08 m <sup>3</sup> )
Nominal Weight	120 lbs (54.4 kg)

\* This assumes a minimum of 12" (305 mm) of stone above, 9" (229 mm) of stone below, 12" (305 mm) of stone perimeter, 9" (229 mm) of stone between chambers/end caps and 40% stone porosity



Call StormTech at 888.892.2694 for technical and product information or visit [www.stormtech.com](http://www.stormtech.com) 15

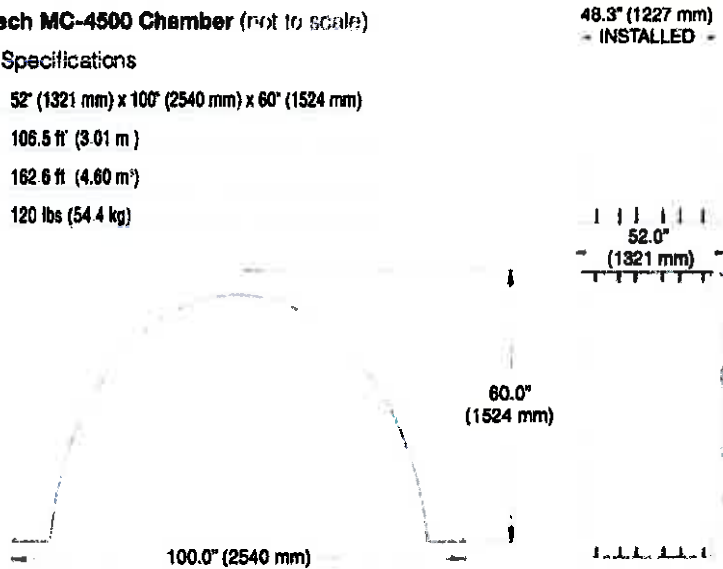
## 1.0 Product Information



**FIGURE 3 – StormTech MC-4500 Chamber (not to scale)**

**Nominal Chamber Specifications**

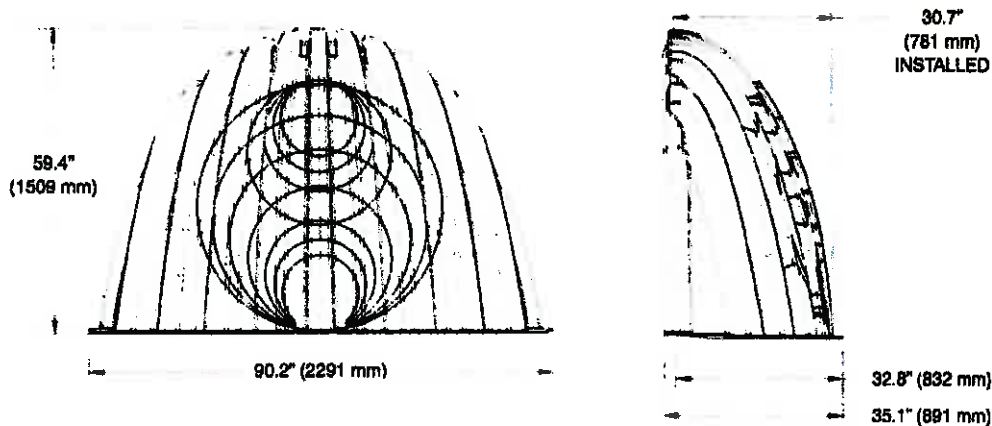
Size (L x W x H)	52" (1321 mm) x 100" (2540 mm) x 60" (1524 mm)
Chamber Storage	106.5 ft <sup>3</sup> (3.01 m <sup>3</sup> )
Min. Installed Storage*	162.6 ft <sup>3</sup> (4.60 m <sup>3</sup> )
Nominal Weight	120 lbs (54.4 kg)



**FIGURE 4 – StormTech MC-4500 End Cap (not to scale)**

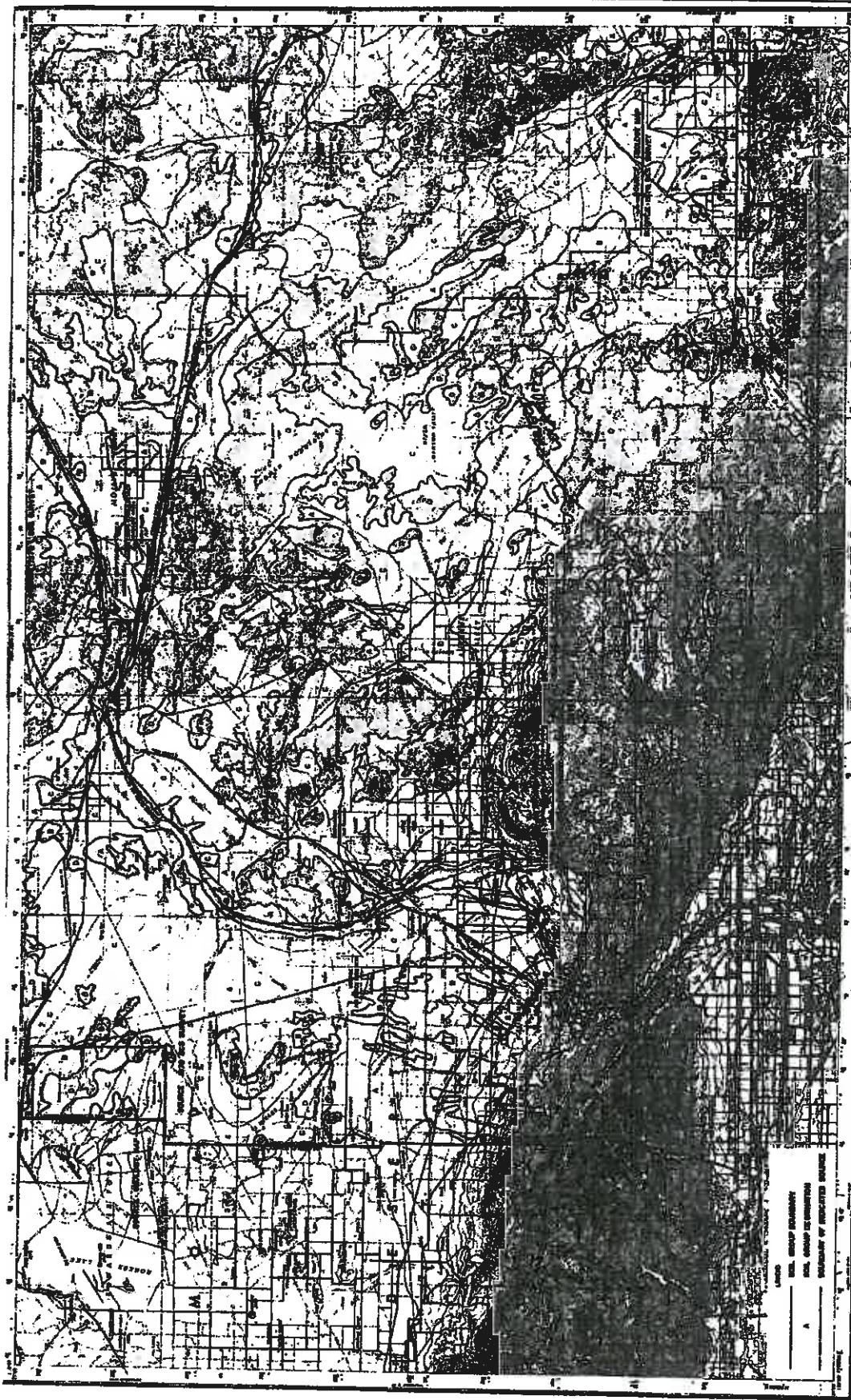
**Nominal End Cap Specifications**

Size (L x W x H)	35.1" (891 mm) x 90.2" (2291 mm) x 59.4" (1509 mm)
End Cap Storage	35.7 ft <sup>3</sup> (1.01 m <sup>3</sup> )
Min. Installed Storage*	108.7 ft <sup>3</sup> (3.08 m <sup>3</sup> )
Nominal Weight	120 lbs (54.4 kg)



\* This assumes a minimum of 12" (305 mm) of stone above, 9" (229 mm) of stone below and 9" (229 mm) of stone between the chambers/end caps and 40% stone porosity. The end cap minimum installed storage also includes the stone storage located in the 12" (305 mm) stone perimeter.





34.2436

LOCATION: 34.2436 LAT  
- 116.8070 LONG  
**SAN BERNARDINO COUNTY**  
**HYDROLOGY MANUAL**



**SCALE REDUCED BY 1/2**

DATE MAP INTRODUCED: FIRST ISSUE, "SAN BERNARDINO" HYDROLOGY MAP

WITH IMPROVEMENTS CONCERNING THE  
HYDROLOGIC SOIL GROUPS  
AND THE HYDROLOGIC UNIT  
BOUNDARIES. THE MAP IS  
BASED ON THE 1954 U.S. GEOLOGICAL SURVEY  
TOPOGRAPHIC MAP OF THE AREA.

LEGEND

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

SOIL TYPE "C"

**HYDROLOGIC SOIL GROUP MAP  
FOR  
SOUTHCENTRAL AREA**

C-34  
STATION P-11

## **EXHIBIT H**

### **Supplemental Preliminary Hydrology Analysis of Off-Site Flows 2014**

**SUPPLEMENTAL PRELIMINARY HYDROLOGY  
ANALYSIS OF OFF-SITE FLOWS**

**FOR  
PROPOSED EAGLE MARKET  
S.E. CORNER OF STATE HWY 38 & STATE LANE  
IN  
SAN BERNARDINO, CALIFORNIA  
(A.P.N. 0315-231-17)**

**FOR  
  
STEENO DESIGN STUDIO  
11774 HESPERIA ROAD, SUITE B  
HESPERIA, CA 92345  
760-244-5001**

**BY  
JERRY L. MILES, P.E.  
P.O. BOX 1861  
APPLE VALLEY, CA 92307**

## **PURPOSE**

This supplemental hydrological analysis of off-site flows is prepared in response to a response letter from the State of California Department of Fish and Wildlife, dated April 16, 2014. This response letter questions the proposed hydrologic and hydraulic impacts of the proposed subject development (convenience store and gas station) on the stream drainage along State Highway 38 (identified by Fish and Wildlife as “Shay Creek”). This supplemental preliminary report will address the impacts to the proposed development to this off-site stream drainage.

## **DESCRIPTION OF OFF-SITE DRAINAGE AREA**

The subject lot is located at the southeast corner of State Highway 38 and State Lane. The site is generally located along the easterly right-of-way of State Highway 38 and south and west of State Lane. A “blue line” stream is shown on the USGS quadrangle topographic map and ends at Highway 38 south of the subject site (see Off-Site Topography below). This stream extends south and slight west for approximately 2.5 miles. The subject stream flow intersects the west side of State Highway 38 south of the subject site. These flows are contained in a ditch along the west side of the highway and conducted north to a catch basin just south of the intersection with State Lane (see Photos 2 & 3). The stream flows are then conducted under the highway in a storm drain pipe to the east side of the highway to a ditch that crosses the highway right-of-way northeasterly to the south side of the State Lane right-of-way (see Photo 4). These flows then cross northerly State Lane in a culvert pipe and continue northeasterly. It appears that off-site stream flows do not enter or cross the subject site.

## **DISCUSSION OF ON-SITE DRAINAGE FLOWS**

On-site flows will be contained on-site and treated by on-site BMP’s in an effort to contain pollutants, trash and sediments generated by the proposed use. The on-site 100-year 1-hour storm generated will be captured and contained in an off-site BMP underground retention basin and allowed to percolate. A proposed concrete swale along the subject site’s westerly boundary will conduct any off-site flows northerly, in an effort to keep off-site flows from entering the site.

## **SUMMARY**

The stream flows in Shay Creek have previously been altered by construction of State Highway 38. These altered stream flows do not appear to impact the subject property. Proposed on-site improvements will direct any stream flow northerly to the culvert under State Lane. On-site flows are required by County NDPES requirements to be contained and treated on-site. Therefore, on-site proposed BMP’s will contain the 100-year 1-hour on-site flows and allow these flows to percolate. These retained flows from the less than one acre developed site will be a minimal decrease in flow from the stream flows which are generated from a tributary area of greater than 300 acres. The stream flow volume of Shay Creek will only be minimally affected by the development because of required NDPES requirements. The stream flow location was previously altered by the highway construction and will be unaffected by the proposed development.

OFF-SITE TOPOGRAPHY

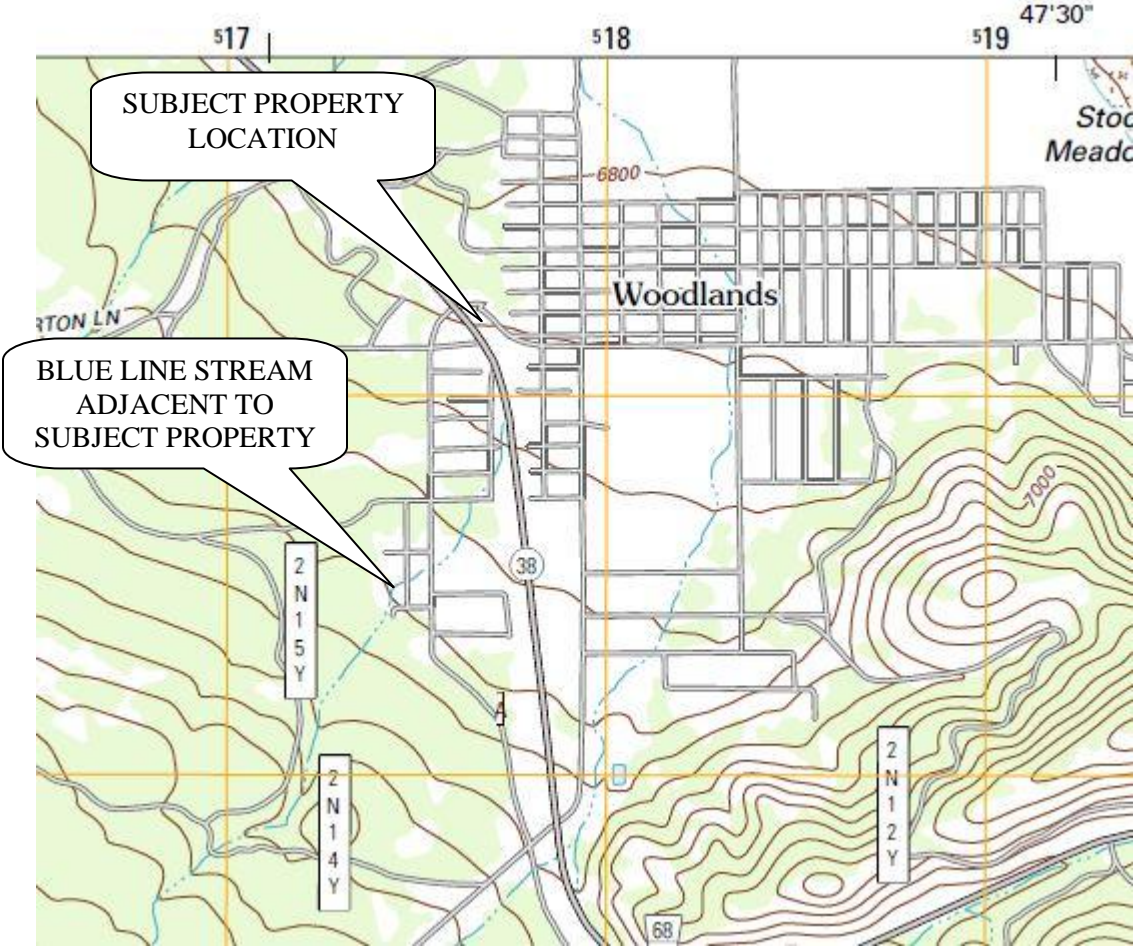


PHOTO 1



PHOTO 2

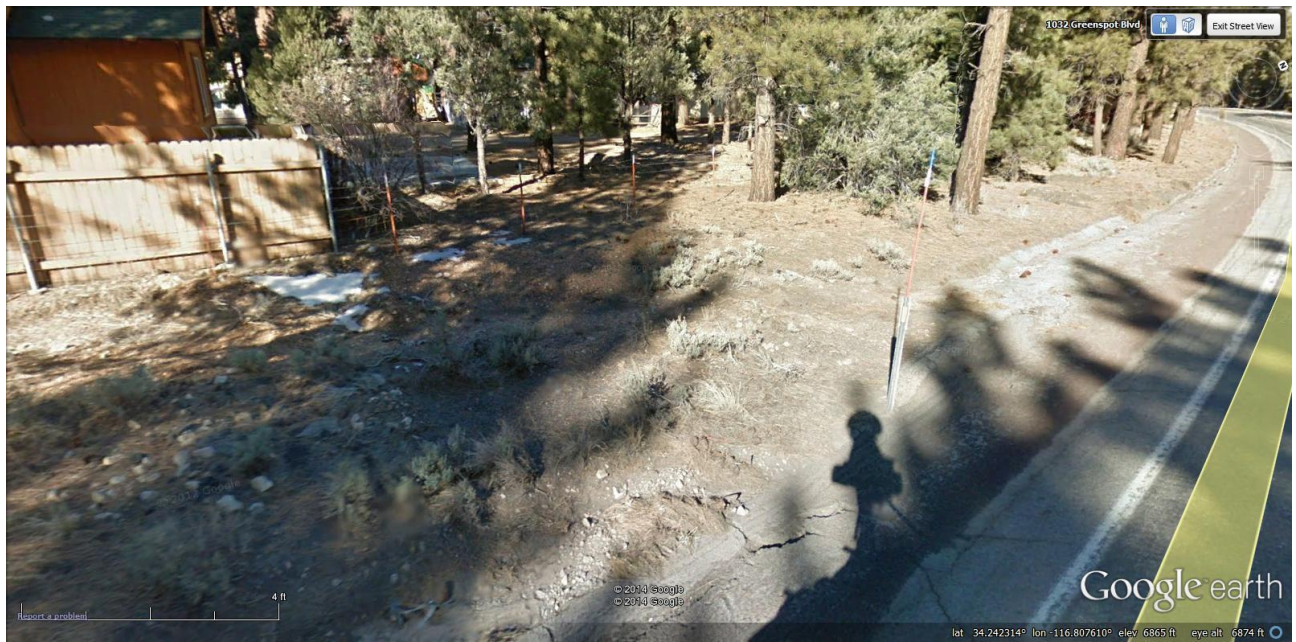


PHOTO 3



## PHOTO 4



## SAN BERNARDINO COUNTY DRAINAGE AREA AERIAL



## **Exhibit I**

**Revised Traffic Report: Hall & Foreman, Inc.;  
2014 with Appendices (Exhibit-A 6-27-2014,  
Winter Weekend Traffic Analysis 01-15-2014,  
and Response to Caltrans  
Letter 06-23-2014)**



Engineering ▪ Planning ▪ Surveying

# Traffic Report

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## **PROPOSED COMMERCIAL DEVELOPMENT EAGLE RIDGE MARKET ERWIN LAKE, CA**

**PREPARED FOR:  
STEENO DESIGN STUDIO**

**PREPARED BY:  
HALL & FOREMAN, INC.  
14297 CAJON STREET, #101  
VICTORVILLE, CA 92392**

**UPDATED  
REPORT  
June 27, 2014**

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June 27, 2014

Job No. VV.130048.0000

Mr. Tom Steeno  
**Steen Design Studio**  
11774 Hesperia Rd, Suite 1B  
Hesperia, CA, 92345

**RE: TRAFFIC STUDY – EAGLE RIDGE MARKET- STATE HWY 38 and STATE LANE-  
ERWIN LAKE, CALIFORNIA**

Dear Mr. Steeno;

**Hall & Foreman Inc.** is pleased to submit this Updated Traffic Study in the unincorporated community of Erwin Lake for the proposed Eagle Ridge commercial development at the southeast corner of Highway 38 and State Lane. The project is comprised of a Gas Station with Convenience Market and a Residence for the caretaker.

The report examines the traffic impacts specifically for the project and presents recommended traffic improvements. The report also addresses the impacts of overall growth within the area to assure that cumulative traffic mitigations can be addressed.

We are pleased to have been of assistance to you in processing and obtaining approval for the project. If you have any questions or comments, please feel free to contact me at 760-524-9115.

Respectfully submitted,

**Hall & Foreman Inc.**

  
Robert A. Kilpatrick, P.E., T.E.  
Vice President/Associate



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## 1. INTRODUCTION

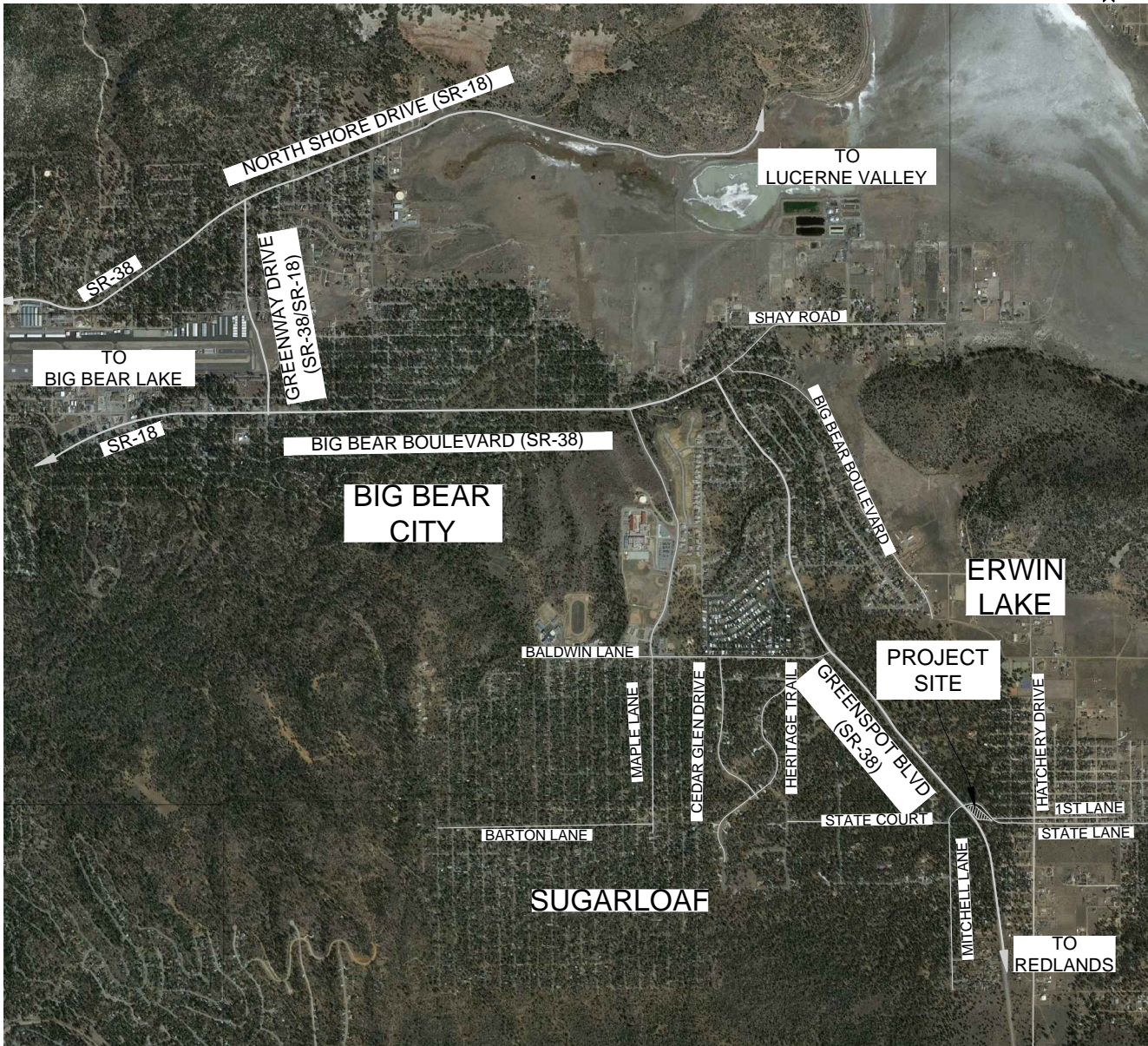
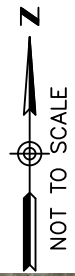
This report identifies the traffic impacts and presents recommendations for access and traffic mitigation for the proposed project located at the southeast corner of Highway 38 and State Lane in the unincorporated community of Erwin Lake, which is southeasterly of the unincorporated community of Big Bear City. The proposed project consists of a Convenient Store with a gas station and a Residence for the caretaker. The site will be accessible from a right turn in only driveway, and a dual entry driveway to be constructed on State Lane east of Highway 38. *Figure 1* illustrates the vicinity map and project location and *Figure 2* illustrates the proposed project site plan.

The project is located in the unincorporated community of Erwin Lake in San Bernardino County. The project is bound by State Lane to the north, Highway 38 to the west, residential homes to the east and south of the project site. Access to the project site is proposed off of State Lane. No direct access is proposed to be from Highway 38.

To address traffic impacts due to the proposed project, a study area encompassing the streets in the area was developed. The study area specifically includes the intersection of Highway 38 and State Lane. Highway 38 provides local and regional access to the study area.

In addition to addressing traffic impacts due specifically to development of the project, this study addresses impacts due to development correlating with the development of the project and cumulative projects up to the year 2035 within the study area. The examination of potential development correlating with the development of the project is known as background traffic. Traffic due to other projects and an estimated straight line growth in the area is added to existing traffic to create a base for analyzing project traffic impacts.

In addition, this report addresses traffic conditions for the future Year 2035 forecast year. Identified as future traffic, the traffic generation of the adjoining projects which is incorporated into the area growth is included. The purpose of the future year analysis is to assure that traffic improvements for the intersection are not needed to accommodate the anticipated future traffic.




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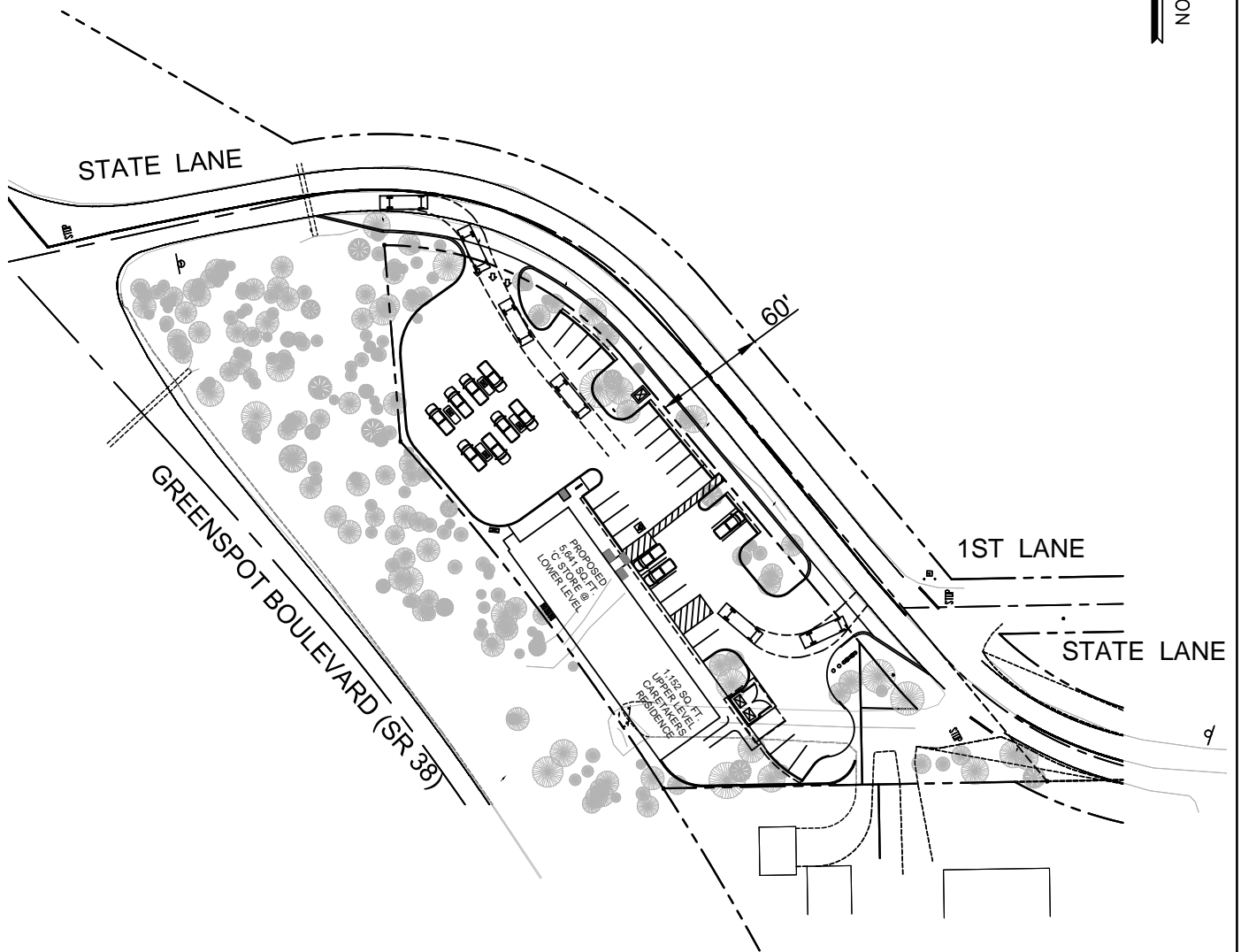
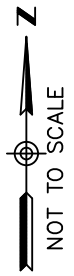
## VICINITY MAP

EAGLE RIDGE MARKET  
 ERWIN LAKE, CALIFORNIA

FIGURE

1

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**SITE PLAN**  
  
**EAGLE RIDGE MARKET**  
**ERWIN LAKE, CALIFORNIA**

**FIGURE**  
**2**

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## 2. EXISTING CONDITIONS

### Existing Street System

The project site currently is vacant and undeveloped. Land uses around the site consist of single family residential developments to the east and south of the project site. Streets in and near the vicinity of the project are mostly paved residential streets with some undeveloped dirt roads. The existing developed roads range in pavement widths of 20 to 50 feet and are in good to fair condition.

The following roadways provide regional access to the project within the study area:

**Greenspot Boulevard/Highway 38** provides local and regional access in the project area. Highway 38 (SR 38) traverses north to south and provides access from the Big Bear Lake area to Redlands/Yucaipa and the Interstate I-10 Freeway. This roadway is primarily a two-lane highway (one lane in each direction). The intersection of Highway 38 and State Lane is currently two-way-stop-controlled.

**State Lane** will provide the primary access to the project site. State Lane is primarily a two-lane paved road (one lane in each direction) fronting the project site east of Highway 38. Currently, State Lane does not consist of a curb and gutter along the property.

**First Lane** is a 25 foot wide local unpaved road. First Lane functions similar to an alley providing access to residential property east of the project.

The project proposes to construct the driveways on State Lane east of Highway 38, as shown on the Site Plan, *Figure 2*. Two existing intersections within the study area has been identified that may potentially be impacted by the project. The intersections are;

- Highway 38 and State Lane
- State Lane and First Lane

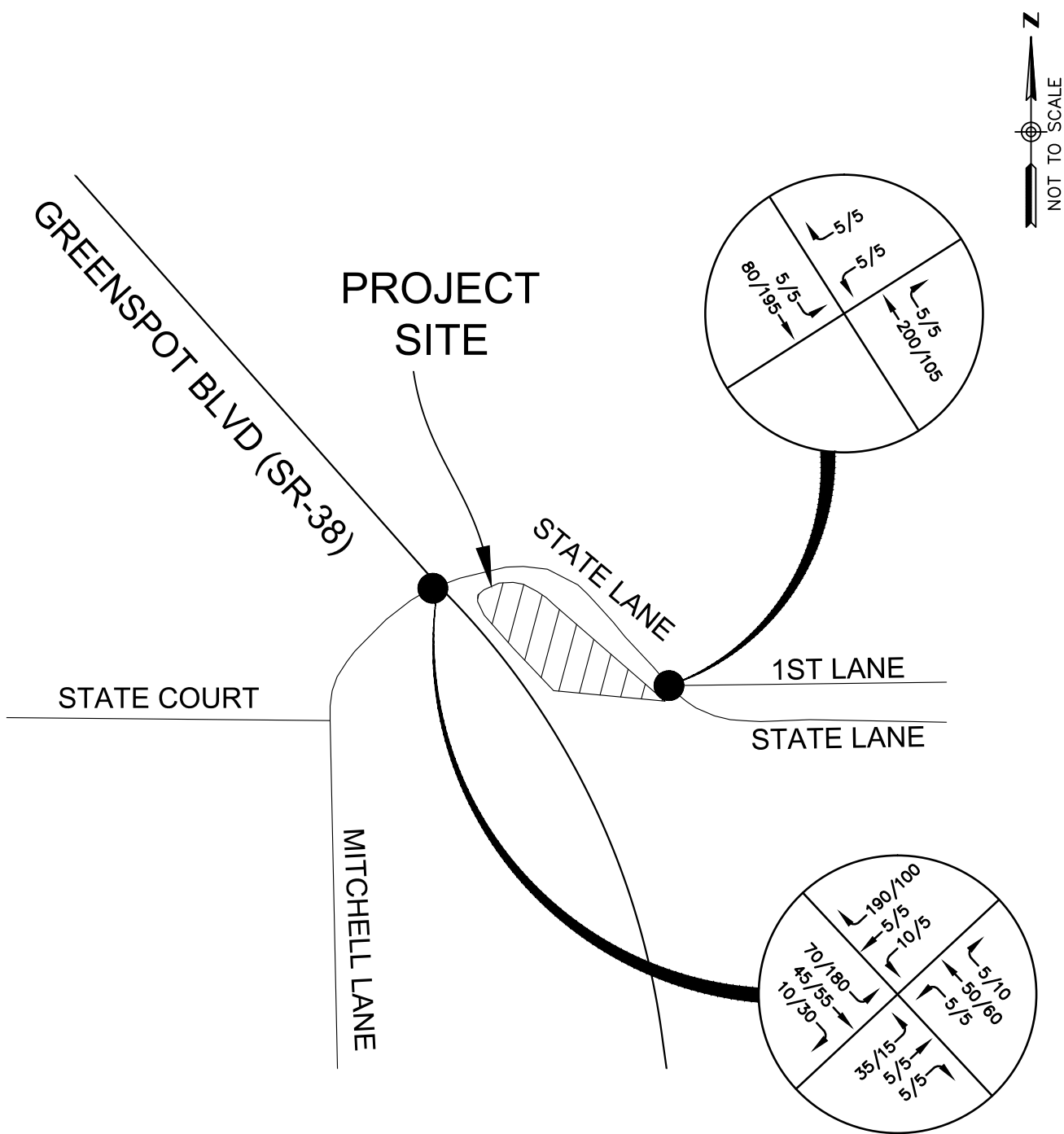
Currently both of these intersections are Two Way Stop Controlled (TWSC).

### Existing Traffic Volumes

Newport Traffic Studies staff conducted Weekday AM (7:00-9:00 AM) and Weekday PM (4:00-6:00 PM) peak hour turning movement counts and 24 hour intersection volume count, at the intersection of Highway 38 and State Lane, identified for detailed analysis. These counts were conducted in December of 2012.

A subsequent Winter Weekend Friday (4:00-7:00 PM) and Sunday (3:00-6:00 PM) peak period turning movement counts, at the intersection of Highway 38 and State Lane, were conducted on December 13, 2013 and December 15, 2013 respectively. This count was conducted while the local ski resorts were in operation.

The resulting volumes are presented in the appendix of this report. *Figure 3* illustrates the weekday AM and PM existing peak hour traffic volumes. Turning movement volumes for First lane were not recorded since volumes were so low turning movement volumes were estimated to be conservative. *Figure 4* illustrates the winter Friday and Sunday existing peak hour traffic volumes.



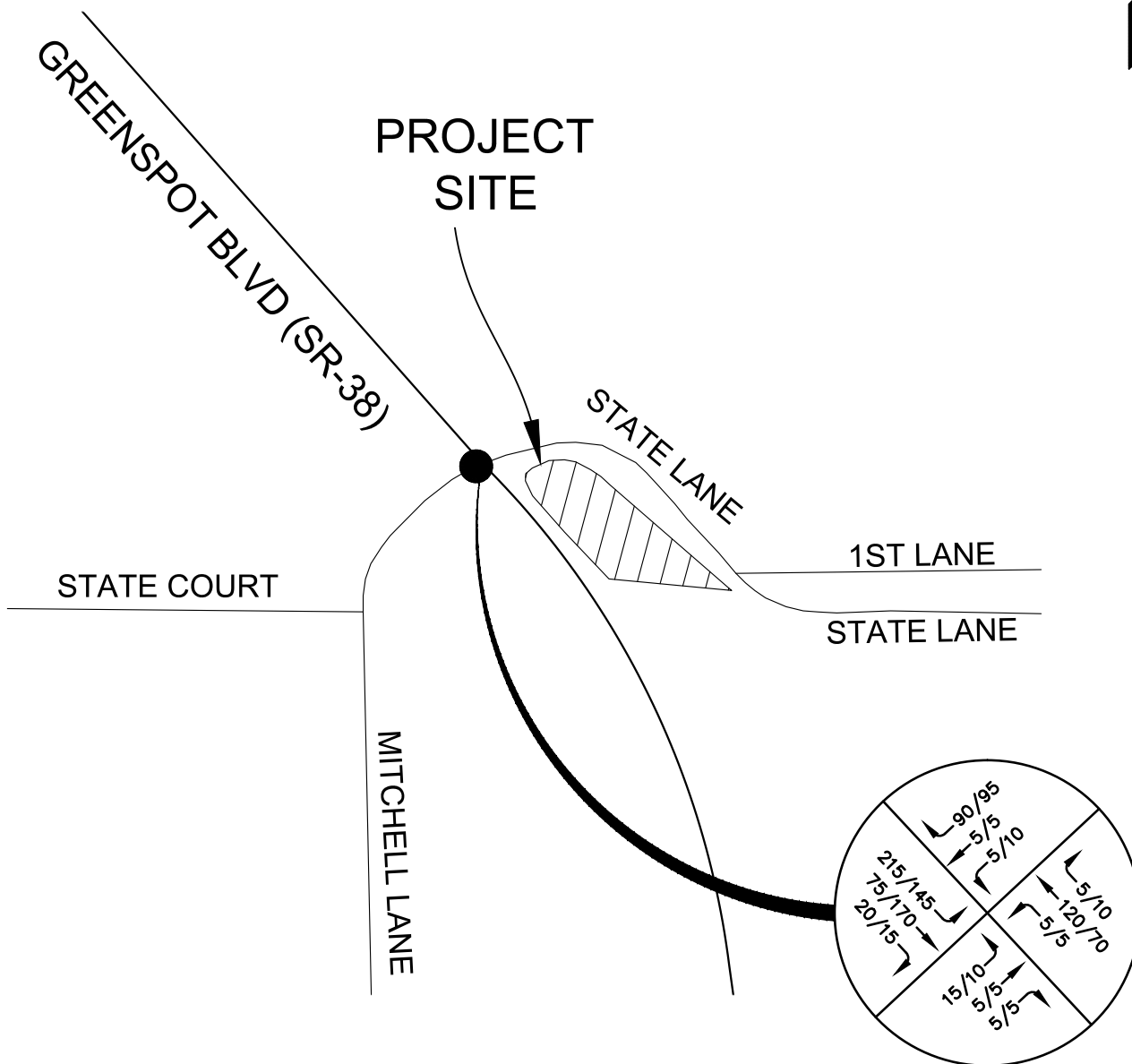
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**WEEKDAY AM AND PM  
 EXISTING TRAFFIC VOLUMES**

**EAGLE RIDGE MARKET  
 ERWIN LAKE, CALIFORNIA**

**FIGURE  
 3**

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#### LEGEND

- - STUDY INTERSECTION
- XX/XX - WINTER FRIDAY/SUNDAY PM  
PEAK HOUR VOLUMES

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## WINTER FRIDAY AND SUNDAY EXISTING TRAFFIC VOLUMES

EAGLE RIDGE MARKET  
ERWIN LAKE, CALIFORNIA

FIGURE

4

## Existing Traffic Analysis

An intersection capacity analysis was conducted for the study intersection to determine a present level-of-service (LOS). Based on the existing intersection geometrics as illustrated in *Figure 5* and the Weekday AM, Weekday PM, Winter Friday PM, and Winter Sunday PM peak hour traffic volumes. The capacity analysis for the un-signalized intersection was conducted utilizing HCS 2010, which is an un-signalized intersection capacity analysis program, developed by McTrans. This program was developed in accordance with the 2010 Highway Capacity Manual. The analysis determines a level-of-service (LOS), which quantitatively describes the operating characteristics of un-signalized intersections. The LOS ranges from "A" (the best) through "F" (system breakdown). The LOS for the intersection represents the LOS for the critical movement. This is typically the stop controlled left turn from the minor street.

**Table 1: Intersection Capacity Analysis - Existing Condition**  
**Eagle Ridge Market Traffic Study**

Intersection	Weekday AM Peak		Weekday PM Peak		Winter Friday PM Peak		Winter Sunday PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Highway 38 and State Lane (3)	13.6	B	15.4	C	18	C	14.8	B
State Lane and First Lane Project Driveway (3)	10	A	9.7	A	-	-	-	-

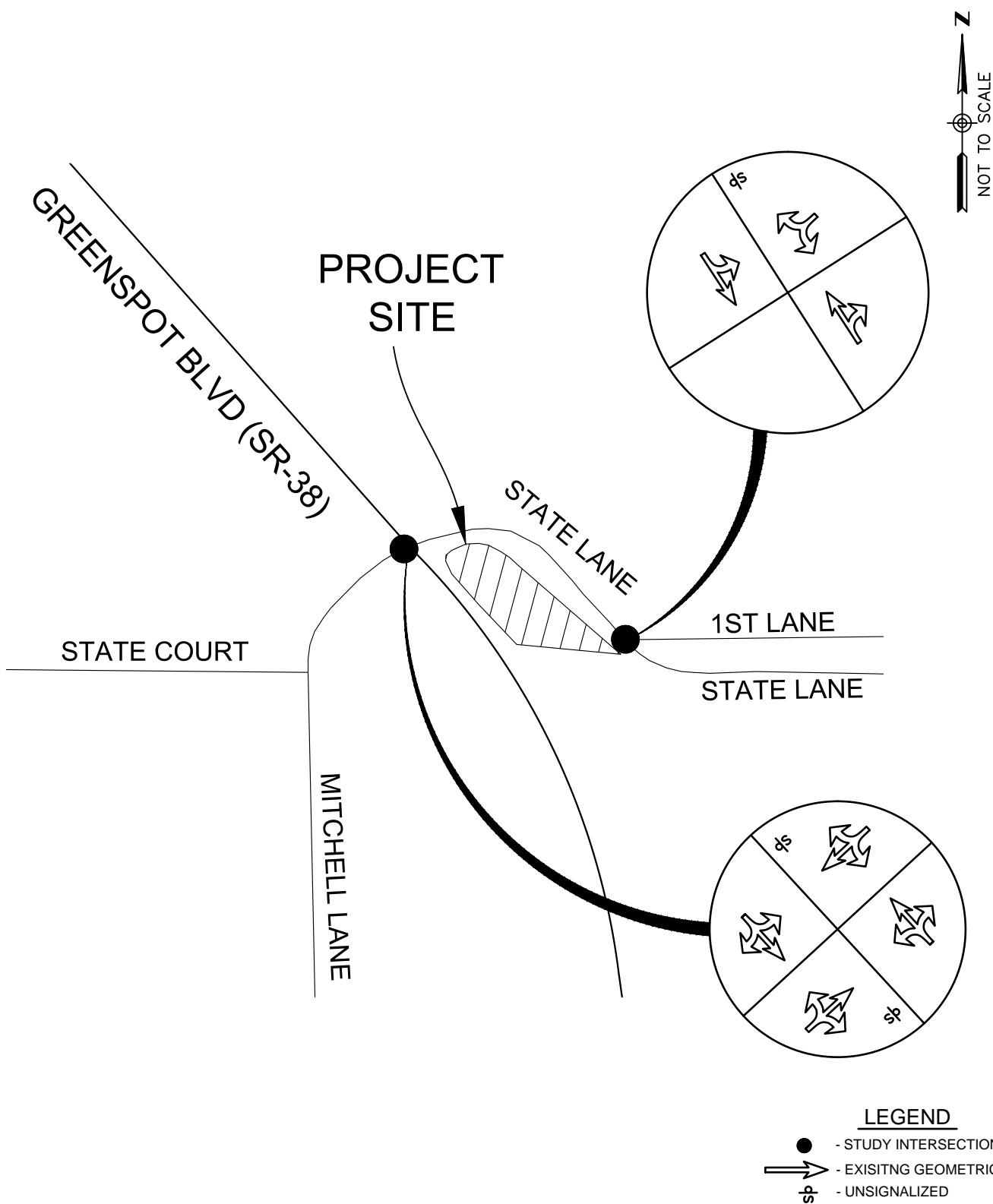
(1) LOS – HCM Level of Service

(2) Delay –In Seconds

(3) Un-Signalized Intersection

Source: **Hall & Foreman Inc**

As provided in *Table 1* under existing traffic conditions, the un-signalized intersections of Highway 38 and State Lane, and State Lane and First Lane/Project Driveway are operating at LOS "C" or better.



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## EXISTING INTERSECTION GEOMETRICS

EAGLE RIDGE MARKET  
ERWIN LAKE, CALIFORNIA

FIGURE

5

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### 3. BACKGROUND TRAFFIC

#### Area Growth

To analyze the project impacts, the inclusion of traffic generated by other projects within the study area is necessary. Other area projects at the intersections were taken into consideration. The County of San Bernardino has identified one project which would impact the study intersection as presented in Exhibit A in the Appendix of this report. This growth with other area project traffic volumes is known as background traffic.

Typically, regional and local growth is expected over the years at rates ranging from 1% to 2% compounded annually. Based on the existing traffic volumes, a straight line growth at a 2% increase compounded annually was utilized. This growth is known as background traffic. The analysis of background traffic allows a comparison of traffic impacts with and without the project applying the growth to the existing turn movement volumes. *Figure 6* illustrates weekday AM and PM year 2014 background traffic volumes. *Figure 7* illustrates the winter Friday and Sunday year 2014 background traffic volumes.

#### Background Traffic Analysis

To determine the impacts of the project to the study intersection, existing plus the anticipated background traffic project peak hour volumes were calculated. The analysis was conducted with the existing intersection geometrics.

**Table 2: Intersection Capacity Analysis - Existing Plus Background Condition**  
Eagle Ridge Market Traffic Study

Intersection	Weekday AM Peak		Weekday PM Peak		Winter Friday PM Peak		Winter Sunday PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Highway 38 and State Lane (3)	14.4	B	16.3	C	19.5	C	15.8	C
State Lane and First Lane Project Driveway (3)	10.1	B	9.8	A	-	-	-	-

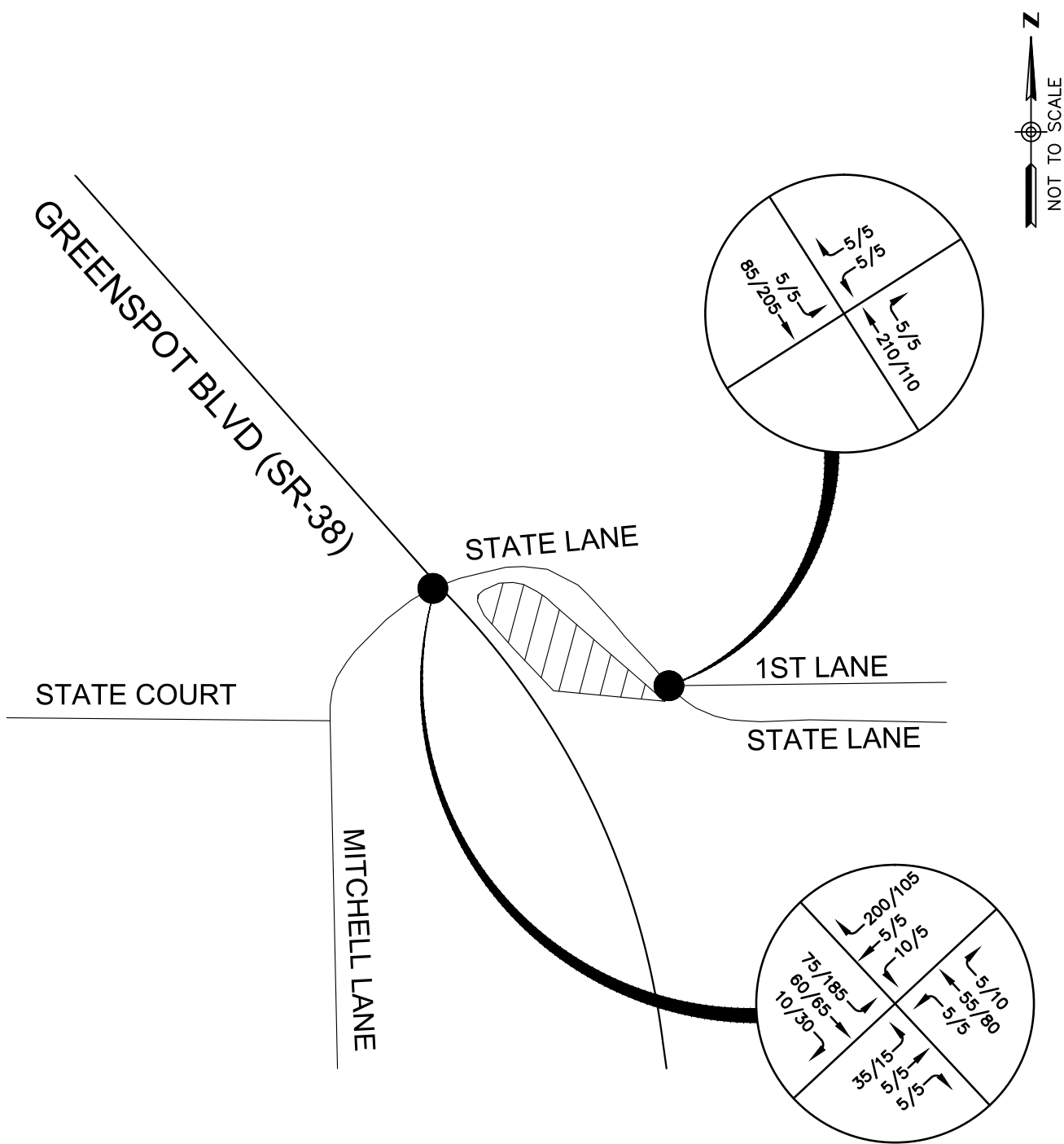
(1) LOS – HCM Level of Service

(2) Delay –In Seconds

(3) Un-Signalized Intersection

Source: **Hall & Foreman Inc.**

As provided in *Table 2* under existing plus background traffic conditions, the un-signalized intersections of Highway 38 and State Lane, and State Lane and First Lane/Project Driveway are anticipated to continue to operate at LOS “C” or better.



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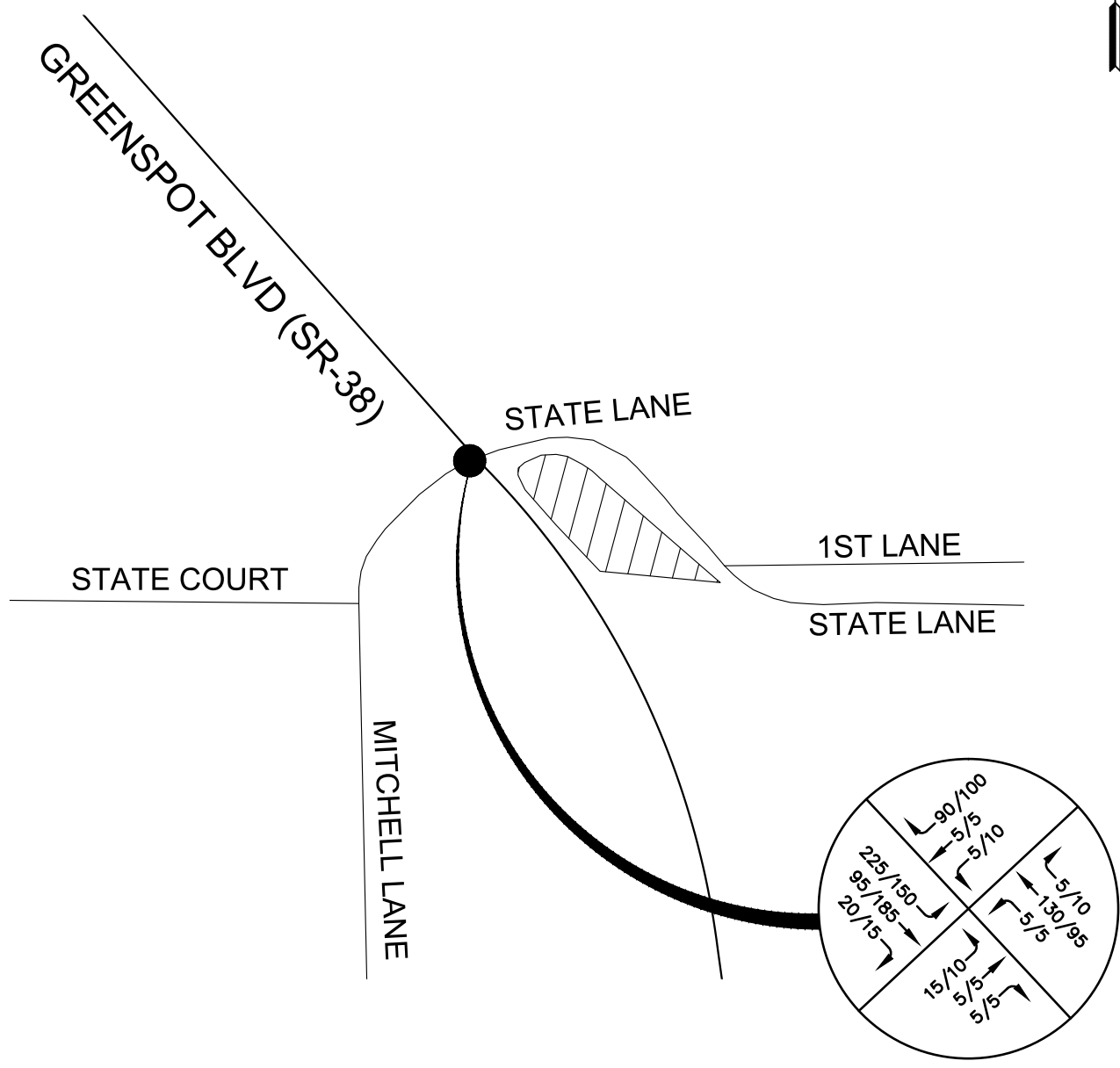
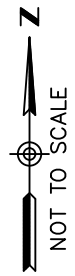
**WEEKDAY AM AND PM  
 YEAR 2014 BACKGROUND  
 TRAFFIC VOLUMES**

**EAGLE RIDGE MARKET  
 ERWIN LAKE, CALIFORNIA**

**FIGURE**

**6**

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**LEGEND**

- - STUDY INTERSECTION
- XX/XX - WINTER FRIDAY/SUNDAY PM PEAK HOUR VOLUMES

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**WINTER FRIDAY AND SUNDAY  
 YEAR 2014 BACKGROUND  
 TRAFFIC VOLUMES**  
 EAGLE RIDGE MARKET  
 ERWIN LAKE, CALIFORNIA

**FIGURE**  
**7**

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## 4. PROJECT CONDITIONS

### Project Trip Generation

The project was analyzed to determine the amount of traffic that would be generated from the proposed development. To identify potential traffic impacts from the project, trip generation factors were applied to the type of use to generate project traffic estimates. The trip generation rates were obtained from the 9th edition of the Institute of Transportation Engineers trip generation report as presented in *Table 3*. The project site consists of a convenience market and a Residence for the caretaker. The trip generation accounts for the trips generated by the Caretaker's residence, since the trips produced are negligible and can be assumed in the rounding of distributed project trips.

**Table 3: Project Trip Generation**  
**Eagle Ridge Market Traffic Study**

	Use	Daily	A.M. Peak Hour			P.M. Peak Hour		
			In	Out	Total	In	Out	Total
1	Convenience Market with Gasoline Pumps							
	(ITE 853) Per Fueling Positions	542.60	8.29	8.29	16.57	9.54	9.54	19.07
	8 Fueling Positions	4,341	66	66	133	76	76	153
	Pass by Reduction (15%)	651	10	10	20	11	11	23
	Primary Trips	3,690	56	56	113	65	65	130

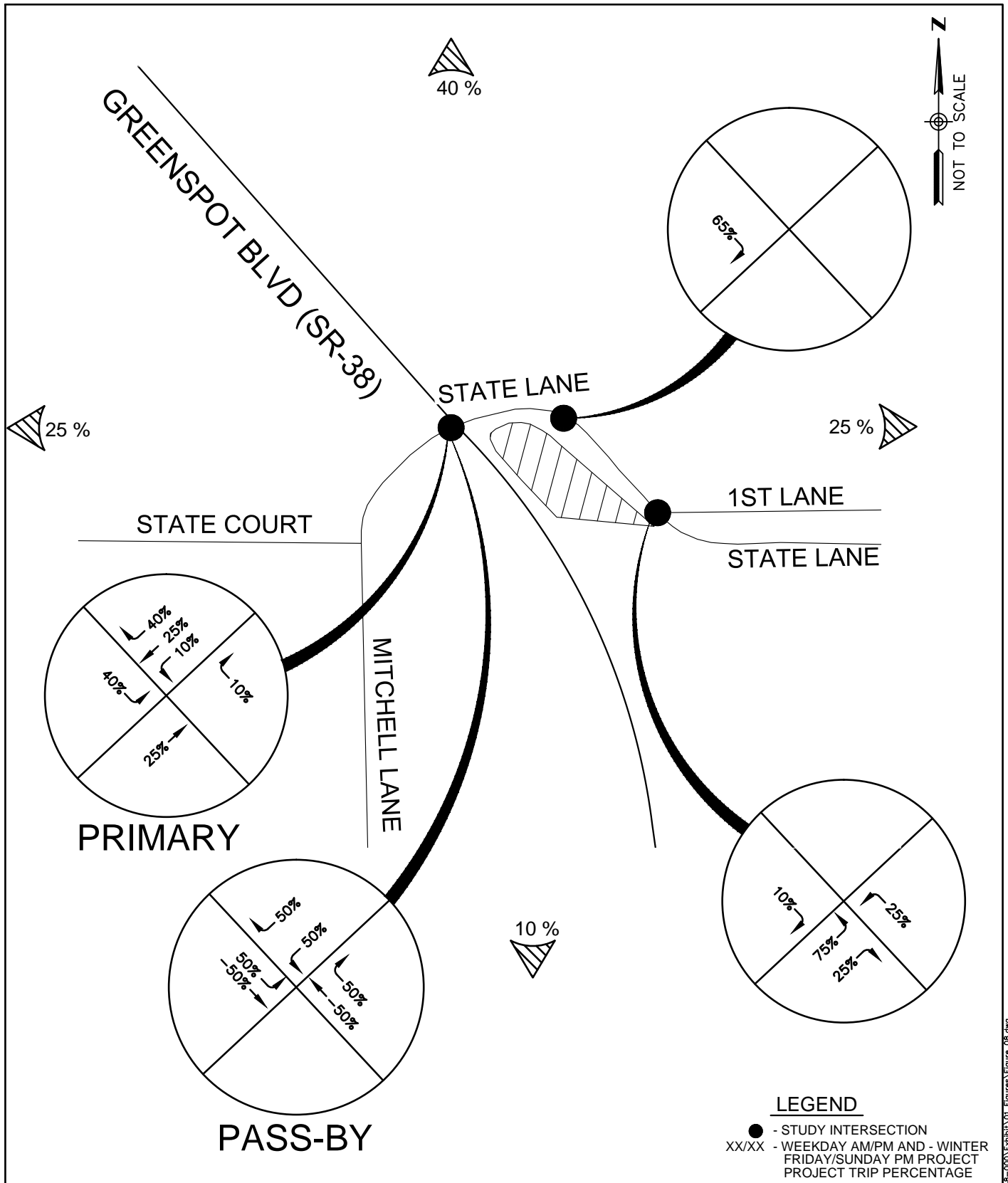
Source: Institute of Transportation Engineers' Trip Generation Report, 9<sup>th</sup> Edition

As presented, it is estimated that the project will generate 3,690 primary daily trips, and 113 primary trips during the AM Peak Hour, and 130 primary trips during the PM Peak Hour.

### Project Trip Distribution

To address the impacts of the estimated project traffic, the trips were distributed and assigned to the surrounding streets and study intersection. The project traffic was distributed based on the anticipated project utilization. Once the distribution pattern was established, project trips were assigned to the area streets that serve the project.

*Figure 8* illustrates the general and specific estimated distribution pattern for the primary and pass-by project trips. *Figure 9* illustrates the estimated weekday AM and PM peak hours for the project traffic volumes. *Figure 10* illustrates the estimated winter Friday and Sunday project traffic volumes. The project traffic was added to the existing traffic volume to assess the impacts generated.



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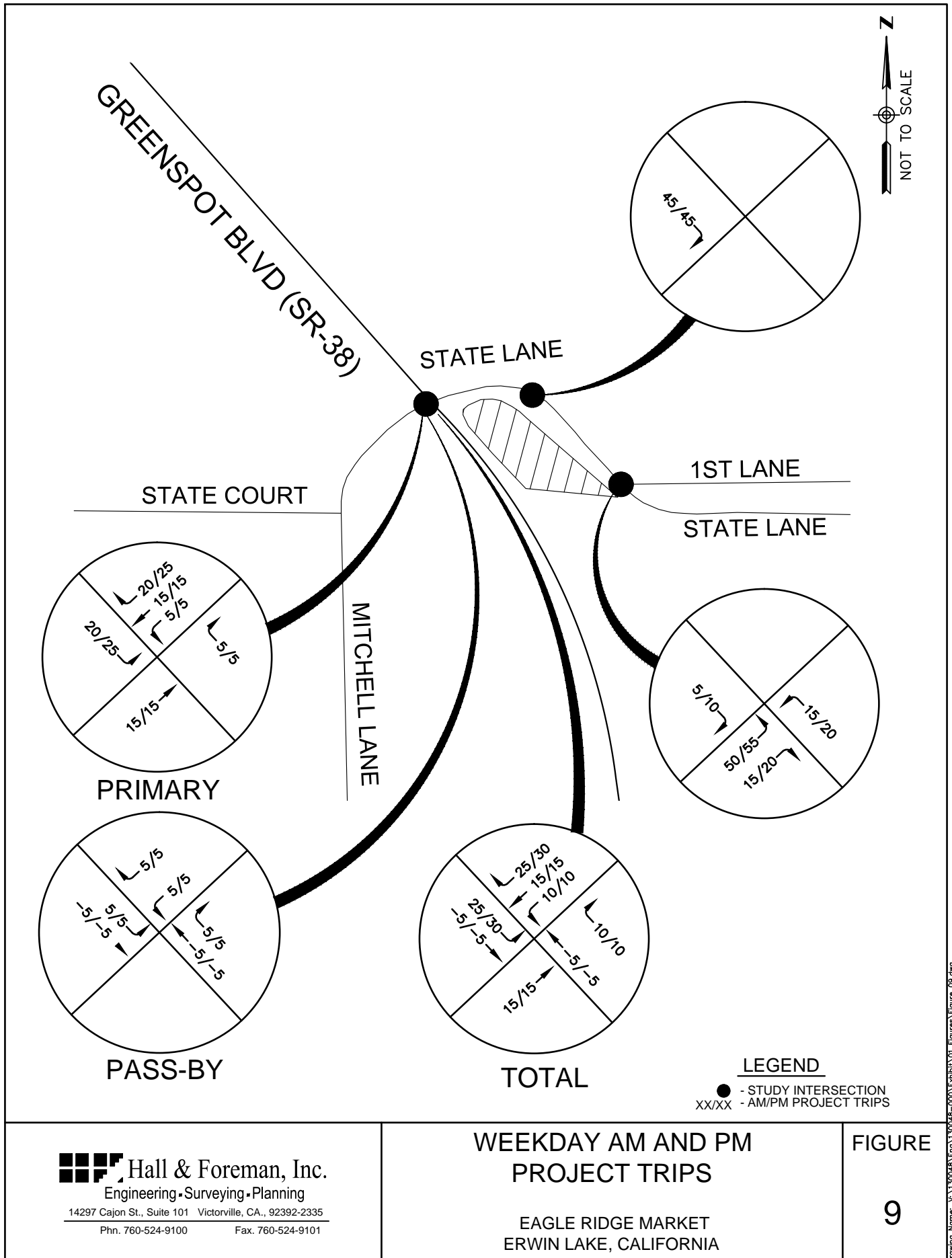
## PROJECT TRIP DISTRIBUTION

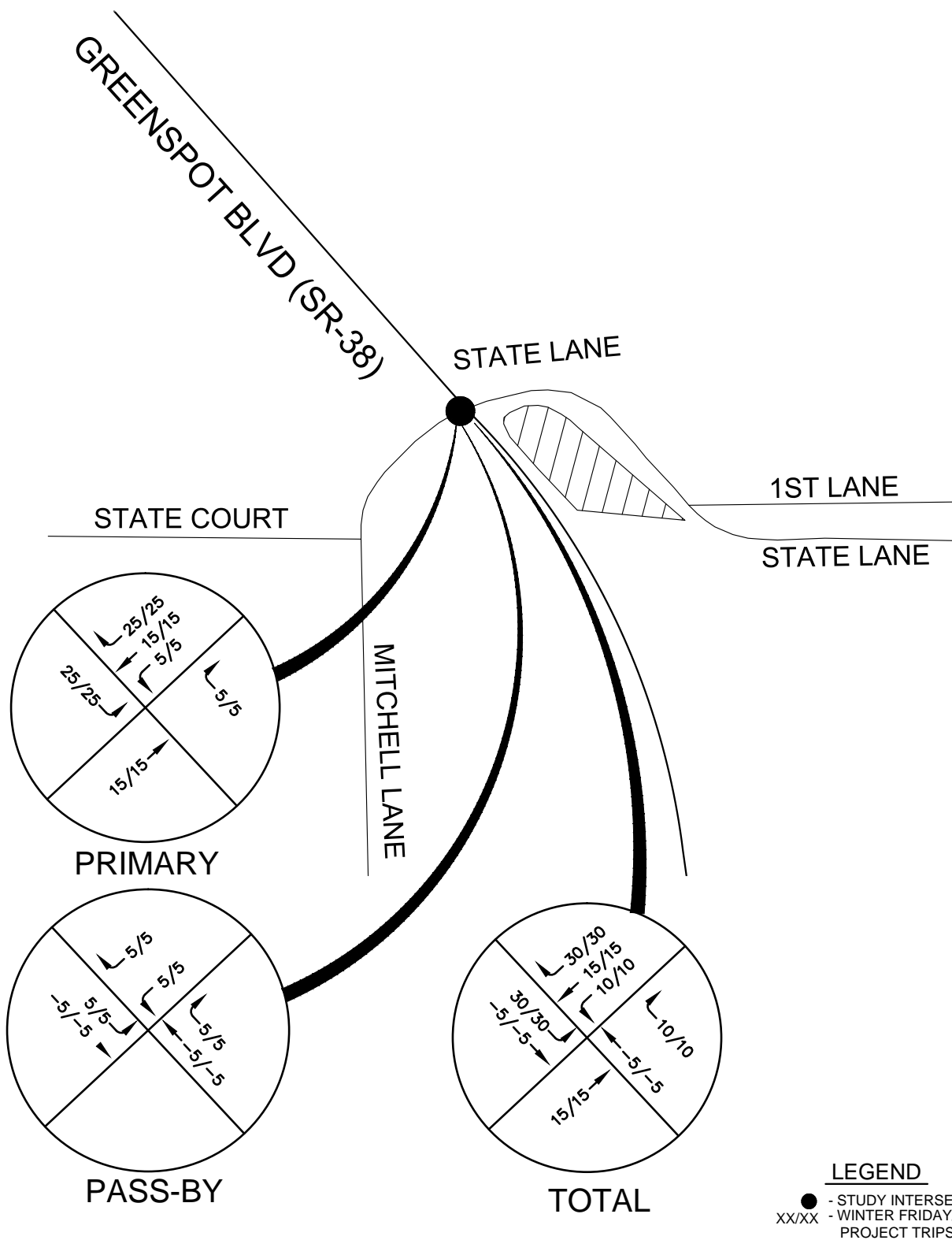
EAGLE RIDGE MARKET  
 ERWIN LAKE, CALIFORNIA

FIGURE

8

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## WINTER FRIDAY AND SUNDAY PROJECT TRIPS

EAGLE RIDGE MARKET  
ERWIN LAKE, CALIFORNIA

FIGURE

10

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## Project Traffic Analysis

Based on the proposed traffic distribution, assignment patterns and project trip generation, intersection capacity analyses were conducted to assess the estimated project impacts. To determine the project impacts at the study intersection and driveways, the Background Year 2014 volumes and project trips, known as Project Conditions, were calculated. *Figure 11* illustrates weekday AM and PM year 2014 project conditions traffic volumes. *Figure 12* illustrates the winter Friday and Sunday project conditions traffic volumes.

Intersection capacity analysis for the Project Condition was performed using the same methodology as presented in Chapter 1.

**Table 4: Intersection Capacity Analysis - Project Condition**  
**Eagle Ridge Market Traffic Study**

Intersection	Weekday AM Peak		Weekday PM Peak		Winter Friday PM Peak		Winter Sunday PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Highway 38 and State Lane (3)	15.7	C	19.4	C	24.9	C	20.0	C
State Lane and First Lane Project Driveway (3)	11.6	B	12.3	B	-	-	-	-

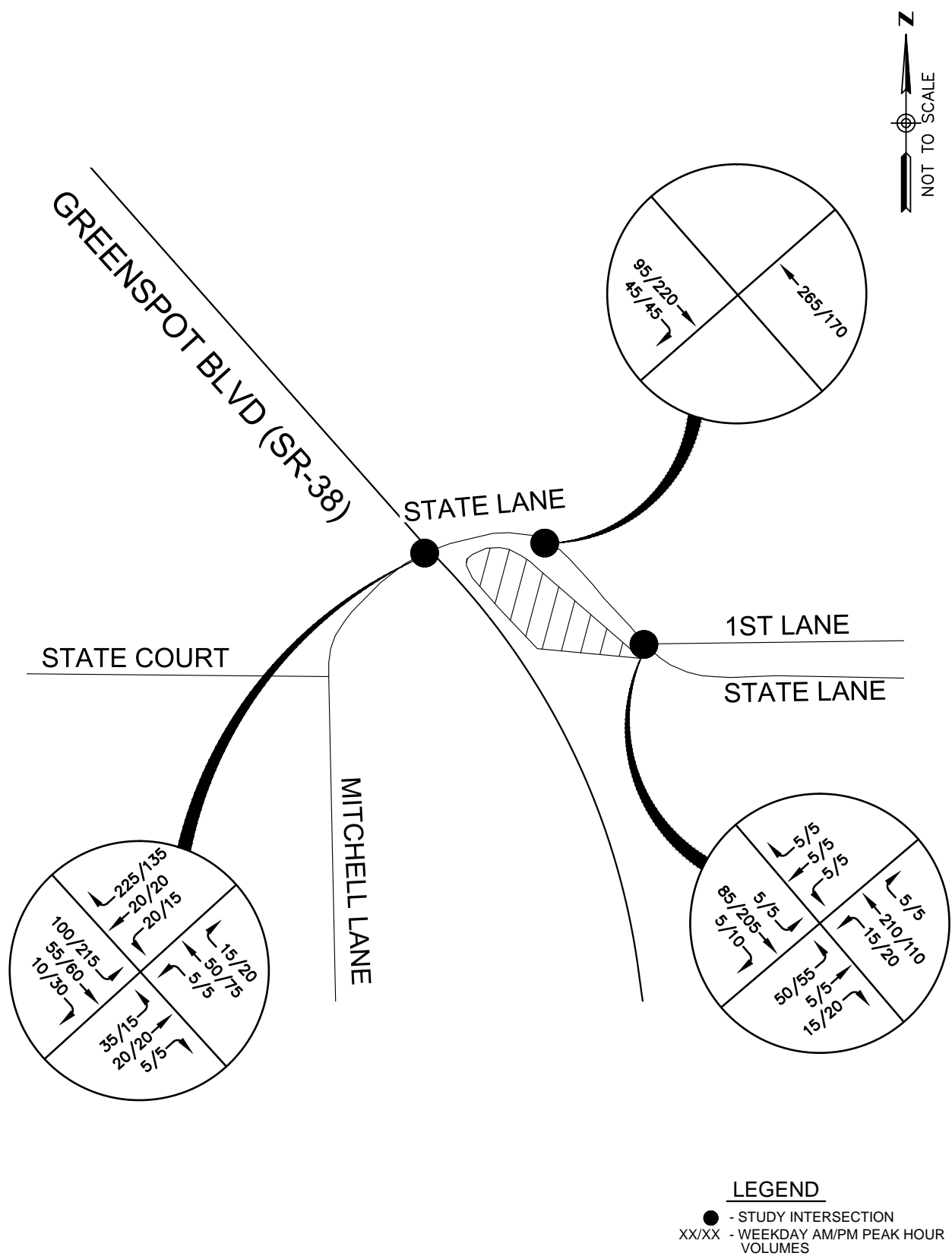
(1) LOS – HCM Level of Service

(2) Delay –In Seconds

(3) Un-Signalized Intersection

Source: **Hall & Foreman Inc.**

As presented in *Table 4* under project traffic conditions, the un-signalized intersections of Highway 38 and State Lane, and State Lane and First Lane/Project Driveway are anticipated to continue to operate at LOS “C” or better.



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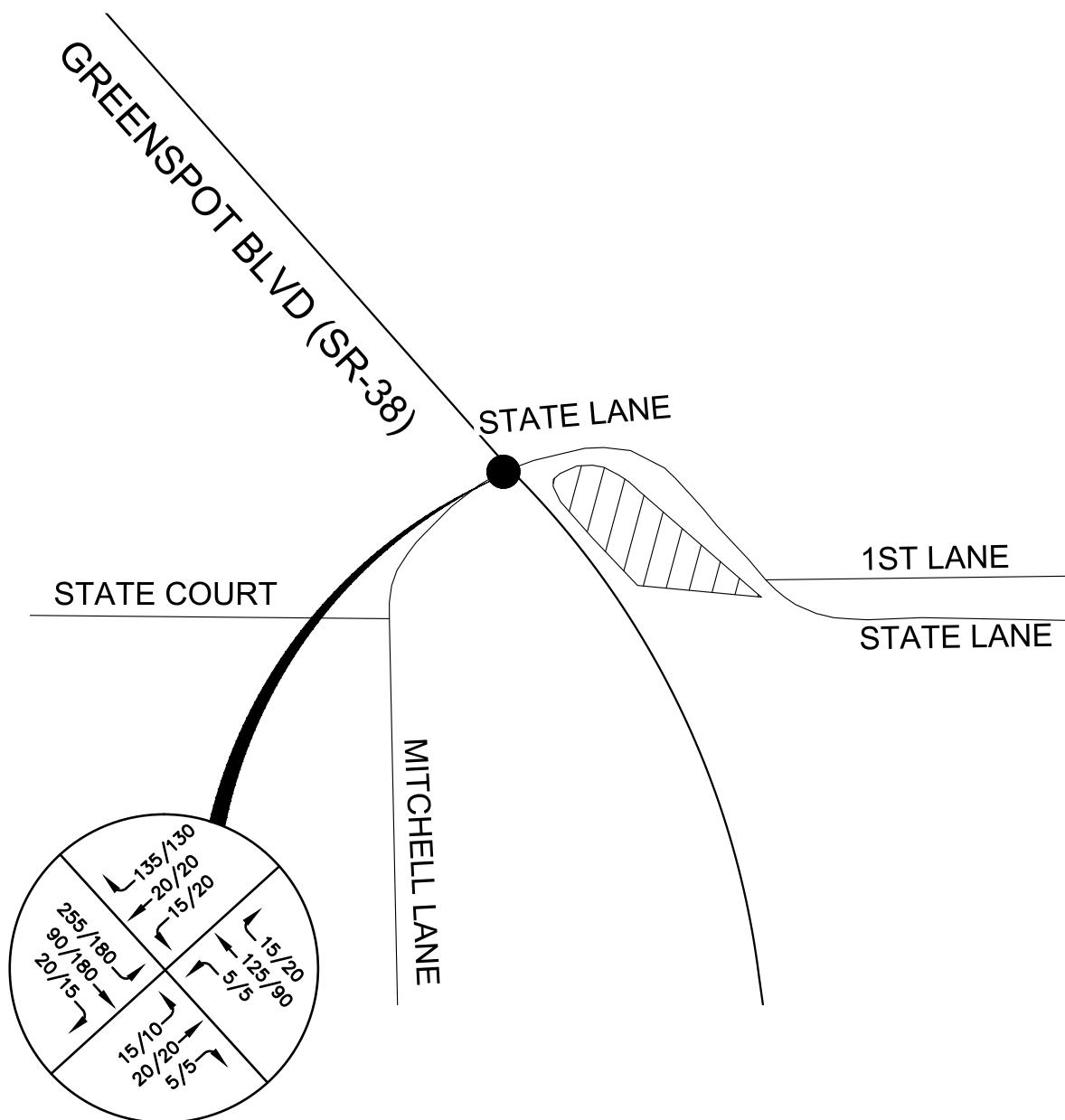
## WEEKDAY AM AND PM PROJECT TRAFFIC VOLUMES

EAGLE RIDGE MARKET  
ERWIN LAKE, CALIFORNIA

FIGURE

11

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#### LEGEND

- - STUDY INTERSECTION
- XX/XX - WINTER FRIDAY/SUNDAY PM  
PEAK HOUR VOLUMES

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## WINTER FRIDAY AND SUNDAY PROJECT TRAFFIC VOLUMES

EAGLE RIDGE MARKET  
ERWIN LAKE, CALIFORNIA

FIGURE

12

### Traffic Signal Warrant Analysis

A traffic signal warrant analysis was conducted at the intersection of Highway 38 and State Lane to determine if the installation of a traffic control signal would improve the overall safety and/or operation of the intersection. Traffic Signal Warrant worksheets are provided in the Appendix. Consideration is given to the geometrics of each approach and the number of lanes used for the analysis. It was determined that a traffic signal was not warranted based on eight hour volumes, four hour volumes, peak hour volumes, or delay. The level of safety of the intersection was also considered by reviewing accident history for the intersection. The Transportation Injury Mapping System (TIMS) was referenced. TIMS report for Highway 38 and State Lane showed that a single accident occurred within the five year data period. Based on the above criteria the warrants for the installation of a traffic signal at this intersection are not met.

### Left Turn Warrant Analysis

Several Left Turn Warrant Analysis Methodologies are available and presented in the Caltrans "Access Management" document. The Left Turn Warrant Analysis methodology to be used as presented in the California State Department of Transportation (Caltrans) "Access Management Plan" Table 17.B-3: *Criteria for Left-Turn Deceleration Lanes on Rural Two-Lane Highways*.

The criteria for an intersection with a speed of 50 mph is a Left-turn Deceleration Lane is required on Rural Two-Lane Highways for 16 or more Advancing Vehicles turning left per hour (vph). *Table 5* presents the volumes used in the analysis of the southbound (Greenspot Blvd/Highway 38) left turn movement. As a result for all conditions the Advancing Vehicles turning left is greater than 16 vehicles per hour (vph). A Left-turn lane is proposed for the southbound left turn.

**Table 5: Volume Comparison for Caltrans Access Management Plan Analysis  
Greenspot Blvd (Highway 38) and State Lane/Mitchelle Lane Intersection**

Intersection	Weekday AM Peak		Weekday PM Peak		Winter Friday PM Peak		Winter Sunday PM Peak	
	V <sub>A</sub>	V <sub>L</sub>	V <sub>A</sub>	V <sub>L</sub>	V <sub>A</sub>	V <sub>L</sub>	V <sub>A</sub>	V <sub>L</sub>
Existing Condition	125	70	265	180	310	215	330	145
Existing plus Background	145	75	280	185	340	225	350	150
Project Year 2014	165	100	305	215	365	255	375	180
Year 2035 without Project	200	105	395	260	470	315	485	210
Year 2035 with Project	220	130	420	290	495	345	510	240

(1) V<sub>A</sub> – Advancing Volume (veh/h)

(2) V<sub>L</sub> – Advancing Vehicles turning Left (veh/h)

Source: **Hall & Foreman Inc**

### Truck Turning Templates

Truck Turning templates were applied to the existing geometrics. These turn movements include northbound right, southbound left and westbound left and right turns. A custom fuel tanker was modeled to represent the model vehicle with dimensions and specifications. The truck turning templates are provided in *Figure 13*. As illustrated some widening of the shoulder at the southeast corner of the intersection will be needed to accommodate the north to east right turn movement.

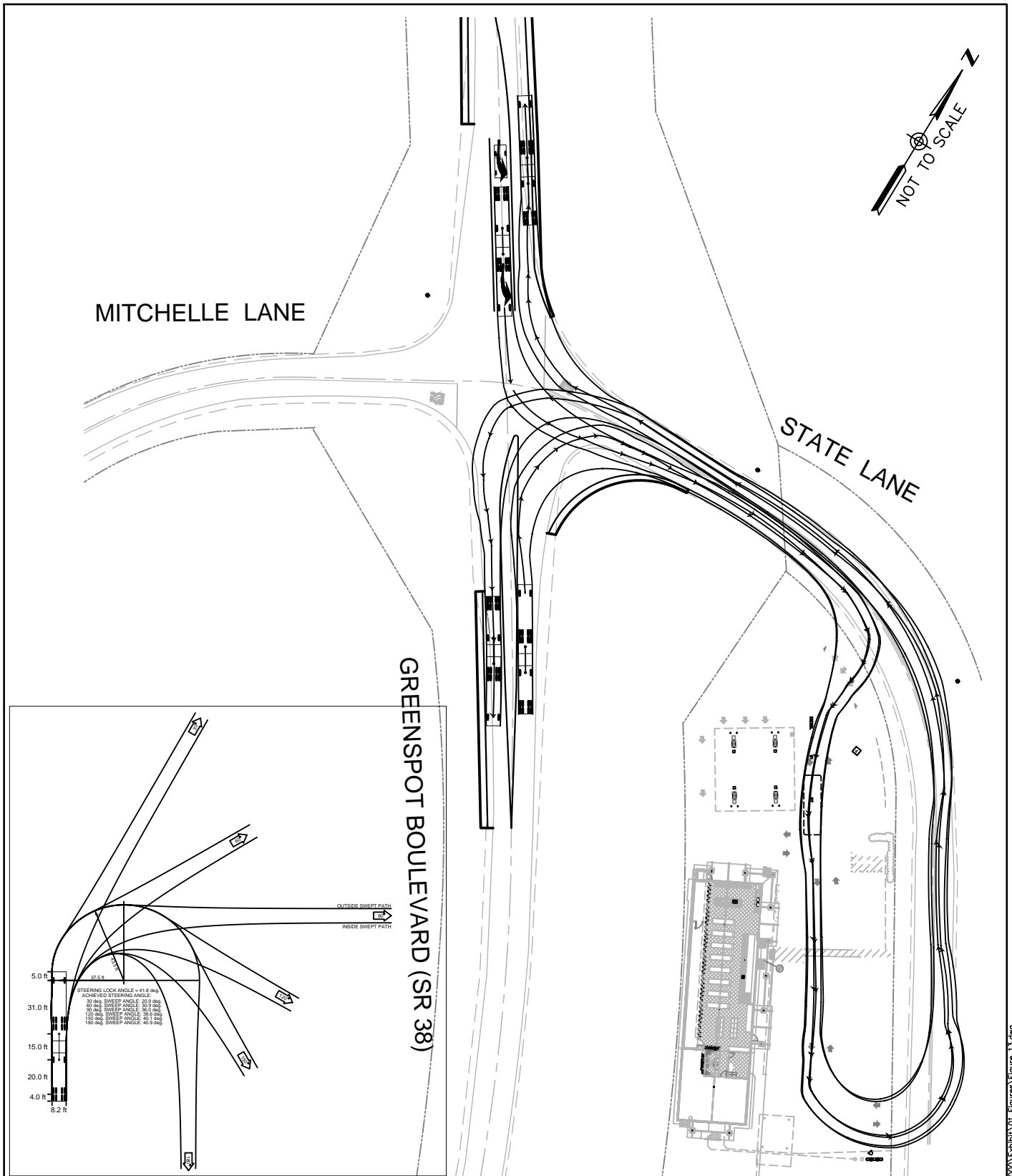
### Greenspot Blvd (Highway 38) and State Lane/Mitchelle Lane Intersection Geometrics

The intersection of Greenspot Blvd (Highway 38) and State Lane/Mitchelle Lane, as previously discussed, was evaluated to determine if a traffic signal was warranted, a left turn lane was needed, and fuel tanker truck turning movements would be accommodated. The traffic signal warrant analysis resulted in the criterion not being met. The left turn warrant analysis resulted in the criterion being met for the southbound left turn movement. Widening of the southbound approach is proposed to accommodate a 100 feet long left turn lane. The length of the left turn lane will accommodate a fuel tanker truck and vehicle waiting to complete the left turn movement. The custom fuel tanker truck turning templates resulted in some widening of the shoulder at the southeast corner of the intersection needed to accommodate the north to east right turn movement. The Proposed Project Intersection Geometrics are illustrated in *Figure 14*.

### State Lane Sight Distance Analysis

The project proposed to provide driveway access to the site along State Lane. A full access second driveway is proposed to intersect with the existing adjacent road First Lane. The proposed driveway intersection will be an un-signalized two-way stop controlled intersection, providing free movement along State Lane. Potential sight distance constraints were evaluated prior to selection of the location of the driveway due to the alignment of State Lane. The "Corner Sight Distance Triangle" utilized the current advisory speed of 20 mph. The north-west bound traffic currently has an advisory speed posted upon the approach of the westbound reverse curve on State Lane. The south-east bound traffic currently has an advisory speed posted upon the eastbound approach of the reverse curve on State Lane. The Caltrans Highway Design Manual presents a corner sight distance requirement of 7.5 second travel time for a vehicle to cross from a minor road. Based on the current advisory speed of 20 mph and the 7.5 second travel time the sight distance requirement would be 220 feet.

Project mitigations and Sight Distance Triangles are illustrated in *Figure 15*. The figure illustrates the placement of the second driveway accommodating the minimum corner sight distance of 220 feet for the westbound traffic traveling at the advisory speed of 20 mph. The eastbound traffic traveling at the advisory speed of 20 mph are also provided with adequate corner sight distance, providing 254 foot line of sight.



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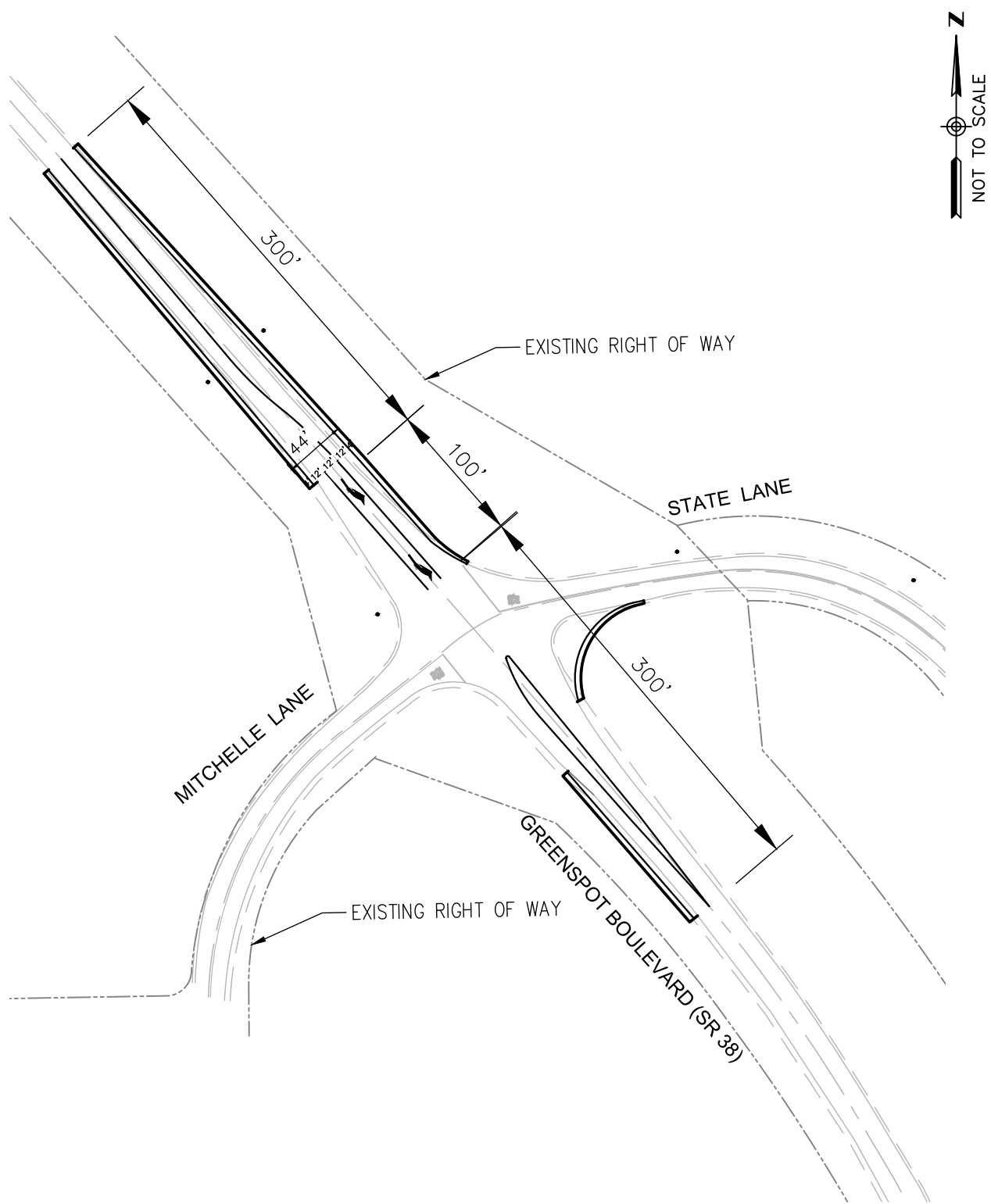
## TRUCK TURNING TEMPLATES

EAGLE RIDGE MARKET  
 ERWIN LAKE, CALIFORNIA

FIGURE

13

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### LEGEND

- - POWER POLE LOCATION

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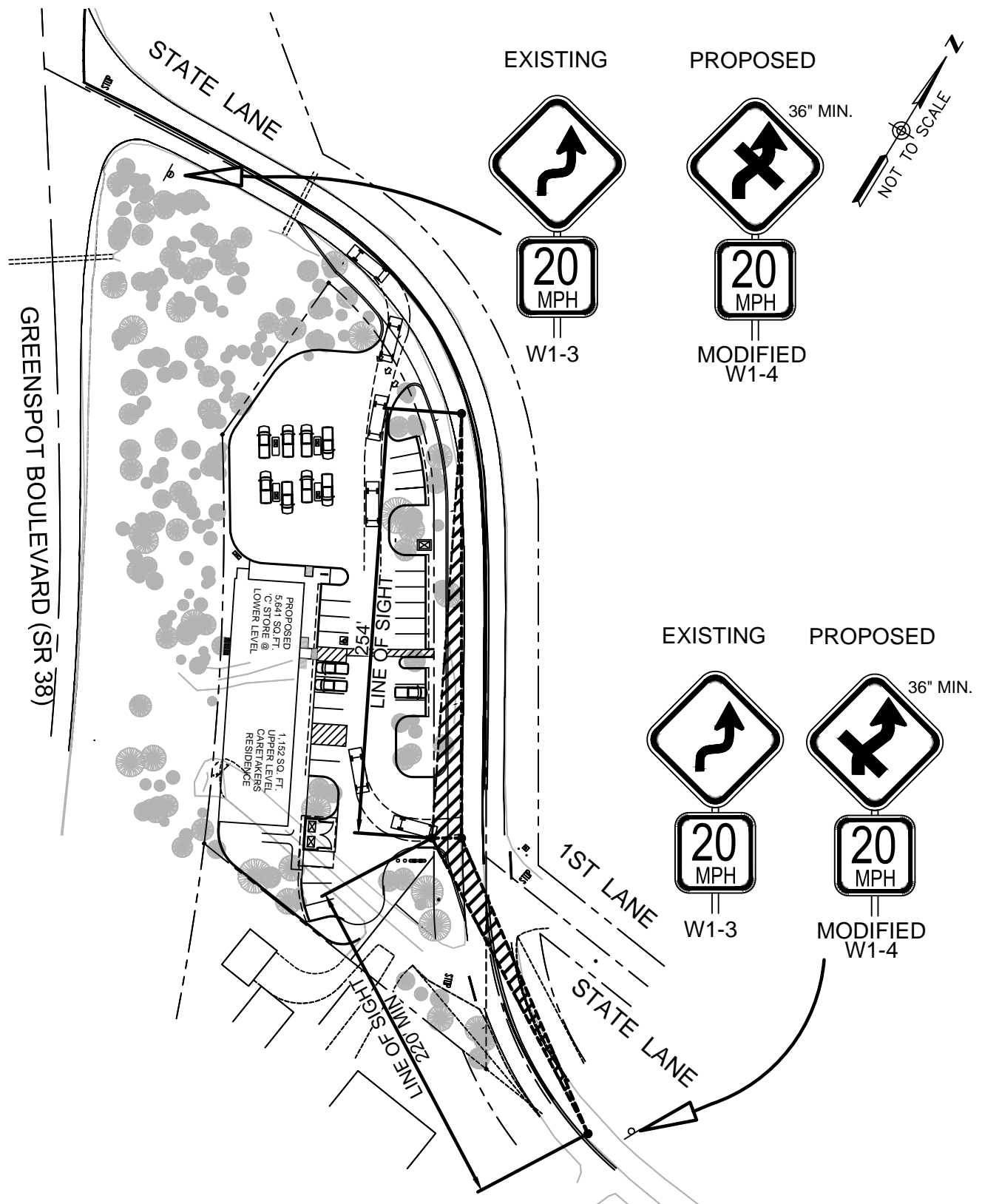
### PROPOSED INTERSECTION GEOMETRICS

EAGLE RIDGE MARKET  
ERWIN LAKE, CALIFORNIA

FIGURE

14

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## STATE LANE PROPOSED PROJECT MITIGATIONS

EAGLE RIDGE MARKET  
ERWIN LAKE, CALIFORNIA

FIGURE

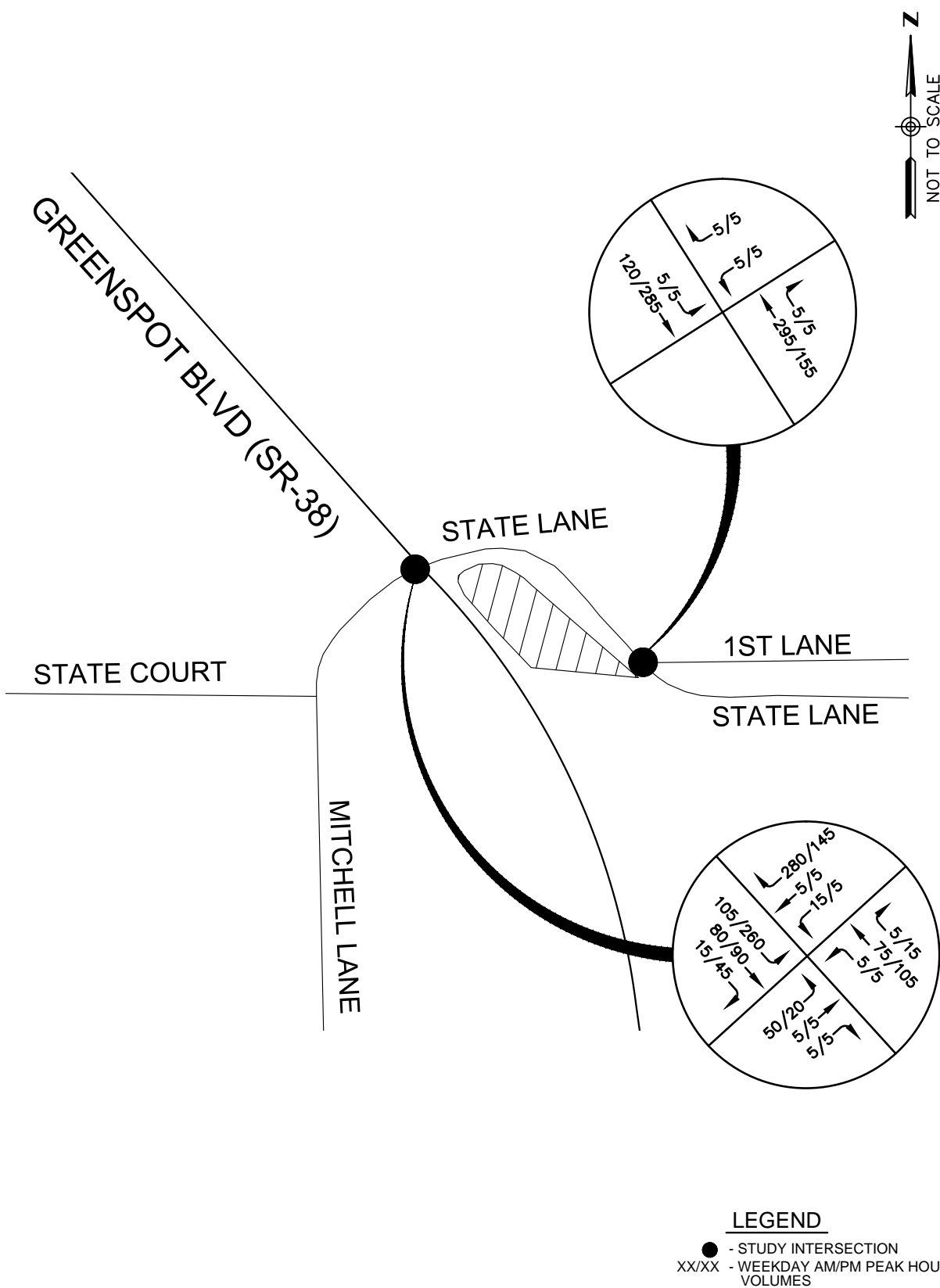
15

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 Last Opened: Jun 27, 2014 - 10:34am by: Munoz

## 5. FUTURE CONDITIONS

### Area Growth

This report is primarily concerned with traffic impacts created by the proposed project. However, growth within the study area due to development will occur. To analyze the future conditions a 2% growth per year of the existing peak hour volumes was considered. *Figure 16* illustrates weekday AM and PM year 2035 without project forecasted volumes. *Figure 17* illustrates the winter Friday and Sunday year 2035 without project forecasted volumes. *Figure 18* illustrates weekday AM and PM year 2035 with project forecasted volumes. *Figure 19* illustrates the winter Friday and Sunday year 2035 with project forecasted volumes.

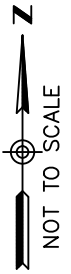
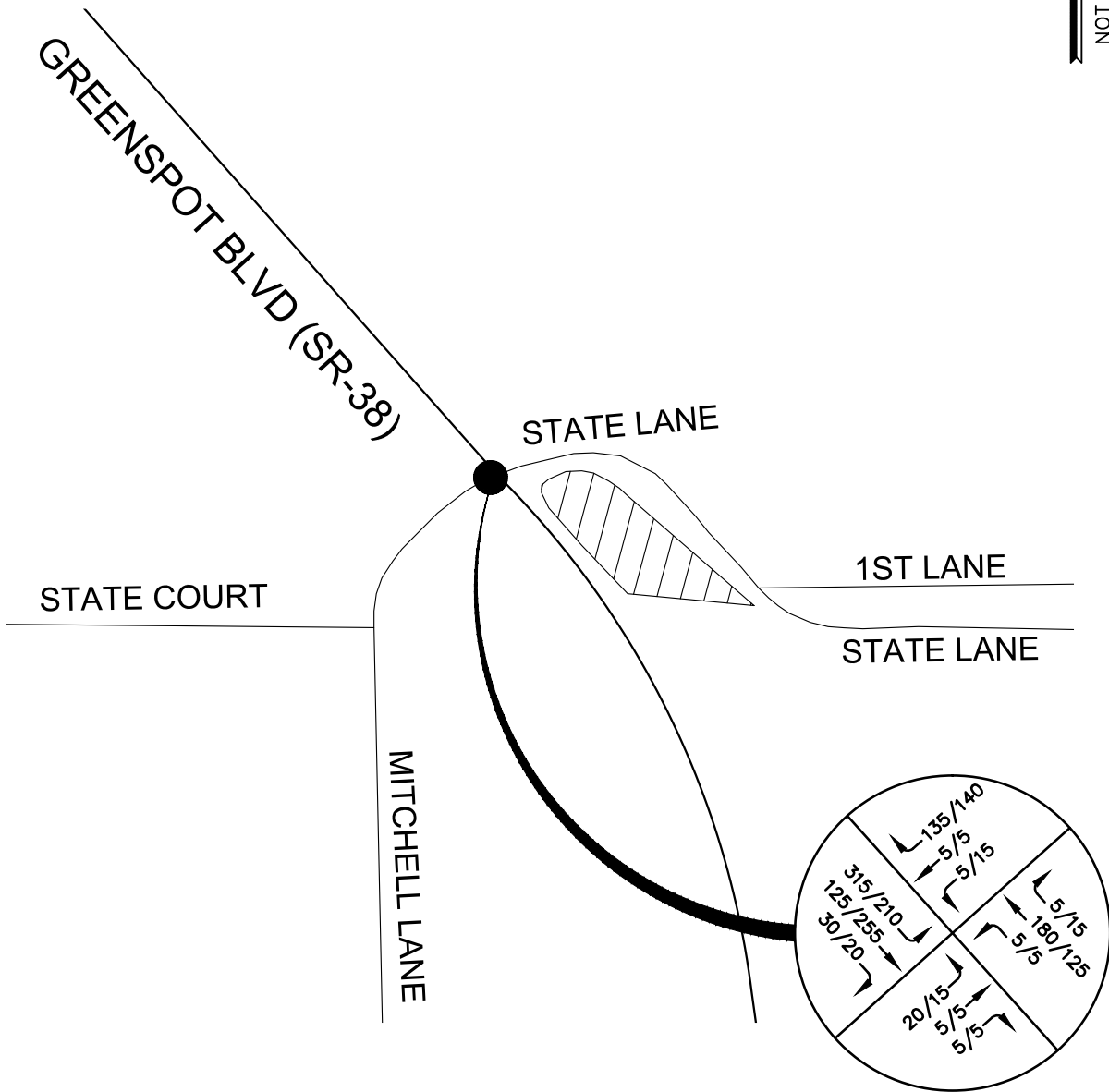


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**WEEKDAY AM AND PM  
YEAR 2035 WITHOUT PROJECT  
TRAFFIC VOLUMES**  
EAGLE RIDGE MARKET  
ERWIN LAKE, CALIFORNIA

**FIGURE  
16**

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#### LEGEND

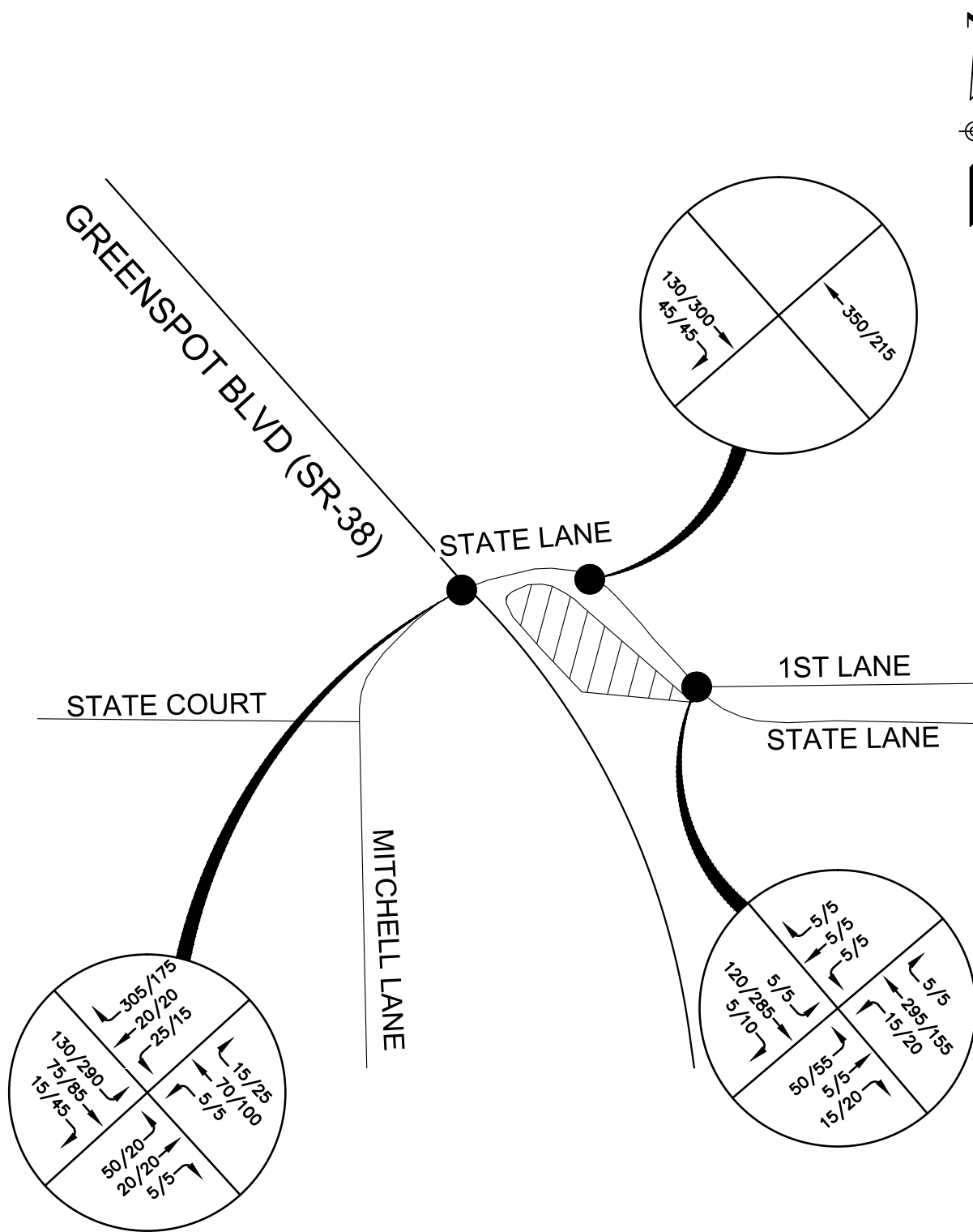
- - STUDY INTERSECTION
- XX/XX - WINTER FRIDAY/SUNDAY PM PEAK HOUR VOLUMES

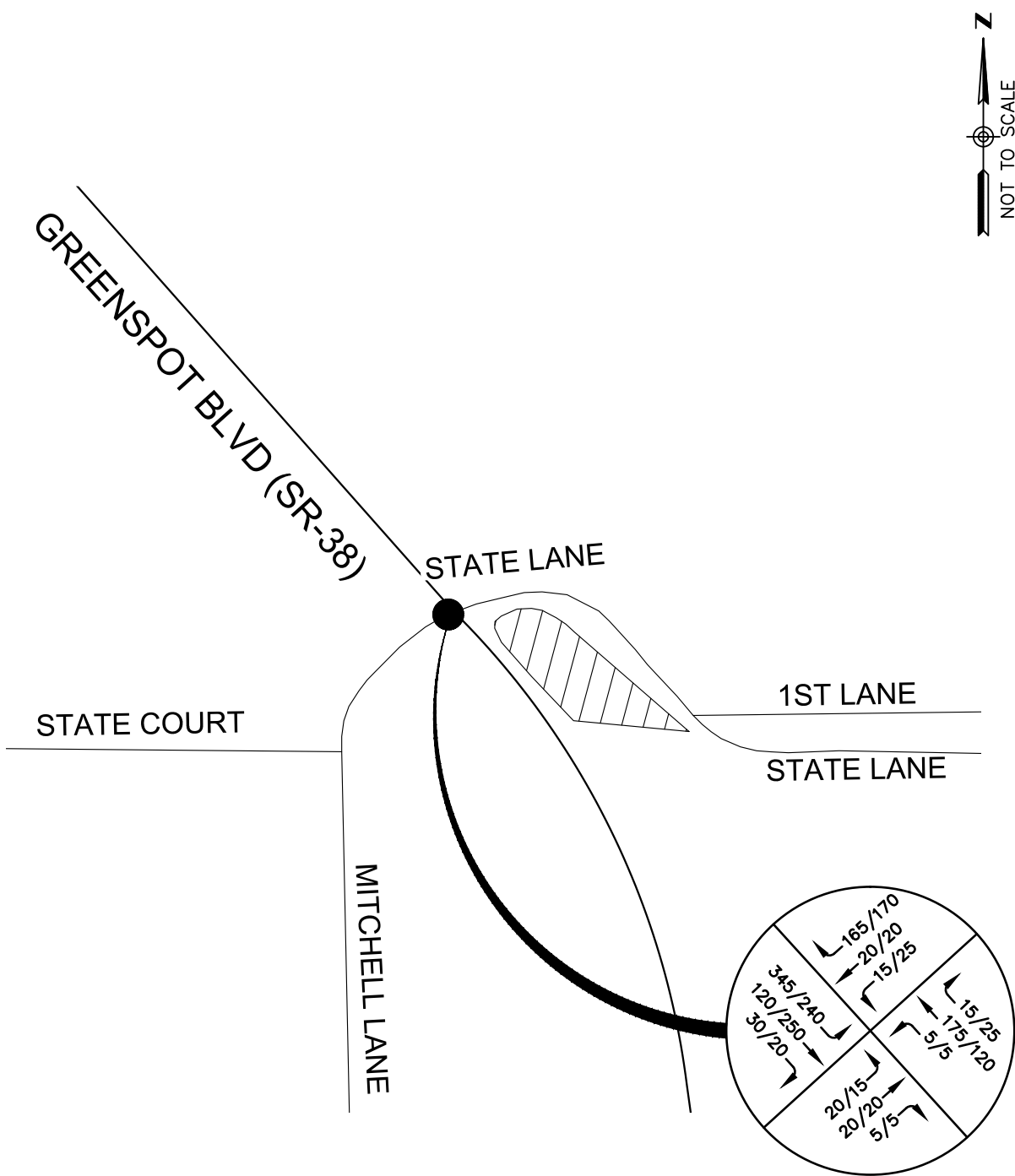
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WINTER FRIDAY AND SUNDAY  
 YEAR 2035 WITHOUT PROJECT  
 TRAFFIC VOLUMES  
 EAGLE RIDGE MARKET  
 ERWIN LAKE, CALIFORNIA

FIGURE  
 17

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**LEGEND**

● - STUDY INTERSECTION

XX/XX - WINTER FRIDAY/SUNDAY PM PEAK HOUR VOLUMES

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WINTER FRIDAY AND SUNDAY  
 YEAR 2035 WITH PROJECT  
 TRAFFIC VOLUMES  
 EAGLE RIDGE MARKET  
 ERWIN LAKE, CALIFORNIA

FIGURE  
 19

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## Future Traffic Analysis

The intersection of Highway 38 and State Lane was analyzed using the capacity analysis methodology described in Chapter 1. The analysis was conducted with the anticipated project and Future Year 2035 traffic volumes and the existing intersection geometrics. The results of the analysis are shown in *Table 6* and *Table 7*.

**Table 6: Intersection Capacity Analysis - Future Year 2035 Condition without Project**  
Eagle Ridge Market Traffic Study

Intersection	Weekday AM Peak		Weekday PM Peak		Winter Friday PM Peak		Winter Sunday PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Highway 38 and State Lane (3)	19.0	C	23.6	C	35.0	D	24.2	C
State Lane and First Lane Project Driveway (3)	10.7	B	10.4	B	-	-	-	-

(1) LOS – HCM Level of Service

(2) Delay –In Seconds

(3) Un-Signalized Intersection

Source: **Hall & Foreman Inc.**

As presented in *Table 6* under Year 2035 traffic conditions, the un-signalized intersections of Highway 38 and State Lane, and State Lane and First Lane/Project Driveway are anticipated to operate at LOS “D” or better.

**Table 7: Intersection Capacity Analysis - Future Year 2035 Condition with Project**  
Eagle Ridge Market Traffic Study

Intersection	Weekday AM Peak		Weekday PM Peak		Winter Friday PM Peak		Winter Sunday PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Highway 38 and State Lane (3)	21.9	C	29.6	D	47.7	E	30.5	D
State Lane and First Lane Project Driveway (3)	12.8	B	13.6	B	-	-	-	-

(1) LOS – HCM Level of Service

(2) Delay –In Seconds

(3) Un-Signalized Intersection

Source: **Hall & Foreman Inc.**

As presented in *Table 7* under Year 2035 traffic conditions with project, the un-signalized intersections of Highway 38 and State Lane, and State Lane and First Lane/Project Driveway are anticipated to continue to operate at an acceptable LOS.

## 6. PROJECT MITIGATION AND SUMMARY

As presented, the project is anticipated to minimally impact area intersections. Improvements to area intersections are needed based on current traffic conditions and to handle estimated project and future traffic.

### Site Improvement Mitigations

1. Driveway Number 1 is to be constructed as right turn in only.
2. Driveway Number 2 is to be constructed as full access, adjacent First Lane. The intersection will be Two Way Stop Controlled (TWSC) at the driveway and First Lane.
3. The curb and gutter along State Lane, project frontage, will be constructed.
4. Upgrading the existing warning signage along State lane. *Figure 15* illustrates this specific mitigation.

### Intersection Improvement Mitigations

1. Widening of the intersection of Greenspot Blvd/Hwy 38 and State Lane/ Michelle Lane to accommodate a southbound 100 foot left turn lane and north to east right turn movement, as illustrated in *Figure 14*.

## **7. APPENDIX**

1. Other Area Projects
2. Intersection Capacity Analysis Calculations
3. Traffic Signal Warrant Worksheets – Highway 38 and State Lane
4. Left Turn Warrant Analysis – Highway 38 and State Lane

## 1. Other Area Projects

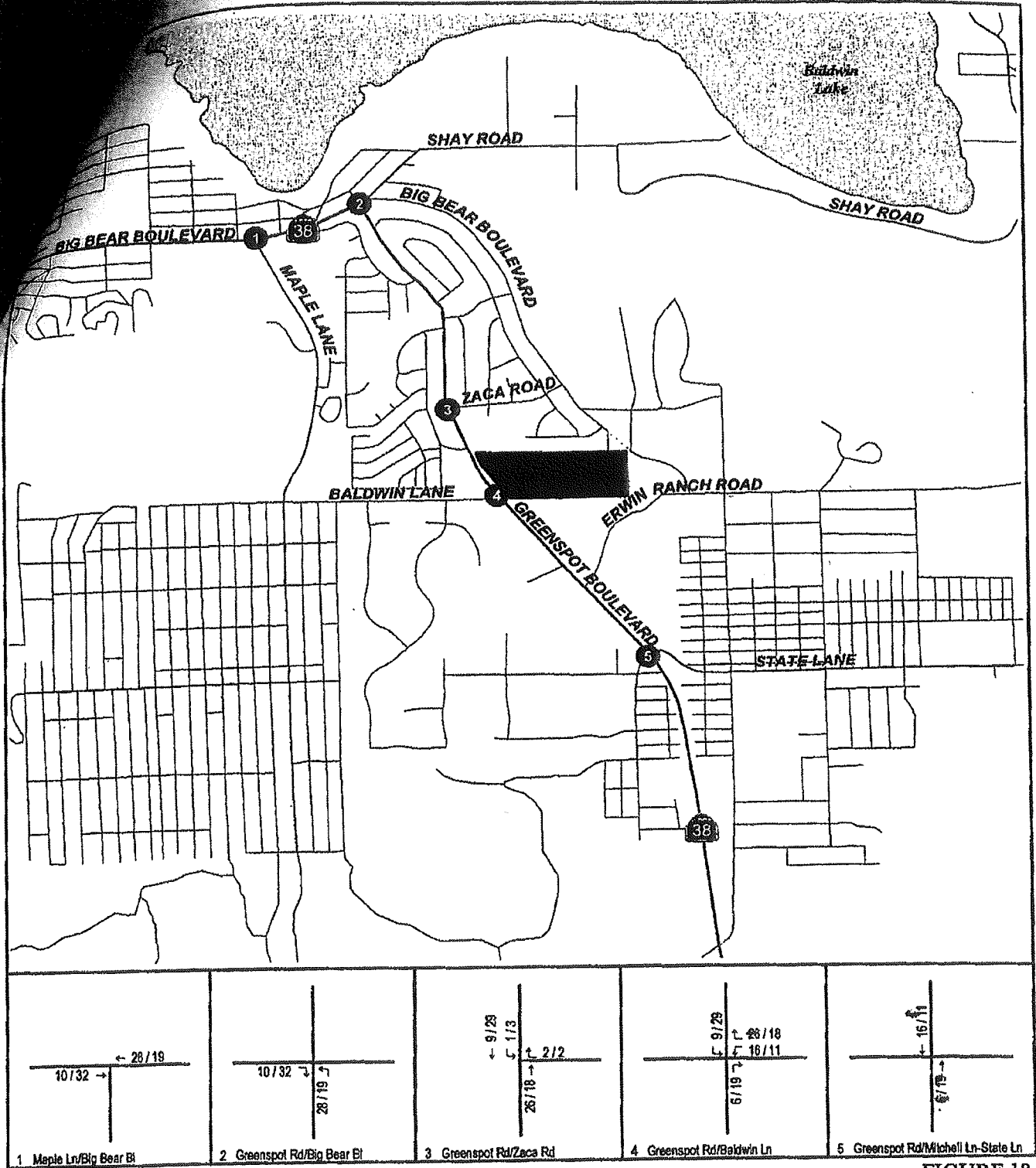


FIGURE 13

LSA

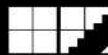
12/34

AM / PM Trips

Tentative Tract 16749  
Project Trip Assignment

R:\CDJ530\Traffic\g30s\g30\_13\_trip\_assign (7/29/2005)

## 2. Intersection Capacity Analysis Calculations



SUBJECT	BY	DATE	JOB NO.	SHEET	OF
SUMMARY	TM	27-Jun-14	VV.130048.0000	1	OF 2

E/W STREET : STATE LANE DRIVEN/S STREET : HIGHWAY 38CONDITION : WEEKDAY AM PEAK HOUR

PROJECT YEAR : 2014

PROJECTED GROWTH : 2%  
PER YEAR**CONDITION DIAGRAMS****EXISTING GEOMETRICS****PROPOSED GEOMETRICS****FUTURE GEOMETRICS****TURN MOVEMENTS**

CONDITION	EXISTING TRAFFIC	BACKGROUND TRAFFIC	EXISTING + BACKGROUND TRAFFIC	PROJECT TRIPS	EXISTING + BACKGROUND + PROJECT	YEAR 2035 WITHOUT PROJECT	YEAR 2035 WITH PROJECT
SCENARIO #							

**STATE LANE DRIVE**

EB LEFT	35	0	35	0	35	50	50
EB THRU	5	0	5	15	20	5	20
EB RIGHT	5	0	5	0	5	5	5
WB LEFT	10	0	10	10	20	15	25
WB THRU	5	0	5	15	20	5	20
WB RIGHT	190	0	200	25	225	280	305

**HIGHWAY 38**

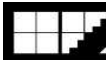
NB LEFT	5	0	5	0	5	5	5
NB THRU	50	5	55	-5	50	75	70
NB RIGHT	5	0	5	10	15	5	15
SB LEFT	70	0	75	25	100	105	130
SB THRU	45	15	60	-5	55	80	75
SB RIGHT	10	0	10	0	10	15	15
<b>TOTALS</b>	<b>435</b>	<b>20</b>	<b>470</b>	<b>90</b>	<b>560</b>	<b>645</b>	<b>735</b>

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Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax

Victorville Office: 760.524.9100 Tel/ 760.524.9101 Fax

Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax



SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	TM	27-Jun-14	VV.130048.0000	2	OF 2

E/W STREET : STATE LANE DRIVE

N/S STREET : HIGHWAY 38

CONDITION : AM PEAK HOUR

NORTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
1	0	2	0	0	0	0	1	0
0	2	0	0	0	0	0	0	0
0	0	0	0	1	0	0	0	0

SOUTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	1	0

EAST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

WEST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

NORTH LEG			SOUTH LEG			EAST LEG			WEST LEG		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
1	12	19	2	12	0	53	1	3	0	0	8
3	12	11	0	8	0	32	0	1	1	1	5
3	8	20	1	16	0	50	1	2	0	1	12
1	11	19	0	10	0	50	1	4	2	1	9

TRUCK TOTAL	AUTO VOLUMES	TOTALS	ROUNDED TOTALS	TRUCK PERCENTAGE
-------------	--------------	--------	----------------	------------------

**STATE LANE DRIVE**

EB LEFT	0	34	34	35	0
EB THRU	0	3	3	5	0
EB RIGHT	1	3	4	5	25
WB LEFT	0	10	10	10	0
WB THRU	0	3	3	5	0
WB RIGHT	3	185	188	190	2

**HIGHWAY 38**

NB LEFT	0	0	0	5	0
NB THRU	2	46	48	50	4
NB RIGHT	1	3	4	5	25
SB LEFT	2	69	71	70	3
SB THRU	4	43	47	45	9
SB RIGHT	1	8	9	10	11

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Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax

# INTERSECTION TURN COUNT

## PEAK HOUR

NORTH-SOUTH STREET: HWY 38  
 EAST-WEST STREET: STATE LANE  
 JURISDICTION: BIG BEAR

DATE: 12-06-12

PEAK HOUR: 07:45AM

### NORTH LEG

TOTAL: 127

9	47	71
1	12	19
4	13	13
3	10	20
1	12	19

Total

1st

2nd

3rd

4th

Rt Thru Lt

EAST LEG TOTAL: 201

Rt	53	32	53	50	188
Thru	1	0	1	1	3
Lt	3	1	2	4	10

1st 2nd 3rd 4th Total

Total 1st 2nd 3rd 4th

34	8	5	12	9
3	0	1	1	1
4	1	1	0	2

Lt

Thru

Rt

WEST LEG TOTAL: 41

### PEAK HOUR FACTORS

NORTH LEG = 0.96

SOUTH LEG = 0.72

EAST LEG = 0.88

WEST LEG = 0.79

ALL LEGS = 0.88

Lt Thru Rt

1st

2nd

3rd

4th

Total

0	12	2
0	8	0
0	16	2
0	12	0
	48	4

TOTAL: 52

### SOUTH LEG

HOURLY TOTAL: 421

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE

TIME: 07:00AM-08:00AM

DATE: 12-06-12

## NORTH LEG

5	43	55	Total
2	10	18	1st
1	12	11	2nd
1	9	7	3rd
1	12	19	4th
Rt	Thru	Lt	

Rt	28	35	39	53	155
Thru	0	0	1	1	2
Lt	3	2	2	3	10
	1st	2nd	3rd	4th	Total

Total 1st 2nd 3rd 4th

21	7	2	4	8	Lt
2	0	0	2	0	Thru
2	0	1	0	1	Rt

	Lt	Thru	Rt
1st	0	9	0
2nd	0	4	0
3rd	0	10	0
4th	0	12	2
Total	0	35	2

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE

TIME: 08:00AM-09:00AM

DATE: 12-06-12

## NORTH LEG

10	56	68	Total
4	13	13	1st
3	10	20	2nd
1	12	19	3rd
2	21	16	4th
Rt	Thru	Lt	

Rt	32	53	50	41	176
Thru	0	1	1	0	2
Lt	1	2	4	1	8
	1st	2nd	3rd	4th	Total

Total 1st 2nd 3rd 4th

32	5	12	9	6	Lt
3	1	1	1	0	Thru
3	1	0	2	0	Rt

	Lt	Thru	Rt
1st	0	8	0
2nd	0	16	2
3rd	0	12	0
4th	0	8	1
Total	0	44	3

Prepared by NEWPORT TRAFFIC STUDIES

**SANBAG CLASSIFICATION SUMMARY**

NORTH-SOUTH STREET : HWY 38 BIG BEAR

EAST-WEST STREET : STATE LANE 12-06-12

BEGINNING TIME : 07:00AM

AUTOS			LARGE 2 AXLE			3 AXLE			4 (+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
NORTH LEG												
2	10	17	0	0	1	0	0	0	0	0	0	30
1	12	11	0	0	0	0	0	0	0	0	0	24
1	9	7	0	0	0	0	0	0	0	0	0	17
1	12	19	0	0	0	0	0	0	0	0	0	32
3	12	11	1	0	2	0	0	0	0	1	0	30
3	8	20	0	2	0	0	0	0	0	0	0	33
1	11	19	0	0	0	0	1	0	0	0	0	32
2	20	16	0	1	0	0	0	0	0	0	0	39
14	94	120	1	3	3	0	1	0	0	1	0	237
SOUTH LEG												
0	9	0	0	0	0	0	0	0	0	0	0	9
0	4	0	0	0	0	0	0	0	0	0	0	4
0	9	0	0	0	0	0	1	0	0	0	0	10
2	12	0	0	0	0	0	0	0	0	0	0	14
0	8	0	0	0	0	0	0	0	0	0	0	8
1	16	0	1	0	0	0	0	0	0	0	0	18
0	10	0	0	0	0	0	1	0	0	1	0	12
1	8	0	0	0	0	0	0	0	0	0	0	9
4	76	0	1	0	0	0	2	0	0	1	0	84
EAST LEG												
26	0	3	2	0	0	0	0	0	0	0	0	31
34	0	2	1	0	0	0	0	0	0	0	0	37
38	1	2	1	0	0	0	0	0	0	0	0	42
53	1	3	0	0	0	0	0	0	0	0	0	57
32	0	1	0	0	0	0	0	0	0	0	0	33
50	1	2	3	0	0	0	0	0	0	0	0	56
50	1	4	0	0	0	0	0	0	0	0	0	55
41	0	1	0	0	0	0	0	0	0	0	0	42
324	4	18	7	0	0	0	0	0	0	0	0	353
WEST LEG												
0	0	7	0	0	0	0	0	0	0	0	0	7
1	0	2	0	0	0	0	0	0	0	0	0	3
0	2	4	0	0	0	0	0	0	0	0	0	6
0	0	8	1	0	0	0	0	0	0	0	0	9
1	1	5	0	0	0	0	0	0	0	0	0	7
0	1	12	0	0	0	0	0	0	0	0	0	13
2	1	9	0	0	0	0	0	0	0	0	0	12
0	0	6	0	0	0	0	0	0	0	0	0	6
4	5	53	1	0	0	0	0	0	0	0	0	63

Prepared by Newport Traffic Studies

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 12/10/2012  
 Analysis Time Period: AM Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing Conditions  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1	2	3		4	5	6
		L	T	R		L	T	R
Volume		5	50	5		70	45	10
Peak-Hour Factor, PHF		0.88	0.88	0.88		0.88	0.88	0.88
Hourly Flow Rate, HFR		5	56	5		79	51	11
Percent Heavy Vehicles		6	--	--		6	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7	8	9		10	11	12
		L	T	R		L	T	R
Volume		10	5	190		35	5	5
Peak Hour Factor, PHF		0.88	0.88	0.88		0.88	0.88	0.88
Hourly Flow Rate, HFR		11	5	215		39	5	5
Percent Heavy Vehicles		0	0	2		0	0	25
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
			LTR	LTR	LTR		LTR	LTR	LTR
v (vph)	5	79		231			49		
C(m) (vph)	1516	1517		966			466		
v/c	0.00	0.05		0.24			0.11		
95% queue length	0.01	0.16		0.94			0.35		
Control Delay	7.4	7.5		9.9			13.6		
LOS	A	A		A			B		
Approach Delay				9.9			13.6		
Approach LOS				A			B		

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 12/10/2012  
 Analysis Time Period: AM Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing plus Background  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound			Southbound		
		1	2	3	4	5	6
		L	T	R	L	T	R
Volume		5	55	5	75	60	10
Peak-Hour Factor, PHF		0.88	0.88	0.88	0.88	0.88	0.88
Hourly Flow Rate, HFR		5	62	5	85	68	11
Percent Heavy Vehicles		6	--	--	6	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		
Upstream Signal?		No			No		
Minor Street:	Approach Movement	Westbound			Eastbound		
		7	8	9	10	11	12
		L	T	R	L	T	R
Volume		10	5	200	35	5	5
Peak Hour Factor, PHF		0.88	0.88	0.88	0.88	0.88	0.88
Hourly Flow Rate, HFR		11	5	227	39	5	5
Percent Heavy Vehicles		0	0	2	0	0	25
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage		No			/		
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
			7	8	9	10	11	12
			LTR	LTR	LTR	LTR	LTR	LTR
v (vph)	5	85		243			49	
C(m) (vph)	1494	1509		955			431	
v/c	0.00	0.06		0.25			0.11	
95% queue length	0.01	0.18		1.02			0.38	
Control Delay	7.4	7.5		10.1			14.4	
LOS	A	A		B			B	
Approach Delay				10.1			14.4	
Approach LOS				B			B	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 4/24/2013  
 Analysis Time Period: AM Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Project Year 2014  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound			Southbound		
		1	2	3	4	5	6
		L	T	R	L	T	R
Volume		5	50	15	100	55	10
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR		5	55	16	111	61	11
Percent Heavy Vehicles		6	--	--	6	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		
Upstream Signal?		No			No		
Minor Street:	Approach Movement	Westbound			Eastbound		
		7	8	9	10	11	12
		L	T	R	L	T	R
Volume		20	20	225	35	20	5
Peak Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR		22	22	250	38	22	5
Percent Heavy Vehicles		0	0	2	0	0	25
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage		No			/		
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
			7	8	9	10	11	12
			LTR	LTR	LTR	LTR	LTR	LTR
v (vph)	5	111		294		65		
C(m) (vph)	1503	1504		882		401		
v/c	0.00	0.07		0.33		0.16		
95% queue length	0.01	0.24		1.49		0.58		
Control Delay	7.4	7.6		11.1		15.7		
LOS	A	A		B		C		
Approach Delay				11.1		15.7		
Approach LOS				B		C		

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 12/10/2012  
 Analysis Time Period: AM Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 without Project  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume		5	75	5		105	80	15
Peak-Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		5	78	5		110	84	15
Percent Heavy Vehicles		6	--	--		6	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		15	5	280		50	5	5
Peak Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		15	5	294		52	5	5
Percent Heavy Vehicles		0	0	2		0	0	25
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
Movement	1	4							
Lane Config	LTR	LTR		LTR				LTR	
v (vph)	5	110		314			62		
C(m) (vph)	1469	1489		926			319		
v/c	0.00	0.07		0.34			0.19		
95% queue length	0.01	0.24		1.53			0.72		
Control Delay	7.5	7.6		10.9			19.0		
LOS	A	A		B			C		
Approach Delay				10.9			19.0		
Approach LOS				B			C		

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 4/24/2013  
 Analysis Time Period: AM Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 with Project  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume		5	70	15		130	75	15
Peak-Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		5	73	15		136	78	15
Percent Heavy Vehicles		6	--	--		6	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		25	20	305		50	20	5
Peak Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		26	21	321		52	21	5
Percent Heavy Vehicles		0	0	2		0	0	25
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
Movement	1	4							
Lane Config	LTR	LTR		LTR				LTR	
v (vph)	5	136		368			78		
C(m) (vph)	1477	1483		854			291		
v/c	0.00	0.09		0.43			0.27		
95% queue length	0.01	0.30		2.25			1.09		
Control Delay	7.4	7.7		12.4			21.9		
LOS	A	A		B			C		
Approach Delay				12.4			21.9		
Approach LOS				B			C		



SUBJECT	BY	DATE	JOB NO.	SHEET	OF
SUMMARY	TM	27-Jun-14	VV.130048.0000	2	OF 2

E/W STREET : STATE LANE DRIVE

N/S STREET : HIGHWAY 38

CONDITION : PM PEAK HOUR

PROJECT YEAR : 2014

PROJECTED GROWTH : 2%

PER YEAR

## CONDITION DIAGRAMS

### EXISTING GEOMETRICS

### PROPOSED GEOMETRICS

### FUTURE GEOMETRICS

### TURN MOVEMENTS

CONDITION	EXISTING TRAFFIC	BACKGROUND TRAFFIC	EXISTING + BACKGROUND TRAFFIC	PROJECT TRIPS	EXISTING + BACKGROUND + PROJECT	YEAR 2035 WITHOUT PROJECT	YEAR 2035 WITH PROJECT
SCENARIO #							

### STATE LANE DRIVE

EB LEFT	15	0	15	0	15	20	20
EB THRU	5	0	5	15	20	5	20
EB RIGHT	5	0	5	0	5	5	5
WB LEFT	5	0	5	10	15	5	15
WB THRU	5	0	5	15	20	5	20
WB RIGHT	100	0	105	30	135	145	175

### HIGHWAY 38

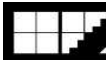
NB LEFT	5	0	5	0	5	5	5
NB THRU	60	20	80	-5	75	105	100
NB RIGHT	10	0	10	10	20	15	25
SB LEFT	180	0	185	30	215	260	290
SB THRU	55	10	65	-5	60	90	85
SB RIGHT	30	0	30	0	30	45	45
<b>TOTALS</b>	<b>475</b>	<b>30</b>	<b>515</b>	<b>100</b>	<b>615</b>	<b>705</b>	<b>805</b>

Tustin Office: 714.665.4500 Tel/ 714.665.4501 Fax

Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax

Victorville Office: 760.524.9100 Tel/ 760.524.9101 Fax

Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax



SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	TM	27-Jun-14	VV.130048.0000	2	OF 2

E/W STREET : STATE LANE DRIVE

N/S STREET : HIGHWAY 38

CONDITION : PM PEAK HOUR

NORTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0

SOUTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

EAST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0

WEST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

NORTH LEG			SOUTH LEG			EAST LEG			WEST LEG		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
8	14	28	3	22	0	31	1	1	1	2	6
11	9	46	2	16	2	22	0	1	0	1	0
4	17	49	3	10	0	20	0	0	0	1	3
9	16	57	4	10	0	24	0	1	1	0	4

TRUCK TOTAL	AUTO VOLUMES	TOTALS	ROUNDED TOTALS	TRUCK PERCENTAGE
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#### STATE LANE DRIVE

EB LEFT	1	13	14	15	7
EB THRU	0	4	4	5	0
EB RIGHT	0	2	2	5	0
WB LEFT	0	3	3	5	0
WB THRU	0	1	1	5	0
WB RIGHT	2	97	99	100	2

5

2

#### HIGHWAY 38

NB LEFT	0	2	2	5	0
NB THRU	0	58	58	60	0
NB RIGHT	0	12	12	10	0
SB LEFT	1	180	181	180	1
SB THRU	0	56	56	55	0
SB RIGHT	0	32	32	30	0

0

0

Irvine Office: 714.665.4500 Tel/ 714.665.4501 Fax

Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax

Victorville Office: 760.241.0595 Tel/ 760.241.1937 Fax

Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax

# INTERSECTION TURN COUNT

## PEAK HOUR

NORTH-SOUTH STREET: HWY 38  
 EAST-WEST STREET: STATE LANE  
 JURISDICTION: BIG BEAR

DATE: 12-06-12

PEAK HOUR: 04:30PM

## NORTH LEG

TOTAL: 269

32	56	181
8	14	28
11	9	46
4	17	49
9	16	58

Total

1st

2nd

3rd

4th

Rt Thru Lt

EAST LEG TOTAL: 103

Rt	32	22	20	25	99
Thru	1	0	0	0	1
Lt	1	1	0	1	3

Total 1st 2nd 3rd 4th

13	6	0	3	4
4	2	1	1	0
2	1	0	0	1

Lt

Thru

Rt

1st 2nd 3rd 4th Total

WEST LEG TOTAL: 19

## PEAK HOUR FACTORS

NORTH LEG = 0.81

SOUTH LEG = 0.72

EAST LEG = 0.76

WEST LEG = 0.53

ALL LEGS = 0.90

	Lt	Thru	Rt
1st	0	22	3
2nd	2	16	2
3rd	0	10	3
4th	0	10	4
Total	2	58	12

## SOUTH LEG

HOURLY TOTAL: 463

TOTAL: 72

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE

TIME: 04:00PM-05:00PM

DATE: 12-06-12

## NORTH LEG

31	59	160	Total
7	20	42	1st
5	16	44	2nd
8	14	28	3rd
11	9	46	4th
Rt	Thru	Lt	

Total 1st 2nd 3rd 4th

15	6	3	6	0	Lt
4	1	0	2	1	Thru
1	0	0	1	0	Rt

Rt	29	18	32	22	101
Thru	0	0	1	0	1
Lt	1	1	1	1	4
	1st	2nd	3rd	4th	Total

Lt Thru Rt

1st	1	14	2
2nd	1	14	5
3rd	0	22	3
4th	2	16	2
Total	4	66	12

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE

TIME: 05:00PM-06:00PM

DATE: 12-06-12

## NORTH LEG

25	52	173	Total
4	17	49	1st
9	16	58	2nd
6	9	38	3rd
6	10	28	4th
Rt	Thru	Lt	

Rt	20	25	16	21	82
Thru	0	0	0	0	0
Lt	0	1	0	0	1
	1st	2nd	3rd	4th	Total

Total 1st 2nd 3rd 4th

13	3	4	2	4	Lt
3	1	0	2	0	Thru
2	0	1	1	0	Rt

	Lt	Thru	Rt
1st	0	10	3
2nd	0	10	4
3rd	2	16	1
4th	2	18	1
Total	4	54	9

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY												
NORTH-SOUTH STREET : HWY 38									BIG BEAR			
EAST-WEST STREET : STATE LANE									12-06-12			
BEGINNING TIME : 04:00PM												
AUTOS			LARGE 2 AXLE			3 AXLE			4 (+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
NORTH LEG												
7	20	42	0	0	0	0	0	0	0	0	0	69
5	16	43	0	0	1	0	0	0	0	0	0	65
8	14	28	0	0	0	0	0	0	0	0	0	50
11	9	46	0	0	0	0	0	0	0	0	0	66
4	17	49	0	0	0	0	0	0	0	0	0	70
9	16	57	0	0	1	0	0	0	0	0	0	83
6	9	38	0	0	0	0	0	0	0	0	0	53
6	10	28	0	0	0	0	0	0	0	0	0	44
56	111	331	0	0	2	0	0	0	0	0	0	500
SOUTH LEG												
2	13	1	0	0	0	0	0	0	0	1	0	17
5	14	1	0	0	0	0	0	0	0	0	0	20
3	22	0	0	0	0	0	0	0	0	0	0	25
2	16	2	0	0	0	0	0	0	0	0	0	20
3	10	0	0	0	0	0	0	0	0	0	0	13
4	10	0	0	0	0	0	0	0	0	0	0	14
1	15	2	0	1	0	0	0	0	0	0	0	19
1	18	2	0	0	0	0	0	0	0	0	0	21
21	118	8	0	1	0	0	0	0	0	1	0	149
EAST LEG												
29	0	1	0	0	0	0	0	0	0	0	0	30
18	0	1	0	0	0	0	0	0	0	0	0	19
31	1	1	1	0	0	0	0	0	0	0	0	34
22	0	1	0	0	0	0	0	0	0	0	0	23
20	0	0	0	0	0	0	0	0	0	0	0	20
24	0	1	1	0	0	0	0	0	0	0	0	26
16	0	0	0	0	0	0	0	0	0	0	0	16
21	0	0	0	0	0	0	0	0	0	0	0	21
181	1	5	2	0	0	0	0	0	0	0	0	189
WEST LEG												
0	1	6	0	0	0	0	0	0	0	0	0	7
0	0	2	0	0	1	0	0	0	0	0	0	3
1	2	6	0	0	0	0	0	0	0	0	0	9
0	1	0	0	0	0	0	0	0	0	0	0	1
0	1	3	0	0	0	0	0	0	0	0	0	4
1	0	4	0	0	0	0	0	0	0	0	0	5
1	2	2	0	0	0	0	0	0	0	0	0	5
0	0	4	0	0	0	0	0	0	0	0	0	4
3	7	27	0	0	1	0	0	0	0	0	0	38

Prepared by Newport Traffic Studies

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 12/10/2012  
 Analysis Time Period: PM Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing Condition  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume		5	60	10		180	55	30
Peak-Hour Factor, PHF		0.90	0.90	0.90		0.90	0.90	0.90
Hourly Flow Rate, HFR		5	66	11		200	61	33
Percent Heavy Vehicles		0	--	--		0	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		5	5	100		15	5	5
Peak Hour Factor, PHF		0.90	0.90	0.90		0.90	0.90	0.90
Hourly Flow Rate, HFR		5	5	111		16	5	5
Percent Heavy Vehicles		0	0	2		7	0	0
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
Movement	1	4							
Lane Config	LTR	LTR		LTR				LTR	
v (vph)	5	200		121				26	
C(m) (vph)	1513	1535		873				371	
v/c	0.00	0.13		0.14				0.07	
95% queue length	0.01	0.45		0.48				0.23	
Control Delay	7.4	7.7		9.8				15.4	
LOS	A	A		A				C	
Approach Delay				9.8				15.4	
Approach LOS				A				C	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 12/10/2012  
 Analysis Time Period: PM Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing plus Background  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound			Southbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		5	80	10	185	65	30
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR		5	88	11	205	72	33
Percent Heavy Vehicles		0	--	--	0	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		
Upstream Signal?		No			No		
Minor Street:	Approach Movement	Westbound			Eastbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		5	5	105	15	5	5
Peak Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR		5	5	116	16	5	5
Percent Heavy Vehicles		0	0	2	7	0	0
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage		No			/		
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	205		126			26	
C(m) (vph)	1499	1507		847			344	
v/c	0.00	0.14		0.15			0.08	
95% queue length	0.01	0.47		0.52			0.24	
Control Delay	7.4	7.8		10.0-			16.3	
LOS	A	A		A			C	
Approach Delay				10.0-			16.3	
Approach LOS				A			C	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 4/24/2013  
 Analysis Time Period: PM Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Project Year 2014  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound			Southbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		5	75	20	215	60	30
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR		5	83	22	238	66	33
Percent Heavy Vehicles		0	--	--	0	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		
Upstream Signal?		No			No		
Minor Street:	Approach Movement	Westbound			Eastbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		15	20	135	15	20	5
Peak Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR		16	22	150	16	22	5
Percent Heavy Vehicles		0	0	2	7	0	0
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage		No			/		
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	238		188			43	
C(m) (vph)	1507	1499		674			293	
v/c	0.00	0.16		0.28			0.15	
95% queue length	0.01	0.57		1.16			0.51	
Control Delay	7.4	7.9		12.4			19.4	
LOS	A	A		B			C	
Approach Delay				12.4			19.4	
Approach LOS				B			C	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 12/10/2012  
 Analysis Time Period: PM Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 without Project  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound			Southbound		
		1	2	3	4	5	6
		L	T	R	L	T	R
Volume		5	105	15	260	90	45
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR		5	110	15	273	94	47
Percent Heavy Vehicles		0	--	--	0	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		
Upstream Signal?		No			No		
Minor Street:	Approach Movement	Westbound			Eastbound		
		7	8	9	10	11	12
		L	T	R	L	T	R
Volume		5	5	145	20	5	5
Peak Hour Factor, PHF		0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR		5	5	152	21	5	5
Percent Heavy Vehicles		0	0	2	7	0	0
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage		No			/		
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
			7	8	9	10	11	12
			LTR	LTR	LTR	LTR	LTR	LTR
v (vph)	5	273		162			31	
C(m) (vph)	1455	1474		800			224	
v/c	0.00	0.19		0.20			0.14	
95% queue length	0.01	0.68		0.76			0.48	
Control Delay	7.5	8.0		10.6			23.6	
LOS	A	A		B			C	
Approach Delay				10.6			23.6	
Approach LOS				B			C	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 4/24/2013  
 Analysis Time Period: PM Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 with Project  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume		5	100	25		290	85	45
Peak-Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		5	105	26		305	89	47
Percent Heavy Vehicles		0	--	--		0	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		15	20	175		20	20	5
Peak Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		15	21	184		21	21	5
Percent Heavy Vehicles		0	0	2		7	0	0
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
Movement	1	4							
Lane Config	LTR	LTR		LTR				LTR	
v (vph)	5	305		220				47	
C(m) (vph)	1461	1467		609				193	
v/c	0.00	0.21		0.36				0.24	
95% queue length	0.01	0.79		1.68				0.95	
Control Delay	7.5	8.1		14.2				29.6	
LOS	A	A		B				D	
Approach Delay				14.2				29.6	
Approach LOS				B				D	



SUBJECT	BY	DATE	JOB NO.	SHEET	OF
SUMMARY	TM	27-Jun-14	VV.130048.0000	1	OF 2

E/W STREET : STATE LANE DRIVE  
N/S STREET : HIGHWAY 38  
CONDITION : WINTER FRIDAY PM PEAK HOUR

PROJECT YEAR : 2014  
PROJECTED GROWTH : 2%  
PER YEAR

## CONDITION DIAGRAMS

### EXISTING GEOMETRICS

### PROPOSED GEOMETRICS

### FUTURE GEOMETRICS

### TURN MOVEMENTS

CONDITION	EXISTING TRAFFIC	BACKGROUND TRAFFIC	EXISTING + BACKGROUND TRAFFIC	PROJECT TRIPS	EXISTING + BACKGROUND + PROJECT	YEAR 2035 WITHOUT PROJECT	YEAR 2035 WITH PROJECT
SCENARIO #							

### STATE LANE DRIVE

EB LEFT	15	0	15	0	15	20	20
EB THRU	5	0	5	15	20	5	20
EB RIGHT	5	0	5	0	5	5	5
WB LEFT	5	0	5	10	15	5	15
WB THRU	5	0	5	15	20	5	20
WB RIGHT	90	0	95	30	125	135	165

### HIGHWAY 38

NB LEFT	5	0	5	0	5	5	5
NB THRU	120	5	130	-5	125	180	175
NB RIGHT	5	0	5	10	15	5	15
SB LEFT	215	0	225	30	255	315	345
SB THRU	75	15	95	-5	90	125	120
SB RIGHT	20	0	20	0	20	30	30
<b>TOTALS</b>	<b>565</b>	<b>20</b>	<b>610</b>	<b>100</b>	<b>710</b>	<b>835</b>	<b>935</b>

Tustin Office: 714.665.4500 Tel/ 714.665.4501 Fax

Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax

Victorville Office: 760.524.9100 Tel/ 760.524.9101 Fax

Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax



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SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	TM	27-Jun-14	VV.130048.0000	2	OF 2

E/W STREET : STATE LANE DRIVE  
CONDITION : WINTER FRIDAY PM PEAK HOUR

N/S STREET : HIGHWAY 38  
COUNT DATE : December 13, 2013

NORTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
1	0	2	0	0	0	0	1	0
0	2	0	0	0	0	0	0	0
0	0	0	0	1	0	0	0	0

SOUTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	1	0

EAST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

WEST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

NORTH LEG			SOUTH LEG			EAST LEG			WEST LEG		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

TRUCK TOTAL	AUTO VOLUMES	TOTALS	ROUNDED TOTALS	TRUCK PERCENTAGE
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#### STATE LANE DRIVE

EB LEFT	0	0	16	15	0
EB THRU	0	0	2	5	0
EB RIGHT	1	0	1	5	100
WB LEFT	0	0	7	5	0
WB THRU	0	0	3	5	0
WB RIGHT	0	0	92	90	0

#### HIGHWAY 38

NB LEFT	0	0	7	5	0
NB THRU	2	0	122	120	2
NB RIGHT	1	0	6	5	17
SB LEFT	2	0	214	215	1
SB THRU	4	0	73	75	5
SB RIGHT	1	0	20	20	5

Irvine Office: 714.665.4500 Tel/ 714.665.4501 Fax

Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax

Victorville Office: 760.241.0595 Tel/ 760.241.1937 Fax

Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax

# INTERSECTION TURN COUNT

## PEAK HOUR

NORTH-SOUTH STREET: HWY 38  
 EAST-WEST STREET: STATE LANE DR  
 JURISDICTION: ERWIN LAKE

DATE: 12-13-13

PEAK HOUR: 04:30PM

### NORTH LEG

TOTAL: 307

20	73	214
6	16	42
6	19	50
6	16	56
2	22	66

Total

1st

2nd

3rd

4th

Rt Thru Lt

EAST LEG TOTAL: 102

Rt	27	23	22	20	92
Thru	1	1	1	0	3
Lt	5	0	2	0	7

Total 1st 2nd 3rd 4th

16	1	3	6	6
2	1	0	0	1
1	0	0	1	0

Lt

Thru

Rt

1st 2nd 3rd 4th Total

WEST LEG TOTAL: 19

### PEAK HOUR FACTORS

NORTH LEG = 0.85

SOUTH LEG = 0.80

EAST LEG = 0.77

WEST LEG = 0.68

ALL LEGS = 0.93

	Lt	Thru	Rt
1st	2	30	2
2nd	4	37	1
3rd	1	21	2
4th	0	34	1
Total	7	122	6

### SOUTH LEG

TOTAL: 135

HOURLY TOTAL: 563

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 04:00PM-05:00PM

DATE: 12-13-13

## NORTH LEG

22	73	192	Total
5	21	49	1st
5	17	51	2nd
6	16	42	3rd
6	19	50	4th
Rt	Thru	Lt	

Total	1st	2nd	3rd	4th	
9	4	1	1	3	Lt
1	0	0	1	0	Thru
0	0	0	0	0	Rt

Rt	32	27	27	23	109
Thru	1	0	1	1	3
Lt	0	0	5	0	5
	1st	2nd	3rd	4th	Total

	Lt	Thru	Rt
1st	0	22	3
2nd	3	26	4
3rd	2	30	2
4th	4	37	1
Total	9	115	10

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 05:00PM-06:00PM

DATE: 12-13-13

## NORTH LEG

24	55	198	Total
6	16	56	1st
2	22	66	2nd
8	9	38	3rd
8	8	38	4th
Rt	Thru	Lt	

Rt	22	20	30	32	104
Thru	1	0	2	1	4
Lt	2	0	0	2	4
	1st	2nd	3rd	4th	Total

Total	1st	2nd	3rd	4th	
23	6	6	4	7	Lt
1	0	1	0	0	Thru
1	1	0	0	0	Rt

	Lt	Thru	Rt
1st	1	21	2
2nd	0	34	1
3rd	0	26	1
4th	0	19	5
Total	1	100	9

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 06:00PM-07:00PM

DATE: 12-13-13

## NORTH LEG

11	36	140	Total
4	9	49	1st
3	9	46	2nd
3	7	23	3rd
1	11	22	4th
Rt	Thru	Lt	

Total 1st 2nd 3rd 4th

11	4	1	3	3	Lt
2	0	1	1	0	Thru
0	0	0	0	0	Rt

Rt	18	21	25	16	80
Thru	1	0	3	0	4
Lt	0	1	0	0	1
	1st	2nd	3rd	4th	Total

	Lt	Thru	Rt
1st	2	14	1
2nd	0	23	1
3rd	1	19	1
4th	2	20	3
Total	5	76	6

Prepared by NEWPORT TRAFFIC STUDIES

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Friday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing Conditions  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1	2	3		4	5	6
		L	T	R		L	T	R
Volume		5	120	5		215	75	20
Peak-Hour Factor, PHF		0.93	0.93	0.93		0.93	0.93	0.93
Hourly Flow Rate, HFR		5	129	5		231	80	21
Percent Heavy Vehicles		5	--	--		5	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7	8	9		10	11	12
		L	T	R		L	T	R
Volume		5	5	90		15	5	5
Peak Hour Factor, PHF		0.93	0.93	0.93		0.93	0.93	0.93
Hourly Flow Rate, HFR		5	5	96		16	5	5
Percent Heavy Vehicles		5	5	5		5	5	5
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
			7	8	9	10	11	12
			LTR	LTR	LTR	LTR	LTR	LTR
v (vph)	5	231		106			26	
C(m) (vph)	1473	1432		761			303	
v/c	0.00	0.16		0.14			0.09	
95% queue length	0.01	0.58		0.48			0.28	
Control Delay	7.5	8.0		10.5			18.0	
LOS	A	A		B			C	
Approach Delay				10.5			18.0	
Approach LOS				B			C	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Friday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing plus Background  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume		5	130	5		225	95	20
Peak-Hour Factor, PHF		0.93	0.93	0.93		0.93	0.93	0.93
Hourly Flow Rate, HFR		5	139	5		241	102	21
Percent Heavy Vehicles		5	--	--		5	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		5	5	95		15	5	5
Peak Hour Factor, PHF		0.93	0.93	0.93		0.93	0.93	0.93
Hourly Flow Rate, HFR		5	5	102		16	5	5
Percent Heavy Vehicles		5	5	5		5	5	5
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
Movement	1	4							
Lane Config	LTR	LTR		LTR				LTR	
v (vph)	5	241		112				26	
C(m) (vph)	1446	1420		745				274	
v/c	0.00	0.17		0.15				0.09	
95% queue length	0.01	0.61		0.53				0.31	
Control Delay	7.5	8.1		10.7				19.5	
LOS	A	A		B				C	
Approach Delay				10.7				19.5	
Approach LOS				B				C	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Friday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Project Year 2014  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume		5	125	15		250	90	20
Peak-Hour Factor, PHF		0.90	0.90	0.90		0.90	0.90	0.90
Hourly Flow Rate, HFR		5	138	16		277	100	22
Percent Heavy Vehicles		5	--	--		5	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		15	20	120		15	20	5
Peak Hour Factor, PHF		0.90	0.90	0.90		0.90	0.90	0.90
Hourly Flow Rate, HFR		16	22	133		16	22	5
Percent Heavy Vehicles		5	5	5		5	5	5
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
Movement	1	4							
Lane Config	LTR	LTR		LTR				LTR	
v (vph)	5	277		171				43	
C(m) (vph)	1447	1408		543				224	
v/c	0.00	0.20		0.31				0.19	
95% queue length	0.01	0.73		1.37				0.71	
Control Delay	7.5	8.2		14.7				24.9	
LOS	A	A		B				C	
Approach Delay				14.7				24.9	
Approach LOS				B				C	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Friday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 without Project  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume		5	180	5		315	125	30
Peak-Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		5	189	5		331	131	31
Percent Heavy Vehicles		5	--	--		5	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		5	5	135		20	5	5
Peak Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		5	5	142		21	5	5
Percent Heavy Vehicles		5	5	5		5	5	5
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
Movement	1	4							
Lane Config	LTR	LTR		LTR				LTR	
v (vph)	5	331		152				31	
C(m) (vph)	1399	1361		665				151	
v/c	0.00	0.24		0.23				0.21	
95% queue length	0.01	0.96		0.89				0.77	
Control Delay	7.6	8.5		12.0				35.0-	
LOS	A	A		B				D	
Approach Delay				12.0				35.0-	
Approach LOS				B				D	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Friday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 with Project  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound			Southbound		
		1	2	3	4	5	6
		L	T	R	L	T	R
Volume		5	175	15	340	120	30
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR		5	184	15	357	126	31
Percent Heavy Vehicles		5	--	--	5	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		
Upstream Signal?		No			No		
Minor Street:	Approach Movement	Westbound			Eastbound		
		7	8	9	10	11	12
		L	T	R	L	T	R
Volume		15	20	160	20	20	5
Peak Hour Factor, PHF		0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR		15	21	168	21	21	5
Percent Heavy Vehicles		5	5	5	5	5	5
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage		No			/		
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
			7	8	9	10	11	12
			LTR	LTR	LTR	LTR	LTR	LTR
v (vph)	5	357		204			47	
C(m) (vph)	1405	1356		456			131	
v/c	0.00	0.26		0.45			0.36	
95% queue length	0.01	1.07		2.38			1.62	
Control Delay	7.6	8.6		19.2			47.7	
LOS	A	A		C			E	
Approach Delay				19.2			47.7	
Approach LOS				C			E	



SUBJECT	BY	DATE	JOB NO.	SHEET	OF
SUMMARY	TM	27-Jun-14	VV.130048.0000	2	OF 2

E/W STREET : STATE LANE DRIVE  
N/S STREET : HIGHWAY 38  
CONDITION : WINTER SUNDAY PM PEAK HOUR

PROJECT YEAR : 2014  
PROJECTED GROWTH : 2%  
PER YEAR

## CONDITION DIAGRAMS

### EXISTING GEOMETRICS

### PROPOSED GEOMETRICS

### FUTURE GEOMETRICS

### TURN MOVEMENTS

CONDITION	EXISTING TRAFFIC	BACKGROUND TRAFFIC	EXISTING + BACKGROUND TRAFFIC	PROJECT TRIPS	EXISTING + BACKGROUND + PROJECT	YEAR 2035 WITHOUT PROJECT	YEAR 2035 WITH PROJECT
SCENARIO #							

### STATE LANE DRIVE

EB LEFT	10	0	10	0	10	15	15
EB THRU	5	0	5	15	20	5	20
EB RIGHT	5	0	5	0	5	5	5
WB LEFT	10	0	10	10	20	15	25
WB THRU	5	0	5	15	20	5	20
WB RIGHT	95	0	100	30	130	140	170

### HIGHWAY 38

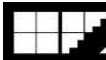
NB LEFT	5	0	5	0	5	5	5
NB THRU	70	20	95	-5	90	125	120
NB RIGHT	10	0	10	10	20	15	25
SB LEFT	145	0	150	30	180	210	240
SB THRU	170	10	185	-5	180	255	250
SB RIGHT	15	0	15	0	15	20	20
<b>TOTALS</b>	<b>545</b>	<b>30</b>	<b>595</b>	<b>100</b>	<b>695</b>	<b>815</b>	<b>915</b>

Tustin Office: 714.665.4500 Tel/ 714.665.4501 Fax

Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax

Victorville Office: 760.524.9100 Tel/ 760.524.9101 Fax

Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax



SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	TM	27-Jun-14	VV.130048.0000	2	OF 2

E/W STREET : STATE LANE DRIVE  
CONDITION : WINTER SUNDAY PM PEAK HOUR

N/S STREET : HIGHWAY 38  
COUNT DATE : December 15, 2013

NORTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0

SOUTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

EAST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0

WEST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

NORTH LEG			SOUTH LEG			EAST LEG			WEST LEG		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

TRUCK TOTAL	AUTO VOLUMES	TOTALS	ROUNDED TOTALS	TRUCK PERCENTAGE
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**STATE LANE DRIVE**

EB LEFT	1	0	10	10	10
EB THRU	0	0	2	5	0
EB RIGHT	0	0	3	5	0
WB LEFT	0	0	10	10	0
WB THRU	0	0	4	5	0
WB RIGHT	2	0	97	95	2

**HIGHWAY 38**

NB LEFT	0	0	2	5	0
NB THRU	0	0	70	70	0
NB RIGHT	0	0	8	10	0
SB LEFT	1	0	145	145	1
SB THRU	0	0	171	170	0
SB RIGHT	0	0	15	15	0

Irvine Office: 714.665.4500 Tel/ 714.665.4501 Fax

Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax

Victorville Office: 760.241.0595 Tel/ 760.241.1937 Fax

Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax

# INTERSECTION TURN COUNT

## PEAK HOUR

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

JURISDICTION: ERWIN LAKE

DATE: 12-15-13

PEAK HOUR: 04:00PM

### NORTH LEG

TOTAL: 331

15	171	145
4	50	35
2	37	43
5	43	33
4	41	34

Total

1st

2nd

3rd

4th

Rt Thru Lt

EAST LEG TOTAL: 111

Rt

Thru

Lt

21	32	27	17	97
0	1	0	3	4
2	5	2	1	10

1st 2nd 3rd 4th Total

Total 1st 2nd 3rd 4th

10	2	2	3	3
2	0	0	0	2
3	0	0	1	2

Lt

Thru

Rt

WEST LEG TOTAL: 15

### PEAK HOUR FACTORS

NORTH LEG = 0.93

SOUTH LEG = 0.74

EAST LEG = 0.73

WEST LEG = 0.54

ALL LEGS = 0.94

Lt Thru Rt

1st

2nd

3rd

4th

Total

0	15	0
1	17	3
1	13	3
0	25	2
2	70	8

TOTAL: 80

### SOUTH LEG

HOURLY TOTAL: 537

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 03:00PM-04:00PM

DATE: 12-15-13

## NORTH LEG

23	141	107	Total
5	22	26	1st
6	38	23	2nd
4	38	32	3rd
8	43	26	4th
Rt	Thru	Lt	

Rt	23	19	20	18	80
Thru	0	1	0	0	1
Lt	1	4	4	2	11
	1st	2nd	3rd	4th	Total

Total	1st	2nd	3rd	4th	
18	3	5	5	5	Lt
5	1	1	1	2	Thru
2	1	1	0	0	Rt

	Lt	Thru	Rt
1st	0	14	2
2nd	0	12	2
3rd	2	12	1
4th	0	15	2
Total	2	53	7

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 04:00PM-05:00PM

DATE: 12-15-13

## NORTH LEG

15	171	145	Total
4	50	35	1st
2	37	43	2nd
5	43	33	3rd
4	41	34	4th
Rt	Thru	Lt	

Total 1st 2nd 3rd 4th

10	2	2	3	3	Lt
2	0	0	0	2	Thru
3	0	0	1	2	Rt

Rt	21	32	27	17	97
Thru	0	1	0	3	4
Lt	2	5	2	1	10
	1st	2nd	3rd	4th	Total

	Lt	Thru	Rt
1st	0	15	0
2nd	1	17	3
3rd	1	13	3
4th	0	25	2
Total	2	70	8

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 05:00PM-06:00PM

DATE: 12-15-13

## NORTH LEG

24	96	105	Total
2	26	32	1st
7	19	33	2nd
10	23	14	3rd
5	28	26	4th
Rt	Thru	Lt	

Rt	16	22	20	15	73
Thru	0	0	0	0	0
Lt	1	0	3	3	7
	1st	2nd	3rd	4th	Total

Total	1st	2nd	3rd	4th	
9	3	3	1	2	Lt
1	0	0	1	0	Thru
3	1	0	1	1	Rt

	Lt	Thru	Rt
1st	1	19	1
2nd	1	5	3
3rd	1	6	2
4th	0	9	2
Total	3	39	8

Prepared by NEWPORT TRAFFIC STUDIES

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Sunday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing Condition  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound			Southbound		
		1	2	3	4	5	6
		L	T	R	L	T	R
Volume		5	70	10	145	170	15
Peak-Hour Factor, PHF		0.94	0.94	0.94	0.94	0.94	0.94
Hourly Flow Rate, HFR		5	74	10	154	180	15
Percent Heavy Vehicles		5	--	--	5	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		
Upstream Signal?		No			No		
Minor Street:	Approach Movement	Westbound			Eastbound		
		7	8	9	10	11	12
		L	T	R	L	T	R
Volume		10	5	95	10	5	5
Peak Hour Factor, PHF		0.94	0.94	0.94	0.94	0.94	0.94
Hourly Flow Rate, HFR		10	5	101	10	5	5
Percent Heavy Vehicles		5	5	5	5	5	5
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage		No			/		
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
			7	8	9	10	11	12
Movement	1	4						
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	154		116			20	
C(m) (vph)	1360	1494		803			386	
v/c	0.00	0.10		0.14			0.05	
95% queue length	0.01	0.34		0.51			0.16	
Control Delay	7.7	7.7		10.2			14.8	
LOS	A	A		B			B	
Approach Delay				10.2			14.8	
Approach LOS				B			B	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Sunday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing plus Background  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound			Southbound		
		1	2	3	4	5	6
		L	T	R	L	T	R
Volume		5	95	10	150	185	15
Peak-Hour Factor, PHF		0.94	0.94	0.94	0.94	0.94	0.94
Hourly Flow Rate, HFR		5	101	10	159	196	15
Percent Heavy Vehicles		5	--	--	0	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		
Upstream Signal?		No			No		
Minor Street:	Approach Movement	Westbound			Eastbound		
		7	8	9	10	11	12
		L	T	R	L	T	R
Volume		10	5	100	10	5	5
Peak Hour Factor, PHF		0.94	0.94	0.94	0.94	0.94	0.94
Hourly Flow Rate, HFR		10	5	106	10	5	5
Percent Heavy Vehicles		5	5	5	5	5	5
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage		No			/		
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
			7	8	9	10	11	12
			LTR	LTR	LTR	LTR	LTR	LTR
v (vph)	5	159		121			20	
C(m) (vph)	1342	1492		771			354	
v/c	0.00	0.11		0.16			0.06	
95% queue length	0.01	0.36		0.56			0.18	
Control Delay	7.7	7.7		10.5			15.8	
LOS	A	A		B			C	
Approach Delay				10.5			15.8	
Approach LOS				B			C	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Sunday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Project Year 2014  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound			Southbound		
		1	2	3	4	5	6
		L	T	R	L	T	R
Volume		5	90	20	180	180	15
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR		5	100	22	200	200	16
Percent Heavy Vehicles		5	--	--	5	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		
Upstream Signal?		No			No		
Minor Street:	Approach Movement	Westbound			Eastbound		
		7	8	9	10	11	12
		L	T	R	L	T	R
Volume		20	20	130	10	20	5
Peak Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR		22	22	144	11	22	5
Percent Heavy Vehicles		5	5	5	5	5	5
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		No
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
			7	8	9	10	11	12
			LTR	LTR	LTR	LTR	LTR	LTR
v (vph)	5	200		188			38	
C(m) (vph)	1336	1447		601			278	
v/c	0.00	0.14		0.31			0.14	
95% queue length	0.01	0.48		1.36			0.47	
Control Delay	7.7	7.9		13.7			20.0	
LOS	A	A		B			C	
Approach Delay				13.7			20.0	
Approach LOS				B			C	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Sunday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 without Project  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound			Southbound		
		1	2	3	4	5	6
		L	T	R	L	T	R
Volume		5	125	15	210	255	20
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR		5	131	15	221	268	21
Percent Heavy Vehicles		5	--	--	5	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		
Upstream Signal?		No			No		
Minor Street:	Approach Movement	Westbound			Eastbound		
		7	8	9	10	11	12
		L	T	R	L	T	R
Volume		15	5	140	15	5	5
Peak Hour Factor, PHF		0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR		15	5	147	15	5	5
Percent Heavy Vehicles		5	5	5	5	5	5
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage		No			/		
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
			7	8	9	10	11	12
			LTR	LTR	LTR	LTR	LTR	LTR
v (vph)	5	221		167			25	
C(m) (vph)	1256	1418		663			212	
v/c	0.00	0.16		0.25			0.12	
95% queue length	0.01	0.55		1.01			0.40	
Control Delay	7.9	8.0		12.3			24.2	
LOS	A	A		B			C	
Approach Delay				12.3			24.2	
Approach LOS				B			C	

## TWO-WAY STOP CONTROL SUMMARY

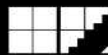
Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Sunday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 with Project  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1	2	3		4	5	6
		L	T	R		L	T	R
Volume		5	120	25		240	250	20
Peak-Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		5	126	26		252	263	21
Percent Heavy Vehicles		5	--	--		5	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7	8	9		10	11	12
		L	T	R		L	T	R
Volume		25	20	170		15	20	5
Peak Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		26	21	178		15	21	5
Percent Heavy Vehicles		5	5	5		5	5	5
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
			LTR	LTR	LTR		LTR	LTR	LTR
v (vph)	5	252		225			41		
C(m) (vph)	1261	1411		510			182		
v/c	0.00	0.18		0.44			0.23		
95% queue length	0.01	0.65		2.33			0.86		
Control Delay	7.9	8.1		17.6			30.5		
LOS	A	A		C			D		
Approach Delay				17.6			30.5		
Approach LOS				C			D		



SUBJECT	BY	DATE	JOB NO.	SHEET	OF
SUMMARY	TM	27-Jun-14	VV.130048.0000	1	OF 2

E/W STREET : PROJECT DRIVEWAY

PROJECT YEAR : 2014

N/S STREET : STATE LANE DRIVE

PROJECTED GROWTH : 2%

CONDITION : WEEKDAY AM PEAK HOUR

PER YEAR

## CONDITION DIAGRAMS

### EXISTING GEOMETRICS

### PROPOSED GEOMETRICS

### FUTURE GEOMETRICS

### TURN MOVEMENTS

CONDITION	EXISTING TRAFFIC	BACKGROUND TRAFFIC	EXISTING + BACKGROUND TRAFFIC	PROJECT TRIPS	EXISTING + BACKGROUND + PROJECT	YEAR 2035 WITHOUT PROJECT	YEAR 2035 WITH PROJECT
SCENARIO #							

### PROJECT DRIVEWAY

EB LEFT	0	0	0	50	50	0	50
EB THRU	0	0	0	5	5	0	5
EB RIGHT	0	0	0	15	15	0	15
WB LEFT	5	0	5	0	5	5	5
WB THRU	0	0	0	5	5	0	5
WB RIGHT	5	0	5	0	5	5	5

### STATE LANE DRIVE

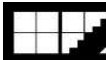
NB LEFT	0	0	0	15	15	0	15
NB THRU	200	0	210	0	210	295	295
NB RIGHT	5	0	5	0	5	5	5
SB LEFT	5	0	5	0	5	5	5
SB THRU	80	0	85	0	85	120	120
SB RIGHT	0	0	0	5	5	0	5
<b>TOTALS</b>	<b>300</b>	<b>0</b>	<b>315</b>	<b>95</b>	<b>410</b>	<b>435</b>	<b>530</b>

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SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	TM	27-Jun-14	VV.130048.0000	2	OF 2

E/W STREET : PROJECT DRIVEWAY

N/S STREET : STATE LANE DRIVE

CONDITION : AM PEAK HOUR

NORTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
1	0	2	0	0	0	0	1	0
0	2	0	0	0	0	0	0	0
0	0	0	0	1	0	0	0	0

SOUTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	1	0

EAST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

WEST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

NORTH LEG			SOUTH LEG			EAST LEG			WEST LEG		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
1	12	19	2	12	0	53	1	3	0	0	8
3	12	11	0	8	0	32	0	1	1	1	5
3	8	20	1	16	0	50	1	2	0	1	12
1	11	19	0	10	0	50	1	4	2	1	9

TRUCK TOTAL	AUTO VOLUMES	TOTALS	ROUNDED TOTALS	TRUCK PERCENTAGE
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**PROJECT DRIVEWAY**

EB LEFT	0	0	0	0	0
EB THRU	0	0	0	0	0
EB RIGHT	0	0	0	0	0
WB LEFT	0	0	5	5	0
WB THRU	0	0	0	0	0
WB RIGHT	0	0	5	5	0

**STATE LANE DRIVE**

NB LEFT	0	0	0	0	0
NB THRU	3	198	201	200	0
NB RIGHT	0	0	5	5	0
SB LEFT	0	0	5	5	0
SB THRU	3	75	78	80	5
SB RIGHT	0	0	0	0	0

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Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/30/13  
 Analysis Time Period: AM Peak Hour  
 Intersection: Project Dwy#2/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing  
 Project ID: VV.130048.0000  
 East/West Street: Project Driveway #2  
 North/South Street: State Lane Drive  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume			200	5		5	80	
Peak-Hour Factor, PHF			0.88	0.88		0.88	0.88	
Hourly Flow Rate, HFR			227	5		5	90	
Percent Heavy Vehicles			--	--		0	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes			1	0		0	1	
Configuration				TR			LT	
Upstream Signal?			No				No	
Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		5		5				
Peak Hour Factor, PHF		0.88		0.88				
Hourly Flow Rate, HFR		5		5				
Percent Heavy Vehicles		0		0				
Percent Grade (%)			0				0	
Flared Approach: Exists?/Storage				No	/			/
Lanes		0		0				
Configuration			LR					

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
Movement	1	4							
Lane Config		LT		LR					
v (vph)		5		10					
C(m) (vph)		1348		733					
v/c		0.00		0.01					
95% queue length		0.01		0.04					
Control Delay		7.7		10.0-					
LOS		A		A					
Approach Delay				10.0-					
Approach LOS				A					

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed:  
 Analysis Time Period: AM Peak Hour  
 Intersection: Project Dwy#2/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing plus Background  
 Project ID: VV.130048.0000  
 East/West Street: Project Driveway #2  
 North/South Street: State Lane Drive  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach	Northbound			Southbound		
	Movement	1	2	3	4	5	6
		L	T	R	L	T	R
Volume			210	5	5	85	
Peak-Hour Factor, PHF			0.88	0.88	0.88	0.88	
Hourly Flow Rate, HFR			238	5	5	96	
Percent Heavy Vehicles			--	--	0	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes			1	0		0	1
Configuration				TR		LT	
Upstream Signal?			No			No	

Minor Street:	Approach	Westbound			Eastbound		
	Movement	7	8	9	10	11	12
		L	T	R	L	T	R
Volume		5		5			
Peak Hour Factor, PHF		0.88		0.88			
Hourly Flow Rate, HFR		5		5			
Percent Heavy Vehicles		0		0			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		5		10				
C(m) (vph)		1335		721				
v/c		0.00		0.01				
95% queue length		0.01		0.04				
Control Delay		7.7		10.1				
LOS		A		B				
Approach Delay				10.1				
Approach LOS				B				

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 4/24/2013  
 Analysis Time Period: AM Peak Hour  
 Intersection: Project Dwy#2/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Project Year 2014  
 Project ID: VV.130048.0000  
 East/West Street: Project Driveway #2  
 North/South Street: State Lane Drive  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1	2	3		4	5	6
		L	T	R		L	T	R
Volume		15	210	5		5	85	5
Peak-Hour Factor, PHF		0.90	0.90	0.90		0.90	0.90	0.90
Hourly Flow Rate, HFR		16	233	5		5	94	5
Percent Heavy Vehicles		0	--	--		0	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7	8	9		10	11	12
		L	T	R		L	T	R
Volume		5	5	5		50	5	15
Peak Hour Factor, PHF		0.90	0.90	0.90		0.90	0.90	0.90
Hourly Flow Rate, HFR		5	5	5		55	5	16
Percent Heavy Vehicles		0	0	0		0	0	0
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage					/			
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
			LTR	LTR	LTR		LTR	LTR	LTR
v (vph)	16	5	15				76		
C(m) (vph)	1507	1341	618				620		
v/c	0.01	0.00	0.02				0.12		
95% queue length	0.03	0.01	0.07				0.42		
Control Delay	7.4	7.7	11.0				11.6		
LOS	A	A	B				B		
Approach Delay			11.0				11.6		
Approach LOS			B				B		

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/30/13  
 Analysis Time Period: AM Peak Hour  
 Intersection: Project Dwy#2/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 without Project  
 Project ID: VV.130048.0000  
 East/West Street: Project Driveway #2  
 North/South Street: State Lane Drive  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume			295	5		5	120	
Peak-Hour Factor, PHF			0.95	0.95		0.95	0.95	
Hourly Flow Rate, HFR			310	5		5	126	
Percent Heavy Vehicles			--	--		0	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes			1	0		0	1	
Configuration			TR			LT		
Upstream Signal?			No			No		

Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		5		5				
Peak Hour Factor, PHF		0.95		0.95				
Hourly Flow Rate, HFR		5		5				
Percent Heavy Vehicles		0		0				
Percent Grade (%)			0				0	
Flared Approach: Exists?/Storage				No	/			/
Lanes		0		0				
Configuration			LR					

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
			7	8	9	10	11	12
Movement	1	4						
Lane Config		LT		LR				
v (vph)		5		10				
C(m) (vph)		1257		641				
v/c		0.00		0.02				
95% queue length		0.01		0.05				
Control Delay		7.9		10.7				
LOS		A		B				
Approach Delay				10.7				
Approach LOS				B				

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 4/24/2013  
 Analysis Time Period: AM Peak Hour  
 Intersection: Project Dwy#2/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 with Project  
 Project ID: VV.130048.0000  
 East/West Street: Project Driveway #2  
 North/South Street: State Lane Drive  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume		15	295	5		5	120	5
Peak-Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		15	310	5		5	126	5
Percent Heavy Vehicles		0	--	--		0	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		5	5	5		50	5	15
Peak Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		5	5	5		52	5	15
Percent Heavy Vehicles		0	0	0		0	0	0
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
Movement	1	4							
Lane Config	LTR	LTR		LTR				LTR	
v (vph)	15	5		15				72	
C(m) (vph)	1467	1257		539				534	
v/c	0.01	0.00		0.03				0.13	
95% queue length	0.03	0.01		0.09				0.47	
Control Delay	7.5	7.9		11.9				12.8	
LOS	A	A		B				B	
Approach Delay				11.9				12.8	
Approach LOS				B				B	



SUBJECT	BY	DATE	JOB NO.	SHEET	OF
SUMMARY	TM	27-Jun-14	VV.130048.0000	2	OF 2

E/W STREET : PROJECT DRIVEWAY  
N/S STREET : STATE LANE DRIVE  
CONDITION : WEEKDAY PM PEAK HOUR

PROJECT YEAR : 2014  
PROJECTED GROWTH : 2%  
PER YEAR

## CONDITION DIAGRAMS

### EXISTING GEOMETRICS

### PROPOSED GEOMETRICS

### FUTURE GEOMETRICS

#### TURN MOVEMENTS

CONDITION	EXISTING TRAFFIC	BACKGROUND TRAFFIC	EXISTING + BACKGROUND TRAFFIC	PROJECT TRIPS	EXISTING + BACKGROUND + PROJECT	YEAR 2035 WITHOUT PROJECT	YEAR 2035 WITH PROJECT
SCENARIO #							

#### PROJECT DRIVEWAY

EB LEFT	0	0	0	55	55	0	55
EB THRU	0	0	0	5	5	0	5
EB RIGHT	0	0	0	20	20	0	20
WB LEFT	5	0	5	0	5	5	5
WB THRU	0	0	0	5	5	0	5
WB RIGHT	5	0	5	0	5	5	5

#### STATE LANE DRIVE

NB LEFT	0	0	0	20	20	0	20
NB THRU	105	0	110	0	110	155	155
NB RIGHT	5	0	5	0	5	5	5
SB LEFT	5	0	5	0	5	5	5
SB THRU	195	0	205	0	205	285	285
SB RIGHT	0	0	0	10	10	0	10
<b>TOTALS</b>	<b>320</b>	<b>0</b>	<b>335</b>	<b>115</b>	<b>450</b>	<b>460</b>	<b>575</b>

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SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	TM	27-Jun-14	VV.130048.0000	2	OF 2

E/W STREET : PROJECT DRIVEWAY

N/S STREET : STATE LANE DRIVE

CONDITION : PM PEAK HOUR

NORTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0

SOUTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

EAST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0

WEST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

NORTH LEG			SOUTH LEG			EAST LEG			WEST LEG		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
8	14	28	3	22	0	31	1	1	1	2	6
11	9	46	2	16	2	22	0	1	0	1	0
4	17	49	3	10	0	20	0	0	0	1	3
9	16	57	4	10	0	24	0	1	1	0	4

TRUCK TOTAL	AUTO VOLUMES	TOTALS	ROUNDED TOTALS	TRUCK PERCENTAGE
-------------	--------------	--------	----------------	------------------

#### PROJECT DRIVEWAY

EB LEFT	0	0	0	0	0
EB THRU	0	0	0	0	0
EB RIGHT	0	0	0	0	0
WB LEFT	0	0	5	5	0
WB THRU	0	0	0	0	0
WB RIGHT	0	0	5	5	0

#### STATE LANE DRIVE

NB LEFT	0	0	0	0	0
NB THRU	2	101	103	105	0
NB RIGHT	0	0	5	5	0
SB LEFT	0	0	5	5	0
SB THRU	1	196	197	195	0
SB RIGHT	0	0	0	0	0

Irvine Office: 714.665.4500 Tel/ 714.665.4501 Fax

Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax

Victorville Office: 760.241.0595 Tel/ 760.241.1937 Fax

Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/30/13  
 Analysis Time Period: PM Peak Hour  
 Intersection: Project Dwy#2/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing  
 Project ID: VV.130048.0000  
 East/West Street: Project Driveway #2  
 North/South Street: State Lane Drive  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach	Northbound			Southbound		
	Movement	1	2	3	4	5	6
		L	T	R	L	T	R
Volume			105	5	5	195	
Peak-Hour Factor, PHF			0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR			116	5	5	216	
Percent Heavy Vehicles			--	--	0	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes			1	0		0	1
Configuration				TR		LT	
Upstream Signal?			No			No	
Minor Street:	Approach	Westbound			Eastbound		
	Movement	7	8	9	10	11	12
		L	T	R	L	T	R
Volume		5		5			
Peak Hour Factor, PHF		0.90		0.90			
Hourly Flow Rate, HFR		5		5			
Percent Heavy Vehicles		0		0			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		5		10				
C(m) (vph)		1479		772				
v/c		0.00		0.01				
95% queue length		0.01		0.04				
Control Delay		7.4		9.7				
LOS		A		A				
Approach Delay				9.7				
Approach LOS				A				

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/30/13  
 Analysis Time Period: PM Peak Hour  
 Intersection: Project Dwy#2/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing plus Project  
 Project ID: VV.130048.0000  
 East/West Street: Project Driveway #2  
 North/South Street: State Lane Drive  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach	Northbound			Southbound		
	Movement	1	2	3	4	5	6
		L	T	R	L	T	R
Volume			110	5	5	205	
Peak-Hour Factor, PHF			0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR			122	5	5	227	
Percent Heavy Vehicles			--	--	0	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes			1	0		0	1
Configuration				TR		LT	
Upstream Signal?			No			No	
Minor Street:	Approach	Westbound			Eastbound		
	Movement	7	8	9	10	11	12
		L	T	R	L	T	R
Volume		5		5			
Peak Hour Factor, PHF		0.90		0.90			
Hourly Flow Rate, HFR		5		5			
Percent Heavy Vehicles		0		0			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		5		10				
C(m) (vph)		1472		759				
v/c		0.00		0.01				
95% queue length		0.01		0.04				
Control Delay		7.5		9.8				
LOS		A		A				
Approach Delay				9.8				
Approach LOS				A				

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed:  
 Analysis Time Period: PM Peak Hour  
 Intersection: Project Dwy#2/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Project Year 2014  
 Project ID: VV.130048.0000  
 East/West Street: Project Driveway #2  
 North/South Street: State Lane Drive  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound			Southbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		20	110	5	5	205	10
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR		22	122	5	5	227	11
Percent Heavy Vehicles		0	--	--	0	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		
Upstream Signal?		No			No		
Minor Street:	Approach Movement	Westbound			Eastbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		5	5	5	55	5	20
Peak Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR		5	5	5	61	5	22
Percent Heavy Vehicles		0	0	0	0	0	0
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage		No			/		
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	22	5		15			88	
C(m) (vph)	1341	1472		608			584	
v/c	0.02	0.00		0.02			0.15	
95% queue length	0.05	0.01		0.08			0.53	
Control Delay	7.7	7.5		11.1			12.3	
LOS	A	A		B			B	
Approach Delay				11.1			12.3	
Approach LOS				B			B	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/30/12  
 Analysis Time Period: PM Peak Hour  
 Intersection: Project Dwy#2/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 without Project  
 Project ID: VV.130048.0000  
 East/West Street: Project Driveway #2  
 North/South Street: State Lane Drive  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach	Northbound			Southbound		
	Movement	1	2	3	4	5	6
		L	T	R	L	T	R
Volume			155	5	5	285	
Peak-Hour Factor, PHF			0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR			163	5	5	300	
Percent Heavy Vehicles			--	--	0	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes			1	0		0	1
Configuration				TR		LT	
Upstream Signal?			No			No	
Minor Street:	Approach	Westbound			Eastbound		
	Movement	7	8	9	10	11	12
		L	T	R	L	T	R
Volume		5		5			
Peak Hour Factor, PHF		0.95		0.95			
Hourly Flow Rate, HFR		5		5			
Percent Heavy Vehicles		0		0			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		5		10				
C(m) (vph)		1422		677				
v/c		0.00		0.01				
95% queue length		0.01		0.04				
Control Delay		7.5		10.4				
LOS		A		B				
Approach Delay				10.4				
Approach LOS				B				

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 4/24/2013  
 Analysis Time Period: PM Peak Hour  
 Intersection: Project Dwy#2/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 with Project  
 Project ID: VV.130048.0000  
 East/West Street: Project Driveway #2  
 North/South Street:  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume		20	155	5		5	285	10
Peak-Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		21	163	5		5	300	10
Percent Heavy Vehicles		0	--	--		0	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		5	5	5		55	5	20
Peak Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		5	5	5		57	5	21
Percent Heavy Vehicles		0	0	0		0	0	0
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
Movement	1	4							
Lane Config	LTR	LTR		LTR				LTR	
v (vph)	21	5		15				83	
C(m) (vph)	1262	1422		530				500	
v/c	0.02	0.00		0.03				0.17	
95% queue length	0.05	0.01		0.09				0.60	
Control Delay	7.9	7.5		12.0				13.6	
LOS	A	A		B				B	
Approach Delay				12.0				13.6	
Approach LOS				B				B	

### 3. Traffic Signal Warrant Worksheets – Highway 38 and State Lane

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

COUNT DATE 12/4/2012  
CALC TM DATE 6/5/13 *UPDATED*  
CHK RL DATE 6/5/13

DIST 08 CO 581 RTE 38 PM 46.533

Major St: Greenspot Blvd / Hwy 38  
Minor St: State Lane

Critical Approach Speed 55 mph  
Critical Approach Speed 45 mph

Speed limit or critical speed on major street traffic > 40 mph.....☒ }  
In built up area of isolated community of < 10,000 population.....☐ } RURAL (R)  
☐ URBAN (U)

**WARRANT 1 - Eight Hour Vehicular Volume** SATISFIED YES ☐ NO ☒  
(Condition A or Condition B or combination of A and B must be satisfied)

**Condition A - Minimum Vehicle Volume**

100% SATISFIED YES ☐ NO ☐  
80% SATISFIED YES ☐ NO ☒

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)											
	U	R	U	R								
	1		2 or More									
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	341	316	276	304	162	245	235	223
Highest Approach Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	115	120	122	94	177	103	108	114

Hour: 3-4 PM, 4-5 PM, 5-6 PM, 6-7 PM, 7-8 PM, 8-9 PM, 9-10 PM, 10-11 PM, 11-12 PM, 1-2 PM

**Condition B - Interruption of Continuous Traffic**

100% SATISFIED YES ☐ NO ☐  
80% SATISFIED YES ☐ NO ☒

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)											
	U	R	U	R								
	1		2 or More									
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	341	316	276	304	162	245	235	223
Highest Approach Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	115	120	122	94	177	103	108	114

Hour: 3-4 PM, 4-5 PM, 5-6 PM, 6-7 PM, 7-8 PM, 8-9 PM, 9-10 PM, 10-11 PM, 11-12 PM, 1-2 PM

**Combination of Conditions A & B**

SATISFIED YES ☐ NO ☒

REQUIREMENT	CONDITION	✓	FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	AND, B. INTERRUPTION OF CONTINUOUS TRAFFIC		
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			Yes <input type="checkbox"/> No <input type="checkbox"/>

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

**Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)**

**WARRANT 2 - Four Hour Vehicular Volume**

SATISFIED\* YES ☐ NO ☒

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	3-4 PM	4-5 PM	5-6 PM	Hour
Both Approaches - Major Street	X		341	316	276	304
Higher Approach - Minor Street	X		115	120	122	94

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<u>OR</u> , All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

**WARRANT 3 - Peak Hour  
(Part A or Part B must be satisfied)**

SATISFIED YES ☐ NO ☒

**PART A**

SATISFIED YES ☐ NO ☒

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; <u>AND</u>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; <u>AND</u>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

**PART B**

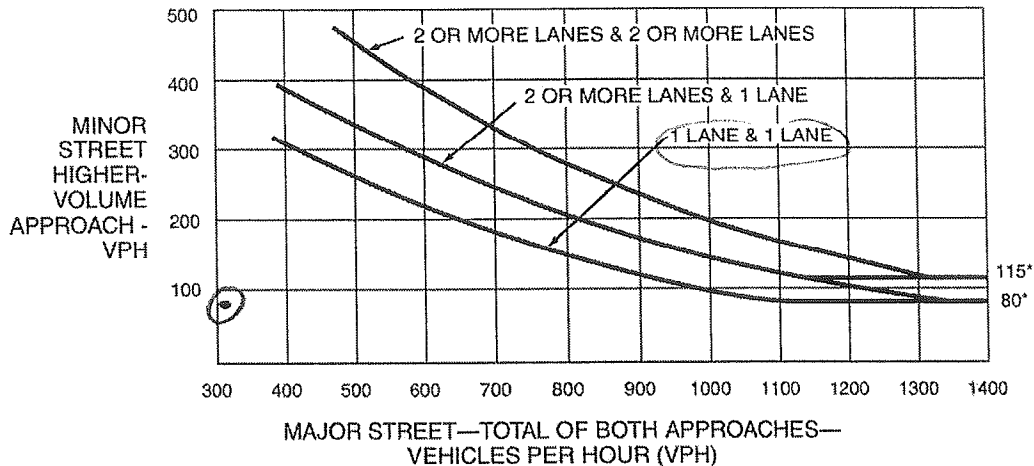
SATISFIED YES ☐ NO ☒

APPROACH LANES	One	2 or More	3-4 PM	Hour
Both Approaches - Major Street	X		341	
Higher Approach - Minor Street	X		115	

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<u>OR</u> , The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

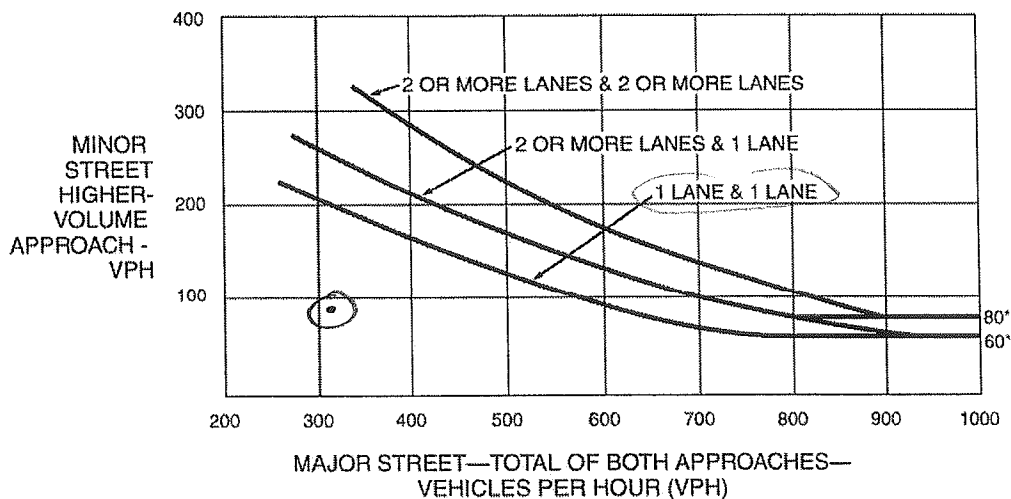
**Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume**



\*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

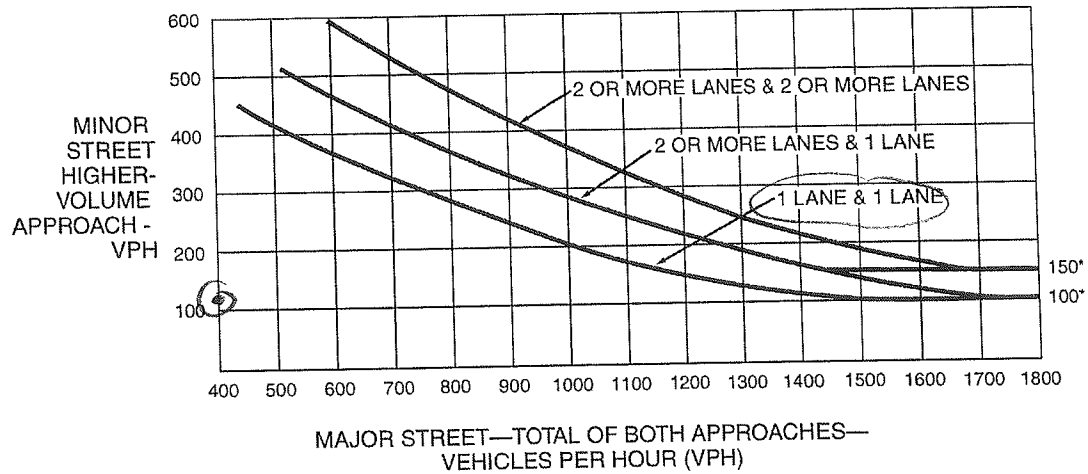
**Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)**

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



\*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

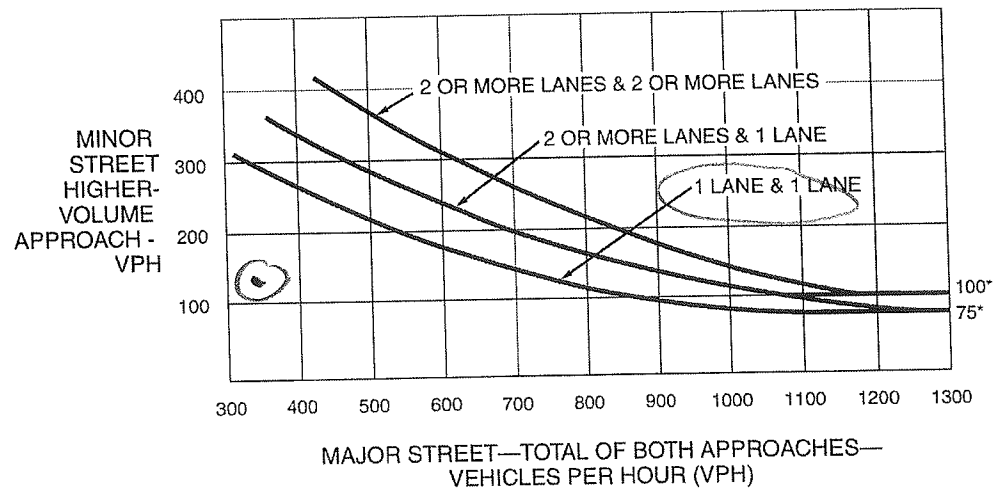
**Figure 4C-3. Warrant 3, Peak Hour**



\*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

**Figure 4C-4. Warrant 3, Peak Hour (70% Factor)**

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



\*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

**Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 3 of 5)**

**WARRANT 4 - Pedestrian Volume  
(Parts 1 and 2 Must Be Satisfied)**

SATISFIED YES ☐ NO ☐ *N/A*

**Part 1 (Parts A or B must be satisfied)**

Hours --->

A.	Vehicles per hour for any 4 hours				
	Pedestrians per hour for any 4 hours				

Figure 4C-5 or Figure 4C-6  
SATISFIED YES ☐ NO ☐

Hours --->

B.	Vehicles per hour for any 1 hour				
	Pedestrians per hour for any 1 hour				

Figure 4C-7 or Figure 4C-8  
SATISFIED YES ☐ NO ☐

**Part 2** SATISFIED YES ☐ NO ☐

<u>AND</u> , The distance to the nearest traffic signal along the major street is greater than 300 ft	Yes <input type="checkbox"/> No <input type="checkbox"/>
<u>OR</u> , The proposed traffic signal will not restrict progressive traffic flow along the major street.	Yes <input type="checkbox"/> No <input type="checkbox"/>

**WARRANT 5 - School Crossing  
(Parts A and B Must Be Satisfied)**

SATISFIED YES ☐ NO ☐ *N/A*

**Part A  
Gap/Minutes and # of Children**

SATISFIED YES ☐ NO ☐

Gaps vs Minutes	Minutes Children Using Crossing	Hour
	Number of Adequate Gaps	
School Age Pedestrians Crossing Street / hr		

Gaps < Minutes YES ☐ NO ☐

AND Children > 20/hr YES ☐ NO ☐

<u>AND</u> , Consideration has been given to less restrictive remedial measures.	Yes <input type="checkbox"/> No <input type="checkbox"/>
--	--

**Part B**

SATISFIED YES ☐ NO ☐

The distance to the nearest traffic signal along the major street is greater than 300 ft	Yes <input type="checkbox"/> No <input type="checkbox"/>
<u>OR</u> , The proposed signal will not restrict the progressive movement of traffic.	Yes <input type="checkbox"/> No <input type="checkbox"/>

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

**Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 4 of 5)**

**WARRANT 6 - Coordinated Signal System  
(All Parts Must Be Satisfied)**

SATISFIED YES ☐ NO ☐

N/A

MINIMUM REQUIREMENTS	DISTANCE TO NEAREST SIGNAL	
≥ 1000 ft	N _____ ft, S _____ ft, E _____ ft, W _____ ft	Yes <input type="checkbox"/> No <input type="checkbox"/>
On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning.		Yes <input type="checkbox"/> No <input type="checkbox"/>
OR, On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.		

**WARRANT 7 - Crash Experience Warrant  
(All Parts Must Be Satisfied)**

SATISFIED YES ☐ NO ☒

Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency.		Yes <input type="checkbox"/> No <input type="checkbox"/>
REQUIREMENTS	Number of crashes reported within a 12 month period susceptible to correction by a traffic signal, and involving injury or damage exceeding the requirements for a reportable crash.	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
5 OR MORE		
REQUIREMENTS	CONDITIONS	✓
ONE CONDITION SATISFIED 80%	Warrant 1, Condition A - Minimum Vehicular Volume	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	OR, Warrant 1, Condition B - Interruption of Continuous Traffic	
	OR, Warrant 4, Pedestrian Volume Condition Ped Vol ≥ 152 for any hour	
	OR, Ped Vol ≥ 80 for any 4 hours	

**WARRANT 8 - Roadway Network  
(All Parts Must Be Satisfied)**

SATISFIED YES ☐ NO ☐

N/A

MINIMUM VOLUME REQUIREMENTS	ENTERING VOLUMES - ALL APPROACHES	✓	FULFILLED
1000 Veh/Hr	During Typical Weekday Peak Hour _____ Veh/Hr and has 5-year projected traffic volumes that meet one or more of Warrants 1, 2, and 3 during an average weekday.		Yes <input type="checkbox"/> No <input type="checkbox"/>
	OR During Each of Any 5 Hrs. of a Sat. or Sun _____ Veh/Hr		
CHARACTERISTICS OF MAJOR ROUTES		MAJOR ROUTE A	MAJOR ROUTE B
Hwy. System Serving as Principal Network for Through Traffic			
Rural or Suburban Highway Outside Of, Entering, or Traversing a City			
Appears as Major Route on an Official Plan			
Any Major Route Characteristics Met, Both Streets			Yes <input type="checkbox"/> No <input type="checkbox"/>

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

**Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 5 of 5)**

**WARRANT 9 - Intersection Near a Grade Crossing  
(Both Parts A and B Must Be Satisfied)**

SATISFIED YES ☐ NO ☐

*N/A*

<p><b>PART A</b></p> <p>A grade crossing exists on an approach controlled by a STOP or YIELD sign and the center of the track nearest to the intersection is within 140 feet of the stop line or yield line on the approach. Track Center Line to Limit Line _____ ft</p>	<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p>
<p><b>PART B</b></p> <p><b>There is one minor street approach lane at the track crossing</b> - During the highest traffic volume hour during which rail traffic uses the crossing, the plotted point falls above the applicable curve in Figure 4C-9.</p> <p>Major Street - Total of both approaches: _____ VPH Minor Street - Crosses the track (one direction only, approaching the intersection): _____ VPH X AF (Use Tables 4C-2, 3, &amp; 4 below to calculate AF) = _____ VPH</p> <hr/> <p><b>OR, There are two or more minor street approach lanes at the track crossing</b> - During the highest traffic volume hour during which rail traffic uses the crossing, the plotted point falls above the applicable curve in Figure 4C-10.</p> <p>Major Street - Total of both approaches : _____ VPH Minor Street - Crosses the track (one direction only, approaching the intersection): _____ VPH X AF (Use Tables 4C-2, 3, &amp; 4 below to calculate AF) = _____ VPH</p>	<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p>

The minor street approach volume may be multiplied by up to three following adjustment factors (AF) as described in Section 4C.10.

- 1- Number of Rail Traffic per Day \_\_\_\_\_ Adjustment factor from table 4C-2 \_\_\_\_\_
- 2- Percentage of High-Occupancy Buses on Minor Street Approach \_\_\_\_\_ Adjustment factor from table 4C-3 \_\_\_\_\_
- 3- Percentage of Tractor-Trailer Trucks on Minor Street Approach \_\_\_\_\_ Adjustment factor from table 4C-4 \_\_\_\_\_

NOTE: If no data is available or known, then use AF = 1 (no adjustment)

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet  
(Average Traffic Estimate Form)

COUNT DATE Forecast Year 2025

CALC \_\_\_\_\_ DATE \_\_\_\_\_

CHK \_\_\_\_\_ DATE \_\_\_\_\_

DIST 08 CO 561 RTE 3B PM \_\_\_\_\_

Major St: SR 3B Critical Approach Speed 55 mph

Minor St: South Lane Critical Approach Speed 40 mph

Speed limit or critical speed on major street traffic > 40 mph..... ☒ or ☐ } **RURAL (R)**

In built up area of isolated community of < 10,000 population..... ☐ } **URBAN (U)**

(Based on Estimated Average Daily Traffic - See Note)

URBAN..... RURAL..... <input checked="" type="checkbox"/>		Minimum Requirements EADT			
<b>CONDITION A - Minimum Vehicular Volume</b>		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied _____ Not Satisfied <input checked="" type="checkbox"/>					
Number of lanes for moving traffic on each approach		Urban	Rural	Urban	Rural
Major Street	Minor Street				
<u>1</u> <u>5,500</u> / <u>5,000</u>	<u>1</u> <u>2,100</u> / <u>1,900</u>	8,000	<u>5,600</u>	2,400	<u>1,680</u>
2 or More.....	1.....	9,600	6,720	2,400	1,680
2 or More.....	2 or More.....	9,600	6,720	3,200	2,240
1.....	2 or More.....	8,000	5,600	3,200	2,240
<b>CONDITION B - Interruption of Continuous Traffic</b>		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied _____ Not Satisfied <input checked="" type="checkbox"/>					
Number of lanes for moving traffic on each approach		Urban	Rural	Urban	Rural
Major Street	Minor Street				
<u>1</u> <u>5,000</u>	<u>1</u> <u>1,900</u>	12,000	<u>8,400</u>	1,200	<u>850</u>
2 or More.....	1.....	14,400	10,080	1,200	850
2 or More.....	2 or More.....	14,400	10,080	1,600	1,120
1.....	2 or More.....	12,000	8,400	1,600	1,120
<b>Combination of CONDITIONS A + B</b>		2 CONDITIONS 80%		2 CONDITIONS 80%	
Satisfied _____ Not Satisfied <input checked="" type="checkbox"/>					
No one condition satisfied, but following conditions fulfilled 80% or more..... <u>YES</u> <u>NO</u> A B		<u>NO</u>			

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

**24 HOUR INTERSECTION VOLUME**  
**NORTH-SOUTH ST : HWY 38**  
**EAST-WEST ST : STATE LANE**

**DATE : 12-04-12**

		NORTH LEG	SOUTH LEG	EAST LEG	WEST LEG	TOTAL
AM	12:00	6	4	0	1	11
	1:00	7	5	7	2	21
	2:00	5	0	1	0	6
	3:00	7	2	3	0	12
	4:00	7	4	10	5	26
	5:00	17	6	34	5	62
	6:00	59	30	87	19	195
	7:00	96	39	168	33	336
	8:00	117	45	177	37	376 (5)
	9:00	127	41	109	32	309
	10:00	140	50	110	19	319
	11:00	181	54	108	13	356 (7)
PM	12:00	189	56	103	19	367 (6)
	1:00	176	47	114	19	356 (e)
	2:00	203	73	122	24	422 (3)
	3:00	275	66	115	25	481 (1)
	4:00	243	73	120	18	454 (2)
	5:00	247	57	94	18	416 (4)
	6:00	134	45	82	11	272
	7:00	88	37	45	7	177
	8:00	97	23	29	8	157
	9:00	61	26	26	8	121
	10:00	28	17	12	3	60
	11:00	16	12	6	1	35
	12:00	2,526	812	1,682	327	5,347

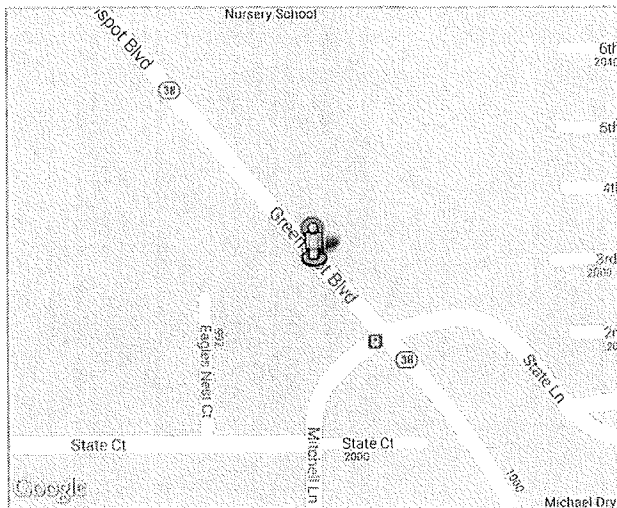
*Per H2011 11/2*

Prepared by NEWPORT TRAFFIC STUDIES

15 MINUTE COUNTS										
NORTH-SOUTH ST : HWY 38					DATE : 12-04-12					
EAST-WEST ST : STATE LANE										
AM					PM					
NORTH LEG	SOUTH LEG	EAST LEG	WEST LEG	TOTAL		NORTH LEG	SOUTH LEG	EAST LEG	WEST LEG	TOTAL
1	1	0	0	2	12:00	55	18	20	5	98
0	1	0	0	1		52	14	30	8	104
2	2	0	1	5		43	9	31	1	84
3	0	0	0	3		39	15	22	5	81
1	1	1	0	3	1:00	39	14	24	4	81
1	0	2	0	3		60	11	33	7	111
5	0	1	1	7		31	9	30	4	74
0	4	3	1	8		46	13	27	4	90
2	0	1	0	3	2:00	44	22	26	4	96
1	0	0	0	1		65	14	29	7	115
0	0	0	0	0		48	17	31	7	103
2	0	0	0	2		46	20	36	6	108
1	1	1	0	3	3:00	63	14	23	4	104
2	1	0	0	3		63	19	33	9	124
3	0	2	0	5		66	17	25	6	114
1	0	0	0	1		83	16	34	6	139
0	0	2	3	5	4:00	67	15	37	6	125
2	0	1	1	4		60	20	26	7	113
2	2	2	0	6		63	23	32	1	119
3	2	5	1	11		53	15	25	4	97
7	0	3	1	11	5:00	87	10	23	4	124
1	2	6	2	11		69	9	22	8	108
6	1	11	1	19		58	17	27	4	106
3	3	14	1	21		33	21	22	2	78
6	5	7	4	22	6:00	40	13	25	2	80
15	3	18	3	39		39	9	23	5	76
17	12	28	4	61		32	15	19	1	67
21	10	34	8	73		23	8	15	3	49
12	10	35	9	66	7:00	36	10	17	2	65
24	8	30	6	68		23	12	11	1	47
31	6	59	7	103		10	8	9	0	27
29	15	44	11	99		19	7	8	4	38
26	17	34	16	93	8:00	33	7	5	3	48
28	9	54	5	96		24	7	11	1	43
33	9	52	8	102		30	6	7	2	45
30	10	37	8	85		10	3	6	2	21
31	15	30	8	84	9:00	23	4	10	1	38
35	8	20	8	71		19	9	6	0	34
29	8	43	4	84		7	3	2	4	16
32	10	16	12	70		12	10	8	3	33
39	9	20	5	73	10:00	8	4	1	2	15
28	14	35	5	82		9	8	6	0	23
38	14	35	1	88		8	2	4	0	14
35	13	20	8	76		3	3	1	1	8
38	14	30	3	85	11:00	2	5	4	1	12
47	9	20	2	78		10	2	1	0	13
53	9	32	4	98		3	2	0	0	5
43	22	26	4	95		1	3	1	0	5

Prepared by NEWPORT TRAFFIC STUDIES

## COLLISION DETAILS: CASE ID 5140780

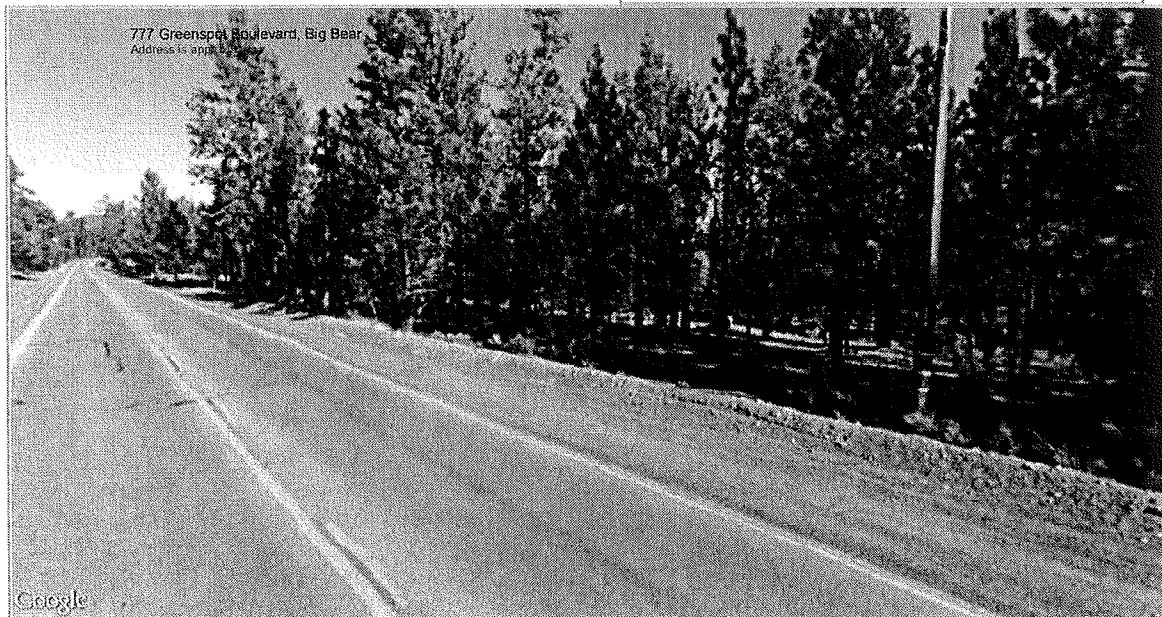


## STREET VIEW

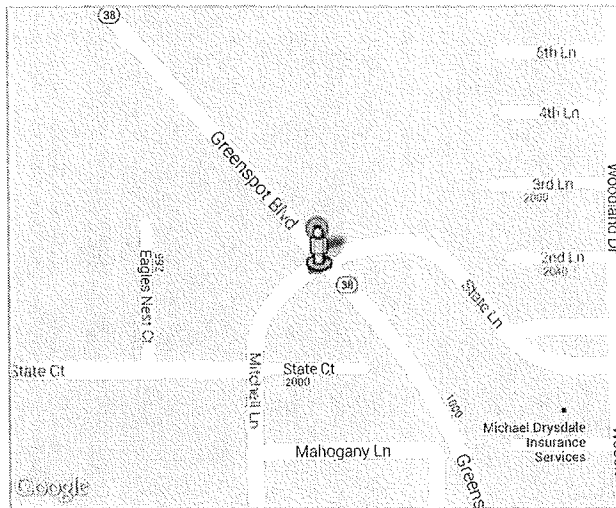
<b>County</b>	SAN BERNARDINO	<b>City</b>	UNINCORPORATED
<b>Date (Y-M-D)</b>	2011-03-20	<b>Time</b>	11:00
<b>Nearby Intersection</b>	RT 38 & STATE LN		
<b>Coordinate Location</b>	34.244538153, -116.809493163		

<b>State Highway</b>	Y	<b>Route</b>	38E	<b>Postmile</b>	46.67
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<b>Injured Victims</b>	1	<b>Fatalities</b>	0
<b>Alcohol</b>	NO	<b>Weather</b>	Snowing
<b>Primary Collision Factor</b>	Other Than Driver (or Pedestrian)	<b>Involved with</b>	Other Object



## COLLISION DETAILS: CASE ID 4996329

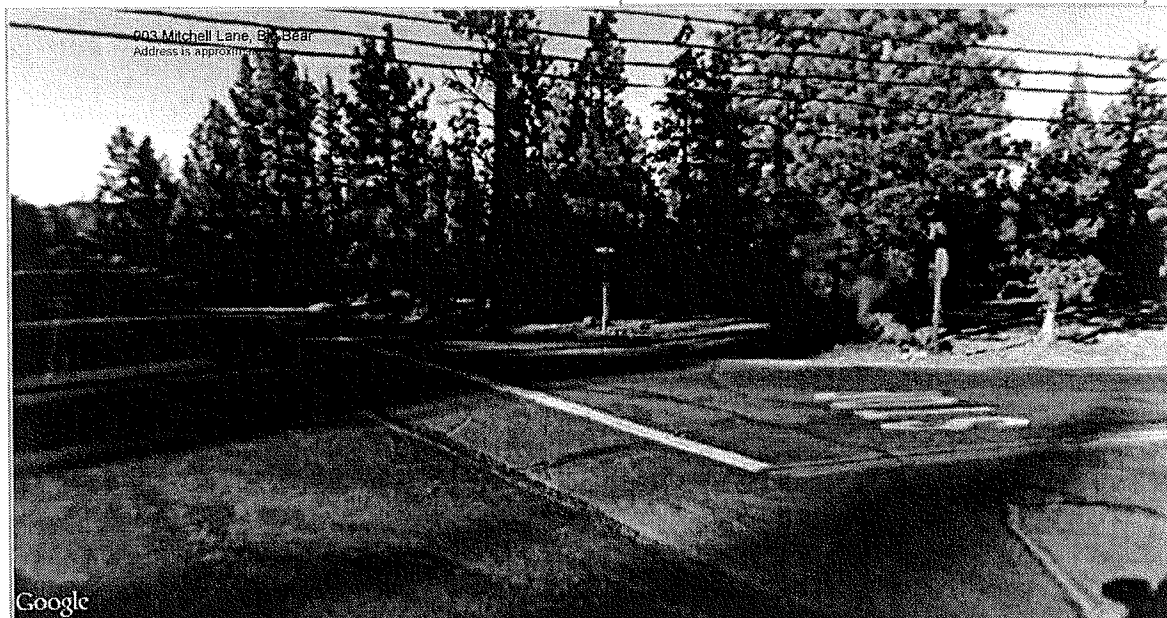


## STREET VIEW

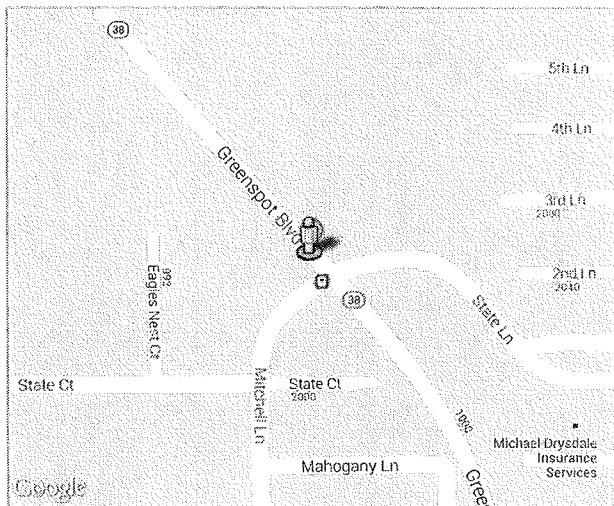
County	SAN BERNARDINO	City	UNINCORPORATED
Date (Y-M-D)	2010-11-29	Time	14:32
Nearby Intersection	STATE LN & RT 38		
Coordinate Location	34.24399944, -116.808935521		

State Highway	Y	Route	38E	Postmile	46.621
---------------	---	-------	-----	----------	--------

Injured Victims	1	Fatalities	0
Alcohol	NO	Weather	Clear
Primary Collision Factor	Unsafe Speed	Involved with	Other Motor Vehicle

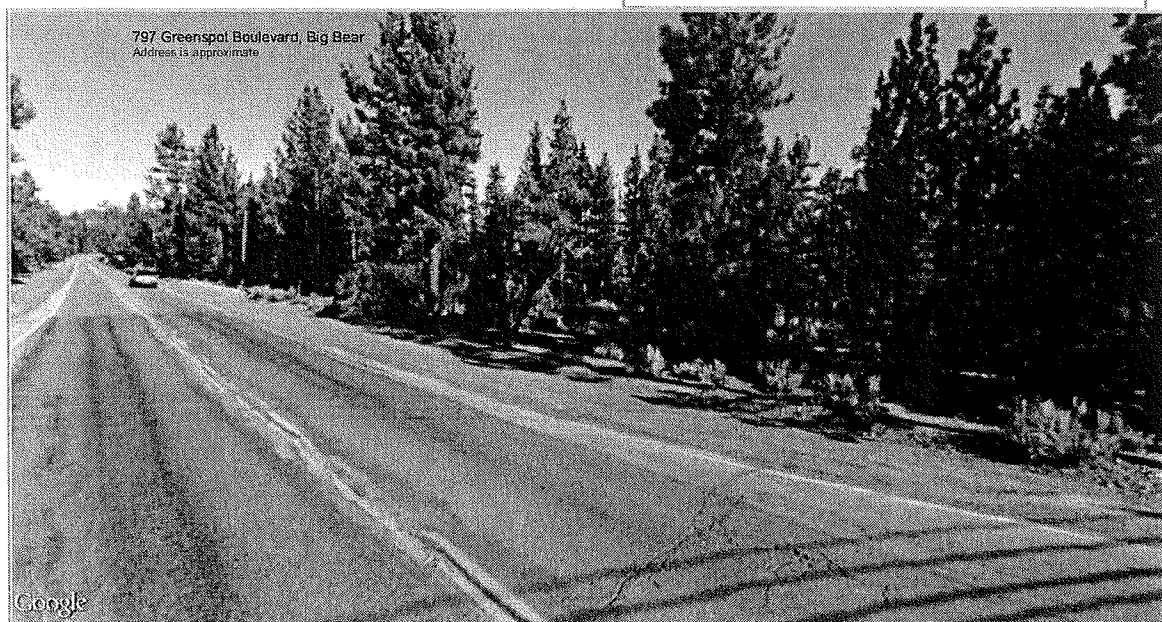


## COLLISION DETAILS: CASE ID 4469449

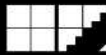


## STREET VIEW

County	SAN BERNARDINO	City	UNINCORPORATED
Date (Y-M-D)	2009-10-27	Time	16:35
Nearby Intersection	RT 38 & STATE LN		
Coordinate Location	34.244099547, -116.809036453		
State Highway	Y	Route	38E Postmile 46.63
Injured Victims	1	Fatalities	1
Alcohol	NO	Weather	Clear
Primary Collision Factor	Improper Turning	Involved with	Fixed Object



#### 4. Left Turn Warrant Analysis – Highway 38 and State Lane



SUBJECT

LEFT TURN WARRANT

BY

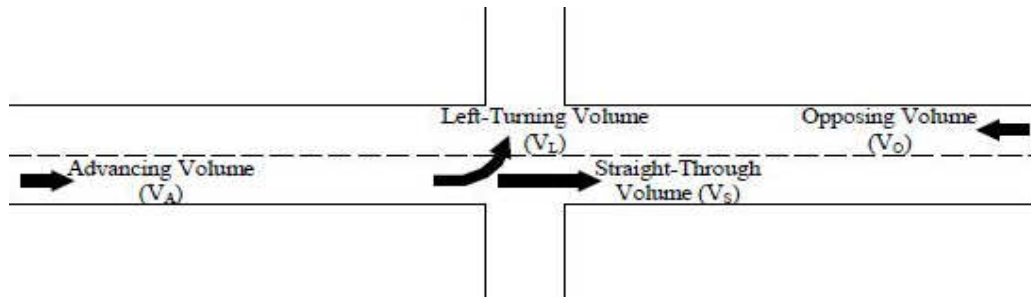
TM

DATE

19-Jun-14

JOB NO.

VV.130048.0000

E/W STREET : STATE LANE DRIVEDESIGN SPEED : 55MPHN/S STREET : HIGHWAY 38CONDITION : WEEKDAY AM PEAK HOUR**CONDITION DIAGRAMS**

CONDITION	EXISTING TRAFFIC	EXISTING + BACKGROUND TRAFFIC	EXISTING + BACKGROUND + PROJECT	YEAR 2035 WITHOUT PROJECT	YEAR 2035 WITH PROJECT
$V_A$	125	145	165	200	220
$V_L$	70	75	100	105	130
$V_L$ (%)	60%	50%	60%	50%	60%
$V_S$	55	70	65	95	90
$V_O$	60	65	70	85	90

Tustin Office: 714.665.4500 Tel/ 714.665.4501 Fax

Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax

Victorville Office: 760.524.9100 Tel/ 760.524.9101 Fax

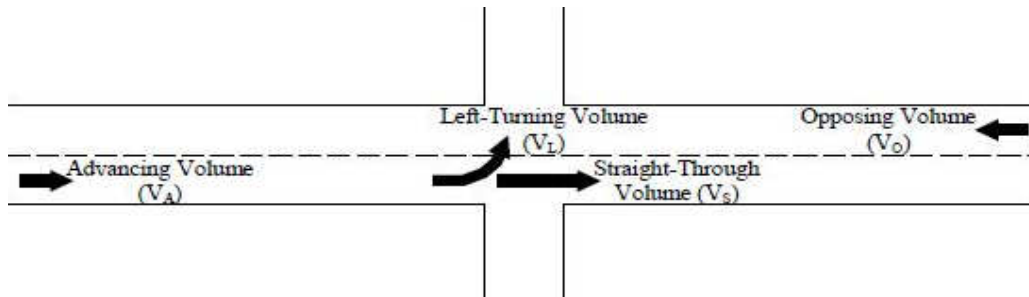
Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax



SUBJECT	BY	DATE	JOB NO.
LEFT TURN WARRANT	TM	19-Jun-14	VV.130048.0000

E/W STREET : STATE LANE DRIVE DESIGN SPEED : 55MPH  
N/S STREET : HIGHWAY 38 CONDITION : WEEKDAY PM PEAK HOUR

## CONDITION DIAGRAMS



CONDITION	EXISTING TRAFFIC	EXISTING + BACKGROUND TRAFFIC	EXISTING + BACKGROUND + PROJECT	YEAR 2035 WITHOUT PROJECT	YEAR 2035 WITH PROJECT
$V_A$	265	280	305	395	420
$V_L$	180	185	215	260	290
$V_L$ (%)	70%	70%	70%	70%	70%
$V_S$	85	95	90	135	130
$V_O$	75	95	100	125	130

Tustin Office: 714.665.4500 Tel/ 714.665.4501 Fax

Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax

Victorville Office: 760.524.9100 Tel/ 760.524.9101 Fax

Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax



SUBJECT

LEFT TURN WARRANT

BY

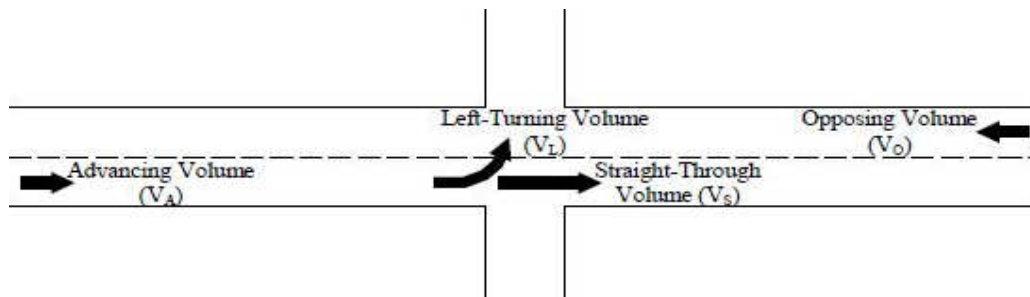
TM

DATE

19-Jun-14

JOB NO.

VV.130048.0000

E/W STREET : STATE LANE DRIVEDESIGN SPEED : 55MPHN/S STREET : HIGHWAY 38CONDITION : WINTER FRIDAY PM PEAK HOUR**CONDITION DIAGRAMS**

CONDITION	EXISTING TRAFFIC	EXISTING + BACKGROUND TRAFFIC	EXISTING + BACKGROUND + PROJECT	YEAR 2035 WITHOUT PROJECT	YEAR 2035 WITH PROJECT
$V_A$	310	340	365	470	495
$V_L$	215	225	255	315	345
$V_L$ (%)	70%	70%	70%	70%	70%
$V_S$	95	115	110	155	150
$V_O$	130	140	145	190	195

Tustin Office: 714.665.4500 Tel/ 714.665.4501 Fax

Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax

Victorville Office: 760.524.9100 Tel/ 760.524.9101 Fax

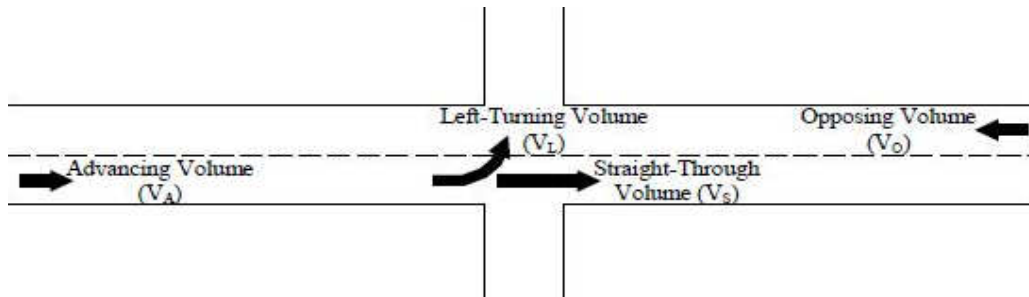
Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax



SUBJECT	BY	DATE	JOB NO.
LEFT TURN WARRANT	TM	19-Jun-14	VV.130048.0000

E/W STREET : STATE LANE DRIVE DESIGN SPEED : 55MPH  
N/S STREET : HIGHWAY 38 CONDITION : WINTER SUNDAY PM PEAK HOUR

## CONDITION DIAGRAMS



CONDITION	EXISTING TRAFFIC	EXISTING + BACKGROUND TRAFFIC	EXISTING + BACKGROUND + PROJECT	YEAR 2035 WITHOUT PROJECT	YEAR 2035 WITH PROJECT
$V_A$	330	350	375	485	510
$V_L$	145	150	180	210	240
$V_L$ (%)	40%	40%	50%	40%	50%
$V_S$	185	200	195	275	270
$V_O$	85	110	115	145	150

Tustin Office: 714.665.4500 Tel/ 714.665.4501 Fax

Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax

Victorville Office: 760.524.9100 Tel/ 760.524.9101 Fax

Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax

**Table 17.B-3**  
**Criteria for Left-turn Deceleration Lanes on**  
**RURAL TWO-LANE HIGHWAYS**

Left-Turn Volume <sup>1</sup> (vph)	LEFT-TURN DECELERATION LANE			
	Minimum Directional Volume in Through Lane (vphpl) <sup>2</sup>			
	≤ 30 mph	35 to 40 mph	45 to 55 mph	> 55 mph
< 5	Not Required	Not Required	Not Required	Not Required
5	400	220	120	60
10	240	140	80	40
15	160	100	60	Required
20	120	80	Required	Required
25	100	Required	Required	Required
≥ 26	Required	Required	Required	Required
	<i>Left-turn Deceleration Lanes are Required on Rural Two-lane Highways for the following Left-turn Volumes:</i> <ul style="list-style-type: none"><li>• ≤ 30 mph : 26 vph or more</li><li>• 35 to 40 mph : 21 vph or more</li><li>• 45 to 55 mph : 16 vph or more</li><li>• &gt; 55 mph : 11 vph or more</li></ul>			
<i>Notes:</i> <ol style="list-style-type: none"><li>1. Use linear interpolation for left-turn volumes between 5 and 25 vph.</li><li>2. The directional volume in the through lane includes through vehicles and turning vehicles.</li></ol>				

**Table 17.B-4**  
**Criteria for Left-turn Deceleration Lanes on**  
**RURAL MULTI-LANE HIGHWAYS**

Left-Turn Volume <sup>1</sup> (vph)	LEFT-TURN DECELERATION LANE			
	Minimum Volume in Adjacent Through Lane (vphpl) <sup>2</sup>			
	≤ 30 mph	35 to 40 mph	45 to 55 mph	> 55 mph
< 5	Not Required	Not Required	Not Required	Not Required
5	450	310	210	130
10	310	220	130	90
15	240	160	100	70
20	190	130	80	Required
25	150	110	Required	Required
30	130	Required	Required	Required
35	110	Required	Required	Required
≥ 36	Required	Required	Required	Required
	<i>Left-turn Deceleration Lanes are Required on Rural Multi-lane Highways for the following Left-turn Volumes:</i> <ul style="list-style-type: none"><li>• ≤ 30 mph : 36 vph or more</li><li>• 35 to 40 mph : 26 vph or more</li><li>• 45 to 55 mph : 21 vph or more</li><li>• &gt; 55 mph : 16 vph or more</li></ul>			
<i>Notes:</i> <ol style="list-style-type: none"><li>1. Use linear Interpolation for left-turn volumes between 5 and 35 vph.</li><li>2. The volume in the adjacent through lane includes through vehicles and turning vehicles.</li></ol>				

Table 9-23. Guide for Left-Turn Lanes on Two-Lane Highways (10)

Metric					U.S. Customary				
Opposing Volume (veh/h)	Advancing Volume (veh/h)				Opposing Volume (veh/h)	Advancing Volume (veh/h)			
	5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns		5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns
60-km/h Operating Speed					40-mph Operating Speed				
800	330	240	180	160	800	330	240	180	160
600	410	305	225	200	600	410	305	225	200
400	510	380	275	245	400	510	380	275	245
200	640	470	350	305	200	640	470	350	305
100	720	515	390	340	100	720	515	390	340
80-km/h Operating Speed					50-mph Operating Speed				
800	280	210	165	135	800	280	210	165	135
600	350	260	195	170	600	350	260	195	170
400	430	320	240	210	400	430	320	240	210
200	550	400	300	270	200	550	400	300	270
100	615	445	335	295	100	615	445	335	295
100-km/h Operating Speed					60-mph Operating Speed				
800	230	170	125	115	800	230	170	125	115
600	290	210	160	140	600	290	210	160	140
400	365	270	200	175	400	365	270	200	175
200	450	330	250	215	200	450	330	250	215
100	505	370	275	240	100	505	370	275	240

Additional information on left-turn lanes, including their suggested lengths, can be found in *Highway Research Record 211*, NCHRP Report 225, and NCHRP Report 279 (10, 19, 17). In the case of double left-turn lanes, a capacity analysis of the intersection should be performed to determine what traffic controls are needed in order for it to function properly.

Local conditions and the cost of right-of-way often influence the type of intersection selected as well as many of the design details. Limited sight distance, for example, may make it desirable to control traffic by yield signs, stop signs, or traffic signals when the traffic densities are less than those ordinarily considered appropriate for such control. The alignment and grade of the intersecting roads and the angle of intersection may make it advisable to channelize or use auxiliary pavement areas, regardless of the traffic densities. In general, traffic service, highway design designation, physical conditions, and cost of right-of-way are considered jointly in choosing the type of intersection.

For the general benefit of through-traffic movements, the number of crossroads, intersecting roads, or intersecting streets should be minimized. Where intersections are closely spaced on a two-way facility, it is seldom practical to provide signals for completely coordinated traffic movements at reasonable speeds in opposing directions on that facility. At the same time, the resultant road or street patterns should permit travel on roadways other than the predominant highway without too much inconvenience. Traffic analysis

The following general steps would be undertaken by IDRM to evaluate the left-turn lane warrants:

1. For each unstopped approach to an intersection, determine whether a left-turn lane is present or not.
2. From data provided by the designer, determine the peak-hour volume of each unstopped approach. If peak-hour volume is not available, use design-hour volume.
3. Determine the 85<sup>th</sup> percentile speed. The speed can be determined from actual data, from a speed prediction model like those developed for the IHSDM design consistency module, or from engineering judgment by the user. (Note that both directions of travel need to be evaluated.)
4. Look up the appropriate warranting condition and display an appropriate message.

No formulas or calculations are required to obtain output from the left-turn lane warrant model. Model output is obtained via a look-up table.

### Model Output

Model output is summarized in Table 15. Determination of whether a left-turn lane is warranted is based on consulting the table for a particular operating speed and opposing design-hour volume. If the advancing volume is greater than the value shown (for a given percentage of left turns), a left-turn lane is warranted.

**Table 15. Volume Warrants for Left-Turn Lanes**

Opposing Volume/Hour	Advancing Volume/Hour			
	5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns
<b>60-km/h Operating Speed</b>				
800	330	240	180	160
600	410	305	225	200
400	510	380	275	245
200	640	470	350	305
100	720	515	390	340
<b>80-km/h Operating Speed</b>				
800	280	210	165	135
600	350	260	195	170
400	430	320	240	210
200	550	400	300	270
100	615	445	335	295
<b>100-km/h Operating Speed</b>				
800	230	170	125	115
600	290	210	160	140
400	365	270	200	175
200	450	330	250	215
100	505	370	275	240

### References

1. *A Policy on Geometric Design of Highways and Street (Green Book)*. American Association of State Highway and Transportation Officials, Washington, DC, 1994 (Table II-1: Design Vehicle Dimensions, p. 21).
2. *Intersection Channelization Design Guide*, NCHRP Report 279. Transportation Research Board, Washington, DC (Figure 4-12 [Harmelink study]).



Engineering ▪ Planning ▪ Surveying

## MEMORANDUM

January 15, 2014

Job No. VV.130048.0000

To: Mr. Tom Steeno  
**Steen Design Studio**  
11774 Hesperia Rd, Suite 1B  
Hesperia, CA, 92345



From: Robert A. Kilpatrick, P.E., T.E. *RK*  
Vice President/Associate

**Re: Winter Weekend Traffic Analysis Addendum - - Eagle Ridge Market- State Hwy 38 and State Lane - - Erwin Lake, San Bernardino County, California,**

Hall & Foreman, Inc. is pleased to submit this Traffic Analysis Addendum Memorandum to provide a Winter Weekend Traffic Analysis at the intersection of Highway 38 and State Lane, in connection with the proposed Eagle Ridge commercial development in the unincorporated community of Erwin Lake, in the County of San Bernardino. The Traffic Analysis Addendum reviews the traffic existing conditions for a typical winter weekend.

### 1. INTRODUCTION

The approved Traffic Study for the proposed project dated September 19, 2013 analyzed the weekday AM and PM peak hours to analyze traffic impacts for the proposed project. HFI has conducted a traffic analysis of the existing Friday PM and Sunday PM peak hour conditions. The turn movement counts were conducted on Friday December 13, 2013 and Sunday December 15, 2013, and were representative of typical winter weekend traffic, when the local ski resorts were in operation. This memorandum identifies the potential Friday and Sunday traffic impacts, for the intersection of Highway 38 and State Lane, in connection with the proposed Eagle Ridge commercial development in the unincorporated community of Erwin Lake, in the County of San Bernardino.

HFI has conducted traffic analysis of the Existing, Year 2014 Background, Year 2014 Project, Future Year 2035 without Project, and Future Year 2035 with Project volumes at the intersection of Highway 38 and State Lane. The analysis utilized a straight line growth of 2% increase, compounded annually for the Year 2014 Background volumes and the Future Year 2035 without Project. The previously outlined conditions were examined to identify traffic impacts.

## **2. EXISTING CONDITIONS**

Currently the intersection of Highway 38 and State Lane is controlled by two way stop controls. Greenspot Boulevard/Highway 38 provides local and regional access in the project area. Highway 38 (SR 38) traverses north to south and provides access from the Big Bear Lake area to Redlands/Yucaipa and the Interstate I-10 Freeway. This roadway is primarily a two-lane highway (one lane in each direction). The intersection of Highway 38 and State Lane is currently two-way-stop-controlled. State Lane will provide the primary access to the project site. State Lane is primarily a two-lane paved road (one lane in each direction) fronting the project site east of Highway 38. Currently, State Lane does not consist of a curb and gutter along the property.

### **2.1 Traffic Volume**

Newport Traffic Studies staff conducted a Friday (4:00-7:00 PM) and Sunday (3:00-6:00 PM) peak period turning movement counts, at the intersection of Highway 38 and State Lane, identified for detailed analysis. These counts were conducted on December 13, 2013 and December 15, 2013 respectively. The resulting volumes are provided as an attachment.

### **2.2 Capacity Analysis**

An intersection capacity analysis calculation was conducted to determine the current intersection level of service (LOS). The Synchro 8 Software package, by Trafficware Ltd was utilized. Synchro implements the methods of the 2010 Highway Capacity Manual. The analysis determines a level-of-service (LOS) which quantitatively describes the operating characteristics of signalized intersections and the maximum delay. The LOS ranges from "A" (the best) through "F" (system breakdown). The level-of-service is based on the average delay of vehicles at the intersections.

**TABLE A**  
Capacity Analysis – Existing Conditions  
Traffic Analysis – Eagle Ridge Market

Intersections	Friday PM Peak		Sunday PM Peak	
	LOS	Delay	LOS	Delay
Highway 38 and State Lane	18.0	C	14.8	B

(1) LOS – HCM Level of Service

(2) Delay –In Seconds

Source: **Hall & Foreman Inc.**

As shown in *Table A* the study intersection is currently operating at LOS C or better during the Friday and Sunday PM peak hours.

### **3. YEAR 2014**

The Year 2014 is the anticipated opening year of the project. The Year 2014 considers two conditions, Year 2014 Background Condition and Year 2014 Project Condition.

#### **3.1 Traffic Volumes**

The Year 2014 Background Condition is necessary to analyze the project impacts, with the inclusion of traffic generated by other projects within the study area. The turn movement volumes utilized a straight line growth of 2% increase, compounded annually to represent regional growth of 1 to 2%. The 2% increase was used to be conservative.

The Year 2014 Project Condition was analyzed to determine the amount of traffic that would be generated from the proposed development. To identify potential traffic impacts from the project, trip generation factors were applied to the type of use to generate project traffic estimates. The trip generation rates were obtained from the 9th edition of the Institute of Transportation Engineers trip generation report as presented in the Proposed Commercial Development Eagle Ridge Market Traffic Report, by Hall & Foreman Inc., dated September 19, 2013.

#### **3.2 Capacity Analysis**

**TABLE B**  
Capacity Analysis –Year 2014  
Traffic Analysis – Eagle Ridge Market

Intersections	Background Condition				Project Condition			
	Friday Peak		Sunday Peak		Friday Peak		Sunday Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Highway 38 and State Lane	19.5	C	15.8	C	24.9	C	20.0	C

(1) LOS – HCM Level of Service

(2) Delay –In Seconds

Source: **Hall & Foreman Inc.**

As shown in *Table B* the study intersections are anticipated to continue to operate at LOS C during the Friday and Sunday peak hours, under the Background and Project conditions.

#### **4. FUTURE YEAR - 2035**

The Future Year 2035 considers two conditions, Future Year 2035 without Project Condition and Future Year 2035 with Project Condition.

##### **4.1 Traffic Volumes**

The analysis primary focus is with traffic impacts created by the proposed project. However, growth within the study area due to development will occur. To analyze the future conditions a 2% growth per year of the existing peak hour volumes was considered. The turn movement volumes utilized a straight line growth of 2% increase, compounded annually to represent regional growth of 1 to 2%. The 2% increase was used to be conservative.

##### **4.2 Capacity Analysis**

**TABLE C**

Capacity Analysis – Future Year 2035  
Traffic Analysis – Eagle Ridge Market

Intersections	Future Year 2035 without Project				Future Year 2035 with Project			
	Friday Peak		Sunday Peak		Friday Peak		Sunday Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Highway 38 and State Lane	35.0	D	24.2	C	47.7	E	30.5	D

(1) LOS – HCM Level of Service

(2) Delay –In Seconds

Source: **Hall & Foreman Inc.**

As shown in *Table C* the study intersections are anticipated to operate at LOS “E” or better during the Friday and Sunday PM peak hours under the Year 2035 conditions.

#### **5. SUMMARY**

Based on the traffic analysis, the project will not cause any significant negative impacts to the surrounding street system. The existing street system will be adequate to handle estimated project and future traffic with the existing intersection geometrics. As a result no project specific mitigation is needed at the study intersection.

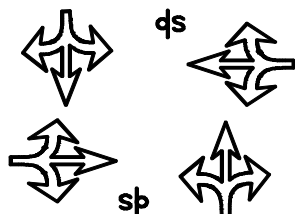


SUBJECT	BY	DATE	JOB NO.	SHEET	OF
SUMMARY	TM	7-Jan-14	VV.130048.0000	1	OF 2

E/W STREET : STATE LANE DRIVE  
N/S STREET : HIGHWAY 38  
CONDITION : FRIDAY PEAK HOUR

PROJECT YEAR : 2014  
PROJECTED GROWTH : 2%  
PER YEAR

## CONDITION DIAGRAMS



### EXISTING GEOMETRICS

### TURN MOVEMENTS

CONDITION	EXISTING TRAFFIC	BACKGROUND TRAFFIC	EXISTING + BACKGROUND TRAFFIC	PROJECT TRIPS	EXISTING + BACKGROUND + PROJECT	YEAR 2035 WITHOUT PROJECT	YEAR 2035 WITH PROJECT
SCENARIO #							

### STATE LANE DRIVE

EB LEFT	15	0	15	0	15	20	20
EB THRU	5	0	5	15	20	5	20
EB RIGHT	5	0	5	0	5	5	5
WB LEFT	5	0	5	10	15	5	15
WB THRU	5	0	5	15	20	5	20
WB RIGHT	90	0	95	25	120	135	160

### HIGHWAY 38

NB LEFT	5	0	5	0	5	5	5
NB THRU	120	5	130	-5	125	180	175
NB RIGHT	5	0	5	10	15	5	15
SB LEFT	215	0	225	25	250	315	340
SB THRU	75	15	95	-5	90	125	120
SB RIGHT	20	0	20	0	20	30	30
<b>TOTALS</b>	<b>565</b>	<b>20</b>	<b>610</b>	<b>90</b>	<b>700</b>	<b>835</b>	<b>925</b>



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SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	TM	7-Jan-14	VV.130048.0000	2	OF 2

E/W STREET : STATE LANE DRIVE

N/S STREET : HIGHWAY 38

CONDITION : FRIDAY PEAK HOUR

COUNT DATE : December 13, 2013

NORTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
1	0	2	0	0	0	0	1	0
0	2	0	0	0	0	0	0	0
0	0	0	0	1	0	0	0	0

SOUTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	1	0

EAST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

WEST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

NORTH LEG			SOUTH LEG			EAST LEG			WEST LEG		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

TRUCK TOTAL	AUTO VOLUMES	TOTALS	ROUNDED TOTALS	TRUCK PERCENTAGE
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#### STATE LANE DRIVE

EB LEFT	0	0	16	15	0
EB THRU	0	0	2	5	0
EB RIGHT	1	0	1	5	100
WB LEFT	0	0	7	5	0
WB THRU	0	0	3	5	0
WB RIGHT	0	0	92	90	0

#### HIGHWAY 38

NB LEFT	0	0	7	5	0
NB THRU	2	0	122	120	2
NB RIGHT	1	0	6	5	17
SB LEFT	2	0	214	215	1
SB THRU	4	0	73	75	5
SB RIGHT	1	0	20	20	5

Irvine Office: 714.665.4500 Tel/ 714.665.4501 Fax

Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax

Victorville Office: 760.241.0595 Tel/ 760.241.1937 Fax

Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax

# INTERSECTION TURN COUNT

## PEAK HOUR

NORTH-SOUTH STREET: HWY 38  
 EAST-WEST STREET: STATE LANE DR  
 JURISDICTION: ERWIN LAKE

DATE: 12-13-13

PEAK HOUR: 04:30PM

### NORTH LEG

TOTAL: 307

20	73	214
6	16	42
6	19	50
6	16	56
2	22	66

Total

1st

2nd

3rd

4th

Rt Thru Lt

EAST LEG TOTAL: 102

Rt	27	23	22	20	92
Thru	1	1	1	0	3
Lt	5	0	2	0	7

Total 1st 2nd 3rd 4th

16	1	3	6	6
2	1	0	0	1
1	0	0	1	0

Lt

Thru

Rt

1st 2nd 3rd 4th Total

WEST LEG TOTAL: 19

### PEAK HOUR FACTORS

NORTH LEG = 0.85

SOUTH LEG = 0.80

EAST LEG = 0.77

WEST LEG = 0.68

ALL LEGS = 0.93

	Lt	Thru	Rt
1st	2	30	2
2nd	4	37	1
3rd	1	21	2
4th	0	34	1
Total	7	122	6

### SOUTH LEG

TOTAL: 135

HOURLY TOTAL: 563

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 04:00PM-05:00PM

DATE: 12-13-13

## NORTH LEG

22	73	192	Total
5	21	49	1st
5	17	51	2nd
6	16	42	3rd
6	19	50	4th
Rt	Thru	Lt	

Rt	32	27	27	23	109
Thru	1	0	1	1	3
Lt	0	0	5	0	5
	1st	2nd	3rd	4th	Total

Total	1st	2nd	3rd	4th	
9	4	1	1	3	Lt
1	0	0	1	0	Thru
0	0	0	0	0	Rt

	Lt	Thru	Rt
1st	0	22	3
2nd	3	26	4
3rd	2	30	2
4th	4	37	1
Total	9	115	10

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 05:00PM-06:00PM

DATE: 12-13-13

## NORTH LEG

24	55	198	Total
6	16	56	1st
2	22	66	2nd
8	9	38	3rd
8	8	38	4th
Rt	Thru	Lt	

Rt	22	20	30	32	104
Thru	1	0	2	1	4
Lt	2	0	0	2	4
	1st	2nd	3rd	4th	Total

Total	1st	2nd	3rd	4th	
23	6	6	4	7	Lt
1	0	1	0	0	Thru
1	1	0	0	0	Rt

	Lt	Thru	Rt
1st	1	21	2
2nd	0	34	1
3rd	0	26	1
4th	0	19	5
Total	1	100	9

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 06:00PM-07:00PM

DATE: 12-13-13

## NORTH LEG

11	36	140	Total
4	9	49	1st
3	9	46	2nd
3	7	23	3rd
1	11	22	4th
Rt	Thru	Lt	

Total 1st 2nd 3rd 4th

11	4	1	3	3	Lt
2	0	1	1	0	Thru
0	0	0	0	0	Rt

Rt	18	21	25	16	80
Thru	1	0	3	0	4
Lt	0	1	0	0	1
	1st	2nd	3rd	4th	Total

	Lt	Thru	Rt
1st	2	14	1
2nd	0	23	1
3rd	1	19	1
4th	2	20	3
Total	5	76	6

Prepared by NEWPORT TRAFFIC STUDIES

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Friday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing Conditions  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1	2	3		4	5	6
		L	T	R		L	T	R
Volume		5	120	5		215	75	20
Peak-Hour Factor, PHF		0.93	0.93	0.93		0.93	0.93	0.93
Hourly Flow Rate, HFR		5	129	5		231	80	21
Percent Heavy Vehicles		5	--	--		5	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7	8	9		10	11	12
		L	T	R		L	T	R
Volume		5	5	90		15	5	5
Peak Hour Factor, PHF		0.93	0.93	0.93		0.93	0.93	0.93
Hourly Flow Rate, HFR		5	5	96		16	5	5
Percent Heavy Vehicles		5	5	5		5	5	5
Percent Grade (%)		0						
Flared Approach: Exists?/Storage					No /			
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
			LTR	LTR	LTR		LTR	LTR	LTR
v (vph)	5	231		106			26		
C(m) (vph)	1473	1432		761			303		
v/c	0.00	0.16		0.14			0.09		
95% queue length	0.01	0.58		0.48			0.28		
Control Delay	7.5	8.0		10.5			18.0		
LOS	A	A		B			C		
Approach Delay				10.5			18.0		
Approach LOS				B			C		

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Friday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing plus Background  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume		5	130	5		225	95	20
Peak-Hour Factor, PHF		0.93	0.93	0.93		0.93	0.93	0.93
Hourly Flow Rate, HFR		5	139	5		241	102	21
Percent Heavy Vehicles		5	--	--		5	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		5	5	95		15	5	5
Peak Hour Factor, PHF		0.93	0.93	0.93		0.93	0.93	0.93
Hourly Flow Rate, HFR		5	5	102		16	5	5
Percent Heavy Vehicles		5	5	5		5	5	5
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
Movement	1	4							
Lane Config	LTR	LTR		LTR				LTR	
v (vph)	5	241		112				26	
C(m) (vph)	1446	1420		745				274	
v/c	0.00	0.17		0.15				0.09	
95% queue length	0.01	0.61		0.53				0.31	
Control Delay	7.5	8.1		10.7				19.5	
LOS	A	A		B				C	
Approach Delay				10.7				19.5	
Approach LOS				B				C	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Friday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Project Year 2014  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound			Southbound		
		1	2	3	4	5	6
		L	T	R	L	T	R
Volume		5	125	15	250	90	20
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR		5	138	16	277	100	22
Percent Heavy Vehicles		5	--	--	5	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		
Upstream Signal?		No			No		
Minor Street:	Approach Movement	Westbound			Eastbound		
		7	8	9	10	11	12
		L	T	R	L	T	R
Volume		15	20	120	15	20	5
Peak Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR		16	22	133	16	22	5
Percent Heavy Vehicles		5	5	5	5	5	5
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage		No			/		
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
			7	8	9	10	11	12
			LTR	LTR	LTR	LTR	LTR	LTR
v (vph)	5	277		171		43		
C(m) (vph)	1447	1408		543		224		
v/c	0.00	0.20		0.31		0.19		
95% queue length	0.01	0.73		1.37		0.71		
Control Delay	7.5	8.2		14.7		24.9		
LOS	A	A		B		C		
Approach Delay				14.7		24.9		
Approach LOS				B		C		

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Friday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 without Project  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach	Northbound			Southbound		
	Movement	1	2	3	4	5	6
		L	T	R	L	T	R
Volume		5	180	5	315	125	30
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR		5	189	5	331	131	31
Percent Heavy Vehicles		5	--	--	5	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		
Upstream Signal?		No			No		
Minor Street:	Approach	Westbound			Eastbound		
	Movement	7	8	9	10	11	12
		L	T	R	L	T	R
Volume		5	5	135	20	5	5
Peak Hour Factor, PHF		0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR		5	5	142	21	5	5
Percent Heavy Vehicles		5	5	5	5	5	5
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage		No			/		
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	331		152			31	
C(m) (vph)	1399	1361		665			151	
v/c	0.00	0.24		0.23			0.21	
95% queue length	0.01	0.96		0.89			0.77	
Control Delay	7.6	8.5		12.0			35.0-	
LOS	A	A		B			D	
Approach Delay				12.0			35.0-	
Approach LOS				B			D	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Friday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 with Project  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume		5	175	15		340	120	30
Peak-Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		5	184	15		357	126	31
Percent Heavy Vehicles		5	--	--		5	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		15	20	160		20	20	5
Peak Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		15	21	168		21	21	5
Percent Heavy Vehicles		5	5	5		5	5	5
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
Movement	1	4							
Lane Config	LTR	LTR		LTR				LTR	
v (vph)	5	357		204				47	
C(m) (vph)	1405	1356		456				131	
v/c	0.00	0.26		0.45				0.36	
95% queue length	0.01	1.07		2.38				1.62	
Control Delay	7.6	8.6		19.2				47.7	
LOS	A	A		C				E	
Approach Delay				19.2				47.7	
Approach LOS				C				E	



SUBJECT	BY	DATE	JOB NO.	SHEET	OF
SUMMARY	TM	7-Jan-14	VV.130048.0000	1	OF 2

E/W STREET : STATE LANE DRIVE  
N/S STREET : HIGHWAY 38  
CONDITION : SUNDAY PEAK HOUR

PROJECT YEAR : 2014  
PROJECTED GROWTH : 2%  
PER YEAR

## CONDITION DIAGRAMS

### TURN MOVEMENTS

	EXISTING TRAFFIC	BACKGROUND TRAFFIC	EXISTING + BACKGROUND TRAFFIC	PROJECT TRIPS	EXISTING + BACKGROUND + PROJECT	YEAR 2035 WITHOUT PROJECT	YEAR 2035 WITH PROJECT
CONDITION SCENERIO #							

### STATE LANE DRIVE

EB LEFT	10	0	10	0	10	15	15
EB THRU	5	0	5	15	20	5	20
EB RIGHT	5	0	5	0	5	5	5
WB LEFT	10	0	10	10	20	15	25
WB THRU	5	0	5	15	20	5	20
WB RIGHT	95	0	100	30	130	140	170

### HIGHWAY 38

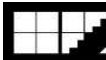
NB LEFT	5	0	5	0	5	5	5
NB THRU	70	20	95	-5	90	125	120
NB RIGHT	10	0	10	10	20	15	25
SB LEFT	145	0	150	30	180	210	240
SB THRU	170	10	185	-5	180	255	250
SB RIGHT	15	0	15	0	15	20	20
<b>TOTALS</b>	<b>545</b>	<b>30</b>	<b>595</b>	<b>100</b>	<b>695</b>	<b>815</b>	<b>915</b>

Tustin Office: 714.665.4500 Tel/ 714.665.4501 Fax

Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax

Victorville Office: 760.524.9100 Tel/ 760.524.9101 Fax

Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax



SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	TM	7-Jan-14	VV.130048.0000	2	OF 2

E/W STREET : STATE LANE DRIVE

N/S STREET : HIGHWAY 38

CONDITION : SUNDAY PEAK HOUR

COUNT DATE : December 15, 2013

NORTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0

SOUTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

EAST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0

WEST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

NORTH LEG			SOUTH LEG			EAST LEG			WEST LEG		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

TRUCK TOTAL	AUTO VOLUMES	TOTALS	ROUNDED TOTALS	TRUCK PERCENTAGE
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**STATE LANE DRIVE**

EB LEFT	1	0	10	10	10
EB THRU	0	0	2	5	0
EB RIGHT	0	0	3	5	0
WB LEFT	0	0	10	10	0
WB THRU	0	0	4	5	0
WB RIGHT	2	0	97	95	2

**HIGHWAY 38**

NB LEFT	0	0	2	5	0
NB THRU	0	0	70	70	0
NB RIGHT	0	0	8	10	0
SB LEFT	1	0	145	145	1
SB THRU	0	0	171	170	0
SB RIGHT	0	0	15	15	0

Irvine Office: 714.665.4500 Tel/ 714.665.4501 Fax

Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax

Victorville Office: 760.241.0595 Tel/ 760.241.1937 Fax

Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax

# INTERSECTION TURN COUNT

## PEAK HOUR

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

JURISDICTION: ERWIN LAKE

DATE: 12-15-13

PEAK HOUR: 04:00PM

### NORTH LEG

TOTAL: 331

15	171	145
4	50	35
2	37	43
5	43	33
4	41	34

Total

1st

2nd

3rd

4th

Rt Thru Lt

EAST LEG TOTAL: 111

Rt

Thru

Lt

21	32	27	17	97
0	1	0	3	4
2	5	2	1	10

Total 1st 2nd 3rd 4th

10	2	2	3	3
2	0	0	0	2
3	0	0	1	2

Lt

Thru

Rt

1st 2nd 3rd 4th Total

WEST LEG TOTAL: 15

### PEAK HOUR FACTORS

NORTH LEG = 0.93

SOUTH LEG = 0.74

EAST LEG = 0.73

WEST LEG = 0.54

ALL LEGS = 0.94

	Lt	Thru	Rt
1st	0	15	0
2nd	1	17	3
3rd	1	13	3
4th	0	25	2
Total	2	70	8

### SOUTH LEG

TOTAL: 80

HOURLY TOTAL: 537

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 03:00PM-04:00PM

DATE: 12-15-13

## NORTH LEG

23	141	107	Total
5	22	26	1st
6	38	23	2nd
4	38	32	3rd
8	43	26	4th
Rt	Thru	Lt	

Rt	23	19	20	18	80
Thru	0	1	0	0	1
Lt	1	4	4	2	11
	1st	2nd	3rd	4th	Total

Total	1st	2nd	3rd	4th	
18	3	5	5	5	Lt
5	1	1	1	2	Thru
2	1	1	0	0	Rt

	Lt	Thru	Rt
1st	0	14	2
2nd	0	12	2
3rd	2	12	1
4th	0	15	2
Total	2	53	7

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 04:00PM-05:00PM

DATE: 12-15-13

## NORTH LEG

15	171	145	Total
4	50	35	1st
2	37	43	2nd
5	43	33	3rd
4	41	34	4th
Rt	Thru	Lt	

Total 1st 2nd 3rd 4th

10	2	2	3	3	Lt
2	0	0	0	2	Thru
3	0	0	1	2	Rt

Rt	21	32	27	17	97
Thru	0	1	0	3	4
Lt	2	5	2	1	10
	1st	2nd	3rd	4th	Total

	Lt	Thru	Rt
1st	0	15	0
2nd	1	17	3
3rd	1	13	3
4th	0	25	2
Total	2	70	8

Prepared by NEWPORT TRAFFIC STUDIES

# INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 05:00PM-06:00PM

DATE: 12-15-13

## NORTH LEG

24	96	105	Total
2	26	32	1st
7	19	33	2nd
10	23	14	3rd
5	28	26	4th
Rt	Thru	Lt	

Rt	16	22	20	15	73
Thru	0	0	0	0	0
Lt	1	0	3	3	7
	1st	2nd	3rd	4th	Total

Total	1st	2nd	3rd	4th	
9	3	3	1	2	Lt
1	0	0	1	0	Thru
3	1	0	1	1	Rt

	Lt	Thru	Rt
1st	1	19	1
2nd	1	5	3
3rd	1	6	2
4th	0	9	2
Total	3	39	8

Prepared by NEWPORT TRAFFIC STUDIES

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Sunday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing Condition  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1	2	3		4	5	6
		L	T	R		L	T	R
Volume		5	70	10		145	170	15
Peak-Hour Factor, PHF		0.94	0.94	0.94		0.94	0.94	0.94
Hourly Flow Rate, HFR		5	74	10		154	180	15
Percent Heavy Vehicles		5	--	--		5	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7	8	9		10	11	12
		L	T	R		L	T	R
Volume		10	5	95		10	5	5
Peak Hour Factor, PHF		0.94	0.94	0.94		0.94	0.94	0.94
Hourly Flow Rate, HFR		10	5	101		10	5	5
Percent Heavy Vehicles		5	5	5		5	5	5
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
	1	4	7	8	9	10	11	12
Movement	LTR	LTR		LTR			LTR	
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	154		116			20	
C(m) (vph)	1360	1494		803			386	
v/c	0.00	0.10		0.14			0.05	
95% queue length	0.01	0.34		0.51			0.16	
Control Delay	7.7	7.7		10.2			14.8	
LOS	A	A		B			B	
Approach Delay				10.2			14.8	
Approach LOS				B			B	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Sunday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Existing plus Background  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1	2	3		4	5	6
		L	T	R		L	T	R
Volume		5	95	10		150	185	15
Peak-Hour Factor, PHF		0.94	0.94	0.94		0.94	0.94	0.94
Hourly Flow Rate, HFR		5	101	10		159	196	15
Percent Heavy Vehicles		5	--	--		--	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7	8	9		10	11	12
		L	T	R		L	T	R
Volume		10	5	100		10	5	5
Peak Hour Factor, PHF		0.94	0.94	0.94		0.94	0.94	0.94
Hourly Flow Rate, HFR		10	5	106		10	5	5
Percent Heavy Vehicles		5	5	5		5	5	5
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
	1	4	7	8	9	10	11	12
Movement	LTR	LTR		LTR			LTR	
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	159		121			20	
C(m) (vph)	1342	1460		771			353	
v/c	0.00	0.11		0.16			0.06	
95% queue length	0.01	0.37		0.56			0.18	
Control Delay	7.7	7.8		10.5			15.8	
LOS	A	A		B			C	
Approach Delay				10.5			15.8	
Approach LOS				B			C	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Sunday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Project Year 2014  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound			Southbound		
		1	2	3	4	5	6
		L	T	R	L	T	R
Volume		5	90	20	180	180	15
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR		5	100	22	200	200	16
Percent Heavy Vehicles		5	--	--	5	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		
Upstream Signal?		No			No		
Minor Street:	Approach Movement	Westbound			Eastbound		
		7	8	9	10	11	12
		L	T	R	L	T	R
Volume		20	20	130	10	20	5
Peak Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR		22	22	144	11	22	5
Percent Heavy Vehicles		5	5	5	5	5	5
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		No
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
			7	8	9	10	11	12
			LTR	LTR	LTR	LTR	LTR	LTR
v (vph)	5	200		188			38	
C(m) (vph)	1336	1447		601			278	
v/c	0.00	0.14		0.31			0.14	
95% queue length	0.01	0.48		1.36			0.47	
Control Delay	7.7	7.9		13.7			20.0	
LOS	A	A		B			C	
Approach Delay				13.7			20.0	
Approach LOS				B			C	

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Sunday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 without Project  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1	2	3		4	5	6
		L	T	R		L	T	R
Volume		5	125	15		210	255	20
Peak-Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		5	131	15		221	268	21
Percent Heavy Vehicles		5	--	--		5	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		
Minor Street:	Approach Movement	Westbound				Eastbound		
		7	8	9		10	11	12
		L	T	R		L	T	R
Volume		15	5	140		15	5	5
Peak Hour Factor, PHF		0.95	0.95	0.95		0.95	0.95	0.95
Hourly Flow Rate, HFR		15	5	147		15	5	5
Percent Heavy Vehicles		5	5	5		5	5	5
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound		
			7	8	9		10	11	12
			LTR	LTR	LTR		LTR	LTR	LTR
v (vph)	5	221		167			25		
C(m) (vph)	1256	1418		663			212		
v/c	0.00	0.16		0.25			0.12		
95% queue length	0.01	0.55		1.01			0.40		
Control Delay	7.9	8.0		12.3			24.2		
LOS	A	A		B			C		
Approach Delay				12.3			24.2		
Approach LOS				B			C		

## TWO-WAY STOP CONTROL SUMMARY

Analyst: TM  
 Agency/Co.: Hall and Foreman, Inc  
 Date Performed: 1/7/2014  
 Analysis Time Period: Sunday Peak Hour  
 Intersection: Highway 38/State Lane Drive  
 Jurisdiction: San Bernardino County  
 Units: U. S. Customary  
 Analysis Year: Year 2035 with Project  
 Project ID: VV.130048.0000  
 East/West Street: State Lane Drive  
 North/South Street: Highway 38  
 Intersection Orientation: NS Study period (hrs): 1.00

## Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound			Southbound		
		1	2	3	4	5	6
		L	T	R	L	T	R
Volume		5	120	25	240	250	20
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR		5	126	26	252	263	21
Percent Heavy Vehicles		5	--	--	5	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		
Upstream Signal?		No			No		
Minor Street:	Approach Movement	Westbound			Eastbound		
		7	8	9	10	11	12
		L	T	R	L	T	R
Volume		25	20	170	15	20	5
Peak Hour Factor, PHF		0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR		26	21	178	15	21	5
Percent Heavy Vehicles		5	5	5	5	5	5
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage		No			/		
Lanes		0	1	0	0	1	0
Configuration		LTR			LTR		

## Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
			7	8	9	10	11	12
			LTR	LTR	LTR	LTR	LTR	LTR
v (vph)	5	252		225		41		
C(m) (vph)	1261	1411		510		182		
v/c	0.00	0.18		0.44		0.23		
95% queue length	0.01	0.65		2.33		0.86		
Control Delay	7.9	8.1		17.6		30.5		
LOS	A	A		C		D		
Approach Delay				17.6		30.5		
Approach LOS				C		D		

## **EXHIBIT J**

### **Air Quality Impact Analysis; Urban Cross Roads; 2014**



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# **Eagle Ridge Market**

## **AIR QUALITY IMPACT ANALYSIS**

### **COUNTY OF SAN BERNARDINO**

PREPARED BY:

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FEBRUARY 25, 2014

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09105-02 AQ Report

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## **LIST OF ABBREVIATED TERMS**

(1)	Reference
µg/m <sup>3</sup>	Microgram per Cubic Meter
AADT	Annual Average Daily Trips
AQIA	Air Quality Impact Analysis
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BACM	Best Available Control Measures
BMPs	Best Management Practices
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DPM	Diesel Particulate Matter
EPA	Environmental Protection Agency
LST	Localized Significance Threshold
NAAQS	National Ambient Air Quality Standards
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Oxides of Nitrogen
Pb	Lead
PM <sub>10</sub>	Particulate Matter 10 microns in diameter or less
PM <sub>2.5</sub>	Particulate Matter 2.5 microns in diameter or less
PPM	Parts Per Million
Project	Eagle Ridge Market
ROG	Reactive Organic Gases
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SIPs	State Implementation Plans
SRA	Source Receptor Area
TAC	Toxic Air Contaminant

TIA	Traffic Impact Analysis
TOG	Total Organic Gases
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds

# 1 INTRODUCTION

This report presents the results of the air quality impact analysis (AQIA) prepared by Urban Crossroads, Inc., for the Eagle Ridge Market (referred to as “Project”), which is located at the southeast corner of Highway 38 and State Lane in the unincorporated community of Erwin Lake as shown on Exhibit 1-A.

The purpose of this AQIA is to evaluate the potential impacts to air quality associated with construction and operation of the proposed Project, and recommend measures to mitigate impacts considered potentially significant in comparison to established regulatory thresholds.

## 1.1 PROJECT OVERVIEW

The Project is proposed to include the development of a convenient store with an 8 pump gas station as shown on Exhibit 1-B. For the purposes of this AQIA, it is assumed that the Project will be constructed and at full occupancy by 2014.

## 1.2 EXISTING LAND USES

The Project site is currently vacant, undeveloped and not generating quantifiable emissions.

## 1.3 SUMMARY OF FINDINGS

### Short-Term Construction

For regional emissions, the Project would not exceed the numerical thresholds of significance established by the South Coast Air Quality Management District (SCAQMD). Although not required, best available control measures (BACM AQ-1 and BACM AQ-2) are recommended to further reduce the impacts.

Without BACMs, emissions during construction activity will exceed the SCAQMD’s localized significance threshold for particulate matter emissions (PM<sub>10</sub> - particulate matter ≤ 10 microns; and PM<sub>2.5</sub> - particulate matter ≤ 2.5 microns). It should be noted that the impacts without BACMs do not take credit for reductions achieved through standard regulatory requirements (Rule 403). After implementation of BACM AQ-1 and BACM AQ-2, the emissions resulting from short-term construction activity will not exceed the SCAQMD LST thresholds. A less than significant impact would occur with the application of mitigation measures.

Project construction-source emissions would not conflict with the applicable Air Quality Management Plan (AQMP).

Established requirements addressing construction equipment operations, and construction material use, storage, and disposal requirements act to minimize odor impacts that may result from construction activities. Moreover, construction-source odor emissions would be temporary, short-term, and intermittent in nature and would not result in persistent impacts that would affect substantial numbers of people. Potential construction-source odor impacts are therefore considered less-than-significant.

## EXHIBIT 1-A: LOCATION MAP

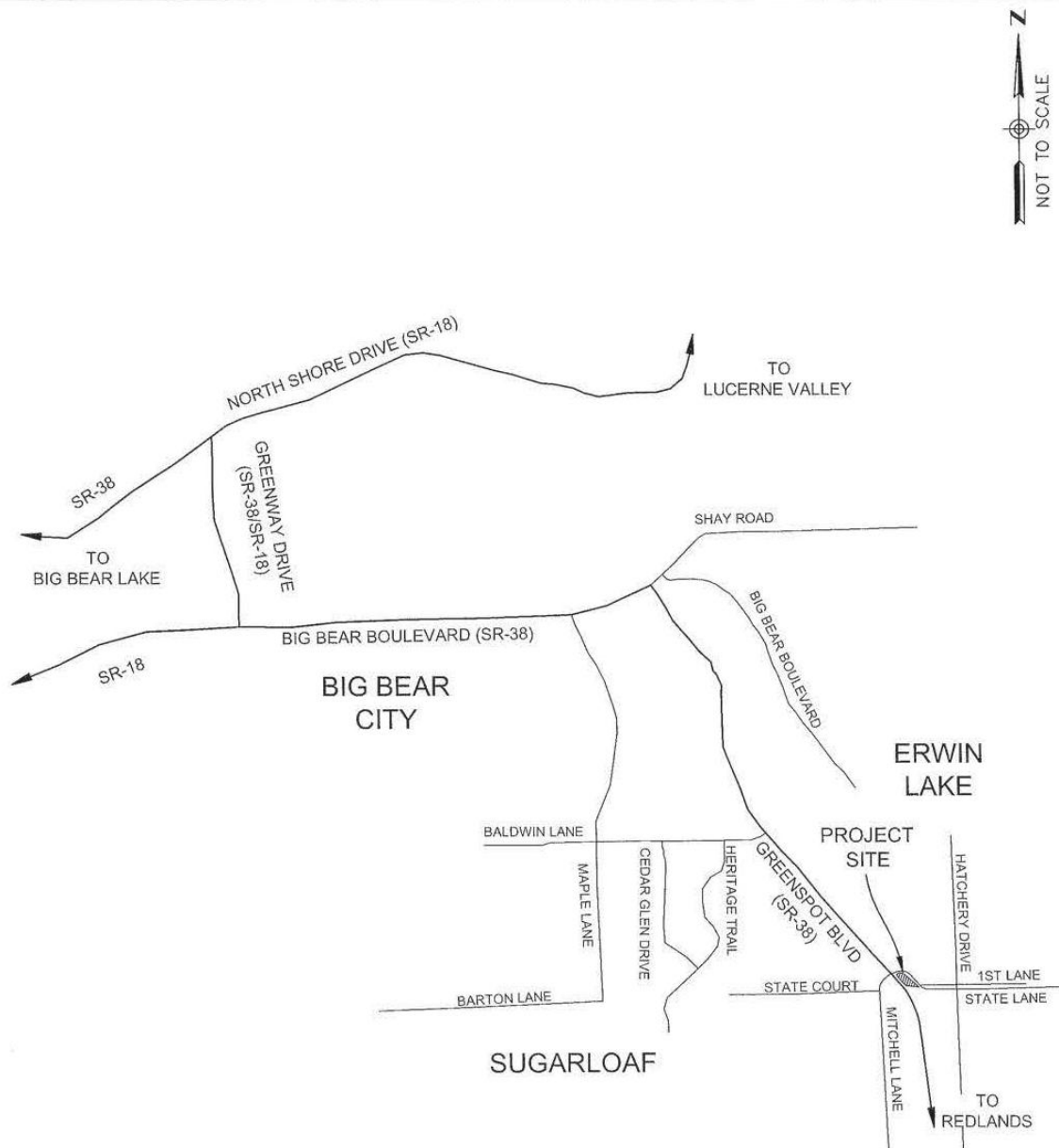
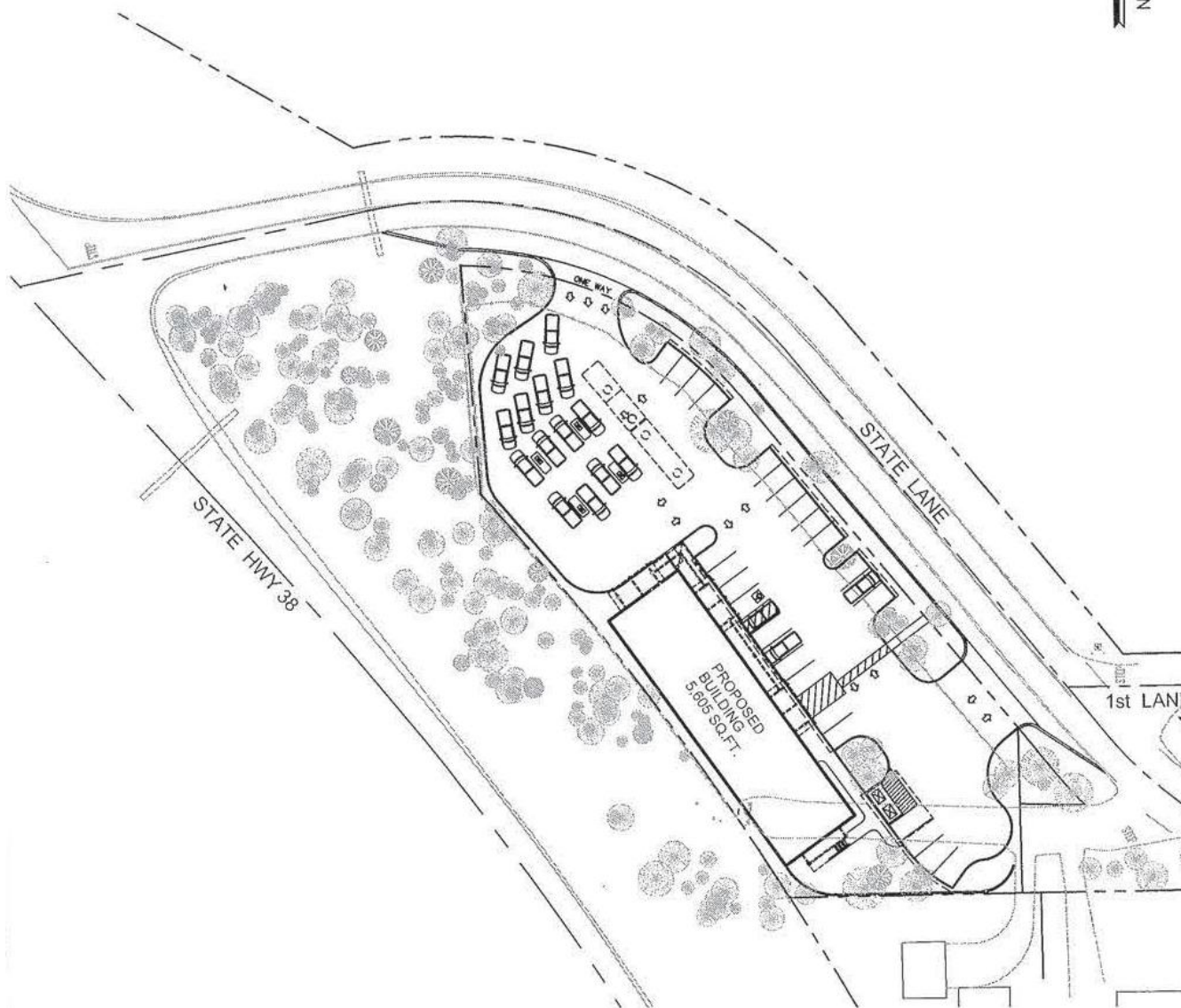


EXHIBIT 1-B: PRELIMINARY SITE PLAN



### Long-Term Operational

For regional emissions, the Project would not exceed the numerical thresholds of significance established by the SCAQMD. Thus a less than significant impact would occur for Project-related operational-source emissions without the application of mitigation measures.

Project operational-source emissions would not result in or cause a significant localized air quality impact as discussed in the operational LSTs section of this report. The proposed Project would not result in a significant CO “hotspot” as a result of Project related traffic during ongoing operations, nor would the Project result in a significant adverse health impact as discussed in Section 3.8, thus a less than significant impact to sensitive receptors during operational activity is expected. Project operational-source emissions would not conflict with the AQMP.

The Project would not result in a significant health risk impact due to toxic air contaminants (TACs) associated with gasoline dispensing activities (see Section 10.0).

Substantial odor-generating sources include land uses such as agricultural activities, feedlots, wastewater treatment facilities, landfills or various heavy industrial uses. The Project does not propose any such uses or activities that would result in potentially significant operational-source odor impacts. Potential sources of operational odors generated by the Project would include disposal of miscellaneous commercial refuse. Moreover, SCAQMD Rule 402 acts to prevent occurrences of odor nuisances (1). Consistent with County requirements, all Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with solid waste regulations. Potential operational-source odor impacts are therefore considered less-than-significant.

## **1.4 STANDARD REGULATORY REQUIREMENTS/BEST AVAILABLE CONTROL MEASURES (BACMs)**

Measures listed below (or equivalent language) shall appear on all Project grading plans, construction specifications and bid documents, and the County shall ensure such language is incorporated prior to issuance of any development permits. County monitoring of construction activities shall be conducted to ensure mitigation compliance.

SCAQMD Rules that are currently applicable during construction activity for this Project include but are not limited to: Rule 1113 (Architectural Coatings) (2); Rule 431.2 (Low Sulfur Fuel) (3); Rule 403 (Fugitive Dust) (4); and Rule 1186 / 1186.1 (Street Sweepers) (5). In order to facilitate monitoring and compliance, applicable SCAQMD regulatory requirements are summarized below.

### **BACM AQ-1**

The following measures shall be incorporated into Project plans and specifications as implementation of Rule 403 (4):

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Project are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and Project site areas are reduced to 15 miles per hour or less

Additional regulatory requirements that are in effect during Project construction include the following:

**BACM AQ-2**

The California Air Resources Board, in Title 13, Chapter 10, Section 2485, Division 3 of the of the California Code of Regulations, imposes a requirement that heavy duty trucks accessing the site shall not idle for greater than five minutes at any location. This measure is intended to apply to construction traffic. Grading plans shall reference that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling (6).

**1.5 CONSTRUCTION-SOURCE MITIGATION MEASURES**

No significant impacts were identified and no mitigation measures are required

**1.6 OPERATIONAL-SOURCE MITIGATION MEASURES**

No significant impacts were identified and no mitigation measures are required

## 2 AIR QUALITY SETTING

This section provides an overview of the existing air quality conditions in the Project area and region.

### 2.1 SOUTH COAST AIR BASIN

The Project site is located in the South Coast Air Basin (SCAB) within the jurisdiction of SCAQMD (7). The SCAQMD was created by the 1977 Lewis-Presley Air Quality Management Act, which merged four county air pollution control bodies into one regional district. Under the Act, the SCAQMD is responsible for bringing air quality in areas under its jurisdiction into conformity with federal and state air quality standards. As discussed above, the Project site is located within the South Coast Air Basin, a 6,745-square mile subregion of the SCAQMD, which includes portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County. The larger South Coast district boundary includes 10,743 square miles.

The SCAB is bound by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Los Angeles County portion of the Mojave Desert Air Basin is bound by the San Gabriel Mountains to the south and west, the Los Angeles / Kern County border to the north, and the Los Angeles / San Bernardino County border to the east. The Riverside County portion of the Salton Sea Air Basin is bound by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley.

### 2.2 EXISTING AIR QUALITY

Existing air quality is measured at established SCAQMD air quality monitoring stations. Monitored air quality is evaluated in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect, as well as health effects of each pollutant regulated under these standards are shown in Table 2-1 (8)(9).

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state and federal standards presented in Table 2-1. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for O<sub>3</sub>, CO, SO<sub>2</sub>, NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> are not equaled or exceeded at any time in any consecutive three-year period; and the federal standards (other than O<sub>3</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, and those based on annual averages or arithmetic mean) are not exceeded more than once per year. The O<sub>3</sub> standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM<sub>10</sub>, the 24 hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

TABLE 2-1: AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards <sup>1</sup>		National Standards <sup>2</sup>		
		Concentration <sup>3</sup>	Method <sup>4</sup>	Primary <sup>3,5</sup>	Secondary <sup>3,6</sup>	Method <sup>7</sup>
Ozone (O <sub>3</sub> )	1 Hour	0.09 ppm (180 µg/m <sup>3</sup> )	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m <sup>3</sup> )		0.075 ppm (147 µg/m <sup>3</sup> )		
Respirable Particulate Matter (PM <sub>10</sub> ) <sup>8</sup>	24 Hour	50 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	150 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m <sup>3</sup>		—		
Fine Particulate Matter (PM <sub>2.5</sub> ) <sup>8</sup>	24 Hour	—	—	35 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	12.0 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m <sup>3</sup> )	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m <sup>3</sup> )	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m <sup>3</sup> )		9 ppm (10 mg/m <sup>3</sup> )	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m <sup>3</sup> )		—	—	
Nitrogen Dioxide (NO <sub>2</sub> ) <sup>9</sup>	1 Hour	0.18 ppm (339 µg/m <sup>3</sup> )	Gas Phase Chemiluminescence	100 ppb (188 µg/m <sup>3</sup> )	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m <sup>3</sup> )		0.053 ppm (100 µg/m <sup>3</sup> )	Same as Primary Standard	
Sulfur Dioxide (SO <sub>2</sub> ) <sup>10</sup>	1 Hour	0.25 ppm (655 µg/m <sup>3</sup> )	Ultraviolet Fluorescence	75 ppb (196 µg/m <sup>3</sup> )	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m <sup>3</sup> )	
	24 Hour	0.04 ppm (105 µg/m <sup>3</sup> )		0.14 ppm (for certain areas) <sup>10</sup>	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas) <sup>10</sup>	—	
Lead <sup>11,12</sup>	30 Day Average	1.5 µg/m <sup>3</sup>	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m <sup>3</sup> (for certain areas) <sup>12</sup>	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m <sup>3</sup>		
Visibility Reducing Particles <sup>13</sup>	8 Hour	See footnote 13	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m <sup>3</sup>	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m <sup>3</sup> )	Ultraviolet Fluorescence			
Vinyl Chloride <sup>11</sup>	24 Hour	0.01 ppm (26 µg/m <sup>3</sup> )	Gas Chromatography			

See footnotes at: <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>

For more information please call ARB-PIO at (916) 322-2990

California Air Resources Board (6/4/13)

## 2.3 REGIONAL AIR QUALITY

The SCAQMD monitors levels of various criteria pollutants at 30 monitoring stations throughout the air district. In 2012, the federal and state ambient air quality standards (NAAQS and CAAQS) were exceeded on one or more days for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub> at most monitoring locations (10). No areas of the SCAB exceeded federal or state standards for NO<sub>2</sub>, SO<sub>2</sub>, CO, sulfates or lead. See Table 2-2 for attainment designations for the SCAB (11).

## 2.4 LOCAL AIR QUALITY

Relative to the Project site, the nearest long-term air quality monitoring site for Ultra-Fine Particulates (PM<sub>2.5</sub>) is the South Coast Air Quality Management District East San Bernardino Mountains monitoring station, located approximately 2.85 miles northwest of the Project site in San Bernardino (SRA 38) (12). The nearest long-term air quality monitoring site for Ozone (O<sub>3</sub>) and Inhalable Particulates (PM<sub>10</sub>) is the Central San Bernardino Mountains monitoring station, located approximately 26.67 miles west of the Project site in San Bernardino (SRA 37). The nearest long-term air quality monitoring site for Carbon Monoxide (CO) and Nitrogen Dioxide (NO<sub>2</sub>) is the Central San Bernardino Valley 2 monitoring station, located approximately 28.35 miles southwest of the Project site in San Bernardino (SRA 34).

The most recent three (3) years of data available is shown on Table 2-3 and identifies the number of days ambient air quality standards were exceeded for the study area, which is considered to be representative of the local air quality at the Project site (10) (13). Additionally, data for SO<sub>2</sub> has been omitted as attainment is regularly met in the South Coast Air Basin and few monitoring stations measure SO<sub>2</sub> concentrations.

Criteria pollutants are pollutants that are regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. Criteria pollutants, their typical sources, and effects are identified below:

- Carbon Monoxide (CO): Is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, motor vehicles operating at slow speeds are the primary source of CO in the Basin. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.
- Sulfur Dioxide (SO<sub>2</sub>): Is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO<sub>2</sub> oxidizes in the atmosphere, it forms sulfates (SO<sub>4</sub>). Collectively, these pollutants are referred to as sulfur oxides (SOX).

Nitrogen Oxides (Oxides of Nitrogen, or NO<sub>x</sub>): Nitrogen oxides (NO<sub>x</sub>) consist of nitric oxide (NO), nitrogen dioxide (NO<sub>2</sub>) and nitrous oxide (N<sub>2</sub>O) and are formed when nitrogen (N<sub>2</sub>) combines with oxygen (O<sub>2</sub>). Their lifespan in the atmosphere ranges from one to seven days for nitric oxide and nitrogen dioxide, to 170 years for nitrous oxide. Nitrogen oxides are typically created during combustion processes, and are major contributors to smog formation and acid

deposition. NO<sub>2</sub> is a criteria air pollutant, and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility. Of the seven types of nitrogen oxide compounds, NO<sub>2</sub> is the most abundant in the atmosphere. As ambient concentrations of NO<sub>2</sub> are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO<sub>2</sub> than those indicated by regional monitors.

- **Ozone (O<sub>3</sub>):** Is a highly reactive and unstable gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NO<sub>x</sub>), both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.
- **PM<sub>10</sub> (Particulate Matter less than 10 microns):** A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be deposited, resulting in adverse health effects. PM<sub>10</sub> also causes visibility reduction and is a criteria air pollutant.
- **PM<sub>2.5</sub> (Particulate Matter less than 2.5 microns):** A similar air pollutant consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include sulfates formed from SO<sub>2</sub> release from power plants and industrial facilities and nitrates that are formed from NO<sub>x</sub> release from power plants, automobiles and other types of combustion sources. The chemical composition of fine particles highly depends on location, time of year, and weather conditions. PM<sub>2.5</sub> is a criteria air pollutant.
- **Volatile Organic Compounds (VOC):** Volatile organic compounds are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form ozone to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include: carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to O<sub>3</sub>, which is a criteria pollutant. The SCAQMD uses the terms VOC and ROG (see below) interchangeably.
- **Reactive Organic Gases (ROG):** Similar to VOC, Reactive Organic Gases (ROG) are also precursors in forming ozone and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and nitrogen oxides react in the presence of sunlight. ROG is a criteria pollutant since they are a precursor to O<sub>3</sub>, which is a criteria pollutant. The SCAQMD uses the terms ROG and VOC (see previous) interchangeably.
- **Lead (Pb):** Lead is a heavy metal that is highly persistent in the environment. In the past, the primary source of lead in the air was emissions from vehicles burning leaded gasoline. As a result of the removal of lead from gasoline, there have been no violations at any of the SCAQMD's regular air monitoring stations since 1982. Currently, emissions of lead are largely limited to stationary sources such as lead smelters. It should be noted that the Project is not anticipated to generate a quantifiable amount of lead emissions. Lead is a criteria air pollutant.

**TABLE 2-2: ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SOUTH COAST AIR BASIN (SCAB)**

<b>Criteria Pollutant</b>	<b>State Designation</b>	<b>Federal Designation</b>
Ozone - 1hour standard	Nonattainment	No Standard
Ozone - 8 hour standard	Nonattainment	Extreme Nonattainment
PM <sub>10</sub>	Nonattainment	Serious Nonattainment
PM <sub>2.5</sub>	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment/Maintenance
Nitrogen Dioxide	Nonattainment <sup>2</sup>	Attainment/Maintenance
Sulfur Dioxide	Attainment	Attainment
Lead	Attainment/Nonattainment	Attainment/Nonattainment
All others	Attainment/Unclassified	Attainment/Unclassified

**TABLE 2-3: PROJECT AREA AIR QUALITY MONITORING SUMMARY 2010-2012**

POLLUTANT	STANDARD	YEAR		
		2010	2011	2012
Ozone (O <sub>3</sub> )				
Maximum 1-Hour Concentration (ppm)		0.142	0.160	0.140
Maximum 8-Hour Concentration (ppm)		0.123	0.136	0.112
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	52	58	56
Number of Days Exceeding State 8-Hour Standard	> 0.07 ppm	101	103	108
Number of Days Exceeding Federal 1-Hour Standard	> 0.12 ppm	6	8	2
Number of Days Exceeding Federal 8-Hour Standard	> 0.075 ppm	74	84	86
Number of Days Exceeding Health Advisory	≥ 0.15 ppm	0	1	0
Carbon Monoxide (CO)				
Maximum 1-Hour Concentration (ppm)		2	1.9	3.1
Maximum 8-Hour Concentration (ppm)		1.7	1.7	1.7
Number of Days Exceeding State 1-Hour Standard	> 20 ppm	0	0	0
Number of Days Exceeding Federal / State 8-Hour Standard	> 9.0 ppm	0	0	0
Number of Days Exceeding Federal 1-Hour Standard	> 35 ppm	0	0	0
Nitrogen Dioxide (NO <sub>2</sub> )				
Maximum 1-Hour Concentration (ppm)		0.069	0.062	0.067
Annual Arithmetic Mean Concentration (ppm)		0.019	0.017	--
Number of Days Exceeding State 1-Hour Standard	> 0.18 ppm	0	0	0
Particulate Matter ≤ 10 Microns (PM <sub>10</sub> )				
Maximum 24-Hour Concentration (µg/m <sup>3</sup> )		39	43	43
Number of Samples		57	59	--
Number of Samples Exceeding State Standard	> 50 µg/m <sup>3</sup>	0	0	0
Number of Samples Exceeding Federal Standard	> 150 µg/m <sup>3</sup>	0	0	0
Particulate Matter ≤ 2.5 Microns (PM <sub>2.5</sub> )				
Maximum 24-Hour Concentration (µg/m <sup>3</sup> )		35.4	30.7	34.8
Annual Arithmetic Mean (µg/m <sup>3</sup> )		8.4	8.5	36.4
Number of Samples Exceeding Federal 24-Hour Standard	> 35 µg/m <sup>3</sup>	0	0	0

Source: South Coast AQMD ([www.aqmd.gov](http://www.aqmd.gov))  
<http://www.epa.gov/airdata/>

## Health Effects of Air Pollutants

### Ozone

Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible subgroups for ozone effects. Short-term exposure (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in communities with high ozone levels.

Ozone exposure under exercising conditions is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

### Carbon Monoxide

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of decreased oxygen supply to the heart. Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport and competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (oxygen deficiency) as seen at high altitudes.

Reduction in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO, resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels; these include pre-term births and heart abnormalities.

### Particulate Matter

A consistent correlation between elevated ambient fine particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in PM<sub>2.5</sub> concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children, and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with longterm exposure to particulate matter.

The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM<sub>10</sub> and PM<sub>2.5</sub>.

#### Nitrogen Dioxide

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO<sub>2</sub> at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO<sub>2</sub> in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.

In animals, exposure to levels of NO<sub>2</sub> considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO<sub>2</sub>.

#### Sulfur Dioxide

A few minutes of exposure to low levels of SO<sub>2</sub> can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO<sub>2</sub>. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO<sub>2</sub>.

Animal studies suggest that despite SO<sub>2</sub> being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO<sub>2</sub> levels. In these studies, efforts to separate the effects of SO<sub>2</sub> from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

#### Lead

Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of

the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure.

Pb poisoning can cause anemia, lethargy, seizures, and death; although it appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.

## Odors

The science of odor as a health concern is still new. Merely identifying the hundreds of VOCs that cause odors poses a big challenge. Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, studies have shown that the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

## 2.5 REGULATORY BACKGROUND

### 2.5.1 FEDERAL REGULATIONS

The U.S. EPA is responsible for setting and enforcing the NAAQS for O<sub>3</sub>, CO, NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>10</sub>, and lead (8). The U.S. EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The U.S. EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the CARB.

The Federal Clean Air Act (CAA) was first enacted in 1955, and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance (14). The CAA also mandates that states submit and implement State Implementation Plans (SIPs) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment and incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the Project site include Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions). Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O<sub>3</sub>, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, CO, PM<sub>2.5</sub>, and lead. The NAAQS were amended in July 1997 to include an

additional standard for O<sub>3</sub> and to adopt a NAAQS for PM<sub>2.5</sub>. Table 3-1 (previously presented) provides the NAAQS within the basin.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and nitrogen oxides (NO<sub>x</sub>). NO<sub>x</sub> is a collective term that includes all forms of nitrogen oxides (NO, NO<sub>2</sub>, NO<sub>3</sub>) which are emitted as byproducts of the combustion process.

### 2.5.2 CALIFORNIA REGULATIONS

The CARB, which became part of the California EPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. The California CAA mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date. The CARB established the CAAQS for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for sulfates, visibility, hydrogen sulfide, and vinyl chloride. However at this time, hydrogen sulfide and vinyl chloride are not measured at any monitoring stations in the SCAB because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS (9)(8).

Local air quality management districts, such as the SCAQMD, regulate air emissions from commercial and light industrial facilities. All air pollution control districts have been formally designated as attainment or non-attainment for each CAAQS.

Serious non-attainment areas are required to prepare air quality management plans that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include:

- Application of Best Available Retrofit Control Technology to existing sources;
- Developing control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g. motor vehicle use generated by residential and commercial development);
- A District permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implementing reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled;
- Significant use of low emissions vehicles by fleet operators;
- Sufficient control strategies to achieve a five percent or more annual reduction in emissions or 15 percent or more in a period of three years for ROGs, NO<sub>x</sub>, CO and PM<sub>10</sub>. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than five percent per year under certain circumstances.

### 2.5.3 AIR QUALITY MANAGEMENT PLANNING

Currently, the NAAQS and CAAQS are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the state and

federal ambient air quality standards (15). AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy. A detailed discussion on the AQMP and Project consistency with the AQMP is provided in Section 3.8.

## **2.6 EXISTING PROJECT SITE AIR QUALITY CONDITIONS**

The Project site is currently vacant, and therefore does not generate quantifiable emissions. Existing air quality conditions at the Project site would generally reflect ambient monitored conditions as presented previously at Table 2-3.

### 3 PROJECT AIR QUALITY IMPACT

#### 3.1 INTRODUCTION

The Project has been evaluated to determine if it will violate an air quality standard or contribute to an existing or projected air quality violation. Additionally, the Project has been evaluated to determine if it will result in a cumulatively considerable net increase of a criteria pollutant for which the SCAB is non-attainment under an applicable federal or state ambient air quality standard. The significance of these potential impacts is described in the following section.

#### 3.2 STANDARDS OF SIGNIFICANCE

The criteria used to determine the significance of potential Project-related air quality impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 California Code of Regulations §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to air quality if it would (16):

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors).
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.

Within the context of the above threshold considerations, and based on the SCAQMD's CEQA Air Quality Handbook (1993), a project's localized CO emissions impacts would be significant if they exceed the following California standards for localized CO concentrations (17):

- 1-hour CO standard of 20.0 parts per million (ppm)
- 8-hour CO standard of 9.0 ppm.

The SCAQMD has also developed regional and localized significance thresholds for other regulated pollutants, as summarized at Table 3-1 (18). The SCAQMD's CEQA Air Quality Significance Thresholds (March 2011) indicate that any projects in the SCAB with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact.

**TABLE 3-1: MAXIMUM DAILY EMISSIONS REGIONAL THRESHOLDS**

Pollutant	Construction	Operations
NO <sub>x</sub>	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM <sub>10</sub>	150 lbs/day	150 lbs/day
PM <sub>2.5</sub>	55 lbs/day	55 lbs/day
Sox	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day

### 3.3 PROJECT-RELATED SOURCES OF POTENTIAL IMPACT

Land uses such as the Project affect air quality through construction-source and operational-source emissions.

On October 2, 2013, the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) released the latest version of the California Emissions Estimator Model™ (CalEEMod™) v2013.2.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (NO<sub>x</sub>, VOC, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>x</sub>, and CO) and greenhouse gas (GHG) emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (19). Accordingly, the latest version of CalEEMod™ has been used for this Project to determine construction and operational air quality emissions. Output from the model runs for both construction and operational activity are provided in Appendix 3.1.

### 3.4 CONSTRUCTION EMISSIONS

Construction activities associated with the Project will result in emissions of CO, VOCs, NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>. Construction related emissions are expected from the following construction activities:

- Site Preparation
- Grading (including soil export)
- Building Construction
- Paving (curb, gutter, flatwork, and parking lot)
- Architectural Coatings (Painting)
- Construction Workers Commuting

Construction is expected to commence in June 2014 and will last through November 2014. Construction duration by phase is shown on Table 3-2. The construction schedule utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year

increases. The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per CEQA guidelines. Site specific construction fleet may vary due to specific project needs at the time of construction. The duration of construction activity was based on input from the applicant and CalEEMod model defaults. The associated construction equipment was estimated based on the SCAQMD's recommendation for the buildout of a 1-acre project site. Please refer to specific detailed modeling inputs/outputs contained in Appendix 3.1 of this analysis. A detailed summary of construction equipment assumptions by phase is provided at Table 3-3. It should be noted that the emissions estimates provided at Table 3-4 represent a "worst-case" (i.e. overestimation) of actual emissions that will likely occur.

Dust is typically a major concern during rough grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Project site will require around 1,800 cubic yards of soil export in order to balance. Soil export will commence in June 2014, concurrent with grading activity, and will last for a duration of approximately two working days.

Construction emissions for construction worker vehicles traveling to and from the Project site, as well as vendor trips (construction materials delivered to the Project site) were estimated based on information from the applicant and the CalEEMod model.

**TABLE 3-2: CONSTRUCTION DURATION**

Phase	Duration (working days)
Site Preparation	1
Grading	2
Building Construction	100
Paving	5
Architectural Coatings	5

**TABLE 3-3: CONSTRUCTION EQUIPMENT ASSUMPTIONS**

Activity	Equipment	Number	Hours Per Day
Site preparation	Graders	1	8
	Tractors/Loaders/Backhoes	1	8
Grading	Graders	1	8
	Water Trucks	1	8
	Rubber Tired Dozers	1	8
	Tractors/Loaders/Backhoes	1	8
Building Construction	Cranes	1	8
	Forklifts	2	8
	Tractors/Loaders/Backhoes	2	8
Paving	Cement and Mortar Mixer	4	8
	Pavers	1	8
	Rollers	1	8
	Tractors/Loaders/Backhoes	1	8
Architectural Coatings	Air Compressors	1	8

### 3.4.1 CONSTRUCTION EMISSIONS SUMMARY

#### *Impacts without BACMs*

The estimated maximum daily construction emissions without BACMs are summarized on Table 3-4. Detailed construction model outputs are presented in Appendix 3.1. Under the assumed scenarios, emissions resulting from the Project construction will not exceed any criteria pollutant thresholds established by the SCAQMD. It should be noted that the impacts without BACMs and do not take credit for reductions achieved through standard regulatory requirements (SCAQMD's Rule 403). Therefore, a less than significant impact would occur without the application of BACMs and standard regulatory requirements.

**TABLE 3-4: EMISSIONS SUMMARY OF OVERALL CONSTRUCTION (WITHOUT BACMS)**

Year	VOC	NOx	CO	SOx	PM10	PM2.5
2014	7.34	72.70	46.92	0.11	9.51	5.31
<b>Maximum Daily Emissions</b>	<b>7.34</b>	<b>79.50</b>	<b>51.23</b>	<b>0.11</b>	<b>11.50</b>	<b>6.48</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

### 3.5 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of ROG, NOX, CO, SOX, PM10, and PM2.5. Operational emissions would be expected from the following primary sources:

- Vehicles
- Fugitive dust related to vehicular travel
- Combustion Emissions Associated with Natural Gas and Electricity
- Landscape maintenance equipment
- Emissions from consumer products
- Architectural coatings

#### 3.5.1 VEHICLES

Project operational (vehicular) impacts are dependent on both overall daily vehicle trip generation and the effect of the Project on peak hour traffic volumes and traffic operations in the vicinity of the Project. The Project related operational air quality impacts derive primarily from vehicle trips generated by the Project. Trip characteristics available from the report, Proposed Commercial Development Highway 38 and State Lane Traffic Study (Hall & Foreman, Inc.) 2013 were utilized in this analysis (20).

### 3.5.2 FUGITIVE DUST RELATED TO VEHICULAR TRAVEL

Vehicles traveling on paved roads would be a source of fugitive emissions due to the generation of road dust inclusive of tire wear particulates. The emissions estimates for travel on paved roads were calculated using the CalEEMod model.

### 3.5.3 COMBUSTION EMISSIONS ASSOCIATED WITH NATURAL GAS AND ELECTRICITY

Electricity and natural gas are used by almost every project. Criteria pollutant emissions are emitted through the generation of electricity and consumption of natural gas. However, because electrical generating facilities for the Project area are located either outside the region (state) or offset through the use of pollution credits (RECLAIM) for generation within the SCAB, criteria pollutant emissions from offsite generation of electricity is generally excluded from the evaluation of significance and only natural gas use is considered. The emissions associated with natural gas use were calculated using the CalEEMod model.

### 3.5.4 LANDSCAPE MAINTENANCE EQUIPMENT

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in the CalEEMod model.

### 3.5.5 CONSUMER PRODUCTS

Consumer projects include, but are not limited to detergents, cleaning compounds, polishes, personal care products, and lawn and garden products. Many of these products contain organic compounds which when released in the atmosphere can react to form ozone and other photochemically reactive pollutants. The emissions associated with use of consumer products were calculated based on assumptions provided in the CalEEMod model. In the case of the commercial/retail uses proposed by the Project, no substantive on-site use of consumer products is anticipated.

### 3.5.6 ARCHITECTURAL COATINGS

Over a period of time the buildings that are part of this Project will be subject to emissions resulting from the evaporation of solvents contained in paints, varnishes, primers, and other surface coatings as part of Project maintenance. The emissions associated with architectural coatings were calculated using the CalEEMod model.

### 3.5.7 OPERATIONAL EMISSIONS SUMMARY

#### ***Impacts without Mitigation***

Operational-source emissions without implementation of mitigation measures are summarized on Table 3-5. Prior to implementation of appropriate mitigation measures, Project operational-source emissions would not exceed applicable SCAQMD regional thresholds of significance.

Therefore, a less than significant impact would occur without the application of appropriate mitigation measures.

**TABLE 3-5: SUMMARY OF PEAK OPERATIONAL EMISSIONS (WITHOUT MITIGATION)**

Operational Activities – Summer Emissions	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Area Source Emissions	0.25	4.00e-5	3.74e-3	--	1.00e-5	1.00e-5
Energy Source Emissions	8.00e-5	7.00e-5	5.90e-4	--	5.00e-5	5.00e-5
Mobile Emissions	15.49	20.69	96.91	0.11	6.75	1.96
<b>Maximum Daily Emissions</b>	<b>15.74</b>	<b>20.69</b>	<b>96.91</b>	<b>0.11</b>	<b>6.75</b>	<b>1.96</b>
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Operational Activities – Winter Emissions	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Area Source Emissions	0.25	4.00e-5	3.74e-3	--	1.00e-5	1.00e-5
Energy Source Emissions	8.00e-5	7.00e-5	5.90e-4	--	5.00e-5	5.00e-5
Mobile Emissions	15.19	21.36	101.45	0.10	6.76	1.97
<b>Maximum Daily Emissions</b>	<b>15.43</b>	<b>21.36</b>	<b>101.45</b>	<b>0.10</b>	<b>6.76</b>	<b>1.97</b>
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

### 3.6 LOCALIZED SIGNIFICANCE - CONSTRUCTION ACTIVITY

#### BACKGROUND ON LOCALIZED SIGNIFICANCE THRESHOLD (LST) DEVELOPMENT

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (Methodology) (21). The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the federal and/or state ambient air quality standards (NAAQS/CAAQS). Collectively, these are referred to as Localized Significance Thresholds (LSTs).

The significance of localized emissions impacts depends on whether ambient levels in the vicinity of any given project are above or below State standards. In the case of CO and NO<sub>2</sub>, if ambient levels are below the standards, a project is considered to have a significant impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a state or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. This would apply to PM<sub>10</sub> and PM<sub>2.5</sub>; both of which are non-attainment pollutants.

The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice Initiative I-4. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

LSTs were developed in response to environmental justice and health concerns raised by the public regarding exposure of individuals to criteria pollutants in local communities. To address the issue of localized significance, the SCAQMD adopted LSTs that show whether a project would cause or contribute to localized air quality impacts and thereby cause or contribute to potential localized adverse health effects. The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (LST Methodology) (21).

#### **APPLICABILITY OF LSTs FOR THE PROJECT**

For this Project, the appropriate Source Receptor Area (SRA) for the LST is the East San Bernardino Mountains monitoring station (SRA 38). LSTs apply to carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), particulate matter  $\leq 10$  microns (PM<sub>10</sub>), and particulate matter  $\leq 2.5$  microns (PM<sub>2.5</sub>). The SCAQMD produced look-up tables for projects less than or equal to 5 acres in size.

In order to determine the appropriate methodology for determining localized impacts that could occur as a result of Project-related construction, the following process is undertaken:

- The CalEEMod model is utilized to determine the maximum daily on-site emissions that will occur during construction activity.
- The SCAQMD's Fact Sheet for Applying CalEEMod to Localized Significance Thresholds (22) is used to determine the maximum site acreage that is actively disturbed based on the construction equipment fleet and equipment hours as estimated in CalEEMod.
- If the total acreage disturbed is less than or equal to five acres per day, then the SCAQMD's screening look-up tables are utilized to determine if a Project has the potential to result in a significant impact (the SCAQMD recommends that Projects exceeding the screening look-up tables undergo dispersion modeling to determine actual impacts). The look-up tables establish a maximum daily emissions threshold in pounds per day that can be compared to CalEEMod outputs.
- If the total acreage disturbed is greater than five acres per day, then the SCAQMD recommends dispersion modeling to be conducted to determine the actual pollutant concentrations for applicable LSTs in the air. In other words, the maximum daily on-site emissions as calculated in CalEEMod are modeled via air dispersion modeling to calculate the actual concentration in the air (e.g., parts per million or micrograms per cubic meter) in order to determine if any applicable thresholds are exceeded.

#### **EMISSIONS CONSIDERED**

SCAQMD's Methodology clearly states that "off-site mobile emissions from the Project should NOT be included in the emissions compared to LSTs (21)." Therefore, for purposes of the construction LST analysis only emissions included in the CalEEMod "on-site" emissions outputs were considered.

## MAXIMUM DAILY DISTURBED-ACREAGE

The SCAQMD produced a construction fleet mix that was based on the disturbance of a 1 acre site. The 1 acreage disturbance and its associated construction equipment will be used to determine localized impacts consistent with SCAQMD protocol.

### Receptors

The nearest sensitive receptor land use is located approximately 20 meters south, immediately adjacent to the Project site. Notwithstanding, the *Methodology* explicitly states that “*It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters (21).*” Accordingly, LSTs for receptors at 25 meters are utilized in this analysis and provide for a conservative i.e. “health protective” standard of care.

### Impacts without BACMs

Without implementation of BACMs, emissions during construction activity will exceed SCAQMD’s localized significance thresholds for PM<sub>10</sub> and PM<sub>2.5</sub>. Table 3-6 identifies the localized impacts without BACMs at the nearest receptor location in the vicinity of the Project. It should be noted that the impacts do not take credit for reductions achieved through standard regulatory requirements (SCAQMD’s Rule 403).

**TABLE 3-6: LOCALIZED SIGNIFICANCE SUMMARY CONSTRUCTION (WITHOUT BACMS)**

On-Site Grading Emissions	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Maximum Daily Emissions</b>	<b>31.24</b>	<b>17.39</b>	<b>6.62</b>	<b>4.02</b>
SCAQMD Localized Threshold	118	775	4	4
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>YES</b>	<b>YES</b>

### Impacts with BACMs

After implementation of BACMs, emissions during construction activity will not exceed any of the SCAQMD’s localized significance thresholds. Table 3-7 identifies the localized impacts with BACMs at the nearest receptor location in the vicinity of the Project.

**TABLE 3-7: LOCALIZED SIGNIFICANCE SUMMARY CONSTRUCTION (WITH MITIGATION)**

On-Site Grading Emissions	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Maximum Daily Emissions</b>	<b>31.24</b>	<b>17.39</b>	<b>3.56</b>	<b>2.47</b>
SCAQMD Localized Threshold	118	775	4	4
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

### 3.7 LOCALIZED SIGNIFICANCE – LONG-TERM OPERATIONAL ACTIVITY

Table 3-8 shows the calculated emissions for the Project’s operational activities compared with the applicable LSTs. The LST analysis includes on-site sources only; however, the CalEEMod™ model outputs do not separate on-site and off-site emissions from mobile sources. In an effort to establish a maximum potential impact scenario for analytic purposes, the emissions shown on Table 3-8 represent all on-site Project-related stationary (area) sources and five percent (5%) of the Project-related mobile sources. Considering that the weighted trip length used in CalEEMod™ for the Project is approximately 16.6 miles, 5% of this total would represent an on-site travel distance for each car and truck of approximately 1 mile or 5,280 feet, thus the 5% assumption is conservative and would tend to overstate the actual impact. Modeling based on these assumptions demonstrates that even within broad encompassing parameters, Project operational-source emissions would not exceed applicable LSTs.

The operational LSTs are located approximately 3.0 meters south, immediately adjacent to the Project site within SRA 32.

As noted above and indicated, sensitive receptors may be located nearer immediately adjacent to the Project site boundaries. Notwithstanding, the *Methodology* explicitly states that “*It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters (23).*” Accordingly, LSTs for receptors at 25 meters are utilized in this analysis and provide for a conservative i.e. “health protective” standard of care. If emissions exceed the LST for a 2-acre site, then dispersion modeling needs to be conducted.

**TABLE 3-8: LOCALIZED SIGNIFICANCE SUMMARY OPERATIONS (WITHOUT MITIGATION)**

Operational Activity	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Maximum Daily Emissions</b>	<b>1.07</b>	<b>5.07</b>	<b>0.34</b>	<b>0.10</b>
SCAQMD Localized Threshold	118	775	1	1
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

As shown on Table 3-8, operational emissions would not exceed the LST thresholds for the nearest sensitive receptor. Therefore, the Project will have a less than significant localized impact during operational activity.

### 3.8 CO “HOT SPOT” ANALYSIS

As discussed below, the Project would not result in potentially adverse CO concentrations or “hot spots.” Further, detailed modeling of Project-specific carbon monoxide (CO) “hot spots” is not needed to reach this conclusion.

It has long been recognized that adverse localized CO concentrations (“hot spots”) are caused by vehicular emissions, primarily when idling at congested intersections. In response, vehicle emissions standards have become increasingly stringent in the last twenty years. Currently, the

allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of increasingly sophisticated and efficient emissions control technologies, CO concentrations in the Project vicinity have steadily declined, as indicated by historical emissions data presented previously at Table 2-3.

A CO “hotspot” would occur if an exceedance of the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur. At the time of the 1993 Handbook, the SCAB was designated nonattainment under the California AAQS and National AAQS for CO (17). As identified within SCAQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), peak carbon monoxide concentrations in the SCAB were a result of unusual meteorological and topographical conditions and not a result of congestion at a particular intersection (24). To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO “hot spot” analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods. This hot spot analysis did not predict any violation of CO standards. It can therefore be reasonably concluded that projects (such as the proposed Depot at Santiago Mixed-Use Project) that are not subject to the extremes in vehicle volumes and vehicle congestion that was evidenced in the 2003 Los Angeles hot spot analysis would similarly not create or result in CO hot spots. Similar considerations are also employed by other Air Districts when evaluating potential CO concentration impacts. More specifically, the Bay Area Air Quality Management District (BAAQMD) concludes that under existing and future vehicle emission rates, a given project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact (25). The proposed Project considered herein would not produce the volume of traffic required to generate a CO hotspot either in the context of the 2003 Los Angeles hot spot study, or based on representative BAAQMD CO threshold considerations. Therefore, CO hotspots are not an environmental impact of concern for the proposed Project. Localized air quality impacts related to mobile-source emissions would therefore be less than significant.

### **3.9 AIR QUALITY MANAGEMENT PLANNING**

The Project site is located within the SCAB, which is characterized by relatively poor air quality. The SCAQMD has jurisdiction over an approximately 10,743 square-mile area consisting of the four-county Basin and the Los Angeles County and Riverside County portions of what use to be referred to as the Southeast Desert Air Basin. In these areas, the SCAQMD is principally responsible for air pollution control, and works directly with the Southern California Association of Governments (SCAG), county transportation commissions, local governments, as well as state and federal agencies to reduce emissions from stationary, mobile, and indirect sources to meet state and federal ambient air quality standards.

Currently, these state and federal air quality standards are exceeded in most parts of the Basin. In response, the SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the state and federal ambient air quality standards. AQMPs are updated regularly in

order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy.

The Final 2012 AQMP was adopted by the AQMD Governing Board on December 7, 2012 (15). The 2012 AQMP incorporates the latest scientific and technological information and planning assumptions, including the 2012 Regional Transportation Plan/Sustainable Communities Strategy and updated emission inventory methodologies for various source categories.

Similar to the 2007 AQMP, the 2012 AQMP was based on assumptions provided by both CARB and SCAG in the latest available EMFAC model for the most recent motor vehicle and demographics information, respectively. The air quality levels projected in the 2012 AQMP are based on several assumptions. For example, the 2012 AQMP has assumed that development associated with general plans, specific plans, residential projects, and wastewater facilities will be constructed in accordance with population growth projections identified by SCAG in its 2012 RTP. The 2012 AQMP also has assumed that such development projects will implement strategies to reduce emissions generated during the construction and operational phases of development. The Project's consistency with the 2012 AQMP is discussed as follows:

Criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's CEQA Air Quality Handbook (1993) (17). These indicators are discussed below:

- Consistency Criterion No. 1: The proposed Project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

### **Construction Impacts**

The violations that Consistency Criterion No. 1 refers to are the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if localized significance thresholds (LSTs) were exceeded. As evaluated as part of the Project LST analysis (previously presented), the Project's localized construction-source emissions will not exceed applicable LSTs after implementation of BACMs, and a less than significant impact is expected.

### **Operational Impacts**

The Project LST analysis demonstrates that Project operational-source emissions would not exceed applicable LSTs, and are therefore less-than-significant. Additionally, Project operational-source emissions would not result in exceedances of applicable SCAQMD regional thresholds.

On the basis of the preceding discussion, the Project is determined to be consistent with the first criterion.

- Consistency Criterion No. 2: The Project will not exceed the assumptions in the AQMP based on the years of Project build-out phase.

## **Construction and Operational Impacts**

The 2012 Air Quality Management Plan (AQMP) demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under federal law. Growth projections from local general plans adopted by cities in the district are provided to the Southern California Association of Governments (SCAG), which develops regional growth forecasts, which are then used to develop future air quality forecasts for the AQMP. The Project site is zoned General Commercial (GC) and the proposed land use is consistent with this designation thus it is assumed that the Project is consistent with the growth projections included in the AQMP.

## **AQMP Consistency Conclusion**

The Project would not result in or cause NAAQS or CAAQS violations. The Project's land use designation for the subject site does not materially affect the uses allowed or their development intensities as reflected in the adopted zoning. The Project is therefore considered to be consistent with the AQMP.

### **3.10 TOXIC AIR CONTAMINANTS ASSOCIATED WITH GASOLINE DISPENSING**

Emissions resulting from the proposed gas station have the potential to result in toxic air contaminants (TACs) (e.g., benzene, hexane, MTBE, toluene, xylene) and have the potential to contribute to health risk in the project vicinity. It should be noted that standard regulatory controls such as the SCAQMD's Rule 461 (Gasoline Transfer and Dispensing) would apply to the project in addition to any permits required that demonstrate appropriate operational controls. It is our understanding that the SCAQMD has issued a permit for the Project that will limit the annual throughput to no more than 3,600,000 gallons. For purposes of this evaluation cancer risk estimates can be made consistent with the methodology presented in the document Gasoline Service Station Industry-wide Risk Assessment Guidelines (California Air Pollution Control Officers Association (CAPCOA), 1997). Based on data provided in the CAPCOA document, emissions resulting from a gasoline station (scenario 6A, E-2) will result in a cancer risk of 1.53 in one million for every million gallons of gasoline dispensed annually for the nearest sensitive receptors, located not closer than 60 meters (~200 feet)<sup>1</sup> from the center of the gasoline station canopy (per CAPCOA guidance). Based on this screening procedure it is anticipated that no sensitive receptors in the project vicinity will be exposed to a cancer risk of greater than 10 in one million and the maximum exposed sensitive receptor would be exposed to a risk of 5.51 in one million which is less than half of the applicable threshold. It should be noted that this screening-level risk estimate is very conservative (i.e. it would overstate rather than understate potential impacts).

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<sup>1</sup> This distance is based on personal communication with Oxso Shahriari from the County of San Bernardino on 2/3/2014 and was also verified through aerial imagery

### 3.11 POTENTIAL IMPACTS TO SENSITIVE RECEPTORS

The potential impact of Project-generated air pollutant emissions at sensitive receptors has also been considered. Sensitive receptors can include uses such as long term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, child care centers, and athletic facilities can also be considered as sensitive receptors.

Results of the LST analysis indicate that the Project will not exceed the SCAQMD localized significance thresholds during construction (with BACMs). Therefore sensitive receptors would not be subject to a significant air quality impact during Project construction.

Results of the LST analysis indicate that the Project will not exceed the SCAQMD localized significance thresholds during operational activity. The proposed Project would not result in a CO “hotspot” as a result of Project related traffic during ongoing operations, nor would the Project result in a significant adverse health impact as discussed in Section 3.8. Thus a less than significant impact to sensitive receptors during operational activity is expected.

### 3.12 ODORS

The potential for the Project to generate objectionable odors has also been considered. Land uses generally associated with odor complaints include:

- Agricultural uses (livestock and farming)
- Wastewater treatment plants
- Food processing plants
- Chemical plants
- Composting operations
- Refineries
- Landfills
- Dairies
- Fiberglass molding facilities

The Project does not contain land uses typically associated with emitting objectionable odors. Potential odor sources associated with the proposed Project may result from construction equipment exhaust and the application of asphalt and architectural coatings during construction activities, and the temporary storage of typical solid waste (refuse) associated with the proposed Project’s (long-term operational) uses. Standard construction requirements would minimize odor impacts from construction. The construction odor emissions would be temporary, short-term, and intermittent in nature and would cease upon completion of the respective phase of construction and is thus considered less than significant. It is expected that Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with the County’s solid waste regulations. The proposed Project would also be required to comply with SCAQMD Rule 402 to prevent occurrences of public nuisances.

Therefore, odors associated with the proposed Project construction and operations would be less than significant and no mitigation is required.

### **3.13 CUMULATIVE IMPACTS**

The Project area is designated as an extreme non-attainment area for ozone, and a non-attainment area for PM<sub>10</sub> and PM<sub>2.5</sub>.

The SCAQMD has recognized that there is typically insufficient information to quantitatively evaluate the cumulative contributions of multiple projects because each project applicant has no control over nearby projects. Nevertheless, the potential cumulative impacts from the Project and other projects are discussed below.

Related projects could contribute to an existing or projected air quality exceedance because the Basin is currently nonattainment for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>. With regard to determining the significance of the contribution from the Project, the SCAQMD recommends that any given project's potential contribution to cumulative impacts should be assessed using the same significance criteria as for project-specific impacts. Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also not cause a commutatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable. As previously noted, the Project will not exceed the applicable SCAQMD regional threshold for construction and operational-source emissions. As such, the Project will result in a cumulatively less than significant impact.

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## 5 CERTIFICATION

The contents of this air study report represent an accurate depiction of the environmental impacts associated with the proposed Eagle Ridge Market. The information contained in this air quality impact assessment report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 660-1994 ext. 217.

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### EDUCATION

Master of Science in Environmental Studies  
California State University, Fullerton • May, 2010

Bachelor of Arts in Environmental Analysis and Design  
University of California, Irvine • June, 2006

### PROFESSIONAL AFFILIATIONS

AEP – Association of Environmental Planners  
AWMA – Air and Waste Management Association  
ASTM – American Society for Testing and Materials

### PROFESSIONAL CERTIFICATIONS

Environmental Site Assessment – American Society for Testing and Materials • June, 2013  
Planned Communities and Urban Infill – Urban Land Institute • June, 2011  
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April, 2008  
Principles of Ambient Air Monitoring – California Air Resources Board • August, 2007  
AB2588 Regulatory Standards – Trinity Consultants • November, 2006  
Air Dispersion Modeling – Lakes Environmental • June, 2006

**APPENDIX 3.1:**

**CALEEMOD EMISSIONS MODEL OUTPUTS**

## Eagle Ridge Market

### San Bernardino-South Coast County, Summer

## 1.0 Project Characteristics

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### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	27.00	Space	0.24	10,800.00	0
Convenience Market With Gas Pumps	8.00	Pump	0.03	1,129.40	0

### 1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	10			Operational Year	2014
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	569.24	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - CPUC GHG Calculator version 3c

Land Use - based on information provided by the applicant

Construction Phase -

Off-road Equipment - SCAQMD's recommendation for the buildout of a 1-acre project site

Off-road Equipment - SCAQMD's recommendation for the buildout of a 1-acre project site

Off-road Equipment - SCAQMD's recommendation for the buildout of a 1-acre project site

Off-road Equipment - SCAQMD's recommendation for the buildout of a 1-acre project site

Woodstoves -

Energy Use - based on a 2014 operational year

Construction Off-road Equipment Mitigation -

Grading -

Trips and VMT -

Off-road Equipment - SCAQMD's recommendation for the buildout of a 1-acre project site

Table Name	Column Name	Default Value	New Value
tblGrading	MaterialExported	0.00	1,800.00
tblOffRoadEquipment	HorsePower	400.00	189.00
tblOffRoadEquipment	LoadFactor	0.38	0.50
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	1.00	6.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblProjectCharacteristics	CO2IntensityFactor	630.89	569.24
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

## 2.0 Emissions Summary

**2.1 Overall Construction (Maximum Daily Emission)****Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	7.3380	71.1102	44.9826	0.1063	7.1259	2.3798	9.5057	3.1174	2.1893	5.3067						
<b>Total</b>	<b>7.3380</b>	<b>71.1102</b>	<b>44.9826</b>	<b>0.1063</b>	<b>7.1259</b>	<b>2.3798</b>	<b>9.5057</b>	<b>3.1174</b>	<b>2.1893</b>	<b>5.3067</b>						

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	7.3380	71.1102	44.9826	0.1063	4.0662	2.3798	6.4460	1.5674	2.1893	3.7567						
<b>Total</b>	<b>7.3380</b>	<b>71.1102</b>	<b>44.9826</b>	<b>0.1063</b>	<b>4.0662</b>	<b>2.3798</b>	<b>6.4460</b>	<b>1.5674</b>	<b>2.1893</b>	<b>3.7567</b>						

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>42.94</b>	<b>0.00</b>	<b>32.19</b>	<b>49.72</b>	<b>0.00</b>	<b>29.21</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

## 2.2 Overall Operational

### Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2458	4.0000e-005	3.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						
Energy	8.0000e-005	7.0000e-004	5.9000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005						
Mobile	15.4896	20.6917	96.9103	0.1078	6.5034	0.2489	6.7523	1.7365	0.2282	1.9647						
<b>Total</b>	<b>15.7354</b>	<b>20.6925</b>	<b>96.9146</b>	<b>0.1078</b>	<b>6.5034</b>	<b>0.2489</b>	<b>6.7524</b>	<b>1.7365</b>	<b>0.2282</b>	<b>1.9648</b>						

### Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2458	4.0000e-005	3.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						
Energy	8.0000e-005	7.0000e-004	5.9000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005						
Mobile	15.4896	20.6917	96.9103	0.1078	6.5034	0.2489	6.7523	1.7365	0.2282	1.9647						
<b>Total</b>	<b>15.7354</b>	<b>20.6925</b>	<b>96.9146</b>	<b>0.1078</b>	<b>6.5034</b>	<b>0.2489</b>	<b>6.7524</b>	<b>1.7365</b>	<b>0.2282</b>	<b>1.9648</b>						

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/1/2014	6/2/2014	5	1	
2	Grading	Grading	6/3/2014	6/4/2014	5	2	
3	Building Construction	Building Construction	6/5/2014	10/22/2014	5	100	
4	Paving	Paving	10/23/2014	10/29/2014	5	5	
5	Architectural Coating	Architectural Coating	10/30/2014	11/5/2014	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0.75

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 2,180; Non-Residential Outdoor: 727 (Architectural Coating – sqft)

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Off-Highway Trucks	1	8.00	189	0.50
Grading	Rubber Tired Dozers	1	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	4.00	226	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	125	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Architectural Coating	Air Compressors	1	8.00	78	0.48
Grading	Graders	1	6.00	174	0.41

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	5.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	225.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	5.00	2.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction****Water Exposed Area**

**3.2 Site Preparation - 2014****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573						
Off-Road	1.4341	14.4817	7.3936	9.3700e-003		0.8920	0.8920		0.8206	0.8206						
<b>Total</b>	<b>1.4341</b>	<b>14.4817</b>	<b>7.3936</b>	<b>9.3700e-003</b>	<b>0.5303</b>	<b>0.8920</b>	<b>1.4223</b>	<b>0.0573</b>	<b>0.8206</b>	<b>0.8779</b>						

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0305	0.0430	0.5610	9.4000e-004	0.0753	6.1000e-004	0.0759	0.0200	5.6000e-004	0.0205						
<b>Total</b>	<b>0.0305</b>	<b>0.0430</b>	<b>0.5610</b>	<b>9.4000e-004</b>	<b>0.0753</b>	<b>6.1000e-004</b>	<b>0.0759</b>	<b>0.0200</b>	<b>5.6000e-004</b>	<b>0.0205</b>						

**3.2 Site Preparation - 2014****Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2068	0.0000	0.2068	0.0223	0.0000	0.0223						
Off-Road	1.4341	14.4817	7.3936	9.3700e-003		0.8920	0.8920		0.8206	0.8206						
<b>Total</b>	<b>1.4341</b>	<b>14.4817</b>	<b>7.3936</b>	<b>9.3700e-003</b>	<b>0.2068</b>	<b>0.8920</b>	<b>1.0988</b>	<b>0.0223</b>	<b>0.8206</b>	<b>0.8430</b>						

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0305	0.0430	0.5610	9.4000e-004	0.0753	6.1000e-004	0.0759	0.0200	5.6000e-004	0.0205						
<b>Total</b>	<b>0.0305</b>	<b>0.0430</b>	<b>0.5610</b>	<b>9.4000e-004</b>	<b>0.0753</b>	<b>6.1000e-004</b>	<b>0.0759</b>	<b>0.0200</b>	<b>5.6000e-004</b>	<b>0.0205</b>						

**3.3 Grading - 2014****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0160	0.0000	5.0160	2.5410	0.0000	2.5410						
Off-Road	2.8808	31.2439	17.3851	0.0221		1.6031	1.6031		1.4748	1.4748						
<b>Total</b>	<b>2.8808</b>	<b>31.2439</b>	<b>17.3851</b>	<b>0.0221</b>	<b>5.0160</b>	<b>1.6031</b>	<b>6.6191</b>	<b>2.5410</b>	<b>1.4748</b>	<b>4.0159</b>						

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.5114	39.7802	26.4756	0.0823	1.9594	0.7755	2.7349	0.5365	0.7133	1.2498						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0610	0.0861	1.1219	1.8700e-003	0.1505	1.2200e-003	0.1517	0.0399	1.1100e-003	0.0410						
<b>Total</b>	<b>2.5724</b>	<b>39.8663</b>	<b>27.5975</b>	<b>0.0842</b>	<b>2.1099</b>	<b>0.7767</b>	<b>2.8866</b>	<b>0.5764</b>	<b>0.7144</b>	<b>1.2908</b>						

### 3.3 Grading - 2014

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9563	0.0000	1.9563	0.9910	0.0000	0.9910						
Off-Road	2.8808	31.2439	17.3851	0.0221		1.6031	1.6031		1.4748	1.4748						
<b>Total</b>	<b>2.8808</b>	<b>31.2439</b>	<b>17.3851</b>	<b>0.0221</b>	<b>1.9563</b>	<b>1.6031</b>	<b>3.5593</b>	<b>0.9910</b>	<b>1.4748</b>	<b>2.4658</b>						

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.5114	39.7802	26.4756	0.0823	1.9594	0.7755	2.7349	0.5365	0.7133	1.2498						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0610	0.0861	1.1219	1.8700e-003	0.1505	1.2200e-003	0.1517	0.0399	1.1100e-003	0.0410						
<b>Total</b>	<b>2.5724</b>	<b>39.8663</b>	<b>27.5975</b>	<b>0.0842</b>	<b>2.1099</b>	<b>0.7767</b>	<b>2.8866</b>	<b>0.5764</b>	<b>0.7144</b>	<b>1.2908</b>						

**3.4 Building Construction - 2014****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4930	14.8331	8.3419	0.0113		1.0334	1.0334		0.9507	0.9507						
<b>Total</b>	<b>1.4930</b>	<b>14.8331</b>	<b>8.3419</b>	<b>0.0113</b>		<b>1.0334</b>	<b>1.0334</b>		<b>0.9507</b>	<b>0.9507</b>						

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0237	0.2520	0.2513	4.9000e-004	0.0144	5.1600e-003	0.0195	4.1000e-003	4.7400e-003	8.8500e-003						
Worker	0.0305	0.0430	0.5610	9.4000e-004	0.0753	6.1000e-004	0.0759	0.0200	5.6000e-004	0.0205						
<b>Total</b>	<b>0.0542</b>	<b>0.2950</b>	<b>0.8123</b>	<b>1.4300e-003</b>	<b>0.0896</b>	<b>5.7700e-003</b>	<b>0.0954</b>	<b>0.0241</b>	<b>5.3000e-003</b>	<b>0.0294</b>						

### 3.4 Building Construction - 2014

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4930	14.8331	8.3419	0.0113		1.0334	1.0334		0.9507	0.9507						
<b>Total</b>	<b>1.4930</b>	<b>14.8331</b>	<b>8.3419</b>	<b>0.0113</b>		<b>1.0334</b>	<b>1.0334</b>		<b>0.9507</b>	<b>0.9507</b>						

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0237	0.2520	0.2513	4.9000e-004	0.0144	5.1600e-003	0.0195	4.1000e-003	4.7400e-003	8.8500e-003						
Worker	0.0305	0.0430	0.5610	9.4000e-004	0.0753	6.1000e-004	0.0759	0.0200	5.6000e-004	0.0205						
<b>Total</b>	<b>0.0542</b>	<b>0.2950</b>	<b>0.8123</b>	<b>1.4300e-003</b>	<b>0.0896</b>	<b>5.7700e-003</b>	<b>0.0954</b>	<b>0.0241</b>	<b>5.3000e-003</b>	<b>0.0294</b>						

**3.5 Paving - 2014****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2331	11.8542	7.3554	0.0111		0.7457	0.7457		0.6898	0.6898						
Paving	0.1258					0.0000	0.0000		0.0000	0.0000						
<b>Total</b>	<b>1.3589</b>	<b>11.8542</b>	<b>7.3554</b>	<b>0.0111</b>		<b>0.7457</b>	<b>0.7457</b>		<b>0.6898</b>	<b>0.6898</b>						

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.1097	0.1549	2.0194	3.3700e-003	0.2709	2.2000e-003	0.2731	0.0719	2.0000e-003	0.0739						
<b>Total</b>	<b>0.1097</b>	<b>0.1549</b>	<b>2.0194</b>	<b>3.3700e-003</b>	<b>0.2709</b>	<b>2.2000e-003</b>	<b>0.2731</b>	<b>0.0719</b>	<b>2.0000e-003</b>	<b>0.0739</b>						

**3.5 Paving - 2014****Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2331	11.8542	7.3554	0.0111		0.7457	0.7457		0.6898	0.6898						
Paving	0.1258					0.0000	0.0000		0.0000	0.0000						
<b>Total</b>	<b>1.3589</b>	<b>11.8542</b>	<b>7.3554</b>	<b>0.0111</b>		<b>0.7457</b>	<b>0.7457</b>		<b>0.6898</b>	<b>0.6898</b>						

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.1097	0.1549	2.0194	3.3700e-003	0.2709	2.2000e-003	0.2731	0.0719	2.0000e-003	0.0739						
<b>Total</b>	<b>0.1097</b>	<b>0.1549</b>	<b>2.0194</b>	<b>3.3700e-003</b>	<b>0.2709</b>	<b>2.2000e-003</b>	<b>0.2731</b>	<b>0.0719</b>	<b>2.0000e-003</b>	<b>0.0739</b>						

### 3.6 Architectural Coating - 2014

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	6.7370					0.0000	0.0000		0.0000	0.0000						
Off-Road	0.5950	3.7031	2.5621	3.9600e-003		0.3269	0.3269		0.3269	0.3269						
<b>Total</b>	<b>7.3319</b>	<b>3.7031</b>	<b>2.5621</b>	<b>3.9600e-003</b>		<b>0.3269</b>	<b>0.3269</b>		<b>0.3269</b>	<b>0.3269</b>						

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	6.0900e-003	8.6100e-003	0.1122	1.9000e-004	0.0151	1.2000e-004	0.0152	3.9900e-003	1.1000e-004	4.1000e-003						
<b>Total</b>	<b>6.0900e-003</b>	<b>8.6100e-003</b>	<b>0.1122</b>	<b>1.9000e-004</b>	<b>0.0151</b>	<b>1.2000e-004</b>	<b>0.0152</b>	<b>3.9900e-003</b>	<b>1.1000e-004</b>	<b>4.1000e-003</b>						

### 3.6 Architectural Coating - 2014

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	6.7370					0.0000	0.0000		0.0000	0.0000						
Off-Road	0.5950	3.7031	2.5621	3.9600e-003		0.3269	0.3269		0.3269	0.3269						
<b>Total</b>	<b>7.3319</b>	<b>3.7031</b>	<b>2.5621</b>	<b>3.9600e-003</b>		<b>0.3269</b>	<b>0.3269</b>		<b>0.3269</b>	<b>0.3269</b>						

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	6.0900e-003	8.6100e-003	0.1122	1.9000e-004	0.0151	1.2000e-004	0.0152	3.9900e-003	1.1000e-004	4.1000e-003						
<b>Total</b>	<b>6.0900e-003</b>	<b>8.6100e-003</b>	<b>0.1122</b>	<b>1.9000e-004</b>	<b>0.0151</b>	<b>1.2000e-004</b>	<b>0.0152</b>	<b>3.9900e-003</b>	<b>1.1000e-004</b>	<b>4.1000e-003</b>						

### 4.0 Operational Detail - Mobile

#### 4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	15.4896	20.6917	96.9103	0.1078	6.5034	0.2489	6.7523	1.7365	0.2282	1.9647						
Unmitigated	15.4896	20.6917	96.9103	0.1078	6.5034	0.2489	6.7523	1.7365	0.2282	1.9647						

#### 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Convenience Market With Gas Pumps	4,340.80	1,635.76	1335.04	2,491,402	2,491,402
Parking Lot	0.00	0.00	0.00		
Total	4,340.80	1,635.76	1,335.04	2,491,402	2,491,402

#### 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Convenience Market With Gas	18.50	10.10	7.90	0.80	80.20	19.00	14	21	65
Parking Lot	18.50	10.10	7.90	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.477446	0.065927	0.171594	0.156638	0.055185	0.009062	0.015877	0.037321	0.001132	0.001346	0.004831	0.000736	0.002906

## 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	8.0000e-005	7.0000e-004	5.9000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005						
NaturalGas Unmitigated	8.0000e-005	7.0000e-004	5.9000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005						

## 5.2 Energy by Land Use - NaturalGas

### Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Convenience Market With Gas Pumps	7.17865	8.0000e-005	7.0000e-004	5.9000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005						
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
<b>Total</b>		<b>8.0000e-005</b>	<b>7.0000e-004</b>	<b>5.9000e-004</b>	<b>0.0000</b>		<b>5.0000e-005</b>	<b>5.0000e-005</b>		<b>5.0000e-005</b>	<b>5.0000e-005</b>						

## 5.2 Energy by Land Use - NaturalGas

### Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
Convenience Market With Gas Pumps	0.00717865	8.0000e-005	7.0000e-004	5.9000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005						
<b>Total</b>		<b>8.0000e-005</b>	<b>7.0000e-004</b>	<b>5.9000e-004</b>	<b>0.0000</b>		<b>5.0000e-005</b>	<b>5.0000e-005</b>		<b>5.0000e-005</b>	<b>5.0000e-005</b>						

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2458	4.0000e-005	3.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						
Unmitigated	0.2458	4.0000e-005	3.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						

## 6.2 Area by SubCategory

### Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.2300e-003					0.0000	0.0000		0.0000	0.0000						
Consumer Products	0.2362					0.0000	0.0000		0.0000	0.0000						
Landscaping	3.8000e-004	4.0000e-005	3.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						
<b>Total</b>	<b>0.2458</b>	<b>4.0000e-005</b>	<b>3.7400e-003</b>	<b>0.0000</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>						

### Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.2300e-003					0.0000	0.0000		0.0000	0.0000						
Consumer Products	0.2362					0.0000	0.0000		0.0000	0.0000						
Landscaping	3.8000e-004	4.0000e-005	3.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						
<b>Total</b>	<b>0.2458</b>	<b>4.0000e-005</b>	<b>3.7400e-003</b>	<b>0.0000</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>						

## 7.0 Water Detail

**7.1 Mitigation Measures Water****8.0 Waste Detail**

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**8.1 Mitigation Measures Waste****9.0 Operational Offroad**

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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**10.0 Vegetation**

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**Eagle Ridge Market**  
**San Bernardino-South Coast County, Winter**

## 1.0 Project Characteristics

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### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	27.00	Space	0.24	10,800.00	0
Convenience Market With Gas Pumps	8.00	Pump	0.03	1,129.40	0

### 1.2 Other Project Characteristics

<b>Urbanization</b>	Rural	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	32
<b>Climate Zone</b>	10			<b>Operational Year</b>	2014
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	569.24	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - CPUC GHG Calculator version 3c

Land Use - based on information provided by the applicant

Construction Phase -

Off-road Equipment - SCAQMD's recommendation for the buildout of a 1-acre project site

Off-road Equipment - SCAQMD's recommendation for the buildout of a 1-acre project site

Off-road Equipment - SCAQMD's recommendation for the buildout of a 1-acre project site

Off-road Equipment - SCAQMD's recommendation for the buildout of a 1-acre project site

Woodstoves -

Energy Use - based on a 2014 operational year

Construction Off-road Equipment Mitigation -

Grading -

Trips and VMT -

Off-road Equipment - SCAQMD's recommendation for the buildout of a 1-acre project site

Table Name	Column Name	Default Value	New Value
tblGrading	MaterialExported	0.00	1,800.00
tblOffRoadEquipment	HorsePower	400.00	189.00
tblOffRoadEquipment	LoadFactor	0.38	0.50
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	1.00	6.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblProjectCharacteristics	CO2IntensityFactor	630.89	569.24
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

## 2.0 Emissions Summary

**2.1 Overall Construction (Maximum Daily Emission)****Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	7.3377	72.7012	46.9155	0.1060	7.1259	2.3824	9.5083	3.1174	2.1916	5.3091						
<b>Total</b>	<b>7.3377</b>	<b>72.7012</b>	<b>46.9155</b>	<b>0.1060</b>	<b>7.1259</b>	<b>2.3824</b>	<b>9.5083</b>	<b>3.1174</b>	<b>2.1916</b>	<b>5.3091</b>						

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	7.3377	72.7012	46.9155	0.1060	4.0662	2.3824	6.4485	1.5674	2.1916	3.7590						
<b>Total</b>	<b>7.3377</b>	<b>72.7012</b>	<b>46.9155</b>	<b>0.1060</b>	<b>4.0662</b>	<b>2.3824</b>	<b>6.4485</b>	<b>1.5674</b>	<b>2.1916</b>	<b>3.7590</b>						

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>42.94</b>	<b>0.00</b>	<b>32.18</b>	<b>49.72</b>	<b>0.00</b>	<b>29.20</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

## 2.2 Overall Operational

### Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2458	4.0000e-005	3.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						
Energy	8.0000e-005	7.0000e-004	5.9000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005						
Mobile	15.1890	21.3551	101.4491	0.1009	6.5034	0.2554	6.7588	1.7365	0.2342	1.9707						
<b>Total</b>	<b>15.4349</b>	<b>21.3558</b>	<b>101.4534</b>	<b>0.1009</b>	<b>6.5034</b>	<b>0.2555</b>	<b>6.7589</b>	<b>1.7365</b>	<b>0.2342</b>	<b>1.9708</b>						

### Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2458	4.0000e-005	3.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						
Energy	8.0000e-005	7.0000e-004	5.9000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005						
Mobile	15.1890	21.3551	101.4491	0.1009	6.5034	0.2554	6.7588	1.7365	0.2342	1.9707						
<b>Total</b>	<b>15.4349</b>	<b>21.3558</b>	<b>101.4534</b>	<b>0.1009</b>	<b>6.5034</b>	<b>0.2555</b>	<b>6.7589</b>	<b>1.7365</b>	<b>0.2342</b>	<b>1.9708</b>						

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/1/2014	6/2/2014	5	1	
2	Grading	Grading	6/3/2014	6/4/2014	5	2	
3	Building Construction	Building Construction	6/5/2014	10/22/2014	5	100	
4	Paving	Paving	10/23/2014	10/29/2014	5	5	
5	Architectural Coating	Architectural Coating	10/30/2014	11/5/2014	5	5	

**Acres of Grading (Site Preparation Phase): 0.5**

**Acres of Grading (Grading Phase): 0.75**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 2,180; Non-Residential Outdoor: 727 (Architectural Coating – sqft)**

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Off-Highway Trucks	1	8.00	189	0.50
Grading	Rubber Tired Dozers	1	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	4.00	226	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	125	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Architectural Coating	Air Compressors	1	8.00	78	0.48
Grading	Graders	1	6.00	174	0.41

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	5.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	225.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	5.00	2.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction****Water Exposed Area**

**3.2 Site Preparation - 2014****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573						
Off-Road	1.4341	14.4817	7.3936	9.3700e-003		0.8920	0.8920		0.8206	0.8206						
<b>Total</b>	<b>1.4341</b>	<b>14.4817</b>	<b>7.3936</b>	<b>9.3700e-003</b>	<b>0.5303</b>	<b>0.8920</b>	<b>1.4223</b>	<b>0.0573</b>	<b>0.8206</b>	<b>0.8779</b>						

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0287	0.0460	0.4776	8.5000e-004	0.0753	6.1000e-004	0.0759	0.0200	5.6000e-004	0.0205						
<b>Total</b>	<b>0.0287</b>	<b>0.0460</b>	<b>0.4776</b>	<b>8.5000e-004</b>	<b>0.0753</b>	<b>6.1000e-004</b>	<b>0.0759</b>	<b>0.0200</b>	<b>5.6000e-004</b>	<b>0.0205</b>						

**3.2 Site Preparation - 2014****Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2068	0.0000	0.2068	0.0223	0.0000	0.0223						
Off-Road	1.4341	14.4817	7.3936	9.3700e-003		0.8920	0.8920		0.8206	0.8206						
<b>Total</b>	<b>1.4341</b>	<b>14.4817</b>	<b>7.3936</b>	<b>9.3700e-003</b>	<b>0.2068</b>	<b>0.8920</b>	<b>1.0988</b>	<b>0.0223</b>	<b>0.8206</b>	<b>0.8430</b>						

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0287	0.0460	0.4776	8.5000e-004	0.0753	6.1000e-004	0.0759	0.0200	5.6000e-004	0.0205						
<b>Total</b>	<b>0.0287</b>	<b>0.0460</b>	<b>0.4776</b>	<b>8.5000e-004</b>	<b>0.0753</b>	<b>6.1000e-004</b>	<b>0.0759</b>	<b>0.0200</b>	<b>5.6000e-004</b>	<b>0.0205</b>						

**3.3 Grading - 2014****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0160	0.0000	5.0160	2.5410	0.0000	2.5410						
Off-Road	2.8808	31.2439	17.3851	0.0221		1.6031	1.6031		1.4748	1.4748						
<b>Total</b>	<b>2.8808</b>	<b>31.2439</b>	<b>17.3851</b>	<b>0.0221</b>	<b>5.0160</b>	<b>1.6031</b>	<b>6.6191</b>	<b>2.5410</b>	<b>1.4748</b>	<b>4.0159</b>						

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.6173	41.3653	28.5752	0.0822	1.9594	0.7781	2.7375	0.5365	0.7157	1.2522						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0574	0.0921	0.9552	1.7100e-003	0.1505	1.2200e-003	0.1517	0.0399	1.1100e-003	0.0410						
<b>Total</b>	<b>2.6746</b>	<b>41.4574</b>	<b>29.5304</b>	<b>0.0839</b>	<b>2.1099</b>	<b>0.7793</b>	<b>2.8892</b>	<b>0.5764</b>	<b>0.7168</b>	<b>1.2932</b>						

**3.3 Grading - 2014****Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9563	0.0000	1.9563	0.9910	0.0000	0.9910						
Off-Road	2.8808	31.2439	17.3851	0.0221		1.6031	1.6031		1.4748	1.4748						
<b>Total</b>	<b>2.8808</b>	<b>31.2439</b>	<b>17.3851</b>	<b>0.0221</b>	<b>1.9563</b>	<b>1.6031</b>	<b>3.5593</b>	<b>0.9910</b>	<b>1.4748</b>	<b>2.4658</b>						

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.6173	41.3653	28.5752	0.0822	1.9594	0.7781	2.7375	0.5365	0.7157	1.2522						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0574	0.0921	0.9552	1.7100e-003	0.1505	1.2200e-003	0.1517	0.0399	1.1100e-003	0.0410						
<b>Total</b>	<b>2.6746</b>	<b>41.4574</b>	<b>29.5304</b>	<b>0.0839</b>	<b>2.1099</b>	<b>0.7793</b>	<b>2.8892</b>	<b>0.5764</b>	<b>0.7168</b>	<b>1.2932</b>						

### 3.4 Building Construction - 2014

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4930	14.8331	8.3419	0.0113		1.0334	1.0334		0.9507	0.9507						
<b>Total</b>	<b>1.4930</b>	<b>14.8331</b>	<b>8.3419</b>	<b>0.0113</b>		<b>1.0334</b>	<b>1.0334</b>		<b>0.9507</b>	<b>0.9507</b>						

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0252	0.2597	0.2789	4.9000e-004	0.0144	5.2200e-003	0.0196	4.1000e-003	4.8000e-003	8.9000e-003						
Worker	0.0287	0.0460	0.4776	8.5000e-004	0.0753	6.1000e-004	0.0759	0.0200	5.6000e-004	0.0205						
<b>Total</b>	<b>0.0539</b>	<b>0.3057</b>	<b>0.7565</b>	<b>1.3400e-003</b>	<b>0.0896</b>	<b>5.8300e-003</b>	<b>0.0955</b>	<b>0.0241</b>	<b>5.3600e-003</b>	<b>0.0294</b>						

### 3.4 Building Construction - 2014

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4930	14.8331	8.3419	0.0113		1.0334	1.0334		0.9507	0.9507						
<b>Total</b>	<b>1.4930</b>	<b>14.8331</b>	<b>8.3419</b>	<b>0.0113</b>		<b>1.0334</b>	<b>1.0334</b>		<b>0.9507</b>	<b>0.9507</b>						

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0252	0.2597	0.2789	4.9000e-004	0.0144	5.2200e-003	0.0196	4.1000e-003	4.8000e-003	8.9000e-003						
Worker	0.0287	0.0460	0.4776	8.5000e-004	0.0753	6.1000e-004	0.0759	0.0200	5.6000e-004	0.0205						
<b>Total</b>	<b>0.0539</b>	<b>0.3057</b>	<b>0.7565</b>	<b>1.3400e-003</b>	<b>0.0896</b>	<b>5.8300e-003</b>	<b>0.0955</b>	<b>0.0241</b>	<b>5.3600e-003</b>	<b>0.0294</b>						

**3.5 Paving - 2014****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2331	11.8542	7.3554	0.0111		0.7457	0.7457		0.6898	0.6898						
Paving	0.1258					0.0000	0.0000		0.0000	0.0000						
<b>Total</b>	<b>1.3589</b>	<b>11.8542</b>	<b>7.3554</b>	<b>0.0111</b>		<b>0.7457</b>	<b>0.7457</b>		<b>0.6898</b>	<b>0.6898</b>						

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.1032	0.1657	1.7194	3.0700e-003	0.2709	2.2000e-003	0.2731	0.0719	2.0000e-003	0.0739						
<b>Total</b>	<b>0.1032</b>	<b>0.1657</b>	<b>1.7194</b>	<b>3.0700e-003</b>	<b>0.2709</b>	<b>2.2000e-003</b>	<b>0.2731</b>	<b>0.0719</b>	<b>2.0000e-003</b>	<b>0.0739</b>						

**3.5 Paving - 2014****Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2331	11.8542	7.3554	0.0111		0.7457	0.7457		0.6898	0.6898						
Paving	0.1258					0.0000	0.0000		0.0000	0.0000						
<b>Total</b>	<b>1.3589</b>	<b>11.8542</b>	<b>7.3554</b>	<b>0.0111</b>		<b>0.7457</b>	<b>0.7457</b>		<b>0.6898</b>	<b>0.6898</b>						

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.1032	0.1657	1.7194	3.0700e-003	0.2709	2.2000e-003	0.2731	0.0719	2.0000e-003	0.0739						
<b>Total</b>	<b>0.1032</b>	<b>0.1657</b>	<b>1.7194</b>	<b>3.0700e-003</b>	<b>0.2709</b>	<b>2.2000e-003</b>	<b>0.2731</b>	<b>0.0719</b>	<b>2.0000e-003</b>	<b>0.0739</b>						

### 3.6 Architectural Coating - 2014

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	6.7370					0.0000	0.0000		0.0000	0.0000						
Off-Road	0.5950	3.7031	2.5621	3.9600e-003		0.3269	0.3269		0.3269	0.3269						
<b>Total</b>	<b>7.3319</b>	<b>3.7031</b>	<b>2.5621</b>	<b>3.9600e-003</b>		<b>0.3269</b>	<b>0.3269</b>		<b>0.3269</b>	<b>0.3269</b>						

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	5.7400e-003	9.2100e-003	0.0955	1.7000e-004	0.0151	1.2000e-004	0.0152	3.9900e-003	1.1000e-004	4.1000e-003						
<b>Total</b>	<b>5.7400e-003</b>	<b>9.2100e-003</b>	<b>0.0955</b>	<b>1.7000e-004</b>	<b>0.0151</b>	<b>1.2000e-004</b>	<b>0.0152</b>	<b>3.9900e-003</b>	<b>1.1000e-004</b>	<b>4.1000e-003</b>						

### 3.6 Architectural Coating - 2014

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	6.7370					0.0000	0.0000		0.0000	0.0000						
Off-Road	0.5950	3.7031	2.5621	3.9600e-003		0.3269	0.3269		0.3269	0.3269						
<b>Total</b>	<b>7.3319</b>	<b>3.7031</b>	<b>2.5621</b>	<b>3.9600e-003</b>		<b>0.3269</b>	<b>0.3269</b>		<b>0.3269</b>	<b>0.3269</b>						

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	5.7400e-003	9.2100e-003	0.0955	1.7000e-004	0.0151	1.2000e-004	0.0152	3.9900e-003	1.1000e-004	4.1000e-003						
<b>Total</b>	<b>5.7400e-003</b>	<b>9.2100e-003</b>	<b>0.0955</b>	<b>1.7000e-004</b>	<b>0.0151</b>	<b>1.2000e-004</b>	<b>0.0152</b>	<b>3.9900e-003</b>	<b>1.1000e-004</b>	<b>4.1000e-003</b>						

### 4.0 Operational Detail - Mobile

#### 4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	15.1890	21.3551	101.4491	0.1009	6.5034	0.2554	6.7588	1.7365	0.2342	1.9707						
Unmitigated	15.1890	21.3551	101.4491	0.1009	6.5034	0.2554	6.7588	1.7365	0.2342	1.9707						

#### 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Convenience Market With Gas Pumps	4,340.80	1,635.76	1335.04	2,491,402	2,491,402
Parking Lot	0.00	0.00	0.00		
Total	4,340.80	1,635.76	1,335.04	2,491,402	2,491,402

#### 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Convenience Market With Gas	18.50	10.10	7.90	0.80	80.20	19.00	14	21	65
Parking Lot	18.50	10.10	7.90	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.477446	0.065927	0.171594	0.156638	0.055185	0.009062	0.015877	0.037321	0.001132	0.001346	0.004831	0.000736	0.002906

## 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	8.0000e-005	7.0000e-004	5.9000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005						
NaturalGas Unmitigated	8.0000e-005	7.0000e-004	5.9000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005						

## 5.2 Energy by Land Use - NaturalGas

### Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Convenience Market With Gas Pumps	7.17865	8.0000e-005	7.0000e-004	5.9000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005						
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
<b>Total</b>		<b>8.0000e-005</b>	<b>7.0000e-004</b>	<b>5.9000e-004</b>	<b>0.0000</b>		<b>5.0000e-005</b>	<b>5.0000e-005</b>		<b>5.0000e-005</b>	<b>5.0000e-005</b>						

## 5.2 Energy by Land Use - NaturalGas

### Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
Convenience Market With Gas Pumps	0.00717865	8.0000e-005	7.0000e-004	5.9000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005						
<b>Total</b>		<b>8.0000e-005</b>	<b>7.0000e-004</b>	<b>5.9000e-004</b>	<b>0.0000</b>		<b>5.0000e-005</b>	<b>5.0000e-005</b>		<b>5.0000e-005</b>	<b>5.0000e-005</b>						

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2458	4.0000e-005	3.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						
Unmitigated	0.2458	4.0000e-005	3.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						

## 6.2 Area by SubCategory

### Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.2300e-003					0.0000	0.0000		0.0000	0.0000						
Consumer Products	0.2362					0.0000	0.0000		0.0000	0.0000						
Landscaping	3.8000e-004	4.0000e-005	3.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						
<b>Total</b>	<b>0.2458</b>	<b>4.0000e-005</b>	<b>3.7400e-003</b>	<b>0.0000</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>						

### Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.2300e-003					0.0000	0.0000		0.0000	0.0000						
Consumer Products	0.2362					0.0000	0.0000		0.0000	0.0000						
Landscaping	3.8000e-004	4.0000e-005	3.7400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						
<b>Total</b>	<b>0.2458</b>	<b>4.0000e-005</b>	<b>3.7400e-003</b>	<b>0.0000</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>						

## 7.0 Water Detail

**7.1 Mitigation Measures Water****8.0 Waste Detail**

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**8.1 Mitigation Measures Waste****9.0 Operational Offroad**

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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**10.0 Vegetation**

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