INITIAL STUDY

FOR THE

CITY OF SAN JACINTO
LYON AVENUE PROJECT
FOR TTM NO. 38468

Prepared for:

City of San Jacinto
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LIST OF ABBREVIATIONS AND ACROYNMS

AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ADT	Average Daily Traffic
APE	Area of Potential Effect
APN	Assessor's Parcel Number
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
BACMs	Best Available Control Measures
BMPs	Best Management Practices
BRA	Biological Resources Assessment
BUOW	Burrowing Owl
C&D	construction and demolition
CAA	Clean Air Act
CAAA	Clean Air Act Amendment
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CALEPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CALGreen	California Green Building Standards Code
CalSTA	California State Transportation Agency
Caltrans	California Department of Transportation
CA MUTCD	California Manual on Uniform Traffic Control Devices
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CBSC	Compliance with the Building Energy Efficiency Standards
CCAR	California Climate Action Registry
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife (formerly CDFG)
CEC	California Energy Commission
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CIP	Capital Improvement Project
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CPUC	California Public Utilities Commission
CVC	California Vehicle Code
CWA	Clean Water Act
CTC	California Transportation Commission
dB	decibel
dBA	A-weighted decibel

DIF	Development Impact Fees
DOI	Department of Interior
DTSC	Department of Toxics Substances Control
DU/A	dwelling units per acre
DWR	Department of Water Resources
EA	Existing plus Ambient Growth
EAC	Existing plus Ambient Growth plus Cumulative
EAP	Existing plus Ambient Growth plus Project
EAPC	Existing plus Ambient Growth plus Project plus Cumulative
EIR	Environmental Impact Report
EMWD	Eastern Municipal Water District
EO	Executive Orders
ESA	Endangered Species Act
FAR	Floor Area Ratio
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FGC	Fish & Game Code
FTA	Federal Transit Association
GCC	Global Climate Change
GHG	Greenhouse Gas
GO Biz	Governor's Office of Business & Economic Development
GP	General Plan
GSA	Groundwater Sustainability Agencies
GSP	Groundwater Sustainability Plans
HMU	Habitat Management Unit
HSA	Hydrologic Sub-Area
HUSD	Hemet Unified School District
HVAC	heating, ventilating and air condition
IRP	Integrated Resource Planning
JD	Jurisdictional Delineation
LDR	Low Density Residential
LOS	Level of Service
LRA	Local Responsibility Area
LSA	Lake or Streambed Alteration
LST	Localized Significance Thresholds
LUST	Leaking Underground Storage Tank
MBTA	Migratory Bird Treaty Act
MD	Mid-day
MM	Mitigation Measure
MND	Mitigated Negative Declaration
MSHCP	Multiple Species Habitat Conservation Plan
NAAQS	National Ambient Air Quality Standards
NBP	Nesting Bird Plan
NOI	Notice of Intent

NPDES	National Pollutant Discharge Elimination System
OPR	Office of Planning and Research
OSHPD	Office of Statewide Health Planning and Development
PGAm	modified peak ground acceleration
RHNA	Regional Housing Needs Assessment
RIVCOM	Riverside County Model
RL	Residential, Low Density
ROW	Rights-of-Way
RPS	Renewable Portfolio Standards
RTA	Riverside Transit Authority
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SB	State Bill
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SGC	Strategic Growth Council
SGMA	Sustainable Groundwater Management Act
SJDC	San Jacinto Development Code
SJSD	San Jacinto Unified School District
SJVRWRF	San Jacinto Valley Regional Water Reclamation Facility
SIP	State Implementation Plan
SMU	Site Mitigation Unit
SoCalGas	Southern California Gas Company
SRA	State Responsibility Area
SSC	Species of Special Concern
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TA	Traffic Analysis
TAZ	Traffic Analysis Zones
TCR	Tribal Cultural Resources
TDA	Treatment and Disposition Agreement
TPA	Transit Priority Area
TTM	Tentative Tract Map
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
VdB	vibration-velocity decibel
VMFHSZ	Very High Fire Hazard Severity Zone
VMT	vehicle miles traveled

WOTUS	Waters of the United States
WRCOG	Western Riverside Council of Governments
WQMP	Water Quality Management Plan

ENVIRONMENTAL CHECKLIST

INTRODUCTION

1. Project Information

i) Project Title: Lyon Avenue Project (TTM No. 38468)

ii) Applicant: 3rd Avenue Storage, LLC
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Temecula, CA 92592

Project Manager: Ms. Ruth Stitcher
T: (951) 491-6035 E: ruth@Cormanleigh.com

ii) Lead Agency Name: City of San Jacinto
Address: 595 S. San Jacinto Ave
San Jacinto, CA 92583

iii) Contact: Yaneli Hernandez, Associate Planner
Phone Number: (951) 487-7330

iv) Project Location: The proposed project is located within Assessor's Parcel Numbers (APNs) 436-280-006 & -007 located on the west side of Lyon Avenue, approximately 137 feet north of Cottonwood Avenue. in the City of San Jacinto, Riverside County, California. The site is located in Section 28, Township 4 South, Range 1 West SBMM as found on the USGS – San Jacinto Quadrangle, 7.5 Minute Series topographic map. The geographic coordinates are as follows: 33.792707°, -116.991877° (Please refer to Figures 1 and 2 for project location depicted at a regional and site level).

2. Project Description

A. Introduction

This document is being prepared for the Lyon Avenue Project for Tentative Tract Map (TTM) No. 38468. The City will consider entitlements to subdivide 42.19 gross acres into 153 single-family residential lots within APNs 436-280-006 & -007, which is situated between Lyon Avenue to the East, drainage channel, and is bound partially by Appaloosa Drive to the south in the City of San Jacinto. The purpose of the project is to obtain entitlements that would enable the subdivision of the property, which would ultimately provide additional housing options to serve the growing population of the City of San Jacinto, and further aid the City in meeting the housing needs determined in the Southern California Association of Governments (SCAG) Regional Housing Needs Assessment (RHNA).

B. Project Characteristics

The approximately 42.19 gross acre site will require a Subdivision Application (Tentative Tract Map) by the City of San Jacinto. The development proposed under TTM No. 38468 would be consistent with the City's General Plan land use designations and is consistent with the City's zoning code. The proposed subdivision of this property to ultimately enable the development of 153 single-family residences is consistent with the existing land use designation and zoning classification. The site is comprised of two parcels, with proposed entrances along Lyon Avenue and Lippizan Drive within the City of San Jacinto.

The proposed subdivision would result in 153 single-family residential lots with the average lot size of 8,123 square feet (SF), minimum lot size of approximately 6,844 SF, with the largest lot at 13,335 SF. The varied

lot sizes and site configuration are shown on Figure 3, which depicts the proposed tentative tract map. In addition to the 153 numbered lots, the project proposes 7 lettered lots that would be provided as part of the ultimate development of the site, as follows:

- Lot A: Water quality mitigation basin
- Lots B through E: Landscape lots
- Lots F through G: Paseo

The water quality bioretention basin will be situated at the northeast corner of the site and is designed to collect onsite incremental drainage as a result of the proposed residential development project. The paseo lots are open space lots that provide pedestrian access from Lyon Ave to the interior street of the development. The landscape lots are areas that cannot be built upon due to the fault zone, and therefore will serve as landscaped open space. The subdivision would necessitate the installation of access roads that would align with Lipizzan Drive to the south and that would provide an outlet to Lyon Avenue to the east. Interior streets include five culs-de-sac throughout the interior of the site and a network of interior streets that would provide access to the entirety of the proposed subdivision. These new internal roadways shall be dedicated to the City once the development becomes accessible to the public. All utilities would ultimately be extended to each lot within these proposed roadways upon the ultimate development of the proposed subdivision under a separate application with the City.

Streets “A” – “H” (interior roads) will be local streets with an overall right-of-way of 56-feet. The right-of-way consists of 36-foot roadway, 6-foot sidewalk and the remaining reserved for future sidewalk/roadway expansion or landscaping. Lyon Avenue improvements consists of an overall right-of-way of 112-feet. The right-of-way consists of 76-foot roadway, 6-foot sidewalk and the remaining reserved for future sidewalk/roadway expansion or landscaping. No offsite improvements required.

Upon the ultimate development of the proposed subdivision under a separate application with the City, the proposed project would connect to existing water, sewer, natural gas and electricity that is available within adjacent roadways as shown on the tentative tract map provided as Figure 3. Sewer would be provided by the City of San Jacinto; water would be provided by Eastern Municipal Water District (EMWD); natural gas would be provided by Southern California Gas Company (SoCalGas); electricity would be provided by Southern California Edison (SCE); and, telephone and cable would be provided by Frontier.

The future development of the proposed subdivision would include a landscaping that would be consistent with the requirements of the SJDC Chapter 17.325, Water Efficient Landscape and Irrigation.

The future residences would be outfitted with low flow toilets and energy efficient appliances. Solar would be installed concurrent with development of each single-family residences as required by the California Energy Code.

Construction Scenario

Upon the ultimate development of the proposed subdivision under a separate application with the City, the anticipated construction sequence would proceed as follows, but may be adjusted to conform to specific conditions at the time of actual construction:

1. Clear and grub, and demolish five onsite structures;
2. Preparation of subgrade;
3. Mass grade site and road beds;
4. Installation of the northerly and southerly storm drain systems;
5. Installation of public sewer systems;
6. Installation of public water systems;
7. Fine grade to prepare for surface improvements;
8. Installation of building foundations;
9. Install private utilities, including water quality infrastructure;
10. Install curb, gutters, sidewalks and first asphalt lift;

11. Complete construction of new residences;
12. Install landscaping; place final lift of asphalt; and
13. Install signage and striping.

The new residential structures will be developed with a combination of wood framing, and the exterior will be stucco, similar to surrounding single-family residence structures. Construction will be completed in one phase with the entirety of the horizontal improvements to be completed first. This will include grading and installation of utilities, and may also include development of internal paved roadways.

Construction is anticipated to be initiated in the summer of 2024 and the units would open for occupancy by about 10 months from the start of construction (around early summer of 2025), once the application to develop the proposed subdivision is submitted to and approved by the City, with full occupancy occurring in 2026. The ultimate development of the project site would require about 14,540 cubic yards (CY) of cut and 37,800 CY of fill, as such the site requires approximately 29,300 CY of import. Grading would occur via traditional mechanized grading and compaction equipment including, but not limited to the following: front end loader, excavator, loader backhoe, dump truck, forklift, skid steer, mobile crane, bulldozer, grader, roller, water wagon, asphalt compactors, telehandlers, cement trucks, various hand tools traditional to grading operations, etc. For the areas that require paving, the asphalt or concrete will be delivered to the site and applied to these areas in a routine manner. It is anticipated that about 15 construction workers will be on site at any given time during construction, with construction truck trips requiring a maximum of about 80 miles round-trip. Further construction details are discussed under Air Quality, with additional details provided in Appendix 1a, the Air Quality and Greenhouse Gas Impact Analysis.

3. Description of the Project Site

The project site consists of a rectangular shaped parcel of land that is bounded to the south in part by Appaloosa Drive, which is a paved roadway that traverses about half of the project's southern boundary, to the north by drainage basin and Dire Road, to the east by Lyon Avenue, and by drainage channel to the west. The site is presently accessible by paved driveways along Lyon Avenue that enable drainage to travel under the driveways along the adjacent roadways. Along Lyon Avenue, there are aboveground electricity lines along the property frontage. The lots surrounding the project are suburban in nature, with the uses surrounding the project including the San Jacinto Reservoir (north), Monte Vista Middle School (east), and single-family residences (south and west). The approximately 42.19-acre site is essentially flat, with an elevation varying from 1,522 feet to 1,528 feet above mean sea level (amsl). The entirety of the site has been previously disturbed. The proposed project site contains some remnants of past development including wood fencing, asphalt, and concrete and is presently covered with weeds. The site also contains several trees including about 5 palm trees, about 5 eucalyptus trees, in addition to about 15 other large-sized mature healthy trees, about 15 medium-sized healthy trees, and several other trees in in poor condition. Refer to the photos below, which depict the present site conditions. The overall setting is that of a suburban single-family residential area. Refer to the aerial photograph in Figure 1 for a representation of the existing project site in a regional setting, and to Figure 2 for a representation of the existing project site at a site-specific level.



Photo 1: View from Lyon Avenue looking west at the project site
Source: Google Maps (Feb 2022)



Photo 2: View from Lyon Avenue looking west at the project site
Source: Google Maps (Feb 2022)



Photo 3: View from Lyon Avenue looking southwest at the project site
Source: Google Maps (Feb 2022)



Photo 4: View from Appaloosa Drive looking north at the project site
Source: Google Maps (Feb 2022)



Photo 5: View from Lipizzan Drive looking north/northeast at the project site
Source: Google Maps (Feb 2022)

4. Surrounding Land Uses: Current land use designations and existing land uses in the vicinity of the proposed project

North: Low Density Residential (LDR): the area north of the project is the San Jacinto Reservoir.
South: Low Density Residential (LDR): the area south of the project site contains single-family residences.
East: Low Density Residential (LDR): the area east of the project is developed with the Monte Vista Middle School, as well as vacant land.
West: Low Density Residential (LDR): the area west of the project is developed with single-family residences.

5. General Plan Designation

Existing: Low Density Residential (LDR)
Proposed: No change in General Plan designation proposed

6. Zoning

Existing: Residential, Low Density (RL)
Proposed: No change in zone classification proposed

7. Other Agencies whose approval may be required

Based on an evaluation of the specific project location, the proposed project will not require any permits from other agencies to support subdivision of the site as proposed by the Owner's application.

Upon the ultimate development of the proposed subdivision under a separate application with the City, the amount of area to be disturbed by the whole project would be greater than one acre and therefore, the developer would be required to file a Notice of Intent (NOI) for a General Construction permit to comply with the National Pollutant Discharge Elimination System (NPDES) requirements. The NOI is filed with the State Water Resources Control Board (SWRCB) and enforced by the Santa Ana Regional Water Quality Control Board (RWQCB). A Stormwater Pollution Prevention Plan (SWPPP) must be implemented in conjunction with construction activities. No other permits or agency requirements have been identified in association with the proposed project.

8. Have California Native American tribes traditionally and cultural affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?

Yes. The City has conferred with local Native American representatives.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

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.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Energy
☒ Geology / Soils	☐ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials
☒ Hydrology & Water Quality	☐ Land Use / Planning	☐ Mineral Resources
☒ Noise	☐ Population / Housing	☐ Public Services
☐ Recreation	☒ Transportation	☒ Tribal Cultural Resources
☒ Utilities / Service Systems	☐ Wildfire	☒ 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.

Prepared by _____ Date _____

Lead Agency (signature) _____ Date _____

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

   a) the significance criteria or threshold, if any, used to evaluate each question; and
   b) the mitigation measure identified, if any, to reduce the impact to less than significance.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
I. AESTHETICS: Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning or other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

SUBSTANTIATION

a. *Less Than Significant Impact* – Adverse impacts to scenic vistas can occur when an area contains existing scenic vistas that would be altered by new development. First, an area itself may contain existing scenic vistas that would be altered by new development. The purpose of the project is to obtain entitlements that would enable the subdivision of the property, ultimately resulting in the development of 153 single-family homes. A review of the project area determined that there are no scenic vista resources located internally within the area proposed for the development of the Lyon Avenue Project. The proposed project is located adjacent to existing development including the Monte Vista Middle School to the east, single-family residences to the south and west, and the San Jacinto Reservoir to the north. The project site is located within a suburban setting and is therefore located in an urbanized visual setting. Furthermore, the entirety of the site has been previously disturbed. The proposed project site contains some remnants of past development including wood fencing, asphalt, and concrete and is presently covered with a mix of weeds and trees. Thus, the project site does not have any distinctive visual features on the property. Therefore, the development of the Lyon Avenue Project is not expected to impact any important scenic vistas within the project area.

A scenic vista impact can also occur when a scenic vista can be viewed from the project area or immediate vicinity and a proposed development may interfere with the view to a scenic vista. The City of San Jacinto General Plan 2040 Environmental Impact Report (GPEIR) indicates that the slopes of the San Jacinto Mountain Range, in addition to open spaces and agricultural lands of visual significance are considered important scenic vistas within the City. Given this, the proposed project would ultimately be developed within a site that is removed from the mountains and thus would not impact any scenic vistas thereof. Furthermore, though the hillsides and mountains can be viewed from the project site, there is development in the fore- and middle-ground vistas. The proposed project would develop comparably sized residential structures that would conform to the fore- and middle-ground vistas in the area surrounding the project. Though the project site currently serves as grazing land supporting cattle, the site itself is surrounded by existing single-family residential development and does not contain any unique visual features that would serve as scenic vistas of value based on the criteria provided in the San Jacinto GPEIR. Thus, the subdivision of this site to enable the future development of 153 single-family residences would conform with the existing visual setting, and thus would not have a potential to obstruct public views to scenic vistas. Therefore, the proposed project

would have a less than significant potential to have a substantial adverse effect on a scenic vista. No mitigation is required.

b. *Less Than Significant Impact* – The proposed project site contains some remnants of past development including wood fencing, asphalt, and concrete and is presently covered with weeds and contains several trees. The site is generally flat as a result of previous development. The site has been designated for Low Density Residential (LDR) use under the City's General Plan. The proposed project does not contain any noteworthy rocks or rock outcroppings that would be considered of scenic value under the current City standards. Furthermore, the project site does not contain any trees that are of scenic significance as the trees that existing within the project site are not significant in number, and thus their removal in order to facilitate the ultimate development of 153 single-family residences would not conflict with the City of San Jacinto General Plan 2040 Policy RM-1.2 states "Encourage the preservation of San Jacinto's scenic resources, including mature trees, rock outcroppings, hillsides, ridgelines, and other prominent natural landforms, to the extent practical," which would not apply to the project as the trees located within the project site are not significant in number. No roadways within the vicinity of the project site are considered eligible for official designation as a City, County or State Scenic Highway. No other scenic resources are located within the project site, and as such, there are no scenic resources within the site that would be damaged as a result of development of the project. Therefore, there is a less than significant potential to damage a scenic onsite resource.

c. *Less Than Significant Impact* – Please refer to the discussion under issue I(a) and (b), above. The project site is located within a suburban setting and is therefore located in an urbanized visual setting and is bordered mostly by surrounding roadways, residential, and rural residential development. Construction of the project would create a temporary change in visual character the visual character of the project site, but this would be temporary as the construction equipment and materials would only be present for the duration of construction of the proposed single-family home. The project has been designed to be consistent with the Low Density Residential (LDR) development guidelines. The subdivision of this site, to enable the development of 153 single-family residential homes, would be designed in accordance with City General Plan and consistent with the Low Density Residential (LDR) development guidelines, the visual character of this site will be converted to a suburban residential visual setting consistent with surrounding single-family residences, but also consistent with the General Plan vision for the City at build-out. The General Plan Update provides several goals and policies, maps, and diagrams to control and direct the general distribution, location, and extent of land uses within the City. For example, Policy LU-3.1 ensures the compatibility of new development with surrounding uses and the ability of new development to enhance the character of the surrounding area, with which the project would comply through project design and adherence to the City's development code (SJDC). Policy RM-1.2 preserves scenic resources in San Jacinto, including mature trees, rock outcroppings, hillsides, ridgelines, and other prominent natural landforms, which, as stated above, would not apply to the project, as no scenic resources exist within the project site. Policy RM-1.5 requires orderly development of hillside areas through compliance with the City's Hillside Development Ordinance, and as the proposed project is not located on a hillside, this policy would not apply. The San Jacinto GPEIR indicates that future growth would largely occur in areas that are already developed, and that all future development would also be subject to conformance with applicable SJDC requirements. SJDC Article 2, Zones, Allowable Land Uses, and Zone-Specific Standards, would regulate maximum building height, building setbacks, parking and garage/carport placement, landscaping and screening requirements, and other development characteristics in place in each zoning district to protect the City's long-term visual character, to which the proposed project must adhere. Furthermore, SJDC Chapter 17.630 requires future development projects to be subject to project-specific design review to ensure compatibility in scale and aesthetic treatment of proposed structures with public areas, and consistency with design guidelines/standards and the General Plan. Thus, the proposed project would conform to the existing regulations pertaining to scenic quality in the City, as well as to the City's zoning code, and impacts would be less than significant.

d. *Less Than Significant Impact* – The implementation of the proposed project will create new sources of light once the site has been occupied by new residences. The site is presently vacant and thus does not contain any light generating uses. Light and glare from interior and exterior building lighting, safety and security lighting, and vehicular traffic accessing the subdivision area will occur once the subdivision is developed and occupied by future residents. The proposed project must be developed in accordance with the SJDC, which would ensure that any building or exterior lighting would not significantly impact adjacent uses. Thus, the proposed project will introduce a new source of light into the project area, but design requirements can limit the lighting impacts to and from the project site. All outdoor lighting would be hooded, appropriately angled away from adjacent land uses, and would be installed in compliance with the SJDC, Section 17.300.080, which provides specifications for shielding lighting away from adjacent uses and intensity of lighting. Compliance with the Development Code would ensure that light and glare sources from the site would be shielded or modified in accordance with SJDC Section 17.300.080 to prevent the emission of light or glare beyond the property line or upward into the sky.

Additionally, the subdivision of the property would not have a potential to result in structures that would cause substantial glare. The future residential homes would require the installation of windows, but the design of each home would ensure that architectural elements would limit the potential of significant glare to a level of less than significant. Through compliance with the City's Development Code, the future development of the proposed subdivision by the Lyon Avenue Project would have a less than significant potential to create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
II. AGRICULTURE AND FORESTRY RESOURCES: 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 Dept. 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 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?	☐	☐	☒	☐
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒
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))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
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 forest land to non-forest use?	☐	☐	☐	☒

SUBSTANTIATION

a. *Less Than Significant Impact* – According to the California Department of Conservation Important Farmland Map Finder, the project is located on land that is deemed "Farmland of Local Importance" (Figure II-1). The City has not designated this site nor zoned this site for agricultural use, as the General Plan designation is Low Density Residential (LDR) and the Zoning Classifications is Residential, Low Density (RL). This indicates that the City intends for the project site to be developed for a use that would suit the land use designation/zoning classification that it has assigned the project site. Furthermore, the City's General Plan indicates that the loss of agricultural values within the City are outweighed by the social and economic factors making land for other uses more desirable. Section 5.2 of the City's GPEIR, states that new land use designations in the General Plan would be expected to result in the conversion of agricultural land to other uses. A mitigation measure was adopted to require setbacks and buffers between new development and existing active agricultural operations, but the GPEIR concluded that while this mitigation measure would reduce potential

conflicts, impacts to agricultural resources will remain significant and unavoidable. Thus, conversion of the project site from Farmland of Local Importance to Single-Family Residential use would be consistent with the anticipated conversion of agricultural land analyzed in the City's General Plan and GPEIR. Therefore, given that the City does not identify the project site for agricultural use, and that no Prime Farmland, Unique Farmland or Farmland of Statewide Importance has been identified within the project site or project area, implementation of the proposed project and conversion of the project site to the proposed subdivision to enable the development of 153 single-family residential uses will not pose any significant adverse impact to agricultural resources or values. Impacts are considered to be less than significant and no mitigation is required.

b. *No Impact* – Implementation of the proposed project will not conflict with existing zoning for agricultural use, or a Williamson Act contract because the project site General Plan designation is Low Density Residential (LDR) and the Zoning Classifications is Residential, Low Density (RL). Based on this information, the proposed project will not conflict with existing zoning for agricultural use, or a Williamson Act contract. No adverse impacts are anticipated and no mitigation is required.

c. *No Impact* – The project site is not located within forest land, timberland or timberland zoned for Timberland Production. Therefore, the proposed project will 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)). No adverse impacts are anticipated and no mitigation is required.

d. *No Impact* – The project site is not located within forest land and has no commercial forest trees on the property; therefore, the project will not result in the loss of forest land or conversion of forest land to non-forest production use. No adverse impacts are anticipated and no mitigation is required.

e. *No Impact* – Please refer to the discussion under issue II(a), above. No agricultural activities have been practiced on the site in recent history. The City has designated and zoned the site for Low Density Residential (LDR) use, which does not permit agricultural uses to be carried out. The uses in the immediate vicinity surrounding the proposed project do not currently support agricultural activities. The ultimate development of this site as the Lyon Avenue Project would not involve other changes that would result in off-site agricultural land converting to a non-agricultural use. Furthermore, there is no forest land in the City of San Jacinto that would be impacted by the development of the proposed project. Therefore, the proposed project would have no potential to 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 forest land to non-forest use.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
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?	☐	☐	☒	☐
b) 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?	☐	☒	☐	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

SUBSTANTIATION: An Air Quality and Greenhouse Gas Impact Analysis was prepared for the project by Gerrick Environmental. The report is titled “Air Quality and Greenhouse Gas Impact Analysis TTM No. 38468, Lyon Avenue Project, San Jacinto, California,” and is dated July 21, 2023. This report is provided as Appendix 1a to this Initial Study.

Background

Climate

The climate of the San Jacinto area, technically called an interior valley subclimate of Southern California's semi-arid climate, is characterized by warm summers, mild winters, infrequent rainfall, moderate afternoon breezes, and generally fair weather. The clouds and the fog that form along the area's coastline rarely extend as far inland as the San Jacinto Valley, and if they do, they usually burn off quickly after sunrise. The most important weather pattern is associated with the warm season airflow across populated areas of the Los Angeles Basin that brings polluted air into western Riverside County late in the afternoon. This transport pattern creates unhealthful air quality when the fringes of this "urban smog cloud" extend to the project site during the summer months.

Air Quality Standards

Existing air quality is measured at established Southern California Air Quality Management District (SCAQMD) air quality monitoring stations. Monitored air quality is evaluated and 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 are shown in Table III-1. Because the State of California had established Ambient Air Quality Standards (AAQS) several years before the federal action and because of unique air quality problems introduced by the restrictive dispersion meteorology, there is considerable difference between state and national clean air standards. Those standards currently in effect in California are shown in Table III-1. Sources and health effects of various pollutants are shown in Table III-2.

Table III-1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Average Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O3)[8]	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		–		
Fine Particulate Matter (PM2.5)[9]	24 Hour	–	–	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15.0 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	–	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	–	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–	–	
Nitrogen Dioxide (NO2)[10]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	–	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	–	Ultraviolet Fluorescence; Spectrophotometry (Paraosaniline Method)
	3 Hour	–		–	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[11]	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas)[11]	–	
Lead 8[12,13]	30-Day Average	1.5 µg/m^3	Atomic Absorption	–	–	–
	Calendar Quarter	–		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Avg	–		0.15 µg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	**No Federal Standards**		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Source: California Air Resources Board 5/4/16

Footnotes:

1 California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter – PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone 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 PM10, the 24-hour standard is attained when the expected number of days per calendar year, with a 24-hour average concentration above 150 $\mu g/m^3$, is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 1560 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 1560 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7 Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

8 On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9 On December 14, 2012, the national PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primarily and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primarily and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10 To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11 On June 2, 2010, a new 1-hour SO2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12 The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13 The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 j.tg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14 In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Sources and health effects of various pollutants are shown in Table III-2.

Table III-2
HEALTH EFFECTS OF MAJOR CRITERIA POLLUTANTS

Pollutants	Sources	Primary Effects
Carbon Monoxide (CO)	• Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. • Natural events, such as decomposition of organic matter.	• Reduced tolerance for exercise. • Impairment of mental function. • Impairment of fetal development. • Death at high levels of exposure. • Aggravation of some heart diseases (angina).
Nitrogen Dioxide (NO_2)	• Motor vehicle exhaust. • High temperature stationary combustion. • Atmospheric reactions.	• Aggravation of respiratory illness. • Reduced visibility. • Reduced plant growth. • Formation of acid rain.
Ozone (O_3)	• Atmospheric reaction of organic gases with nitrogen oxides in sunlight.	• Aggravation of respiratory and cardiovascular diseases. • Irritation of eyes. • Impairment of cardiopulmonary function. • Plant leaf injury.
Lead (Pb)	• Contaminated soil.	• Impairment of blood function and nerve construction. • Behavioral and hearing problems in children.
Fine Particulate Matter (PM-10)	• Stationary combustion of solid fuels. • Construction activities. • Industrial processes. • Atmospheric chemical reactions.	• Reduced lung function. • Aggravation of the effects of gaseous pollutants. • Aggravation of respiratory and cardio respiratory diseases. • Increased cough and chest discomfort. • Soiling. • Reduced visibility.
Fine Particulate Matter (PM-2.5)	• Fuel combustion in motor vehicles, equipment, and industrial sources. • Residential and agricultural burning. • Industrial processes. • Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.	• Increases respiratory disease. • Lung damage. • Cancer and premature death. • Reduces visibility and results in surface soiling.
Sulfur Dioxide (SO_2)	• Combustion of sulfur-containing fossil fuels. • Smelting of sulfur-bearing metal ores. • Industrial processes.	• Aggravation of respiratory diseases (asthma, emphysema). • Reduced lung function. • Irritation of eyes. • Reduced visibility. • Plant injury. • Deterioration of metals, textiles, leather, finishes, coatings, etc.

Source: California Air Resources Board, 2002.

Air Quality Planning

The United State Environmental Protection Agency (U.S. EPA) is responsible for setting and enforcing the National Ambient Air Quality Standards (NAAQS) for O3, CO, NOx, SO2, PM10, PM2.5, and lead. 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 California Air Resources Board (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. 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. Substantial reductions in emissions of ROG, NOx and CO are forecast to continue throughout the next several decades. Unless new particulate control programs are implemented, PM-10 and PM-2.5 are forecast to slightly increase.

The Air Quality Management District (AQMD) adopted an updated clean air "blueprint" in August 2003. The 2003 Air Quality Management Plan (AQMP) was approved by the EPA in 2004. The AQMP outlined the air pollution measures needed to meet federal health-based standards for ozone by 2010 and for particulates (PM-10) by 2006. The 2003 AQMP was based upon the federal one-hour ozone standard which was revoked late in 2005 and replaced by an 8-hour federal standard. Because of the revocation of the hourly standard, a new air quality planning cycle was initiated.

With re-designation of the air basin as non-attainment for the 8-hour ozone standard, a new attainment plan was developed. This plan shifted most of the one-hour ozone standard attainment strategies to the 8-hour standard. As previously noted, the attainment date was to "slip" from 2010 to 2021. The updated attainment plan also includes strategies for ultimately meeting the federal PM-2.5 standard.

Because Projected attainment by 2021 required control technologies that did not exist yet, the SCAQMD requested a voluntary "bump-up" from a "severe non-attainment" area to an "extreme non-attainment" designation for ozone. The extreme designation was to allow a longer time period for these technologies to develop. If attainment cannot be demonstrated within the specified deadline without relying on "black-box" measures, EPA would have been required to impose sanctions on the region had the bump-up request not been approved. In April 2010, the EPA approved the change in the non-attainment designation from "severe-17" to "extreme." This reclassification set a later attainment deadline (2024), but also required the air basin to adopt even more stringent emissions controls.

In other air quality attainment plan reviews, EPA had disapproved part of the SCAB PM-2.5 attainment plan included in the AQMP. EPA stated that the current attainment plan relied on PM-2.5 control regulations that had not yet been approved or implemented. It was expected that a number of rules that were pending approval would remove the identified deficiencies. If these issues were not resolved within the next several years, federal funding sanctions for transportation projects could result. The 2012 AQMP included in the current California State Implementation Plan (SIP) was expected to remedy identified PM-2.5 planning deficiencies.

The Federal Clean Air Act requires that non-attainment air basins have EPA approved attainment plans in place. This requirement includes the federal one-hour ozone standard even though that standard was revoked almost ten years ago. There was no approved attainment plan for the one-hour federal standard at the time of revocation. Through a legal quirk, the SCAQMD is now required to develop an AQMP for the long since revoked one-hour federal ozone standard. Because the current SIP for the basin contains a number of control measures for the 8-hour ozone standard that are equally effective for one-hour levels, the 2012 AQMP was believed to satisfy hourly attainment planning requirements.

AQMPs are required to be updated every three years. The 2012 AQMP was adopted in early 2013. An updated 2016 AQMP was adopted by the SCAQMD Board in March 2017. The 2016 AQMD demonstrated the emissions reductions shown in Table III-3 compared to the 2012 AQMP.

Table III-3
COMPARISON OF EMISSIONS BY MAJOR SOURCE CATEGORY FROM 2012 AQMP

Pollutant	Stationary Sources	Mobile Sources
VOC	-12%	-3%
NOx	-13%	-1%
SOx	-34%	-23%
PM2.5	-9%	-7%

*Source: 2016 AQMP

SCAQMD initiated the development of the 2022 AQMP to address the attainment of the 2015 8-hour ozone standard (70 ppb) for South Coast Air Basin (SCAB) and Coachella Valley which will focus on attaining the 70 ppb 8-hour ozone National Ambient Air Quality Standard (NAAQS) by 2037. In December 2022, the SCAQMD released the Final 2022 AQMP (2022 AQMP). The 2022 AQMP continues to evaluate current integrated strategies and control measures to meet the CAAQS, as well as explore new and innovative methods to reach its goals. Some of these approaches include utilizing incentive programs, recognizing existing co-benefit programs from other sectors, and developing a strategy with fair-share reductions at the federal, state, and local levels. Similar to the 2016 AQMP, the 2022 AQMP incorporates scientific and technological information and planning assumptions, including the 2020-2045 Southern California Association of Governments (SCAG) Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS), a planning document that supports the integration of land use and transportation to help the region meet the federal CAA requirements.

On-road vehicles and off-road mobile sources represent the largest categories of NOx emissions. Accomplishment of attainment goals requires an approximate 70% reduction in NOx emissions. Large scale transition to zero emission technologies is a key strategy. To this end, Governor Executive Order N-79-20 requires 100 percent EV sales by 2035 for automobiles and short haul drayage trucks. A full transition to EV buses and heavy-duty long-haul trucks is required by 2045.

The proposed project does not directly relate to the AQMP in that there are no specific air quality programs or regulations governing residential development projects. Conformity with adopted plans, forecasts and programs relative to population, housing, employment and land use is the primary yardstick by which impact significance of planned growth is determined. The SCAQMD, however, while acknowledging that the AQMP is a growth-accommodating document, does not favor designating regional impacts as less-than-significant just because the proposed development is consistent with regional growth projections. Air quality impact significance for the proposed project has therefore been analyzed on a project-specific basis.

Impact Thresholds

Appendix G of the California CEQA Guidelines offers the following four tests of air quality impact significance. A Project would have a potentially significant impact if it:

a. Conflicts with or obstructs implementation of the applicable air quality plan.
b. Results in a cumulatively considerable net increase of any criteria pollutants 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).
c. Exposes sensitive receptors to substantial pollutant concentrations.
d. Creates objectionable odors affecting a substantial number of people.

Primary Pollutants
Air quality impacts generally occur on two scales of motion. Near an individual source of emissions or a collection of sources such as a crowded intersection or parking lot, levels of those pollutants that are emitted in their already unhealthful form will be highest. Carbon monoxide (CO) is an example of such a pollutant. Primary pollutant impacts can generally be evaluated directly in comparison to appropriate clean air standards. Violations of these standards where they are currently met, or a measurable worsening of an existing or future violation, would be considered a significant impact. Many particulates, especially fugitive dust emissions, are also primary pollutants. Because of the non-attainment status of the SCAB for PM-10, an aggressive dust control program is required to control fugitive dust during project construction.

Secondary Pollutants
Many pollutants, however, require time to transform from a more benign form to a more unhealthful contaminant. Their impact occurs regionally far from the source. Their incremental regional impact is minute on an individual basis and cannot be quantified except through complex photochemical computer models. Analysis of significance of such emissions is based upon a specified amount of emissions (pounds, tons, etc.) even though there is no way to translate those emissions directly into a corresponding ambient air quality impact.

Because of the chemical complexity of primary versus secondary pollutants, the SCAQMD has designated significant emissions levels as surrogates for evaluating regional air quality impact significance independent of chemical transformation processes. Projects with daily emissions that exceed any of the following emission thresholds are recommended by the SCAQMD to be considered significant under CEQA guidelines.

Table III-4
DAILY EMISSIONS THRESHOLDS

Pollutant	Construction	Operations
ROG	75	55
NOx	100	55
CO	550	550
PM-10	150	150
PM-2.5	55	55
SOx	150	150
Lead	3	3

Source: SCAQMD CEQA Air Quality Handbook, November, 1993 Rev.

Additional Indicators
In its CEQA Handbook, the SCAQMD also states that additional indicators should be used as screening criteria to determine the need for further analysis with respect to air quality. The additional indicators are as follows:

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation
- Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP and in other than planned locations for the project's build-out year.
- Project could generate vehicle trips that cause a CO hot spot.

Impact Analysis

a. *Less Than Significant Impact* – The proposed project does not directly relate to the AQMP in that there are no specific air quality programs or regulations governing development projects. Conformity

with adopted plans, forecasts and programs relative to population, housing, employment and land use is the primary yardstick by which impact significance of planned growth is determined. The SCAQMD, however, while acknowledging that the AQMP is a growth-accommodating document, does not favor designating regional impacts as less than significant just because the proposed development is consistent with regional growth projections. Air quality impact significance for the proposed project has therefore been analyzed on a project-specific basis.

The proposed project would be consistent with the City's General Plan and Zoning Code, because the improvements would be developed within a site designated for Low Density Residential (LDR) and the Zoning Classifications is Residential, Low Density (RL), to which the proposed 153 single-family residential lots within the proposed 42.19-acre subdivision proposed by this project would conform. As a result, the development density of the proposed project would be consistent with the assumptions in the AQMP and would not conflict with SCAQMD's attainment plans. Furthermore, the proposed project is forecast to be consistent with regional planning forecasts maintained by the Southern California Association of Government (SCAG) regional plans, particularly given that the proposed project would install housing consistent with the recent SCAG Regional Housing Needs Assessment Final Allocation Plan approved on 3/22/21, modified 7/1/21.[1] Air quality impact significance for the proposed project has been analyzed on a project-specific basis. As the analysis of project-related emissions provided below in issues III(b) and III(c) indicate, the proposed project would not cause or be exposed to significant air pollution, and is, therefore, consistent with the applicable air quality plan. No mitigation is required.

b. *Less Than Significant Impact With Mitigation Incorporated* – Air pollution emissions associated with the proposed project would occur over both a short- and long-term time period. Short-term emissions include fugitive dust from construction activities (i.e., site prep, demolition, grading, and exhaust emission) at the proposed project site. Long-term emissions generated by occupancy of the proposed project primarily include energy consumption generated by the single-family residence.

The City currently has a number of proposed projects that would generate air quality emissions, both through construction and operation. The proposed project has been analyzed utilizing SCAQMD's thresholds for individual projects, and these thresholds indicate that if project emissions fall below the significance thresholds, the project's individual contribution to air quality emissions within the overall SCAB would be less than significant. The list of projects that the City is considering is provided as an attachment to this Initial Study (Appendix 1b). The list includes: 3 multi-family residential developments, 5 standard commercial developments, 11 single-family residential developments; 1 solar development; 3 industrial developments, 5 cannabis developments, and 1 annexation.

Construction Emissions
This analysis utilizes calculations generated by CalEEMod2020.4.0. CalEEMod was developed by the SCAQMD to provide a model by which to calculate both construction emissions and operational emissions from a variety of land use projects. It calculates both the daily maximum and annual average emissions for criteria pollutants as well as total or annual greenhouse gas (GHG) emissions.

The project proposes the subdivision of 153 single-family residential lots within a 42.19-acre site. An additional lettered lot would be provided as part of the ultimate development of the site to enable the construction of a water quality bioretention basin at the northwest corner of the site. The average square footage of each lot is 8,123 SF.

[1] SCAG, 2021. SCAG 6th Cycle Final RHNA Allocation Plan. https://scag.ca.gov/sites/main/files/file-attachments/6th_cycle_final_rhna_allocation_plan_070121.pdf?1646938785 (accessed 04/05/24)
According to SCAG, "the RHNA does not necessarily encourage or promote growth, but rather allows communities to anticipate growth, so that collectively the region and subregion can grow in ways that enhance quality of life, improve access to jobs, promotes transportation mobility, and addresses social equity, fair share housing needs."; The intent of the future needs allocation by income groups is to relieve the undue concentration of very low and low-income households in a single jurisdiction and to help allocate resources in a fair and equitable manner.

Construction is anticipated to start in summer of 2025 with the completion in 2026. The project site contains existing structures, but is mostly vacant. Regardless, development of the site would require demolition of the existing concrete pavement scattered throughout the site, grading, paving, and construction of the onsite structure. The project anticipates about 14,540 cubic yards (CY) of cut and 37,800 CY of fill, as such the site requires approximately 29,300 CY of import. To account for the dust from earth movement it was assumed that the entire 42.19-acre site would undergo grading, not just the building pad areas.

Construction was modeled in CalEEMod2022.1 using the construction equipment and schedule for a project of this size as shown in Table III-5.

Table III-5
CONSTRUCTION ACTIVITY EQUIPMENT FLEET

Phase Name and Duration	Equipment
Demolition (30 days)	1 Concrete Saw
	3 Excavators
	2 Dozers
Grading (45 days)	1 Grader
	2 Excavators
	1 Dozer
	2 Scrapers
	2 Loader/Backhoes
Construction (440 days)	1 Crane
	1 Generator Set
	1 Welder
	3 Forklifts
	3 Loader/Backhoes
Paving (35 days)	2 Pavers
	2 Paving Equipment
	2 Rollers

Utilizing this indicated equipment fleet and durations shown in Table III-5 the following worst case daily construction emissions are calculated by CalEEMod for an opening year in the summer of 2025 and are listed in Table III-6.

Table III-6
CONSTRUCTION ACTIVITY EMISSIONS
MAXIMUM DAILY EMISSIONS (POUNDS/DAY)

Maximal Construction Emissions	ROG	NOx	CO	SO_2	PM-10	PM-2.5
2024	3.3	32.4	28.4	0.1	5.1	2.7
2025	2.0	14.8	22.6	0.1	2.9	1.2
2026	51.8	14.8	22.2	0.1	2.9	1.2
SCAQMD Thresholds	**75**	**100**	**550**	**150**	**150**	**55**

*****with mandatory compliance with SCAQMD Rule 403

Peak daily construction activity emissions are estimated be well below SCAQMD CEQA thresholds with required compliance with SCAQMD Rule 403 for fugitive dust which requires watering of dust at least three times a day during grading activities. Construction activities are not anticipated to cause dust emissions to exceed SCAQMD CEQA thresholds. Nevertheless, emissions minimization through an enhanced dust control mitigation measure is recommended for use because of the non-attainment status of the air basin.

AQ-1 ***The development of the site shall be required to comply with South Coast Air Quality Management District Rule 403 – Fugitive Dust. This rule is intended to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (human-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. Rule 403 applies to any activity or human-made condition capable of generating fugitive dust. Applicable dust suppression requirements from Rule 403 are summarized below.***

- ***Nontoxic chemical soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more).***
- ***Active sites shall be watered at least twice daily. (Locations where grading is to occur will be thoroughly watered prior to earthmoving.)***
- ***All trucks hauling dirt, sand, soil, or other loose materials shall be covered, or at least 0.6 m (2 ft) of freeboard (vertical space between the top of the load and top of the trailer) maintained in accordance with the requirements of California Vehicle Code (CVC) Section 23114.***
- ***Construction access roads shall be paved at least 30 m (100 ft) onto the site from the main road.***
- ***Traffic speeds on all unpaved roads shall be reduced to 15 mph or less.***

Similarly, ozone precursor emissions (ROG and NOx) are calculated to be below SCAQMD CEQA thresholds. However, because of regional non-attainment for photochemical smog, the use of a reasonably available exhaust emission control mitigation measure for diesel exhaust is recommended.

AQ-2 ***<u>Exhaust Emissions Control</u>. The following measures shall be incorporated into Project plans and specifications for implementation:***

- ***Utilize off-road construction equipment that has met or exceeded the maker's recommendations for vehicle/equipment maintenance schedule.***
- ***Contactors shall utilize Tier 3 or better heavy equipment.***
- ***Enforce 5-minute idling limits for both on-road trucks and off-road equipment.***

The following additional measures shall be implemented during construction to further reduce emissions:

AQ-3 ***The development of the site shall be required to use electric or alternative fueled construction equipment where technically feasible and/or commercially available, where the electric or alternatively fueled equipment can perform adequately when compared to gasoline or diesel fueled equipment.***

AQ-4 ***The development of the site shall be required to utilize "Super-Compliant" low VOC paints which have been reformulated to exceed the regulatory VOC limits put forth by SCAQMD's Rule 1113. Super-Compliant low VOC paints shall be no more than 10g/L of VOC. Alternatively, Future AGSP Development may utilize building materials that do not require the use of architectural coatings. This measure will apply to all future projects***

AQ-5 ***The development of the site shall be required to sweep all streets at least once a day using SCAQMD Rule 1186 certified street sweepers if visible soil materials are carried to adjacent streets.***

AQ-6 ***The contract with demolition and construction contractors shall include the requirement that all materials that can be recycled shall be salvaged and recycled. This includes, but is not limited to, wood, metals, concrete, road base, and asphalt. The developer shall submit a recycling plan to the City for review and approval prior to the start of demolition/construction activities to accomplish this objective.***

With implementation of mitigation measures (MMs) **AQ-1** through **AQ-6**, any impacts related to construction emissions are considered less than significant.

Operational Emissions
Operational emissions were calculated using CalEEMod2022.1 for an assumed occupancy year of 2024, with the full occupancy occurring in 2026. The operational impacts are shown in Table III-7. The project would generate 1,443 daily trips according to the traffic report prepared for this analysis. In addition to mobile sources from vehicles, general development causes smaller amounts of "area This is based on the VMT Analysis provided as Appendix 6b, prepared by Urban Crossroads. source" air pollution to be generated from on-site energy consumption (primarily space heating, hot water and landscaping). These sources represent a minimal percentage of the total project NOx and CO burdens, and a few percent of other pollutants. The inclusion of such emissions adds negligibly to the total significant project-related emissions burden as shown below.

Table III-7
PROPOSED USES DAILY OPERATIONAL IMPACTS

Maximal Summer Emissions	ROG	NOx	CO	SO_2	PM-10	PM-2.5
Area *	6.7	2.4	13.6	0.0	0.2	0.3
Energy	0.1	1.1	0.5	0.0	0.1	0.1
Mobile	4.3	5.5	42.0	0.1	10.5	2.8
Total	**11.1**	**9.0**	**56.1**	**0.1**	**10.8**	**3.2**
SCAQMD Threshold	55	55	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

*natural gas hearths (no wood burning fireplaces)

Impacts without Mitigation: The project would not cause any operational emissions to exceed their respective SCAQMD CEQA significance thresholds. Operational emission impacts are judged to be less than significant. No impact mitigation for operational activity emissions is considered necessary to support this finding. However, in an effort to reduce emissions to the greatest extent feasible, the following measures shall be implemented to minimize construction emissions and impacts:

AQ-7 ***The project applicant shall require that all building structures meet or exceed 2020 Title 24, Part 6 Standards and meet Green Building Code Standards.***

AQ-8 ***The project applicant shall require that all faucets, toilets and showers installed in the proposed structures utilize low-flow fixtures that would reduce indoor water demand by 20% per CalGreen Standards.***

AQ-9 ***The project applicant shall require that a water-efficient irrigation system be installed that conforms to the requirements of City codes.***

AQ-10 The project applicant shall require that ENERGY STAR-compliant appliances are installed on-site.

AQ-11 The project applicant shall require that high-efficiency lighting be installed that is at least 34% more efficient than standard lighting.

AQ-12 No wood burning devices shall be installed in any dwelling units, consistent with SCAQMD Rule 445.

Conclusion
With the incorporation of MMs **AQ-1** through **AQ-12**, the development of the proposed project would have a less than significant potential to 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.

c. *Less Than Significant Impact* – The SCAQMD has developed analysis parameters to evaluate ambient air quality on a local level in addition to the more regional emissions-based thresholds of significance. These analysis elements are called Localized Significance Thresholds (LSTs).[2] LSTs were developed in response to Governing Board's Environmental Justice Enhancement Initiative 1-4 and the LST methodology was provisionally adopted in October 2003 and formally approved by SCAQMD's Mobile Source Committee in February 2005.

Use of an LST analysis for a project is optional. For the proposed project, the primary source of possible LST impact would be during construction. LSTs are applicable for a sensitive receptor where it is possible that an individual could remain for 24 hours such as a residence, hospital or convalescent facility.

LSTs are only applicable to the following criteria pollutants: oxides of nitrogen (NOx), carbon monoxide (CO), and particulate matter (PM-10 and PM-2.5). LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor.

LST screening tables are available for 25, 50, 100, 200- and 500-meter source-receptor distances. The closest distance of the project boundary of the proposed single-family residential subdivision to the nearest neighboring house is at the northern boundary with the neighboring subdivision, which is a distance of about 35 feet. Thus, the 25-meter distance was used.

The SCAQMD has issued guidance on applying CalEEMod to LSTs. LST pollutant screening level concentration data is currently published for 1, 2- and 5-acre sites for varying distances. LSTs are based on the ambient concentrations of that pollutant and the distance to the nearest sensitive receptor. LST analysis for construction is applicable for all projects of five acres and less; however, it can be used as screening criteria for larger projects to determine whether dispersion modeling may be required. For this project based on methodology established by the SCAQMD for the use of CalEEMod construction emissions to LST thresholds, a daily construction area of 3.0 acres was used[3] in this analysis, derived with interpolation of the available tables.[4]

[2] SCAQMD, 2008. Final Localized Significance Threshold Methodology. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2 (accessed 07/25/23)
[3] SCAQMD, 2023. Fact Sheet for Applying CalEEMod to Localized Significance Thresholds http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf?sfvrsn=2 (accessed 07/25/23)
[4] SCAQMD, 2023. Table C-1. 2006 – 2008 Thresholds for Construction and Operation with

The following construction thresholds and emissions in Table III-8 are therefore determined (pounds per day):

Table III-8
LST AND PROJECT EMISSIONS (POUNDS/DAY)
CONSTRUCTION

3.0 acre/25 meters Hemet/San Jacinto Valley	CO	NOx	PM-10	PM-2.5
LST Threshold	1,388	280	9	5
Max On-Site Emissions				
2024	28	32	5	3
2025	23	15	3	1
2026	22	15	3	1
Exceeds LST Threshold?	NO	NO	NO	NO

LSTs were compared to the maximum daily construction activities. As seen in Table III-8, even if all activities were performed simultaneously, emissions meet the LST for construction thresholds. Furthermore, as seen on Table III-8, operational LST impacts are less than significant.

Construction equipment exhaust contains carcinogenic compounds within the diesel exhaust particulates. The toxicity of diesel exhaust is evaluated relative to a 24-hour per day, 365 days per year, 70-year lifetime exposure. The SCAQMD does not generally require the analysis of construction-related diesel emissions relative to health risk due to the short period for which the majority of diesel exhaust would occur. Health risk analyses are typically assessed over a 9-, 30-, or 70-year timeframe and not over a relatively brief construction period due to the lack of health risk associated with such a brief exposure. No analysis was required for the proposed project.

Given that the proposed project does not exceed LST thresholds, the development of the proposed project would have a less than significant potential to expose sensitive receptors to substantial pollutant concentrations. No mitigation is required.

d. *Less Than Significant Impact* – The potential for the project to generate objectionable odors has also been considered in relation to development of the proposed subdivision. 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; and, Fiberglass molding facilities. The project is a residential development and 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 occupancy) 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 City of San Jacinto solid waste regulations. The proposed project would also be required to comply with SCAQMD Rule 402 to prevent occurrences of public odor nuisances. Therefore, odors associated with the proposed project construction and occupancy would be less than significant and no mitigation is required

Gradual Conversion of NOx to NO2. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/appendix-c-mass-rate-lst-look-up-tables.pdf?sfvrsn=2 (accessed 07/25/23)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
IV. BIOLOGICAL RESOURCES: Would the project:				
a) 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?	☐	☒	☐	☐
b) 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 U.S. Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
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?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
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?	☐	☒	☐	☐

SUBSTANTIATION: A biological resources assessment (BRA), Jurisdictional Delineation (JD), and multiple-species habitat conservation plan (MSHCP) consistency analysis has been prepared for the proposed project titled “Biological Resources Assessment, Jurisdictional Delineation and MSHCP Consistency Analysis” prepared by Lisa Patterson of Tom Dodson & Associates dated November 2023 (Appendix 2). The following summary information has been abstracted from this report.

Summary of Findings

Introduction

The purpose of the BRA is to address potential effects of the project to designated Critical Habitats and/or any species currently listed or formally proposed for listing as endangered or threatened under the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA) or species designated as sensitive by the California Department of Fish and Wildlife (CDFW [formerly California Department of Fish and Game]) and/or the California Native Plant Society (CNPS). As part of the BRA, the project site was also assessed to determine the extent (if any) of State and federal jurisdictional waters (i.e. Waters of the U.S. and Waters of the State) within the project area potentially subject to regulation by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA), Regional Water Quality Control Board (RWQCB) under Section 401 of the CWA and Porter Cologne Water Quality Control Act, and CDFW under Section 1602 of the California Fish and Game Code (FGC), respectively. In addition to the

BRA, Lisa Patterson prepared a Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Consistency Analysis, which is included in the scope of this report. As part of the City of San Jacinto's approval process, a Western Riverside County MSCHP compliance report is required. Another purpose of the BRA is to assess whether the proposed project is consistent with the conditions and provisions identified in the MSCHP.

Environmental Setting
The project area lies in the geographically based ecological classification known as the Inland Valleys – Level IV ecoregion, of the Southern California/Northern Baja Coast – Level III ecoregion. The goal of regional ecological classifications is to reduce variability based on spatial covariance in climate, geology, topography, climax vegetation, hydrology, and soils. The Inland Valleys ecoregion is a heavily urbanized ecoregion that historically consisted of the alluvial fans and basin floors immediately south of the San Gabriel and San Bernardino Mountains.

The project area is situated in the San Jacinto Valley, between the Santa Ana Mountains to the west/southwest and the San Jacinto Mountains the east/northeast. The topography of the project area consists of flat urban landscape, comprised of vacant land and surrounding residential and commercial development. The elevation of the project site is approximately 1,400 feet above mean sea level (amsl).

The project area is within a hot-summer Mediterranean climate (Csa), subject to both seasonal and annual variations in temperature and precipitation. Average annual maximum temperatures within the project area peak at 94.4 degrees Fahrenheit (°F) in August and fall to an average annual minimum temperature of 39.1° F in January. Average annual precipitation is greatest from December through March and reaches a peak in February (2.20 inches). Precipitation is lowest in the month of July (0.04 inches). Annual total precipitation averages 10.21 inches.

Hydrologically, the project area is situated within the Gilman Hot Springs Hydrologic Sub-Area (HSA 802.21). The Gilman Hot Springs HSA comprises a 193,598-acre drainage area, within the larger San Jacinto Valley Watershed (HUC 18070202). The San Jacinto River is the major hydrogeomorphic feature within the San Jacinto Watershed. The nearest tributaries to the San Jacinto River.

Soils within the project site are predominantly comprised of Traver fine sandy loam, Chino silt loam, Dello fine sandy loam, and Grangeville sandy loam. The Dominant soils are drained and alkali 0-5percent slopes.

The City of San Jacinto consists of a mix of urban landscapes and isolated patches of undeveloped, grassland, and coastal sage scrub habitats. The project site is within an urban landscape that no longer supports any native habitat. Surrounding uses consists of flood control, commercial and residential developed areas with non-native landscaped vegetation. The entirety of the property cleared/graded vacant lands (refer to Figure IV-1).

Conclusion

A reconnaissance level BRA survey of the project site was conducted by TDA on September 21, 2023 to identify potential habitat for special status wildlife within the project area. No sensitive species were observed within the project area during the reconnaissance-level field survey and due to the environmental conditions on site, none are expected to occur. The project site is completely disturbed and no longer supports any native habitats (see attached Site Photos). The project site consists of vacant cleared/graded lands surrounded by urban landscape consisting commercial and residential developments. Existing disturbances within the project site include frequent disking. Due to the environmental conditions on site and the adjacent disturbances, the project site is likely not suitable to support any of the listed species that have been documented in the project vicinity (within approximately 3 miles). Furthermore, the project site does not contain any sensitive habitats, including any USFWS designated Critical Habitat for any federally listed species, and the project will not result in any loss or adverse modification of Critical Habitat.

Burrowing Owl
A burrowing owl (BUOW) habitat suitability assessment was conducted by Lisa Patterson in April 19, 2022 that included 100 percent visual coverage of any potentially suitable BUOW habitat within the project area. The result of the survey was that no evidence of BUOW was found in the survey area and much of the project site is not suitable to support this species. No BUOW individuals or sign including castings, feathers or whitewash were observed and BUOW are considered absent from the project area at the time of survey. Although the proposed project is not likely to adversely affect this species, there is still a low potential for the project site to become occupied by BUOW between the time the survey was conducted and the commencement of future site disturbance. Therefore, the following precautionary avoidance measures are recommended to ensure the proposed project does not result in any impacts to BUOW:

- Pre-construction surveys for BUOW should be conducted no more than 3 days prior to commencement of ground disturbance to verify that BUOW remain absent from the project area.

The BUOW is a state and federal species of special concern (SSC) and is also protected under the Migratory Bird Treaty Act (MBTA) and by state law under the California FGC (FGC #3513 & #3503.5). In general, impacts to BUOW can be avoided by avoiding occupied burrows and conducting work outside of their nesting season (peak BUOW breeding season is identified as April 15th to August 15th). However, if all work cannot be conducted outside of nesting season, a project specific BUOW protection and/or passive relocation plan can be prepared to determine suitable buffers and/or artificial burrow construction locations. Regardless of survey results and conclusions given herein, BUOW are protected by applicable state and federal laws. As such, if a BUOW is found on-site at the time of construction, all activities likely to affect the animal(s) should cease immediately and regulatory agencies should be contacted to determine appropriate management actions. Importantly, nothing given in this report is intended to authorize any form of disturbance to BUOW. Such authorization must come from the appropriate regulatory agencies, including CDFW and/or USFWS.

Nesting Birds
The habitat within the project area is suitable to support nesting birds, including open ground nesting species. Most native bird species are protected from unlawful take by the MBTA. In December 2017, the Department of the Interior (DOI) issued a memorandum concluding that the MBTA's prohibitions on take apply "[...] only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs." Then in April 2018, the USFWS issued a guidance memorandum that further clarified that the take of migratory birds or their active nests (i.e., with eggs or young) that is incidental to, and not the purpose of, an otherwise lawful activity does not constitute a violation of the MBTA. The State of California provides additional protection for native bird species and their nests in the FGC.

In general, impacts to all bird species (common and special status) can be avoided by conducting work outside of the nesting season, which is generally February 1st through August 31st. However, if all work cannot be conducted outside of nesting season, mitigation is required (MM **BIO-3**) below.

Jurisdictional Waters
In addition to the BRA and focused botanical field survey, Lisa Patterson also assessed the project site for the presence of any state and/or federal jurisdictional waters. The result of the jurisdictional waters assessment is that there are no wetland or non-wetland waters of the United States (WOTUS) or waters of the State potentially subject to regulation by the USACE under Section 404 of the CWA, the RWQCB under Section 401 of the CWA and/or Porter Cologne Water Quality Control Act, or the CDFW under Section 1602 of the California FGC, respectively. Therefore, the project will not impact any jurisdictional waters and no state or federal jurisdictional waters permitting will be required.

MSHCP Consistency Analysis
The proposed project is consistent with the MSHCP policies found in Sections 3 and 6 of the MSHCP, which include Riparian/Riverine Areas/Vernal Pools, Narrow Endemic Plant Species, Criteria Area Species, Urban/Wildlands Interface, and Surveys for Special Status Species (BUOW). The project site is within the Western Riverside County MSHCP boundary but is not within or adjacent any MSHCP Criteria Cells or Cell Groups. Therefore, implementation of the MSHCP Section 6.1.4 Guidelines Pertaining to the

Urban/Wildlands Interface is not required. The future developer should be prepared to pay the MSHCP fees and restrict all future development activities to existing right-of-way and/or other areas outside of Conserved Lands. No conservation or avoidance measures are expected, and thus, consistency with the San Jacinto Area Plan conservation criteria and overall conservation goals and objectives set forth in the MSHCP is anticipated.

Impact Analysis

a. *Less Than Significant With Mitigation Incorporated* – As discussed above, no special status wildlife species, including any state and/or federally listed threatened or endangered species, were observed or otherwise detected within the project area during the reconnaissance-level assessment survey. Of the 41 sensitive species (12 plant species, 29 animal species) documented within the within the San Jacinto USGS 7.5-Minute Series Quadrangle, 15 are state and/or federally listed as threatened or endangered species. However, the project site consists entirely of disturbed, vacant lot surrounded by urban landscape, and the habitat requirements for these listed species are absent from the project area. As a result, the habitat requirements for the listed species documented within the within the San Jacinto USGS 7.5-Minute Series Quadrangle are absent from the project area. Although not a state or federally listed as threatened or endangered species, BUOW are considered a state and federal SSC and this species is protected by international treaty under the Migratory Bird Treaty Act of 1918 and by State law under the California FGC (FGC #3513 & #3503.5). Additionally, the project site is located within an MSHCP BUOW Survey Area and this species has been documented in the project vicinity (approximately 3 miles).

   The result of the survey was that BUOW have not been documented within the project site. According to the literature review, the nearest documented BUOW occurrence (2007) is approximately 0.7 miles east of the project site (CNDDB 2022). The BUOW habitat assessment survey was structured, in part, to detect BUOW. The survey consisted of walking transects spaced approximately 10 meters (30 feet) apart to provide 100 percent visual coverage of the project site, including the adjacent earthen flood control channel to the north. The result of the survey was that no evidence of BUOW was found in the survey area and much of the project site is not suitable to support this species. BUOW prefer short or sparse vegetation and the entire site has zero vegetation, with a shrub cover > 90 percent. No BUOW individuals or sign including castings, feathers or whitewash were observed within the project site during the habitat assessment survey. Furthermore, no burrow surrogates or appropriately sized fossorial mammal dens were observed within the project site. Therefore, BUOW are considered absent from the project area at the time of survey and the project is not likely to adversely affect this species. Although the proposed project is not likely to adversely affect this species, there is still a low potential for the project site to become occupied by BUOW between the time the survey was conducted and the commencement of project-related site disturbance. Therefore, the following avoidance measures shall be implemented to ensure the proposed project does not result in any impacts to BUOW:

   BIO-1 Pre-construction surveys for BUOW should be conducted no more than 3 days prior to commencement of project-related ground disturbance to verify that BUOW remain absent from the project area.

   The BUOW is a state and federal SSC and is also protected under the MBTA and by state law under the California FGC (FGC #3513 & #3503.5). In general, impacts to BUOW can be avoided by avoiding occupied burrows and conducting work outside of their nesting season (peak BUOW breeding season is identified as April 15th to August 15th). However, if all work cannot be conducted outside of nesting season and occupied burrows cannot be avoided, the following measure shall be required:

   BIO-2 If burrowing owl are discovered within the project footprint during construction activities, a site-specific BUOW protection and/or passive relocation plan shall be prepared to determine suitable buffers and/or artificial burrow construction locations to minimize impacts to this species. If a BUOW is found

on-site at the time of construction, all activities likely to affect the animal(s) shall cease immediately and regulatory agencies shall be contacted to determine appropriate management actions.

This measure will ensure that any burrowing owl that may come to inhabit the site between the date of the BRA survey and the start of construction. Given that no other State- and/or federally-listed threatened or endangered species, or other sensitive species are anticipated to occur within the project site based on the results of the BRA, the proposed project would have a less than significant potential to have a substantial adverse effect on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS with implementation of mitigation measures (MMs) **BIO-1** and **BIO-2**.

b. *Less Than Significant Impact* – The approximately 42.19-acre site is located in the City of San Jacinto. The project site is occupied by an existing single-family residence with a backhouse structure, and a barn at the southwestern corner of the property, with the middle of the westernmost portion of the property containing dilapidated two wooden barn structures, each presently without a roof. The remainder of the site—the middle and easternmost portions of the site—serves as grazing land, which currently supports a heard of goats. The project site does not contain any sensitive habitats, nor does it contain any USFWS designated Critical Habitat[5] for any federally listed species. The project site does not contain any sensitive habitats, including any USFWS designated Critical Habitat for any federally listed species. The nearest Critical Habitat unit is approximately 1 mile to the east of the project site for San Bernardino Merriam's kangaroo rat, and approximately 4 miles to the west for Spreading navarretia (*Navarretia fossalis*). However, no portion of the project site is within or adjacent this Critical Habitat unit, or any other Critical Habitat. Therefore, the project will not result in any loss or adverse modification of USFWS designated Critical Habitat, or any other special status habitats. Therefore, the proposed project will not result in any loss or adverse modification of USFWS designated Critical Habitat, or any other special status habitats. Based on the field survey conducted by Lisa Patterson, and the information contained in Appendix 2, the proposed project has no potential to impact riparian habitat or other sensitive communities as there are none on the project site. No mitigation is required.

c. *No Impact* – Lisa Patterson assessed the project site for the presence of any state and/or federal jurisdictional waters. The result of the jurisdictional waters assessment is that there are no wetlands within the project site. Within the project site, there are no wetland or non-wetland WOTUS or waters of the State potentially subject to regulation by the USACE under Section 404 of the CWA, the RWQCB under Section 401 of the CWA and/or Porter Cologne Water Quality Control Act, or the CDFW under Section 1602 of the California FGC, respectively. Therefore, the proposed project will not impact any jurisdictional waters and no state or federal jurisdictional waters permitting will be required, and ultimately, the proposed project would have no potential to have substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. No mitigation is required.

d. *Less Than Significant With Mitigation Incorporated* – As indicated previously, the site and environs are located adjacent to some vacant land that is surrounded by urban development. Given the results of the BRA, the project site does not appear to support wildlife movement. The project site is bound to the south in part by Appaloosa Drive and residences, to the north by the San Jacinto Reservoir, which is developed, and does not contain any native habitat, to the east by Lyon Avenue, and to the west by the San Jacinto Reservoir concrete channel, and residences, which would minimize wildlife movement in the project area. When future development proceeds, the site could contain nesting birds, which could be adversely impacted. Most native bird species are protected from unlawful take

[5] Critical habitat is defined by the USFWS as: *The specific areas within the geographic area, occupied by the species at the time it was listed, that contain the physical or biological features that are essential to the conservation of endangered and threatened species and that may need special management or protection.* https://www.fws.gov/sites/default/files/documents/critical-habitat-fact-sheet.pdf (accessed 04/05/24)

by the MBTA. However, the USFWS issued a guidance memorandum that further clarified that the take of migratory birds or their active nests (i.e., with eggs or young) that is incidental to, and not the purpose of, an otherwise lawful activity does not constitute a violation of the MBTA. The State of California provides additional protection for native bird species and their nests in the FGC. Given that suitable habitat for nesting birds has been identified within the project site, the following mitigation measure is required to minimize impacts from the proposed project to a less than significant level:

BIO-3 ***The State of California prohibits the "take" of active bird nests. To avoid an illegal take of active bird nests, any grubbing, brushing or tree removal should be conducted outside of the State identified nesting season (typically February 1 through September 1). Alternatively, nesting bird surveys shall be conducted by a qualified avian biologist no more than three (3) days prior to vegetation clearing or ground disturbance activities. Preconstruction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If active nests are found during the preconstruction nesting bird surveys, a Nesting Bird Plan (NBP) shall be prepared and implemented by the qualified avian biologist. At a minimum, the NBP shall include guidelines for addressing active nests, establishing buffers, ongoing monitoring, establishment of avoidance and minimization measures, and reporting. The size and location of all buffer zones, if required, shall be based on the nesting species, individual/pair's behavior, nesting stage, nest location, its sensitivity to disturbance, and intensity and duration of the disturbance activity. To avoid impacts to nesting birds, any grubbing or vegetation removal should occur outside peak breeding season (typically February 1 through September 1).***

Thus, with implementation of the above measure, any effects on wildlife movement or the use of wildlife nursery sites can be reduced to a less than significant impact.

e. *Less Than Significant Impact* – The project site is completely disturbed and no longer supports any native communities. The site was utilized as an equestrian facility in excess of 40 years. The site was developed with dwellings, barns, paddocks, arenas, and a racetrack. The buildings have been demolished, and fencing roads, and landscape trees remain scattered throughout the site. Future development of the proposed project would have a less than significant potential to conflict with any local policies or ordinances protecting biological resources as no local policies or ordinances would apply to the development of this site. The project site does not contain any trees that are of scenic significance as the trees that existing within the project site are not significant in number, and thus their removal in order to facilitate the ultimate development of 153 single-family residences would not conflict with the City of San Jacinto Municipal Code. Impacts to biological resources have been addressed above under issues IV(a-d). Therefore, the potential for the proposed project to conflict with local policies or ordinances pertaining to biological resources would be considered less than significant.

f. *Less Than Significant With Mitigation Incorporated* – The Western Riverside County MSHCP is a criteria-based plan and identification of planning units on which to base the Criteria is necessary for such a criteria-based plan. The MSHCP Conservation Area is comprised of a variety of existing and proposed Cores, Extensions of Existing Cores, Linkages, Constrained Linkages and Non-contiguous Habitat Blocks. The MSHCP coverage area is divided into Area Plans based on the Riverside County's General Plan Area Plan boundaries. Each of the Area Plans has: 1) established conservation criteria, 2) species specific surveys that may be required based on an on-site Habitat Assessment or field investigation, and 3) resources and areas identified for conservation. In each Area Plan, Core Habitat areas and Linkages have been identified.

The MSHCP is intended to satisfy the legal requirements to authorize the "take" of species covered under the Plan during otherwise lawful activities, by providing for the conservation of the Covered Species. There are 146 species covered by the MSHCP. Surveys are not required for 106 of these covered species. The remaining 40 species are conditionally covered under the MSHCP and may require focused surveys for proposed development projects. The 40 species that are not fully covered under the MSHCP include four birds, three mammals, three amphibians, three crustaceans, 14 Narrow Endemic Plants, and 13 Criteria Area plants. The need to conduct focused surveys for all but six of these 40 species is determined by the presence of suitable habitat within designated 'survey areas' mapped for each of the species. The remaining six species that require focused surveys throughout the entire MSHCP area are associated with riparian/riverine areas and vernal pools and include three riparian obligate bird species and three vernal pool associated fairy shrimp species.

The project site is located within the MSHCP's San Jacinto Valley Area Plan. According to the Western Riverside County Regional Conservation Authority's online MSHCP Information Tool query, the project site is within the San Jacinto Habitat Management Unit (HMU) but is not mapped within or adjacent a Criteria Cell or Cell Group, and therefore not targeted for conservation. Furthermore, the project site is not mapped within any required survey areas for amphibians, mammals, invertebrates, or other Criteria Area Species. However, Burrowing Owl Surveys are required within the project site. Therefore, in addition to the BRA survey, a BUOW habitat suitability assessment survey was conducted for the project area in accordance with the MSHCP requirements.

Subunit Area/Cell Criteria

Pursuant to Section 3.3.12 of the MSHCP, Subunits are areas within an Area Plan that contain target conservation acreages along with a description of the planning species, biological issues, and considerations.

- Findings: According to the Western Riverside County MSHCP GIS overlay, the project site is not located within a Subunit Area or Criteria Cell. No further discussion on this subject is required in this analysis.

Amphibian, Mammal, Invertebrate and Other Criteria Area Species

Pursuant to Section 6.3.2 of the MSHCP, additional surveys may be needed for certain species in conjunction with Plan implementation to achieve coverage for these species.

- Findings: According to the Western Riverside County MSHCP GIS overlay, the project site is not located in an area where additional surveys are required for any amphibians, mammals, invertebrates, or other Criteria Area species. No further discussion on this subject is required in this analysis.

Burrowing Owl

Pursuant to Section 6.3.2 of the MSHCP, surveys shall be conducted within suitable habitat for BUOW, according to accepted protocols.

- Findings: According to the Western Riverside County MSHCP GIS overlay, the project site is located in an area where surveys are required for BUOW. As discussed in Section 3.2.1 (above), a BUOW habitat suitability assessment survey that included 100 percent visual coverage of the project site and adjacent earthen flood control channel was conducted by TDA on September 21, 2023. The result of the survey was that no evidence of BUOW was found in the survey area and all of the project site is not suitable to support this species. BUOW prefer short or sparse vegetation and the undisked portion of the project site consists mostly of the residential dwelling and outbuilding, dense ruderal vegetation, with a shrub cover > 90 percent, and landscape trees.

  No BUOW individuals or sign including castings, feathers or whitewash were observed within the project site during the habitat assessment survey. Additionally, there are many trees and raptor perches that typically preclude burrowing owls. No surrogates or appropriately sized fossorial mammal dens with evidence of owl use were observed within the project site. Therefore, BUOW are considered absent from the project area at the time of survey and the project is not likely to adversely affect this species.

Narrow Endemic Plant Survey Area

Pursuant to Section 6.1.3 of the MSHCP, additional surveys may be needed for certain species in conjunction with Plan implementation in order to achieve coverage for these species. This section discusses those additional survey needs and procedures. Surveys shall be conducted within suitable Habitat for the following species according to accepted protocols. For the plant species listed below, surveys shall be conducted within the Criteria Area. The habitat suitability assessment procedures described in Section 6.1.3 may also be used for these plant species. The following species are listed for the project site: Below is a discussion of habitat type, suitability of the site, and findings:

- Munz's onion (*Allium munzii*): Mesic exposures or seasonally moist microsites in grassy openings in coastal sage scrub, chaparral, juniper woodland, valley and foothill grasslands in clay soils. Munz's onion is restricted to clay soils with the exception of one population documented to occur in association with pyroxenite outcrops.
- San Diego ambrosia (*Ambrosia pumila*): Open floodplain terraces or on in the watershed margins of vernal pools. This species occurs in a variety of associations that are dominated by sparse non-native grasslands or ruderal habitat in association with river terraces, vernal pools, and alkali playas. Garretson gravelly fine sandy loams when in association with floodplains, and on Las Posas loam in close proximity to silty, alkaline soils of the Willows series.
- Many-stemed dudleye (*Dudleya multicaulis*): clay soils in barren, rocky places, and ridgelines as well as thinly vegetated openings in chaparral, coastal sage scrub, and southern needlegrass grasslands on clay soils.
- Spreading navarretia (*Navarretia fossalis*): Vernal pools and depressions and ditches in areas that once supported vernal pools. Saline-alkaline
- California Orcutt grass (*Orcuttia californica*): Vernal pools, alkaline soils and southern basaltic claypan Wright's trichocoronis (*Trichocoronis wrightii var. wrightii*): Alkali playa, alkali annual grassland, and alkali vernal pools. Alkali soils.
    - Findings: The site has been completely disturbed. The past use appears to be an equestrian facility with training track, stalls, pastures, and dwelling(s). There is no native habitat, nor suitable habitat for any of the identified narrow endemics. There are no vernal pools or topographic depressions with evidence of ponding. Although many of the soils are alkaline, the soils appear to have been disturbed by agricultural activities and ranching. Therefore, these species are considered absent from the site.

Riparian/Riverine Areas and Vernal Pools

The MSHCP describes the protection of Riparian/Riverine Areas and Vernal Pools within the MSHCP Plan Area as important to the conservation of certain amphibian, avian, fish, invertebrate and plant species. The MSHCP describes guidelines to ensure that the biological functions and values for species inside the MSHCP Conservation Areas are maintained, as outlined in Volume 1, Section 6.1.2.

Pursuant to Section 6.1.2 of the MSHCP, Riparian/Riverine areas are lands which contain habitat dominated by trees, shrubs, persistent emergent vegetation, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from nearby fresh water sources, or areas with freshwater flow during all or a portion of the year. Riverine habitat includes all wetlands and deep-water habitats contained in natural or artificial channels periodically or continuously containing flowing water or which forms a connecting link between the two bodies of standing water. Riverine habitat is bounded on the landward side by upland, by the channel bank (including natural and man-made levees), or by wetlands dominated by trees, shrubs, persistent emergent, mosses, or lichens. In braided streams, the system is bounded by the banks forming the outer limits of the depression within which the braiding occurs. Springs discharging into a channel are considered part of the riverine habitat. The term riparian is used to define the type of wildlife habitat found along the banks of a river, stream, lake or other body of water. Riparian habitats are ecologically diverse and can be found in many types of environments including grasslands, wetlands, and forests.

Pursuant to Section 6.1.2 of the MSHCP, Vernal Pools are seasonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (soils, vegetation, and

hydrology) during the wetter portion of the growing season but normally lack wetlands indicators of hydrology and/or vegetation during the drier portion of the growing season. Obligate hydrophytes and facultative wetlands plant species are normally dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season. The determination that an area exhibits vernal pool characteristics should consider (1) the length of time the area exhibits upland and wetland characteristics, and (2) the manner in which the area fits into the overall ecological system as a wetland. Evidence concerning the persistence of an area's wetness can be obtained from its history, vegetation, soils, and drainage characteristics, uses to which it has been subjected, and weather and hydrologic records.

- Findings: No Riparian/Riverine areas were found within the project site. There are no natural or man-made features that support any aquatic resources, stream-dependent wildlife resources, or riparian habitats within the project site. Additionally, no vernal pools were identified within the project site and based on a review of historic aerial imagery and USGS topographic maps, no vernal pools or other natural wetland features existed historically within the project site.

Urban/Wildlands Interface

Section 6.1.4 of the MSHCP presents guidelines to minimize indirect effects of projects adjacent to MSCHP Conservation Areas. These guidelines are intended to reduce potential Edge Effects that could adversely affect biological resources within the MSHCP Conservation Areas. This section provides mitigation measures for impacts associated with Drainage, Toxics, Lighting, Noise, Invasives, Barriers, and Grading/Land Development.

- Findings: There are no MSCHP Conservation Areas within or adjacent to the project site. No further discussion on this subject is required in this analysis.

No conservation or avoidance measures are expected, and the future development of the project site would be consistent with the San Jacinto Area Plan conservation criteria and overall conservation goals and objectives set forth in the MSHCP. Therefore, with implementation of MMs **BIO-1** and **BIO-2**, the proposed project will not have any adverse impact or conflict with the MSHCP. No further mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

SUBSTANTIATION: A cultural resources report has been prepared to evaluate the potential for cultural resources to occur within the project area of potential effect titled "Historical/Archaeological Resources Survey, Tentative Tract Map Number 38468, Assessor's Parcel Number 436-280-006 and -007" prepared by CRM TECH dated July 29, 2023 (Appendix 3). The following summary information has been abstracted from this report. It provides an overview and findings regarding the cultural resources found within the project area.

Summary of Findings

Between July 2022 and July 2023, CRM TECH performed a cultural resources study on approximately 42 acres of former ranch land in the City of San Jacinto, Riverside County, California. The purpose of the Historical/Archaeological Resources Survey Report is to provide the City with the necessary information and analysis to determine whether the proposed project would cause substantial adverse changes to any "historical resources," as defined by CEQA, that may exist in or around the project area. In order to identify such resources, CRM TECH initiated a historical/archaeological resources records search and a Native American Sacred Lands File search, pursued historical background research, and carried out an intensive-level field survey.

As a result of these research procedures, a horse racetrack constructed between 1967 and 1972 in the northern portion of the project area was recorded into the California Historical Resources Inventory and designated temporarily as Site 3917-1H, pending the assignment of an official identification number. It does not, however, appear to meet any of the criteria for listing in the California Register of Historical Resources, thus it does not constitute a "historical resource" under CEQA provisions. No other potential "historical resources" were encountered within the project area throughout the course of this study.

The State of California Native American Heritage Committee reported the presence of unspecified Native American cultural resource(s) in the project vicinity and referred further inquiry to nearby tribal organizations. According to current CEQA guidelines, the identification of potential "tribal cultural resources" is beyond the scope of this study and needs to be addressed through government-to-government consultations between the City of San Jacinto and the pertinent Native American groups pursuant to Assembly Bill (AB) 52.

Based on these findings, CRM TECH recommends to the City of San Jacinto a tentative conclusion of No Impact on cultural resources, pending completion of the AB 52 consultation process. No other cultural resources investigation is recommended for this project unless development plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are encountered during any earth-moving operations associated with the project, all work within 50 feet of the discovery should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. Human remains unearthed during the project will need to be treated in accordance with Health and Safety Code §7050.5 and Public Resources Code §5097.98.

Impact Analysis

a&b. *Less Than Significant With Mitigation Incorporated* – CEQA establishes that "a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (PRC §21084.1). "Substantial adverse change," according to PRC §5020.1(q), "means demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired."

A horse racetrack constructed between 1967 and 1972 in the northern portion of the project area was recorded into the California Historical Resources Inventory and designated temporarily as Site 3917-1H, pending the assignment of an official identification number. The track is substantial in size at approximately 1,200x620 feet and is encompassed by an oval earthen berm that is somewhat deteriorated. Foundational remains of some former ranch buildings and other features dating to the 1970-1996 era were noted nearby, but these common features of late historic and modern origin lack any potential for significance. In summary of the research results outlined above, the 1967-1972 horse racetrack (Site 3917-1H) is the only potential "historical resource" identified within the project area. While it meets the generally accepted 50-year age threshold for "historical resources," diligent historical research could not establish a close or important association with any persons, events, or pattern of events of recognized significance. The horse racetrack does not exhibit any remarkable qualities in design, construction, engineering, or aesthetics, nor does it demonstrate the potential to yield any information important to the study of local history, which is well documented in published historical accounts. Based on these considerations, and in light of the criteria listed above, Site 3917-1H does not appear eligible for listing in the California Register of Historical Resources and therefore does not meet the statutory definition of "historical resource" under CEQA provisions.

Per the above discussion and definition, no historical resources, archaeological sites or isolates were recorded within the project boundaries; thus, none of them requires further consideration during this study. In light of this information and pursuant to PRC §21084.1, the following conclusions have been reached for the proposed project:

- The project as currently proposed will not cause a substantial adverse change to any known "historical resources."
- A tentative conclusion of *No Impact* on cultural resources appears to be appropriate for this project, pending the completion of the AB 52 consultation process to ensure the proper identification of potential "tribal cultural resources."
- No other cultural resources investigation will be necessary for the proposed project unless development plans undergo such changes as to include areas not covered by the study prepared by CRM TECH.
- If buried cultural materials are discovered inadvertently during any earth-moving operations associated with the project, all work within 50 feet of the discovery should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

However, if any earth moving activities are required, the following mitigation measure ensures that impacts to any buried cultural materials that may be discovered during earth moving activities are appropriately reviewed and assessed:

CUL-1 In the event that cultural resources are discovered during project activities, all work in the immediate vicinity of the find (within a 60-foot buffer) shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period. The archaeological professional shall assess the find, determine its significance, and make recommendations for appropriate mitigation measures within the guidelines of the California Environmental Quality Act.

With the incorporation of MM **CUL-1**, as well as the mitigation identified under Tribal Cultural Resources in Section XVIII, the potential for impacts to cultural resources will be reduced to a less than significant level.

c. *Less Than Significant With Mitigation Incorporated* – As noted in the discussion above, no available information suggests that human remains may occur within the project site and the potential for such an occurrence is considered low. Human remains discovered during future construction or operation activities would need to be treated in accordance with the provisions of HSC §7050.5 and PRC §5097.98, which is mandatory. State law (Section 7050.5 of the Health and Safety Code) as well as local laws requires that the Police Department, County Sheriff and Coroner's Office receive notification if human remains are encountered. Compliance with these laws is considered adequate mitigation; however, the Soboba Band of Luiseño Indians requested that the following mitigation measure be incorporated due to the location of the project site within the Tribe's ancestral territory:

CUL-2 ***If human remains, grave goods, ceremonial items, and/or sacred items are encountered, work will immediately halt within the immediate area and any nearby area reasonably suspected to overlie adjacent remains, and a 100-foot environmentally sensitive area (ESA) boundary will be established to protect the find from impact, and the Soboba Band of Luiseno Indians and the City of San Jacinto Planning Division shall be immediately notified.***

In accordance with Section 7050.5 of the California Health and Safety Code and State CEQA Guidelines Section 15064.5(e), if human remains are found, the Riverside County Coroner's office shall be notified by the permittee within 24 hours of the discovery. County Coroner's determination regarding the origin of the remains and any required notification is described in Section 7050.5 of the California Health and Safety Code and State CEQA Guidelines Section 15064.5(e). No further excavation or disturbance of the potential human remains, or any area reasonably suspected to overlie additional remains, shall occur until a determination has been made, any notifications have been sent and received, and the Riverside County Coroner's Office has cleared the site.

With the implementation of the above mitigation measure, the proposed Project would have a less than significant potential to disturb any human remains, including those interred outside of formal cemeteries.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
VI. ENERGY: Would the project:				
a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operations?	☐	☒	☐	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

SUBSTANTIATION

a. *Less Than Significant With Mitigation Incorporated* – The proposed project consists of the subdivision of an 42.19-acre parcel into 153 single-family residential lots, with an additional lettered lot that would enable the construction of a water quality bioretention basin.

Energy consumption encompasses many different activities. For example, construction can include the following activities: delivery of equipment and material to a site from some location (note it also requires energy to manufacture the equipment and material, such as harvesting, cutting and delivering wood from its source); employee trips to work, possibly offsite for lunch (or a visit by a catering truck), travel home, and occasionally leaving a site for an appointment or checking another job; use of equipment onsite (electric or fuel); and sometimes demolition and disposal of construction waste. During construction, the proposed project will utilize construction equipment that is CARB approved, minimizing emissions generated and electricity required to the extent feasible (as outlined under Section III, Air Quality, above). As stated in Section III, Air Quality, the construction of the proposed Lyon Avenue Project would require mitigation measures to minimize emissions impacts from construction equipment use (refer to MM **AQ-2**). This mitigation measure applies to energy resources as they require equipment not in use for 5 minutes to be turned off, and for electrical construction equipment to be used where available. Furthermore, the project is required to comply with California Air Resources Board (CARB) Rule 2485 (13 CCR, Chapter 10 Section 2485), Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling. The project would comply with existing regulations requiring recycling of construction debris from demolition of the onsite structures. The contract with demolition and construction contractor must include a requirement that all materials that can be recycled should be salvaged, thus further reducing a wasteful consumption of energy resources (refer to MM **AQ-6**). These measures would prevent a significant impact during construction due to wasteful, inefficient, or unnecessary consumption of energy resources, and would also conform to the CARB regulations regarding energy efficiency. These requirements are consistent with State and regional rules and regulations.

Additionally, operation of construction equipment would be regulated per the In-Use Off-Road Diesel Vehicle Regulation administered by CARB. The In-Use Off-Road Diesel Vehicle Regulation is intended to reduce emissions from in-use, off-road, heavy-duty diesel vehicles in California by imposing limits on idling, requiring all vehicles to be reported to CARB, restricting the addition of older vehicles into fleets, and requiring fleets to reduce emissions by retiring, replacing, or repowering older engines, or installing exhaust retrofits. Compliance with this regulation would also ensure that off-road diesel-powered vehicles would consume less fuel and more efficiently combust fuel. In addition to off-road regulations, the California Environmental Protection Agency (EPA) establishes stringent on-road emissions standards for heavy-duty engines, though enforcing emissions standards that promote fuel efficiency. These standards are continually evolving to result in more effective technology and more stringent standards, which reduce reliance on fossil fuels and thus reduce emissions. The development of the proposed project would be required to comply with Title 24, Part 6, of the California Code of Regulations (the CalGreen Code), which would help to ensure that energy

efficient equipment is utilized. As the proposed project would be required to comply with these standards and regulations, under the construction scenario outlined in the Project Description, the proposed project would not result in a significant increase in demand on regional energy supplies or require additional capacity from local or regional energy suppliers.

The proposed project will be supplied with electricity by Southern California Edison (SCE) through the power distribution system located adjacent to the site. SCE will be able to supply sufficient electricity. Natural gas would be supplied by Southern California Gas (SoCalGas). Both SCE and SoCalGas would review the proposed connections to their systems. The site will connect to the existing natural gas line adjacent to the project site. Energy use associated with project occupancy would be typical of a single-family residential development, though the project would be required to install solar as required by the 2022 California Energy Code, thus further reducing the demand for electricity that would be obtained from SCE's mix of electricity sources as a result of energy demanded by project occupancy. Additionally, the project would be developed with Energy Star-rated appliances, and other energy efficient systems, including the HVAC systems. The 2022 CalGreen Code also requires water efficient landscaping and irrigation, to which project development will adhere.

Other energy demanding activities associated with project occupancy would include landscape maintenance, consumption of fuel from non-electric vehicle trips, consumption of electricity from electric-vehicle trips, etc. The developer would not have control over what types of vehicles visit the residence over the life of the project, but the trend for greater fuel efficiency in on-road vehicles that has occurred as a result of State and Federal Mandates suggest that long-term transportation fuel consumption from project occupancy would steadily decline over time, thus ensuring that vehicle fuel consumption is not wasteful or inefficient.

The proposed project must be constructed in conformance with a variety of existing energy efficiency regulatory requirements or guidelines including:

- Compliance with Title Chapter 6 of the California Code of Regulations with respect to energy efficiency standards for new building construction.
- Both federally and non-federally regulated appliances shall abide by the efficiency standards of Title 20, Section 1601 et seq. of the California Code of Regulations.
- Compliance with the 2022 California Green Building Standards Code, AKA the CALGreen Code (Title 24, Part 11). The purpose of the CALGreen Code is to improve public health, safety, and general welfare by enhancing the design and construction of building through the use of building concepts encouraging sustainable construction practices.
- The provisions of the CALGreen code apply to the planning, design, operation, construction, use, and occupancy of every newly construction building.
- Compliance with the Building Energy Efficiency Standards (CBSC) would ensure that the building energy use associated with the proposed project would not be wasteful or unnecessary.
- Compliance with Indoor Water use consumption reduced through the maximum fixture water use rates.
- Compliance with diversion of construction and demolition materials from landfills.
- Compliance with AQMD Mandatory use of low-pollutant emitting finish materials.
- Compliance with AQMD Rules 431.1 and 431.2 to reduce the release of undesirable emissions.
- Compliance with diesel exhaust emissions from diesel vehicles and off-road diesel vehicle/equipment operations.

Compliance with these regulatory requirements for operational energy use and construction energy use would not be wasteful or unnecessary use of energy. Further, SCE is presently in compliance with State renewable energy supply requirements and SCE, in addition to energy generated by solar on site, will supply electricity to the project. Under the operational scenario for the proposed project, the proposed project will not result in wasteful, inefficient, or unnecessary energy consumption that could result in a significant adverse impact to energy issues based on compliance with the referenced laws, regulations and guidelines. No mitigation beyond those identified above are required.

b. *Less Than Significant Impact* – The project's consistency with the applicable state and local plans is discussed below.

Consistency with Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)
Transportation and access to the project site is provided by the local and regional roadway systems. The project would not interfere with, nor otherwise obstruct intermodal transportation plans or projects that may be realized pursuant to the ISTEA because Southern California Association of Governments is not planning for intermodal facilities on or through the project site.

Consistency with the Transportation Equity Act for the 21st Century (TEA-21)
The project site is located near major transportation corridors with proximate access to the Interstate freeway system. The site selected for the project facilitates access and acts to reduce vehicle miles traveled, takes advantage of existing infrastructure systems, and promotes land use compatibilities through collocation of similar uses. The project supports the strong planning processes emphasized under TEA-21. The project is therefore consistent with, and would not otherwise interfere with, nor obstruct implementation of TEA-21.

Consistency with Integrated Energy Policy Report (IEPR)
Electricity would be provided to the project by SCE. SCE's Clean Power and Electrification Pathway white paper builds on existing state programs and policies. As such, the project is consistent with, and would not otherwise interfere with, nor obstruct implementation the goals presented in the 2020 IEPR.

Consistency with State of California Energy Plan
The project site is located proximate to transportation corridors with access to the Interstate freeway system. The site selected for the project is infill and facilitates access and takes advantage of existing infrastructure systems. The project therefore supports urban design and planning processes identified under the State of California Energy Plan, is consistent with, and would not otherwise interfere with, nor obstruct implementation of the State of California Energy Plan.

Consistency with California Code Title 24, Part 6, Energy Efficiency Standards
The 2019 version of Title 24 was adopted by the California Energy Commission (CEC) and became effective on January 1, 2020. It should be noted that the analysis herein assumes compliance with the 2019 Title 24 Standards.

Consistency with AB 1493 (Pavley Regulations and Fuel Efficiency Standards)
AB 1493 is not applicable to the project as it is a statewide measure establishing vehicle emissions standards. No feature of the project would interfere with implementation of the requirements under AB 1493.

Consistency with California's Renewable Portfolio Standard (RPS)
California's Renewable Portfolio Standard is not applicable to the project as it is a statewide measure that establishes a renewable energy mix. No feature of the project would interfere with implementation of the requirements under RPS.

Consistency with the Clean Energy and Pollution Reduction Act of 2015 (SB 350)
The proposed project would use energy from SCE, which has committed to diversify its portfolio of energy sources by increasing energy from wind and solar sources. No feature of the project would interfere with implementation of SB 350. Additionally, the project would be designed and constructed to implement the energy efficiency measures for new residential developments and would include several measures designed to reduce energy consumption.

Conclusion
As shown above, the project would not conflict with any of the state or local plans. As such, the proposed project would have a less than significant potential to conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
VII. GEOLOGY AND SOILS: Would the project:				
a) Directly or indirectly cause 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.	☐	☐	☒	☐
(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 onsite or offsite land-slide, lateral spreading, subsidence, liquefaction or collapse?	☐	☒	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect 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?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

SUBSTANTIATION: A Geotechnical Investigation provided as Appendix 4a to this Initial Study has been prepared for the proposed project titled: "*Geotechnical Investigation Proposed Residential Development NWC Lyon Avenue & Appaloosa Drive, Tentative Tract Map 38468, APN 436-280-006 & 007, San Jacinto, California."* The report was prepared by Sladden Engineering and is dated August 22, 2022.

a. i. Ground Rupture

Less Than Significant Impact – The project site is located in the City of San Jacinto, which is an area with several active faults, including Alquist-Priolo Special Study Zones classified as such under the Alquist-Priolo Earthquake Fault Zoning Act. Figure VII-1 shows where these faults are located as indicated by the San Jacinto GPEIR Map depicting Alquist Priolo Fault Hazard Zones. According to Figure VII-1, the San Jacinto Fault Zone traverses in a diagonal path from northwest to southeast. The Alquist-Priolo Special Study Zone overlaps with the southern boundary of the site near Appaloosa Drive and is located in close proximity to the proposed project, with the traces traversing northwest to southeast to the south, west, and northwest of the project site. According to the Geotechnical Investigation provided as Appendix 4a, the project site is located within a State of California Delineated Fault Zone (refer to Figure VII-2), the San Jacinto – San Jacinto Valley (Casa Loma Fault) with a maximum known event of 7.38. A 575-foot-long exploratory fault trench was previously excavated on the proposed project site in 2005 to a depth of 22 feet below grade. The fault investigation identified three fault ruptures and established a fault zone and determined that the surveyed location of the main fault should be used as a point of reference to establish the exact location of the structural setbacks. The Geotechnical investigation concluded that, surface rupture is expected to occur along preexisting, known active fault traces, and may splay or step from known active faults or rupture along unidentified traces. In accordance with the current guidelines (2019 California Building Code (CBC)), structures intended for habitable use shall not be constructed within the established structural setback zone. The site itself has been designed to avoid the established fault zone shown on Figure 3 and again on Figure VII-3, extracted from the 2005 Responses to County of Riverside Review Comments provided as an Attachment to the Geotechnical Investigation prepared for this project and provided as Appendix 4a. Therefore, given that the proposed project has been designed to avoid the identified fault traces within the site, the potential for ground rupture within the project site any impacts under this issue are considered less than significant; no mitigation is required.

ii. Strong Seismic Ground Shaking

Less Than Significant With Mitigation Incorporated – Several faults run through the valley within which the City of San Jacinto is located, and as with much of southern California, and the proposed structures ultimately developed by the proposed subdivision will be subject to strong seismic ground shaking impacts should any major earthquakes occur in the future. The California Department of Conservation Data Viewer Map depicting Alquist Priolo Fault Hazard Zones, provided as Figure VII-1, indicates that the proposed project is situated near major fault systems, including the San Jacinto Fault Zone, and specifically the San Jacinto Valley Casa Loma Fault Zone transects a portion of the site (refer to Figure 3 and Figure VII-3). Furthermore, the California Department of Conservation Data Viewer Map depicting Earthquake Shaking Potential (Figure VII-4) indicates that the project site is situated within an area with at least moderate shaking potential. The Geotechnical Investigation indicates that the project site has been subject to groundshaking by faults that traverse the region in the past. Strong seismic shaking from nearby faults was determined to be anticipated during the design life of the proposed project and thus, the site shall be designed in accordance with the site modified peak ground acceleration (PGAm) at 0.961g. As such, the following mitigation measure that will enforce the overall geotechnical design parameters introduced in the Geotechnical Investigation shall be implemented:

Additionally, like all other development projects in the City and throughout the Southern California Region, the proposed project will be required to comply with all applicable seismic design standards contained in 2019 CBC, including Section 1613 Earthquake Loads. Compliance with the CBC will further ensure that structural integrity will be maintained in the event of an earthquake. Therefore, impacts associated with strong ground shaking will be less than significant with the implementation of MM **GEO-1**, above.

iii. Seismic-Related Ground Failure Including Liquefaction

Less Than Significant With Mitigation Incorporated – Liquefaction is the process in which loose, saturated granular soil loses strength as a result of cyclic loading, and occurs in the following conditions: liquefaction susceptible soil, groundwater within a depth of 50 or less feet, and strong seismic shaking. The San Jacinto GPEIR Liquefaction Susceptibility Map (Figure VII-5) indicates that the proposed project is located in an area with moderate liquefaction potential. However, according to the Geotechnical Investigation provided as Appendix 4a indicates that the project site is located within a moderate liquefaction potential zone, but based on the groundwater depth, the risks associated with liquefaction are considered low. Mitigation is required to ensure that seismic settlement is mitigated through MM **GEO-1**, which would ensure that the site-specific ground motion parameters are implemented. Compliance with the 2019 CBC and implementation of MM **GEO-1** would ensure human safety will be protected from any liquefaction hazards that may exist at the project site.

iv. Landslides

Less Than Significant Impact – The San Jacinto GPEIR Landslide Susceptibility Map depicting area potential for landslide (Figure VII-3) indicates that the proposed project is not located in an area with an earthquake induced landslide potential. Seismically induced landslides and other slope failures are common occurrences during or soon after earthquakes. According to the Geotechnical Investigation, the slope failure, landsliding and rock failure potential at the project's location on relatively flat ground and not immediately adjacent to any slopes or hillsides indicates that the risks associated with slope instability are negligible. Given that the proposed project site is both located outside of a delineated landslide zone, and would be developed on a flat site removed from any hillsides that might pose landslide-related hazards, the project will have a less than significant potential to expose people or structures to potential substantial adverse landslide effects, including the risk of loss, injury, or death involving landslides.

b. *Less Than Significant With Mitigation Incorporated* – The potential for soil erosion, loss of topsoil, and/or placing structures on unstable soils is anticipated to be marginally possible at the site during ground disturbance associated with construction. The vacant project site contains some remnants of past development including wood fencing, asphalt, and concrete and is presently covered with weeds and contains several trees. City grading standards, best management practices and the Storm Water Pollution Prevention Plan (SWPPP) and Water Quality Management Plan (WQMP) are required to control the potential significant erosion hazards. The topography of the site is generally flat.

During project construction when soils are exposed, temporary soil erosion could occur, which could be exacerbated by rainfall. Project grading would be managed through the preparation and implementation of a SWPPP, and will be required to implement best management practices to achieve concurrent water quality controls after construction is completed and the Lyon Avenue Project has been subdivided and development ultimately occurs. Additionally, the proposed project will be required to comply with SCAQMD Rule 403, which requires watering of project sites during dry periods and reduction in construction vehicle speeds to minimize fugitive dust, and on-site washing of construction vehicle tires to prevent transfer of soil to surface streets. Regardless, the following mitigation measures or equivalent best management practices (BMPs) shall be implemented to address potential for soil erosion:

GEO-1 Based upon the geotechnical investigation (Appendix 4a of this document), all of the recommended site-specific ground motion parameters (Table 2) identified in Appendix 4a (beginning on Page 6) shall be implemented by the Developer. Implementation of these specific measures will address all of the identified geotechnical constraints identified at project site, including remediation to address groundshaking.

GEO-2 ***Stored backfill material shall be covered with water resistant material during periods of heavy precipitation to reduce the potential for rainfall erosion of stored backfill material. If covering is not feasible, then measures such as the use of straw bales or sandbags shall be used to capture and hold eroded material on the project site for future cleanup.***

GEO-3 ***All exposed, disturbed soil (trenches, stored backfill, etc.) shall be sprayed with water or soil binders twice a day, or more frequently if fugitive dust is observed migrating from the site within which the Lyon Avenue Project is being constructed.***

With implementation of the above mitigation measures, implementation of the SWPPP, WQMP, and associated BMPs, any impacts under this issue are considered less than significant.

c. *Less Than Significant With Mitigation Incorporated* – Refer to the discussion under VII(a), above. Potential slope instability related to the project was determined to be less than significant. Liquefaction potential at the site appears to be low, and building and site preparation consistent with recommendations included in the geotechnical report and conforming to seismic requirements of the California Building Codes reduces the risk from liquefaction to new development to a less than significant level. According to the Geotechnical Investigation, subsidence is not anticipated to be an issue at the site, as the depth to groundwater is greater than 50 feet. Static settlement is expected to be less than 1 inch when using the recommended allowable bearing pressures provided in the Conclusions and Recommendations in the Geotechnical Investigation provided as Appendix 4a. Thus, implementation of MMs **GEO-1** and **GEO-4** will ensure that settlement and other geologic hazards are minimized to a level of less than significant. Furthermore, the Geotechnical Investigation identified several recommendations for site construction that will ensure that the proposed project is constructed to address the geotechnical constraints of the project site. Thus, with the following mitigation measure, the project will not have a significant potential to 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 onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse:

GEO-4 ***Based upon the geotechnical investigation (Appendix 4a of this document), all of the recommended design measures identified in Appendix 4a (listed on pages 7-12) shall be implemented by the Developer. Implementation of these specific measures will address all of the geotechnical constraints identified at project site.***

d. *Less Than Significant With Mitigation Incorporated* – According to the United States Department of Agriculture Web Soil Survey, the project's Area of Potential Effect (APE) is underlain mostly by San Emigdio fine sandy loam soils (Appendix 4b). According to the USDA Soil Series website, the San Emigdio series is well drained with negligible to low runoff and moderately rapid permeability.[6] The Geotechnical Investigation indicates that the materials underlying the site are considered to have a low expansion potential. Furthermore, the San Jacinto GPEIR Shrink-Swell Potential of Soils Map indicates that the site is located in an area with low shrink-swell potential. The expansion potential of the surface soils will be reevaluated after grading. Results of expansion testing at finish grades will be utilized to confirm final foundation design through the implementation of MMs **GEO-1** and **GEO-4**, which are intended to ensure that the recommendations provided in the Geotechnical Investigation are implemented. Therefore, the ultimate development of the proposed subdivision of this site will have a less than significant potential to create a substantial risk to life or property by being placed on expansive soils because none exist on the site. Any impacts are considered less than significant with the implementation of mitigation identified above.

[6] USDA, 1999. San Emigdio Series. https://soilseries.sc.egov.usda.gov/OSD_Docs/S/SAN_EMIGDIO.html (accessed 07/25-23)

e. *No Impact* – The project does not propose any septic tanks or alternative wastewater disposal systems. Therefore, determining if the project site soils are capable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater does not apply. No impacts are anticipated. No mitigation is required.

f. *Less Than Significant With Mitigation Incorporated* – The potential for discovering paleontological resources during development of the project is considered unlikely, primarily because the site has been previously disturbed, and based on the data gathered within the Cultural Resources Report provided as Appendix 3. No unique geologic features are known or suspected to occur on or beneath the sites. However, because these resources are located beneath the surface and can only be discovered as a result of ground disturbance activities, the following measure shall be implemented:

GEO-5 Should any paleontological resources be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection should be performed immediately by a qualified paleontologist. Responsibility for making this determination shall be with the City's onsite inspector. The paleontological professional shall assess the find, determine its significance, and determine appropriate mitigation measures within the guidelines of the California Environmental Quality Act that shall be implemented to minimize any impacts to a paleontological resource.

With incorporation of this contingency mitigation, the potential for adverse impact to paleontological resources will be reduces to a less than significant level. No additional mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
VIII. GREENHOUSE GAS EMISSIONS: Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

SUBSTANTIATION: An Air Quality and Greenhouse Gas Impact Analysis was prepared for the project by Gerrick Environmental. The report is titled "Air Quality and Greenhouse Gas Impact Analysis TTM No. 38468, Lyon Avenue Project, San Jacinto, California," and is dated July 21, 2023. This report is provided as Appendix 1a to this Initial Study.

Regulatory Framework

California has passed several bills and the Governor has signed at least three executive orders regarding greenhouse gases. Greenhouse gas (GHG) statues and executive orders (EO) include AB 32, SB 1368, EO S-03-05, EO S-20-06 and EO S-01-07.

AB 32 is one of the most significant pieces of environmental legislation that California has adopted. Among other things, it is designed to maintain California's reputation as a "national and international leader on energy conservation and environmental stewardship." It will have wide-ranging effects on California businesses and lifestyles as well as far reaching effects on other states and countries. A unique aspect of

AB 32, beyond its broad and wide-ranging mandatory provisions and dramatic GHG reductions are the short time frames within which it must be implemented. Major components of the AB 32 include:

- Require the monitoring and reporting of GHG emissions beginning with sources or categories of sources that contribute the most to statewide emissions.
- Requires immediate "early action" control programs on the most readily controlled GHG sources.
- Mandates that by 2020, California's GHG emissions be reduced to 1990 levels.
- Forces an overall reduction of GHG gases in California by 25-40%, from business as usual, to be achieved by 2020.
- Must complement efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

Statewide, the framework for developing the implementing regulations for AB 32 is under way. Maximum GHG reductions are expected to derive from increased vehicle fuel efficiency, from greater use of renewable energy and from increased structural energy efficiency. Additionally, through the California Climate Action Registry (CCAR now called the Climate Action Reserve), general and industry-specific protocols for assessing and reporting GHG emissions have been developed. GHG sources are categorized into direct sources (i.e. company owned) and indirect sources (i.e. not company owned). Direct sources include combustion emissions from on-and off-road mobile sources, and fugitive emissions. Indirect sources include off-site electricity generation and non-company owned mobile sources.

Thresholds of Significance

In response to the requirements of SB 97, the State Resources Agency developed guidelines for the treatment of GHG emissions under CEQA. These new guidelines became state laws as part of Title 14 of the California Code of Regulations in March 2010. The CEQA Appendix G guidelines were modified to include GHG as a required analysis element. A project would have a potentially significant impact if it:

- Generates GHG emissions, directly or indirectly, that may have a significant impact on the environment, or,
- Conflicts with an applicable plan, policy or regulation adopted to reduce GHG emissions.

California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15064.4 specifies how significance of GHG emissions is to be evaluated. The process is broken down into quantification of project-related GHG emissions, making a determination of significance, and specification of any appropriate mitigation if impacts are found to be potentially significant. At each of these steps, the new GHG guidelines afford the lead agency with substantial flexibility.

Emissions identification may be quantitative, qualitative or based on performance standards. CEQA guidelines allow the lead agency to "select the model or methodology it considers most appropriate." The most common practice for transportation/combustion GHG emissions quantification is to use a computer model such as CalEEMod, as was used in the ensuing analysis.

The significance of those emissions then must be evaluated; the selection of a threshold of significance must take into consideration what level of GHG emissions would be cumulatively considerable. The guidelines are clear that they do not support a zero net emissions threshold. If the lead agency does not have sufficient expertise in evaluating GHG impacts, it may rely on thresholds adopted by an agency with greater expertise.

On December 5, 2008 the SCAQMD Governing Board adopted an Interim quantitative GHG Significance Threshold for industrial projects where the SCAQMD is the lead agency (e.g., stationary source permit projects, rules, plans, etc.) of 10,000 Metric Tons (MT) CO_2 equivalent/year. In September 2010, the SCAQMD CEQA Significance Thresholds GHG Working Group released revisions which recommended a threshold of 3,000 MT CO_2e for all land use projects. This 3,000 MT/year recommendation has been used as a guideline for this analysis. In the absence of an adopted numerical threshold of significance, project related GHG emissions in excess of the guideline level are presumed to trigger a requirement for enhanced GHG reduction at the project level.

Impact Analysis

a&b. *Less Than Significant Impact* – Global Climate Change (GCC) is defined as the change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms. Many scientists believe that the climate shift taking place since the industrial revolution (1900) is occurring at a quicker rate and magnitude than in the past. Scientific evidence suggests that GCC is the result of increased concentrations of greenhouse gases in the earth's atmosphere, including carbon dioxide, methane, nitrous oxide, and fluorinated gases. Many scientists believe that this increased rate of climate change is the result of greenhouse gases resulting from human activity and industrialization over the past 200 years.

An individual project like the proposed project evaluated in the GHG analysis cannot generate enough greenhouse gas emissions to effect a discernible change in global climate. However, the proposed project may participate in the potential for GCC by its incremental contribution of greenhouse gases combined with the cumulative increase of all other sources of greenhouse gases, which when taken together constitute potential influences on GCC.[7]

Construction Activity GHG Emissions

The project is assumed to require less than two years for construction, but would occur over three calendar years. Construction was modeled in CalEEMod2022.1 using the construction equipment and schedule for a Project of this size as shown in Table VIII-1. Program defaults were modified to account for the correct lot size area that would be developed under the proposed subdivision. For construction, it was assumed that greater paved area would be installed by the proposed project as a result of the internal roadways and driveways that would be installed as part of the proposed project.

Table VIII-1
CONSTRUCTION EMISSIONS (METRIC TONS CO_2e)

	CO_2e
Year 2024	576.1
Year 2025	628.4
Year 2026	86.9
Total	1,291.4
Amortized	**43.1**

CalEEMod Output provided in appendix to the AQ/GHG Analysis

SCAQMD GHG emissions policy from construction activities is to amortize emissions over a 30-year lifetime. The amortized level is also provided. GHG impacts from construction are considered individually less than significant. No mitigation is required.

Operational Activity Emissions

The input assumptions for operational GHG emissions calculations and the GHG conversion from consumption to annual regional CO_2e emissions are summarized in the CalEEMod2020.4.0 output files found in the appendix of this report.

The total operational and annualized construction emissions for the proposed project are identified in Table VIII-2.

[7] Urban Crossroads, 2018. *Eastgate Building 1, Greenhouse Gas Analysis*. SCH No. 2018071038

Table VIII-2
OPERATIONAL EMISSIONS (METRIC TONS CO_2e)

Consumption Source	
Area Sources	35.9
Energy Utilization	449.5
Mobile Source	1593.6
Waste	90.3
Water	49.2
Construction	43.1
Total	**2,261.6**
Guideline Threshold	3,000
Exceeds Threshold?	**No**

Total project GHG emissions would be substantially below the proposed significance threshold of 3,000 MT suggested by the SCAQMD. Hence, the project would not result in generation of a significant level of greenhouse gases.

Consistency with GHG Plans, Programs, and Policies

Western Riverside Council of Governments Subregional Climate Action Plan
The City of San Jacinto is participating the Western Riverside Council of Governments (WRCOG) Subregional Climate Action Plan. The WRCOG Subregional CAP establishes a community-wide emissions reduction target of 15% below 2010, following guidance from CARB and the Governor's Office of Planning and Research. CARB and the California Attorney General have determined this approach to be consistent with the state-wide AB 32 goal of reducing emissions to 1990 levels.

The project's total operational and amortized construction emissions are 2,261.6 MT CO2e per year and do not exceed the SCAQMD draft threshold. The proposed project would also be anticipated to be consistent with the WRCOG Subregional CAP with the following project design features, which include standard rules and requirements and recognized building design elements which will help reduce GHG emissions.

Operational Design Features:
- No wood burning fireplaces will be installed in any residential dwelling.
- The future residences would be outfitted with low flow toilets and energy efficient appliances. Solar would be installed concurrent with development of each residence as required by the California Energy Code.
- The project will include a landscaping consistent with the requirements of the SJDC Chapter 17.325, Water Efficient Landscape and Irrigation. Additionally, the proposed subdivision would comply with the City's Landscape Design Guidelines.
- The project will comply with the mandatory requirements of California Building Standards Code Title 24 Part 6 (Energy Code) and Title 24 Part 11 (CAL Green).
- The project will comply with the mandatory requirements of City of San Jacinto/CalRecycle's residential recycling program.
- The homeowner's association will encourage residents and landscape maintenance crews to use electric landscaping equipment, such as lawn mowers and leaf blowers. Therefore, the project will not conflict with an applicable plan, policy, or regulation for the purpose of reducing the emissions of greenhouse gases and the impact is considered less than significant.

SB 32/2017 Scoping Plan Consistency

The 2017 Scoping Plan Update reflects the 2030 target of a 40% reduction below 1990 levels, set by Executive Order B-30-15 and codified by SB 32. Table VIII-3 summarizes the project's consistency with the 2017 Scoping Plan. As summarized, the project will not conflict with any of the provisions of the Scoping Plan and in fact supports seven of the action categories.

Table VIII-3
2017 SCOPING PLAN CONSISTENCY SUMMARY

Action	Responsible Parties	Consistency
Implement SB 350 by 2030		
Increase the Renewables Portfolio Standard to 50% of retail sales by 2030 and ensure grid reliability.	CPUC, CEC, CARB	Consistent. This measure is not directly applicable to development projects, but the proposed project would use energy from Southern California Edison, which has committed to diversify its portfolio of energy sources by increasing energy from wind and solar sources. Additionally, as the project structures are less than 4-stories, they would be required to install solar PV systems to increase renewable energy availability for the project.
Establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas end uses by 2030.		Consistent. Although this measure is directed towards policymakers, the proposed project would be designed consistent with Title 24 2019, which increases in overall energy efficiency from Title 24 2016.
Reduce GHG emissions in the electricity sector through the implementation of the above measures and other actions as modeled in Integrated Resource Planning (IRP) to meet GHG emissions reductions planning targets in the IRP process. Load-serving entities and publicly- owned utilities meet GHG emissions reductions planning targets through a combination of measures as described in IRPs.		Not applicable. This measure is not within the purview of this project.
Implement Mobile Source Strategy (Cleaner Technology and Fuels)		
At least 1.5 million zero emission and plug-in hybrid light-duty electric vehicles by 2025.	CARB, California State Transportation Agency (CalSTA), Strategic Growth Council (SGC), California Department of Transportation (Caltrans), CEC, OPR, Local Agencies	No conflict. These are CARB enforced standards; vehicles that access the project that are required to comply with the standards will comply with the strategy.
At least 4.2 million zero emission and plug-in hybrid light-duty electric vehicles by 2030.		No conflict. These are CARB enforced standards; vehicles that access the project that are required to comply with the standards will comply with the strategy.
Further increase GHG stringency on all light-duty vehicles beyond existing Advanced Clean cars regulations.		No conflict. These are CARB enforced standards; vehicles that access the project that are required to comply with the standards will comply with the strategy.
Medium- and Heavy-Duty GHG Phase 2.		No conflict. These are CARB enforced standards; vehicles that access the project that are required to comply with the standards will comply with the strategy.
Innovative Clean Transit: Transition to a suite of to-be-determined innovative clean transit options. Assumed 20% of new urban		Not applicable. This measure is not within the purview of this project.

Action	Responsible Parties	Consistency
buses purchased beginning in 2018 will be zero emission buses with the penetration of zero-emission technology ramped up to 100% of new sales in 2030. Also, new natural gas buses, starting in 2018, and diesel buses, starting in 2020, meet the optional heavy-duty low-NO_X standard.		
Last Mile Delivery: New regulation that would result in the use of low NO_X or cleaner engines and the deployment of increasing numbers of zero-emission trucks primarily for class 3-7 last mile delivery trucks in California. This measure assumes ZEVs comprise 2.5% of new Class 3–7 truck sales in local fleets starting in 2020, increasing to 10% in 2025 and remaining flat through 2030.		Not applicable. This project is not responsible for implementation of SB 375 and would therefore not conflict with this measure.
Further reduce VMT through continued implementation of SB 375 and regional Sustainable Communities Strategies; forthcoming statewide implementation of SB 743; and potential additional VMT reduction strategies not specified in the Mobile Source Strategy but included in the document "Potential VMT Reduction Strategies for Discussion."		No conflict. This project is not responsible for implementation of SB 375 and would therefore not conflict with this measure.
Increase stringency of SB 375 Sustainable Communities Strategy (2035 targets).	CARB	Not applicable. The project is not within the purview of SB 375 and would therefore not conflict with this measure.
By 2019, adjust performance measures used to select and design transportation facilities		
Harmonize project performance with emissions reductions and increase competitiveness of transit and active transportation modes (e.g., via guideline documents, funding programs, project selection, etc.).	CalSTA, SGC, OPR, CARB, Governor's Office of Business and Economic Development (GO Biz), California Infrastructure and Economic Development Bank, Department of Finance, California Transportation Commission (CTC), Caltrans	Not applicable. Although this is directed towards CARB and Caltrans, the proposed project would be designed to promote and support pedestrian activity on-site and in the project site area.
By 2019, develop pricing policies to support low-GHG transportation (e.g., low-emission vehicle zones for heavy duty, road user, parking pricing, transit discounts).	CalSTA, Caltrans, CTC, OPR, SGC, CARB	Not applicable. Although this measure is directed towards policymakers, the proposed project would comply with AB 939, which sets a statewide policy that not less than 65% of solid waste generated be source reduced, recycled, or composted. Additionally, the proposed project would be required to participate in the City of San Jacinto recycling program and recycling

Action	Responsible Parties	Consistency
		collection. During construction, the proposed project shall recycle and reuse construction and demolition waste per City of Whittier solid waste procedures.
Implement California Sustainable Freight Action Plan		
Improve freight system efficiency.	CalSTA, CalEPA, CNRA, CARB, Caltrans, CEC, GO-Biz	Not applicable. This measure is not within the purview of this project.
Deploy over 100,000 freight vehicles and equipment capable of zero emission operation and maximize both zero and near-zero emission freight vehicles and equipment powered by renewable energy by 2030.		Not applicable. This measure is not within the purview of this project.
Adopt a Low Carbon Fuel Standard with a Carbon Intensity reduction of 18%.	CARB	No conflict. This measure would apply to all fuel purchased and used by the project in the state.
Implement the Short-Lived Climate Pollutant Strategy by 2030		
40% reduction in methane and hydrofluorocarbon emissions below 2013 levels.	CARB, CalRecycle, CDFA, SWRCB, Local Air Districts	Not applicable. This measure is not within the purview of this project.
50% reduction in black carbon emissions below 2013 levels.		Not applicable. This measure is not within the purview of this project.
By 2019, develop regulations and programs to support organic waste landfill reduction goals in the SLCP and SB 1383.	CARB, CalRecycle, CDFA SWRCB, Local Air Districts	Not applicable. This measure is not within the purview of this project.
Implement the post-2020 Cap-and-Trade Program with declining annual caps.	CARB	Not applicable. This measure is not within the purview of this project.
By 2018, develop Integrated Natural and Working Lands Implementation Plan to secure California's land base as a net carbon sink		
Protect land from conversion through conservation easements and other incentives.	CNRA, Departments Within CDFA, CalEPA, CARB	Not applicable. This measure is not within the purview of this project.
Increase the long-term resilience of carbon storage in the land base and enhance sequestration capacity		Not applicable. This measure is not within the purview of this project.
Utilize wood and agricultural products to increase the amount of carbon stored in the natural and built environments		Not applicable. This measure is not within the purview of this project.
Establish scenario projections to serve as the foundation for the Implementation Plan		Not applicable. This measure is not within the purview of this project.
Establish a carbon accounting framework for natural and working lands as described in SB 859 by 2018	CARB	Not applicable. This measure is not within the purview of this project.
Implement Forest Carbon Plan	CNRA, California Department of Forestry and Fire Protection, CalEPA and Departments Within	Not applicable. This measure is not within the purview of this project.
Identify and expand funding and financing mechanisms to support GHG reductions across all sectors.	State Agencies & Local Agencies	Not applicable. This measure is not within the purview of this project.

As shown above, the project would not conflict with any of the 2017 Scoping Plan elements as any regulations adopted would apply directly or indirectly to the project. Further, recent studies show that the State's existing and proposed regulatory framework will allow the State to reduce its GHG emissions level to 40% below 1990 levels by 2030.

Conclusion

As shown, the project does not directly conflict with any applicable plans or policies adopted for the purpose of reducing GHG emissions. Additionally, the project would not exceed the SCAQMD threshold of 3,000 MT CO2e. Therefore, project-related emissions would be less than significant relative to GHG reduction plans.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
IX. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
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?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
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?	☐	☐	☒	☐
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 or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☒

SUBSTANTIATION

a&b. *Less Than Significant With Mitigation Incorporated* – The project may create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; or may 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. During construction of the proposed Lyon Avenue Project, there are activities that can expose the public to significant hazards from accidental circumstances. The first pathway occurs when petroleum products are accidentally released from construction equipment or storage facilities. For example, vandalism can cause a release from stored fuels, or a hydraulic hose may break on a large piece of construction equipment. This type of impact is readily mitigated by immediately stopping the construction activity; controlling the accidental release; and carrying out remediation of the area contaminated by the spill. The following mitigation measure addresses this circumstance, and with implementation of this measure, no residual contamination would remain:

HAZ-1 ***Prior to and during grading and construction, should an accidental release of a hazardous material occur, the following actions will be implemented: construction activities in the immediate area will be immediately stopped; appropriate regulatory agencies will be notified; immediate actions will be implemented to limit the volume and area impacted by the contaminant; the contaminated material, primarily soil, shall be collected and removed to a location where it can be treated or disposed of in accordance with the regulations in place at the time of the event; any transport of hazardous waste from the property shall be carried out by a registered hazardous waste transporter; and testing shall be conducted to verify that any residual concentrations of the accidentally released material are below the regulatory remediation goal at the time of the event. All of the above sampling or remediation activities related to the contamination will be conducted under the oversight of Riverside County Certified Unified Program Agency (CUPA) Site Mitigation Unit (SMU). All of the above actions shall be documented and made available to the appropriate regulatory agencies prior to closure (a determination of the regulatory agency that a site has been remediated to a threshold that poses no hazard to humans) of the contaminated area.***

Roadways adjacent to the project site are public roads that can be used by any common carrier to or from the local area. For such transporters, the existing regulatory mandates ensure that the hazardous materials and any hazardous wastes transported to and from the project site will be properly managed. These regulations are codified in Titles 8, 22, and 26 of the California Code of Regulations. For example, maintenance trucks for construction equipment must transport their hazardous materials in appropriate containers, such as tanks or other storage devices. In addition, the haulers must comply with all existing applicable federal, state and local laws and regulations regarding transport, use, disposal, handling and storage of hazardous wastes and material, including storage, collection and disposal. Compliance with these laws and regulations related to transportation will minimize potential exposure of humans or the environment to significant hazards from transport of such materials and wastes once the proposed subdivision is ultimately developed.

Occupancy of the proposed Lyon Avenue Project consists of 153 single-family residences; occupancy of such uses would not involve the use of a substantial amount of hazardous materials. Household cleaning supplies would be used in small quantities to support the apartments, which are not typically capable of generating significant hazardous emissions or involve the use of acutely hazardous materials that could pose a significant threat to the environment. Compliance with all Federal, State, and local regulations governing the storage and use of hazardous materials is required, and will ensure that the project operates in a manner that poses no substantial hazards to the public or the environment. No further mitigation is required.

c. *Less Than Significant Impact* – The nearest school to the Lyon Avenue Project site is located across the street from the project site, the Monte Vista Middle School is located at 425 North Lyon Avenue. It is not anticipated that the proposed project would emit hazardous emissions or handle large quantities of hazardous materials or substances that would cause a significant impact to a local school. Hazardous materials associated with a new subdivision and subsequent residential uses

would be used in such limited quantity that its use would not generate significant hazardous air emissions or involve the use of acutely hazardous materials that could pose a significant threat to the environment or human health. As such, though the proposed project is located adjacent to an existing school, the proposed project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste during construction or occupancy in a quantity that would pose any danger to people adjacent to, or in the general vicinity of, the project site. No impacts are anticipated and no mitigation is required.

d. *Less Than Significant Impact* – The proposed project site contains some remnants of past development including wood fencing, asphalt, and concrete and is presently covered with weeds and contains several trees. The project will not be located on a site that is included on a list of hazardous materials sites that are currently under remediation. According to the California State Water Board's GeoTracker website (consistent with Government Code Section 65962.5), which provides information regarding Leaking Underground Storage Tanks (LUST) and other types of clean-up sites, there are no open LUST, Cleanup Program or Military clean-up sites within 2,500 feet of the project site (Figure IX-1). There is a certified cleaned up program site as part of the Department of Toxic Substances Control (DTSC) database adjacent to the project site, as the Monte Vista Middle School site previously served as an agricultural orchard, and as a result required clean-up of potential contaminants of concerns including organochlorine pesticides and metals. As this site has been cleaned up and presently serves as a middle school, it poses no hazards to the development of the proposed project. There are no other hazardous waste generators in close proximity to the project site, and ultimately the safe operation of area hazardous waste sites are permitted, and must comply with Federal, State, and local regulations governing the storage and use of hazardous materials, and as such would not pose a hazard to the occupancy of the project site by future residents of the Lyon Avenue Project. Therefore, the proposed construction and occupancy of the site as the Lyon Avenue Project will not create a significant hazard to the population or to the environment from their implementation. No mitigation is required.

e. *No Impact* – The project site is not located within two miles of an airport or private airstrip. The closest airports the Hemet-Ryan Airport, approximately 4 miles southwest of the project site, Banning Municipal Airport, approximately 12 miles northeast of the project site, and the Perris Valley Airport located approximately 15 miles west of the project site. Therefore, there is no potential for the project result in a safety hazard for people residing or working in the project area as a result of being located near an airport or private airstrip. No impacts are anticipated and no mitigation is required.

f. *Less Than Significant With Mitigation Incorporated* – According to the City's General Plan, the City's Emergency Preparedness Plan is intended to enable response to emergency situations with a coordinated system of emergency service providers and facilities. The City's General Plan Update identifies major arterials as the primary routes for evacuation; however, evacuation routes would depend upon the emergency event and area affected. The General Plan Update includes policies and actions to address emergency response and evacuation. Additionally, As part of the site plan and design review process (SJDC Chapter 17.630), future development projects would be reviewed for adequate infrastructure and access as well as consistency with adopted emergency and evacuation plans among many other environmental issues in order to ensure the safety of City residents and the physical environment.

The proposed project will occur within the project site, but may require some improvements to and construction within the adjacent sidewalk and roadways. The project site is bound by Lyon Avenue to the east and is partially bound by Appaloosa Drive to the south. It is not anticipated that development of the project site would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan because the site activities will be confined within the proposed project site, and improvements to the adjacent roadways would be temporary as the improvements would occur for a limited duration during construction. Additionally, the construction activities would be subject to Section 503 of the California Fire Code (Title 24, California Code of Regulations, Part 9), which would ensure emergency access during construction. During the

construction phase, the City would require an encroachment permit for any temporary activities that would affect a public right-of-way. Additionally, MM **TRAN-1** would address traffic disruption and emergency access issues through the implementation of a Traffic Management Plan, and is included in Section XVII, Transportation. The Traffic Management Plan prepared for the proposed subdivision that would result in a 153-lot single-family development would include procedures for emergency responses.

Furthermore, the proposed onsite parking and circulation plans will be reviewed by the local Fire Department and City Engineering Department to ensure that the project's ingress/egress are adequate for accommodating emergency vehicles. Therefore, there is a less than significant potential for the development of the project to physically interfere with any adopted emergency response plans, or evacuation plans.

g. *No Impact* – According to the CAL FIRE Fire Hazard Severity Zone Viewer map (Figure XX-1), the proposed project is not located in a high or very high fire hazard zone. Given the proposed project's location removed from the nearby San Jacinto Mountain Range to the east/northeast, Lakeview Mountains, Badlands to the north, Santa Rosa Hills to the south where the high and very high fire hazard severity zones are located, project implementation would not result and a potential to expose people or structures to fire hazards. No impacts are anticipated and no mitigation measures are required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
X. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☒	☐	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
(i) result in substantial erosion or siltation onsite or offsite?	☐	☒	☐	☐
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite?	☐	☒	☐	☐
(iii) 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?; or,	☐	☒	☐	☐
(iv) impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

SUBSTANTIATION

a. *Less Than Significant With Mitigation Incorporated* – The proposed project is located within the planning area of the Santa Ana Regional Water Quality Control Board (RWQCB). The project would be supplied with water by Eastern Municipal Water District (Eastern or EMWD) that uses a mix of groundwater and imported surface water to meet customer demand.

For a developed area, the only three sources of potential violation of water quality standards or waste discharge requirements are from generation of municipal wastewater, stormwater runoff, and potential discharges of pollutants, such as accidental spills. Municipal wastewater is delivered to one of Eastern's four active regional water reclamation facilities which treat 49 million gallons of wastewater per day through 1,813 miles of sewer pipeline.[8] The District is responsible for the collection, transmission, treatment, and disposal of wastewater within its service area, which includes the City of San Jacinto, California.

[8] EMWD, 2024. Wastewater Service. https://www.emwd.org/wastewater-service (accessed 04/05/24)

To address stormwater and accidental spills within this environment, any new project must ensure that site development implements an SWPPP and a National Pollutant Discharge Elimination System (NPDES) to control potential sources of water pollution that could violate any standards or discharge requirements during construction and a Water Quality Management Plan (WQMP) to ensure that project-related after development surface runoff meets discharge requirements over the short- and long-term. The WQMP would specify stormwater runoff permit BMPs requirements for capturing, retaining, and treating on site stormwater once the residential units have been occupied. Because the project site consists of mostly pervious surfaces, the project has identified onsite drainage that will generally be directed to the additional lettered lot, at which a bioretention basin will be developed as part of the project. The SWPPP would specify the BMPs that the project would be required to implement during construction activities to ensure that all potential water pollutants of concern are prevented, minimized, and/or otherwise appropriately treated prior to being discharged from the subject property. With implementation of these mandatory Plans and their BMPs, as well as MM **HAZ-1** above, the development of Lyon Avenue Project will not cause a violation of any water quality standards or waste discharge requirements.

b. *Less Than Significant Impact* – Implementation of the proposed project will not deplete groundwater supplies that would substantially affect the water availability for existing or planned land uses or biological resources. It is anticipated that, based on previous studies at the project site (refer to the Geotechnical Investigation provided as Appendix 4a), the potential to intercept groundwater during grading of both the project site and offsite roadways is considered to be less than significant. The groundwater basin would not be physically altered or impacted as a result of the proposed project. The design of the drainage and retention facilities of the proposed project would encourage groundwater recharge.

The Lyon Avenue Project is a proposed subdivision that would ultimately result in the development of 153 single-family residences. The project would be supplied with water by Eastern Municipal Water District (EMWD or Eastern) that uses imported surface water to meet primary customer demand. Using imported surface water helps prevent overdraft of local groundwater basins. The District's 2020 Urban Water Management Plan (UMWP)[9] identifies sufficient water resources to meet demand in its service area. The total retail water supply for Eastern in 2020 for retail customers, was 124,314 acre-feet per year (AFY) inclusive of both potable and recycled water, while the demand for both potable and recycled water was 115,916 AFY. According to Eastern, single-family uses accounted for 61.6% of the overall potable water demand in 2020, equal to 52,162 AFY. EMWD served a population of 603,950 persons in 2015, given that the average household size in the City of San Jacinto is 3.45 persons (according to the SCAG 2020 Local Profile for the City of San Jacinto[10]), the proposed project is anticipated to house a population of about 528 persons. According to EMWD's UWMP, EMWD's actual 2020 per capita use is 125 gallons per capita per day (GPCD). Based on the above, the population generated by the proposed project would demand 66,000 gallons per day (GPD)(528 x 125 = 66,000 GPD) equal to about 73.93 AFY of water from EMWD. Based on the projected water demand for single-family residential units within EMWD's retail service area in 2025 at 8,500 AFY, and in 2045 at 10,600 AFY, it is anticipated that the 73.93 AFY demand by the project can be accommodated into the future, particularly given that the overall available total gross water use is anticipated to be 145,930 AFY in 2025, and 187,100 AFY in 2045. The anticipated available water supply within Eastern's retail service area is anticipated to be greater than the demand for water in the future, which indicates that Eastern has available capacity to serve the proposed project without significant adverse impacts on area groundwater basins.

While the development of the project may result in a reduction in the amount of surface runoff recharge associated with natural runoff, this reduction is expected to be off-set/replaced by infiltration

[9] EMWD, 2021. Eastern Municipal Water District 2020 Urban Water Management Plan. https://www.emwd.org/sites/main/files/file-attachments/urbanwatermanagementplan_0.pdf?1625160721 (accessed 04/05/24)
[10] SCAG, 2021. Local Profiles. https://www.arcgis.com/sharing/rest/content/items/4f32535de7444301aee7be8378f4b7ff/data (accessed 07/25/23)

from the onsite bioretention basin, as well as the required onsite landscaping. The development of the project will, therefore, not substantially interrupt the existing percolation of the site, or any flow of groundwater under the project site. No significant adverse impacts to groundwater resources are forecast to occur from implementing the proposed project. No mitigation is required.

c. i. Result in substantial erosion or siltation onsite or offsite?

Less Than Significant With Mitigation Incorporated – The proposed project is not anticipated to significantly change the volume of flows downstream of the project site, and would not be anticipated to change the amount of surface water in any water body in an amount that could initiate a new cycle of erosion or sedimentation downstream of the project site. The onsite drainage system will capture the incremental increase in runoff from the project site associated with project development. Onsite flows will be directed to and captured by the proposed site bioretention basin. These systems will be designed to capture any excess runoff from the project site after development. Refer to the data contained in Appendix 5, which contains the Infiltration Testing for On-Site Storm Water Management prepared by Sladden Engineering, dated August 23, 2022 on behalf of the project site, which determined that the infiltration rates represent an appropriate safety factor should be incorporated into the design to account for long-term saturation and potential silting of the surface soils. This measure will be incorporated into the design of the project and enforced by the following mitigation measure:

HYD-1 The Developer shall incorporate an appropriate safety factor into the design of the retention basin that accounts for long-term saturation and potential silting of surface soils. The safety factor shall be determined with consideration of other factors considered in the storm water retention system design—specifically storm water volume estimates—and the safety factors associated with the related design components.

Treated surface runoff will be discharged in conformance with Riverside County and City of San Jacinto requirements. The downstream drainage system will not be altered given the control of future surface runoff from the project site; thus, the potential for downstream erosion or sedimentation will be controlled to a less than significant impact level with the implementation of MM **HYD-1**.

c. ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite?

Less Than Significant With Mitigation Incorporated – The proposed project will alter the existing drainage courses or patterns onsite but control of future discharges from the site through the bioretention basin, which would prevent flooding onsite or offsite from occurring. Onsite flows will be directed to and captured by the proposed site bioretention basin. Refer to the data contained in Appendix 5, which contains the Infiltration Testing for On-Site Storm Water Management prepared by Sladden Engineering, dated August 23, 2022 on behalf of the project site, which determined that the infiltration rates represent an appropriate safety factor should be incorporated into the design to account for long-term saturation and potential silting of the surface soils. This will be incorporated into the design of the project and enforced by MM **HYD-1**, above. The City will require these and the BMPs identified in the WQMP to be implemented as conditions of the project's approval. Thus, the implementation of onsite drainage improvements and applicable requirements included in the WQMP and recommendations provided in the Infiltration Report—enforced through MM **HYD-1**—will ensure that stormwater runoff will not substantially increase the rate or volume of runoff in a manner that would result in substantial flooding on- or off-site. Impacts under this issue are considered less than significant with the implementation of mitigation.

c. iii. 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?

Less Than Significant With Mitigation Incorporated – The proposed project will alter the site such that stormwater runoff within the site will be increased, but control future discharges from the site. This would prevent the project from exceeding the capacity of existing or planned stormwater drainage systems and from providing substantial additional sources of polluted runoff. The drainage throughout the project site will be captured and treated in the proposed bioretention basin. Onsite flows will be directed to and captured by the proposed site bioretention basin. These systems will be designed to capture the flows above the peak 100-year flow runoff from the project site without development or otherwise be detained on site and discharged in conformance with Riverside County requirements. The project would be required to treat surface water runoff prior to its discharge to meet Regional Water Quality Control Board (RWQCB) water quality requirements and provide safeguards that surface water runoff would not provide sources of polluted runoff. Varying amounts of urban pollutants, such as motor oil, antifreeze, gasoline, pesticides, detergents, trash, animal wastes, and fertilizers, could be introduced into downstream stormwater. However, the proposed project is not anticipated to generate discharges that would require pollution controls beyond those already designed into the project and/or required by the City as a standard operating procedure to meet water quality management requirements from the RWQCB. As such, the project is not anticipated to result in a significant adverse impact to water quality or flows downstream of the project with implementation of mitigation outlined below.

The City and County have adopted stringent best management practices designed to control discharge of non-point source pollution that could result in a significant adverse impact to surface water quality. The City has identified BMPs that when implemented, can ensure that neither significant erosion and sedimentation, nor other water quality degrading impacts will occur as a result of developing the project. Although BMPs are mandatory for the project to comply with established pollutant discharge requirements, the following mitigation measure is designed to establish a performance standard to ensure that the degree of water quality control is adequate to ensure the project does not contribute significantly to downstream water quality degradation.

HYD-2 The project proponent will select best management practices from the range of practices identified by the City and reduce future non-point source pollution in surface water runoff discharges from the site to the maximum extent practicable, both during construction and following development. The Storm Water Pollution Prevention Plan (SWPPP) and Water Quality Management Plan (WQMP) shall be submitted to the City for review and approval prior to ground disturbance and the identified BMPs installed in accordance with schedules contained in these documents.

Compliance will also be ensured through fulfilling the requirements of a SWPPP and WQMP monitored by the City and the RWQCB. The SWPPP must incorporate the BMPs that meet the performance standard established in MM **HYD-2** for both construction and occupancy stages of the project. Thus, the implementation of onsite drainage improvements enforced through MM **HYD-1** and **HYD-2**, in addition to applicable requirements will ensure that that drainage and stormwater will not create or contribute runoff that would exceed the capacity of existing or planned offsite stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts under this issue are considered less than significant with mitigation required.

c. iv. Impede or redirect flood flows?

Less Than Significant Impact – As shown on the Federal Emergency Management Agency (FEMA) Federal Insurance Rate Map (FIRM) #06065C1490H provided as Figure X-1, the project site is located within zone X, which is an area of reduced flood hazard risk due to levee. Figure X-2 depicts the flood hazards as delineated by the City's General Plan; here again, the proposed project falls outside of the 100- and 500-year flood hazard boundaries. The development of this site would continue to be elevated, thus remaining outside of the 100-year floodplain, and is not anticipated to redirect or impede flood flow at the project site, particularly given that surface flows on site will be

directed to the onsite drainage features which will be capable of intercepting the peak 100-year flow rate from the project site or otherwise be detained on site and discharged in conformance with Riverside County requirements. Therefore, impacts under this issue are considered less than significant and no mitigation is required.

d. *Less Than Significant Impact* – Implementation of the project will not expose people or structures to a significant risk of inundation by seiche, tsunami, or other flood hazards. The City General Plan does not identify any dam inundation hazards, as no dams are located within the vicinity of the City. As the proposed project would be developed in an area without a potential for dam rupture, the proposed project would not result in a significant potential to expose people or structures to a significant risk of flood hazard due to dam inundation. Furthermore, the proposed project is located at a higher elevation than the Little Lake Reservoir in Hemet, which would reduce the potential for seiche risk at the project site. However, the proposed project is located adjacent to and south of the San Jacinto Reservoir. The reservoir is utilized for stormwater control following periods of heavy rainfall. Based on the proximity to the site, and that the San Jacinto GPEIR does not identify the San Jacinto Reservoir as a source for substantial risk associated with seiche, the proposed project is not anticipated to be subject to seiche risk. Furthermore, the San Jacinto GPEIR Dam Inundation Map provided as Figure X-3 indicates that the proposed project is not located in an inundation risk area. The project is located about 45 miles from the Pacific Ocean, and is separated by the Peninsular Range, as well as by an elevation of 1,425 feet above mean sea level (amsl) from the Ocean, thus limiting the risk for tsunami at the project site. Therefore, the potential to expose people or structures to a significant risk of flood hazard due to dam inundation, tsunami, or seiche would be less than significant. No mitigation is required.

e. *Less Than Significant Impact* – The proposed project is underlain by the San Jacinto groundwater basin.[11] The Lyon Avenue Project will be served with water supply by EMWD. EMWD's local supplies include groundwater, desalinated groundwater, and recycled water. Groundwater is pumped from the Hemet/San Jacinto and West San Jacinto areas of the San Jacinto Groundwater Basin. However, EMWD utilizes imported water for a large portion of its water supply. The San Jacinto Groundwater Basin is considered high priority by the Sustainable Groundwater Management Act (SGMA) and Department of Water Resources (DWR)[12]. The San Jacinto Groundwater Basin is deemed a high priority basin, but not critically overdrafted, by DWR, and the Groundwater Sustainability Agency (GSA) is required to develop by 2022 and implement by 2042 a Groundwater Sustainability Plan (GSP). The GSP will document basin conditions and basin management will be determined through measurable objectives and minimum thresholds defined to prevent significant and unreasonable impacts to the sustainability indicators defined in the GSP. This document has not been drafted yet; however, the developer and future residents and will be required to comply with the water consumption reduction measures, and other sustainability measures once the GSP has been adopted and implementation measures have been identified. Water consumption and the effects thereof in nearby basins indicates that the proposed project's water demand is considered to be less than significant. By controlling water quality during construction and occupancy through implementation of both short- (SWPPP) and long- (WQMP) term best management practices at the site, no potential for conflict or obstruction of the Regional Board's water quality control plan has been identified.

[11] Department of Water Resources, 2023. SGMA Basin Prioritization Dashboard. https://gis.water.ca.gov/app/bp-dashboard/final/ (accessed 07/25/23)
[12] EMWD, 2023. Sustainable Groundwater Management Act. https://www.emwd.org/post/sustainable-groundwater-management-act#:~:text=The%20San%20Jacinto%20Groundwater%20Basin%20is%20deemed%20a%20high%20priority,Groundwater%20Sustainability%20Plan%20(GSP) (accessed 07/25/23)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XI. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

SUBSTANTIATION

a. *No Impact* – Refer to the aerial photos provided as Figures 1 and 2, which depict the project's regional and site-specific location. The project site would be installed within a site zoned for Residential, Low Density (RL) development. The vacant project site contains some remnants of past development including wood fencing, asphalt, and concrete and is presently covered with weeds and contains several trees. The site is located in an area that is surrounded by residential uses, as well as some undeveloped adjacent vacant land. The subdivision and ultimate development of 153 single-family residential homes at this location would be consistent with both the uses surrounding the project and the surrounding land use designations and zoning classifications. Consequently, the development of the project site with the proposed use will not divide any established community in any manner. Therefore, no significant impacts under this issue are anticipated and no mitigation is necessary.

b. *Less Than Significant Impact* – The project site encompasses about 42.19 acres, and it is zoned for Residential, Low Density (RL) development. The project proposes to subdivide the lot to enable the development of 153 single-family residential homes at a density of 3.6 dwelling units per acre (DU/A). With approval of the entitlements to enable the proposed subdivision on this property, the proposed Lyon Avenue Project will be fully consistent the General Plan Land Use Map. A review of the Land Use Element Goals indicates that the proposed project is consistent with Land Use Goals 1, 2, 3, 4, 6, and 9. All other Land Use Element Goals are not applicable to the proposed project.

A review of all other General Plan Element Goals (Community Services and Facilities Element, Circulation Element, Resource Management Element, Public Safety Element, Noise Element, Housing Element, Resource Management Element) indicates that the proposed project is consistent with all applicable Goals, often with mitigation, as demonstrated by the findings in the pertinent sections of this Initial Study. The proposed project can be implemented without significant effects on the circulation system; all infrastructure exists at or can be extended to the site to support the 153 single-family residential units once the site has been subdivided; it can support a safe and sustainable transportation system in the City; it can be developed with no conflicts with the Resource Management Element issues (open space; agricultural lands; natural resources such as mineral resources, water resources and biological resources; scenic resources; hillsides; cultural resources; air quality; and energy use); it will contribute development impact fees (DIF) to ensure that the City can meet recreation needs meeting the Community Services and Facilities Element goals and policies by contributing to a cohesive neighborhood; it will not generate significant air emissions or GHG emissions; it will meet noise compatibility requirements with mitigation; it can meet all Public Safety Element requirements; and it implements the City's Housing Element, specifically Goal 2, which states:

- *Housing Goal 2: Provide adequate sites for new residential construction to meet the needs of all segments of the community while promoting the character of the City.*
  - *Policy 2.1: Maintain adequate capacity to accommodate the City's unmet Regional Housing Needs Allocation (RHNA) for all income categories throughout the planning period.*

Furthermore, according to the Southern California Association of Governments (SCAG) RHNA 2020, the City's regional housing needs are as follows:

Table XI-1
REGIONAL HOUSING NEEDS: CITY OF PERRIS[13]

Total	Very Low Income	Low Income	Moderate Income	Above Moderate Income
3,392	800	465	560	1,567

The proposed subdivision would ultimately result in the contribution of 153 single-family residential dwelling units to the SCAG identified 3,392 dwelling unit deficit within the City at present, thus meeting the City's Housing Element Policy 2.1. Therefore, the implementation of this project at this site is consistent with the City's plans and policies. Based on the preceding information, implementation of the Lyon Avenue Project would not 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, zone classification, or the City's Municipal Code) adopted for the purpose of avoiding or mitigating an environmental effect. No adverse impacts are anticipated under this issue and no mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XII. 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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

SUBSTANTIATION

a&b. *No Impact* – The proposed project site would be installed within a site zoned for Residential, Low Density (RL) development, which does not support any mining uses. The vacant project site contains some remnants of past development including wood fencing, asphalt, and concrete and is presently covered with weeds and contains several trees. The site is, therefore, disturbed and is surrounded by residential development. The San Jacinto General Plan and General Plan FEIR do not identify any areas containing mineral resources within the City; however, the General Plan provides Resource Management Goals (Goal 3) that stipulate that the City wishes to prevent incompatible development in areas that should be preserved for mineral extraction. Due to the current use of the project site, and the suburban area in which it is located, the project is not anticipated to result in the loss of mineral resource values to the region or residents of the state, nor would it result in the loss of any locally important mineral resources identified in the City of San Jacinto General Plan. No impacts would occur under this issue. No mitigation is required.

[13] SCAG, 2021. SCAG 6TH Cycle Final RHNA Allocation Plan https://scag.ca.gov/sites/main/files/file-attachments/6th-cycle-rhna-final-allocation-plan.pdf?1616462966 (accessed 07/25/23)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XIII. NOISE: Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of a project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐
c) For a project located within the vicinity of a private airstrip or 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?	☐	☐	☐	☒

SUBSTANTIATION

Background

Noise is generally described as unwanted sound. The proposed subdivision would ultimately result in the development of 153 single-family residences within the City of San Jacinto. The vacant project site contains some remnants of past development including wood fencing, asphalt, and concrete and is presently covered with weeds and contains several trees. The site is, therefore, disturbed and is surrounded by residential development, the San Jacinto Reservoir, and the Monte Vista Middle School. The project area is residential and suburban in nature, and thus the proposed project is located in an area containing sensitive receptors. Furthermore, the nearest sensitive receptor is about 25 feet from the nearest sensitive receivers, which is the closest area at which construction will occur. The proposed project site is located in a low-to-moderate background level environment as a result of the neighborhood residential nature of the project area.

The unit of sound pressure ratio to the faintest sound detectable to a person with normal hearing is called a decibel (dB). Sound or noise can vary in intensity by over one million times within the range of human hearing. A logarithmic loudness scale, similar to the Richter scale for earthquake magnitude, is therefore used to keep sound intensity numbers at a convenient and manageable level. The human ear is not equally sensitive to all sound frequencies within the entire spectrum. Noise levels at maximum human sensitivity from around 500 to 2,000 cycles per second are factored more heavily into sound descriptions in a process called “A-weighting,” written as “dBA.”[14]

Leq is a time-averaged sound level; a single-number value that expresses the time-varying sound level for the specified period as though it were a constant sound level with the same total sound energy as the time-varying level. Its unit is the decibel (dB). The most common averaging period for Leq is hourly. The State of California has established guidelines for acceptable community noise levels that are based on the Community Noise Equivalent Level (CNEL) rating scale (a 24-hour integrated noise measurement scale). The guidelines rank noise land use compatibility in terms of "normally acceptable," "conditionally acceptable," and "clearly unacceptable" noise levels for various land use types. The State Guidelines,[15]

[14] U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control, 1981. Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise. https://nepis.epa.gov/Exe/ZyPDF.cgi/9100OOAJ.PDF?Dockey=9100OOAJ.PDF (accessed 04/05/24)
[15] California Office of Planning and Research, 2024. Appendix D Noise Element Guidelines. https://opr.ca.gov/docs/OPR_Appendix_D_final.pdf (accessed 04/05/24)

Land Use Compatibility for Community Noise Exposure, single-family homes are "normally acceptable" in exterior noise environments up to 60 dB CNEL and "conditionally acceptable" up to 70 dB CNEL based on this scale. Multiple family residential uses are "normally acceptable" up to 65 dB CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries and churches are "normally acceptable" up to 70 dB CNEL, as are office buildings and business, commercial and professional uses with some structural noise attenuation.

City of San Jacinto Noise Standards
The City of San Jacinto General Plan interior and exterior noise standards are outlined below.

Table XIII-1
INTERIOR AND EXTERIOR NOISE STANDARDS

Land Use	Noise Standards[1]	
	Exterior	Interior
Residential – single-family, multi-family, duplex and mobile home	65 dB(A)	45 dB(A)
Residential – transient lodging, hotels, motels, nursing homes, hospitals, assisted care facilities	65 dB(A)	45 dB(A)
Private offices, churches, libraries, theaters, concert halls, meeting halls, schools	65 dB(A)	45 dB(A)
General commercial, office, retail, reception, restaurant	65 dB(A)	45 dB(A)
Light industrial[2]	---	---
Parks and playgrounds	65 dB(A)	50 dB(A)
Golf courses, outdoor spectator sports	70 dB(A)	---

[1]In Community Noise Level Equivalent (CNEL).
[2]Noise standards do not apply to Light Industrial areas.

The City of San Jacinto General Plan requires all construction activity to comply with the limits (maximum noise levels, hours and days of allowed activity) established in the City noise regulations (Title 24 California Code of Regulations, Noise Ordinance). The City of San Jacinto Noise Ordinance states the following in regards to Noise regulations pertaining to construction activities:

- 8.40.060 D: Noise sources associated with construction, repair, remodeling, demolition or grading of any real property. Such activities shall instead be subject to the provisions of Section 8.40.090;
- 8.40.090 A: Weekdays and Saturdays. No person shall engage in construction, remodeling, digging, grading, demolition or any other related building activity, nor shall operate any tool, equipment or machine, on any weekday or Saturday except between the hours of seven a.m. and seven p.m.; and,
- 8.40.090 B: Sundays and Holidays. No person shall engage in construction, remodeling, grading, demolition or other related building activity, nor shall operate any tool, equipment or machine, on any Sunday or any federal holiday.
- 8.40.090 D. Exceptions:
    - 1. The provisions of this section shall not apply to emergency construction work performed by a private party when authorized by the city manager or his or her designee;

Impact Analysis

a. *Less Than Significant With Mitigation Incorporated* – The project site is located within a suburban residential area of the City of San Jacinto. The proposed subdivision would ultimately result in the development of 153 single-family residences within the City of San Jacinto. The vacant project site contains some remnants of past development including wood fencing, asphalt, and concrete and is presently covered with weeds and contains several trees. The proposed project is situated in an area surrounded by existing residential development and an adjacent middle school. Thus, the site experiences moderate background noise due to the traffic, adjacent school generated noise, and

other activities that are the primary sources of noise generation in suburban settings and that would occur on the surrounding roadways. The nearest area in which construction will occur within the project site is only about 25 feet from the nearest residential structures and about 50 feet from the adjacent middle school property.

Short Term Noise

According to the City of San Jacinto General Plan, the City requires all construction activity to comply with the limits (maximum noise levels, hours and days of allowed activity) established in the City noise regulations (Title 24 California Code of Regulations, Noise Ordinance). The proposed project would be constructed during the hours in which construction is exempt from the City's Noise Performance Standards. The proposed project would be constructed in compliance with the City's Noise Performance Standards. Construction equipment generates noise that ranges between approximately 75 and 90 dBA at a distance of 50 feet. Refer to Table XIII-2, which shows construction equipment noise levels at 25, 50 and 100 feet from the noise source.

Table XII-2
NOISE LEVELS OF CONSTRUCTION EQUIPMENT AT 25, 50 AND 100 FEET (in dBA Leq) FROM THE SOURCE

Equipment	Noise Levels at 25 feet	Noise Levels at 50 feet	Noise Levels at 100 feet
Earthmoving			
Front Loader	85	79	73
Backhoes	86	80	74
Dozers	86	80	74
Tractors	86	80	74
Scrapers	91	85	79
Trucks	91	85	79
Material Handling			
Concrete Mixer	91	85	79
Concrete Pump	88	82	137
Crane	89	83	77
Derrick	94	88	82
Stationary Sources			
Pumps	82	79	70
Generator	84	78	72
Compressors	87	81	75
Other			
Saws	84	78	72
Vibrators	82	137	70

Source: U.S. Environmental Protection Agency "Noise"

Receptors located in the vicinity of the project shown on Figure 2, which depicts the site and adjacent residences on an aerial map, and indicates that the nearest residences are about 25 feet from the project's property line. These sensitive receptors may experience increased noise levels during construction, but the proposed project will comply with the City's restrictions on night-time construction activity. Therefore, through compliance with the City's noise standards, construction of the proposed project would not result in the generation of a substantial temporary or permanent noise

levels in the vicinity of a project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. However, contingency mitigation is provided below to reduce construction noise levels at residences and/or minimize or address complaints from local sensitive noise receptors. The short-term noise impacts associated with project construction activities are forecast to be less than significant through implementing the following measures. As construction activities may be a nuisance to nearby residents, the following mitigation is recommended that would further reduce construction noise levels at nearby residences, and would provide a response program that would ensure noise levels are reduced to the City's noise standards identified in Table XIII-1 at nearby sensitive receivers:

NOI-1 ***No construction activities shall occur during the hours of 7 PM through 7 AM Monday through Saturday, and no construction activities shall occur on Sunday unless emergency construction work must be performed and is authorized by the City manager or his or her designee.***

NOI-2 ***No radios or other sound equipment shall be used at this site unless required for emergency response by the contractor.***

NOI-3 ***The City shall require the Applicant/Developer to require that all construction equipment be operated with mandated noise control equipment (mufflers or silencers). Enforcement will be accomplished by random field inspections by applicant personnel during construction activities.***

NOI-4 ***Equipment not in use for five minutes shall be shut off.***

NOI-5 ***Equipment shall be maintained and operated such that loads are secured from rattling or banging.***

NOI-6 ***Construction employees shall be trained in the proper operation and use of equipment consistent with these mitigation measures, including no unnecessary revving of equipment.***

NOI-7 ***The City shall require the Applicant/Developer to establish a noise complaint response program and shall respond to any noise complaints received for this Project by measuring noise levels at the affected receptor site. If the noise level exceeds an Ldn of 65 dBA exterior or an Ldn of 45 dBA interior at the receptor, the Applicant/Developer will implement adequate measures (which may include portable sound attenuation walls, use of quieter equipment, shift of construction schedule to avoid the presence of sensitive receptors, etc.) to reduce noise levels to the greatest extent feasible.***

NOI-8 ***All residential units located within 500 feet of the construction site shall be sent a notice regarding the construction schedule of the proposed project. A sign, legible at a distance of 50 feet shall also be posted at the construction site. All notices and the signs shall indicate the dates and duration of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register complaints.***

Long-Term Noise

The long term or permanent change in noise from the proposed subdivision and ultimate occupation of the proposed 153 single-family residences would be consistent with the surrounding uses. The primary noise sources associated with the project would include the typical residential noise sources such as heating, ventilating, and air conditioning (HVAC) units, as well as off-site traffic noise from the additional vehicles that would be driving to and from the project area to access the proposed

residential use. The project would result in modest additional traffic on adjacent roadways since the project would generate traffic to and from each of the 153 single-family residences. Thus, it is not anticipated, given the setting within which the project would be developed—surrounded by existing single-family residential and school uses—that the proposed project would generate significant vehicular noise within the project area. The noise attributable to the project would follow the City's limit of 65 dBA for the exterior of sensitive uses, or 45 dBA for the interior of sensitive uses surrounding the project area. Furthermore, AB 1307 provides that noise generated by occupants of residential projects is not a significant effect on the environment under the CEQA.[16] Based on the existing noise levels in the area surrounding the project from adjacent residential uses, and due to the fact that the new permanent noise generating activities would be similar to those that already exist in the project neighborhood, proposed project occupancy would not result in the generation of a substantial temporary or permanent noise levels in the vicinity of a project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

b. *Less Than Significant With Mitigation Incorporated* – Vibration is the periodic oscillation of a medium or object. The rumbling sound caused by vibration of room surfaces is called structure borne noises. Sources of groundborne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous or transient. Vibration is often described in units of velocity (inches per second), and discussed in decibel (dB) units in order to compress the range of numbers required to describe vibration. Vibration impacts related to human development are generally associated with activities such as train operations, construction, and heavy truck movements.

The Federal Transit Authority (FTA) Noise and Vibration Assessment[17] states that in contrast to airborne noise, ground-borne vibration is not a common environmental problem. Although the motion of the ground may be noticeable to people outside structures, without the effects associated with the shaking of a structure, the motion does not provoke the same adverse human reaction to people outside. Within structures, the effects of ground-borne vibration include noticeable movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. The FTA Assessment further states that it is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. However, some common sources of vibration are trains, trucks on rough roads, and construction activities, such as blasting, pile driving, and heavy earth-moving equipment. The FTA guidelines identify a level of 80 VdB for sensitive land uses. This threshold provides a basis for determining the relative significance of potential project related vibration impacts, as the City has not adopted a specific vibration threshold.

Due to the distance at which the majority of construction would occur in relation to nearby structures, the proposed project is unlikely to expose people to significant generation of excessive groundborne vibration or groundborne noise levels. Groundborne vibration is normally perceptible to humans at approximately 65 VdB, while 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible. Construction activity can result in varying degrees of groundborne vibration; in the short term, construction from installing the project is in close enough proximity to the adjacent residential and school structures (within 25-200 feet) has the potential to create some groundborne vibration to the nearest sensitive receptors at some sites within the project footprint. However, any short-term impacts to the nearest sensitive receptors would be considered less than significant through implementing the following mitigation measure:

[16] California Legislative Information, 2024. AB-1307 California Environmental Quality Act: noise impact: residential projects.(2023-2024). https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240AB1307 (accessed 04/05/24)
[17] USDOT, 2006. Transit Noise and Vibration Impact Assessment. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf (accessed 07/25/23)

NOI-9 ***During future initiation of construction activities with heavy equipment within 200 feet of occupied residences and school structures, vibration field tests shall be conducted at the nearest occupied residences upon receipt. If vibrations exceed 72 VdB, the construction activities shall be revised (smaller equipment, reduced activity) to reduce vibration below this threshold.***

With implementation of the above mitigation measure, the project would prevent significant impacts from occurring as a result of construction of the proposed project. Therefore, impacts from project related vibration would be considered less than significant with implementation of mitigation. No further mitigation is required.

c. *No Impact* – The project site is not located within two miles of any public or public use airports. According to a review of Google Maps (July 26, 2022), the closest airports the Hemet-Ryan Airport, approximately 4 miles southwest of the project site, Banning Municipal Airport, approximately 12 miles northeast of the project site, and the Perris Valley Airport located approximately 15 miles west of the project site. Based on this information, the project will have no potential to expose people residing or working in the project area to excessive noise levels generated by nearby aircraft or airport operations. No impact will occur and no mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XIV. 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)?	☐	☐	☒	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐

SUBSTANTIATION

a. *Less Than Significant Impact* – The proposed Lyon Avenue Project would convert vacant land to contain 153 single-family dwelling units located within the City of San Jacinto within the City's Low Density Residential land use designation. The project will subdivide one parcel to ultimately develop 153 single-family residences. The SCAG 2020 Local Profile for the City of San Jacinto[18] indicates that the 2020 population was 50,207. The SCAG Connect SoCal Demographics and Growth Forecast (2020) projects an estimated City population of 69,900 by the year 2045.[19] The SCAG 2020 Local Profile for the City of San Jacinto indicates that the average household size is 3.45 persons. As such, the development of 153 residential dwellings at the site is anticipated to house a total of 528 persons. Given that the current population of the City of San Jacinto is 19,693 persons less than the projected 2045 population, the potential for an additional 528 residents within the City of San Jacinto represents only about 2.6% of the potential growth anticipated between the present population and the City's projected build-out population. Even with the additional residential units that are being considered or are currently in development within the City in addition to this project, there is ample room for growth

[18] SCAG, 2021. Local Profiles. https://www.arcgis.com/sharing/rest/content/items/4f32535de7444301aee7be8378f4b7ff/data (accessed 07/25/23)
[19] SCAG, 2020. SCAG Connect SoCal Demographics and Growth Forecast https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_demographics-and-growth-forecast.pdf?1606001579 (accessed 07/25/23)

within the confines of projected populations (with a large gap between the current population [50,207] and the projected population in 21 years [2045; 69,900]).

Additionally, the SCAG Connect SoCal Demographics and Growth Forecast (2020) projects that the total number of households within the City by 2045 will be 25,000, while the SCAG 2019 Local Profile for the City indicates that the total number of households within the City is 13,753. As such, the addition of 153 new residential units within the project site would be well within the projected number of households that would be anticipated to be developed in the next 20+ years. These units would contribute to the housing needs within the City, which, as determined by the SCAG 6th Cycle Regional Housing Needs Assessment (RHNA) Allocation Plan,[20] and as stated under Subsection XI, Land Use, above, was determined to be 3,392 units.[21] Given the above, the proposed project would not induce population growth beyond that which has been planned for in the City General Plan or SCAG planning documents, or that can be accommodated by the project and the City. Therefore, impacts would be less than significant. No mitigation is required.

b. *Less Than Significant Impact* – At present, the project site is vacant and does not support any persons or housing. The proposed project would convert the vacant site to a subdivision to enable the development of 153 single-family lots. The proposed use would conform with the City's land use designation that the City has selected as the appropriate use for the site. As such, implementation of the proposed project will not displace substantial numbers of existing housing or persons, necessitating the construction of replacement housing elsewhere beyond that which the project would install as proposed. Impacts would be less than significant and no mitigation is required.

[20] According to SCAG, "the RHNA does not necessarily encourage or promote growth, but rather allows communities to anticipate growth, so that collectively the region and subregion can grow in ways that enhance quality of life, improve access to jobs, promotes transportation mobility, and addresses social equity, fair share housing needs."; The intent of the future needs allocation by income groups is to relieve the undue concentration of very low and low-income households in a single jurisdiction and to help allocate resources in a fair and equitable manner.
[21] SCAG, 2021. SCAG 6TH Cycle Final RHNA Allocation Plan https://scag.ca.gov/sites/main/files/file-attachments/6th-cycle-rhna-final-allocation-plan.pdf?1616462966 (accessed 07/25/23)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XV. PUBLIC SERVICES: 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:				
a) Fire protection?	☐	☐	☒	☐
b) Police protection?	☐	☐	☒	☐
c) Schools?	☐	☐	☒	☐
d) Parks?	☐	☐	☒	☐
e) Other public facilities?	☐	☐	☒	☐

SUBSTANTIATION

a. *Less Than Significant Impact* – The proposed project site is served by the Riverside County Fire Department, which provides fire protection and emergency medical services to the City of San Jacinto. The closest fire station to the project site is Station 78, which is located to the southwest of the project site at 2450 Cottonwood Ave, San Jacinto, CA 92582. The project proposes to subdivide a 42.19-acre parcel to enable the development of 153 single-family residences. According to the City of San Jacinto General Plan FEIR, the Fire Department's average response time is 4.5 minutes, which is below their target time of 5 minutes. The proposed project would not include the use or storage of highly flammable materials. The proposed project would involve the subdivision, and ultimate construction and occupation of 153 single-family residences. The development of new single-family residences would incrementally add to the existing demand for fire protection services. The development of the proposed 153 single-family residences would be required to adhere to the California Fire Code, as included in the City of San Jacinto Municipal Code Chapter 8.16. Additionally, the project plans would be reviewed by the City's Building and Safety Department to ensure that the project plans meet the fire protection requirements. Cumulative contributions to the need for fire protection as a result of new development are mitigated through the payment of the Development Impact Fee (DIF), which includes a fire facilities component. Therefore, through payment of the DIF and compliance with the County Fire and City's Municipal Code design requirements, the potential impacts on fire protection as a result of project implementation would be less than significant.

b. *Less Than Significant Impact* – As noted in the preceding discussion regarding fire protection, the area surrounding the project site is located in a suburban residential area, and at present contains one single-family home on a parcel that is also utilized for grazing land. The City of San Jacinto contracts with the Riverside County Sheriff's Department for police services. The San Jacinto Police Department is located at 160 West Sixth Street, San Jacinto, CA 92583. The project site is located within existing patrol routes and future calls can be responded to within the identified priority call target response times. The project is not expected to result in any unique or more extensive crime problems that cannot be handled with the existing level of police resources. No new or expanded police facilities would need to be constructed as a result of the project. This is because the proposed project is not the kind of use that would likely attract criminal activity, except for random trespass and theft. These incremental impacts are mitigated through the payment of the DIF, which contains a police facilities component. Given the above, the proposed subdivision and ultimate development of 153 single-family residences at the project site would not cause a significant additional demand on

police protection services. Thus, implementation of the proposed project would not substantially increase the demand for law enforcement services within the City. Thus, impacts to the existing police protection system would be less than significant. No mitigation is required.

c. *Less Than Significant Impact* – The City of San Jacinto is located within the area served by San Jacinto Unified School District (SJSD) and Hemet Unified School District (HUSD), which is depicted in the City of San Jacinto General Plan School District Map (Figure XV-1). As stated under Population and Housing, the project is anticipated to increase population within the City of San Jacinto by approximately 528 persons beyond that which exists within the City at present through the provision of an additional 153 single-family residential housing units as a result of project implementation. The SJSD has developed a facility's plan and a School Fee Justification Study that identifies funding from new development that would provide for new school facilities as needed throughout the school district. The estimated school generation rates for the project are as follows based on the generation rates included in the San Jacinto Unified School District School Fee Justification Study (2022)[22]:

- The project would generate between about 44 K-5 students at a student generation rate for single-family detached of 0.3219.
- The project would generate between about 22 Middle School students at a student generation rate for single-family detached of 0.1620.
- The project would generate between about 28 High School students at a student generation rate for single-family detached of 0.2073.

As required by Government Code Section 65995, the project would be required by state law pay the required DIF towards the cost to offset impacts from the students that would be generated by the project, which requires a mitigation payment per square foot of residential development. The DIF mitigation program of the SJSD and HUSD adequately mitigate the impacts of the proposed project in accordance with current state law. Since this is a mandatory requirement, no additional mitigation measures are required to reduce school impacts of the proposed project to a less than significant level.

d. *Less Than Significant Impact* – The proposed project would add to the existing demand on local recreational facilities. The proposed project site is located just north of Stallions Crossing Park and just west of Monte Vista Middle School. As these sites are adjacent to the proposed project, these facilitates would be within a walkable distance to the project site. Stallions Crossing Park is 0.94 acre and contains open green space, benches, a pavilion with picnic tables, two one-half court basketball pads, and a playground. The General Plan EIR described that the City had established a parkland standard of five acres per 1,000 residents. The City of San Jacinto General Plan FEIR concluded that Buildout of San Jacinto would result in the need of additional parks, however the available land designated for park and open space use by the General Plan meets the planned demand for such uses, as shown on the City of San Jacinto General Plan Parks and Public Facilities map (Figure XV-2). The City's Municipal Code Section 16.40.040 states that the parkland dedication requirement for single-family residences is 0.015 acres per unit, or otherwise the developer must provide payment of an in-lieu fee dedicated to park uses. The City assesses DIF for Park and Open Space Facilities under three separate fees on a per dwelling unit basis: Park Facility Improvements, Park Land Acquisitions, and Park Land Improvements. The Developer of TTM No. 38339 will contribute two parks within the proposed project layout as shown on the site plan (Figure 3) in the amount of 3.12 acres. In addition, the Developer will contribute the applicable and commensurate in lieu fee to offset the incremental increased demand for parks generated by development of the proposed single-family residential development. Thus, implementation of the proposed project would not cause a substantial adverse physical impact to any parks within the City. Impacts are considered less than significant and no mitigation is required

e. *Less Than Significant Impact* – The City of San Jacinto contracts with the Riverside County Public Library System and provides library services at several area libraries including the San Jacinto Public

[22] SJUSD, 2022. San Jacinto Unified School District School Justification Study. https://4.files.edl.io/b666/05/10/22/222903-290081e6-1256-4f89-90d9-c599445fbf8f.pdf (accessed 07/25/23)

Library at 595 S. San Jacinto Avenue. The City GPEIR indicates that developers must pay library fees to offset incremental impacts to the Riverside County Library System. As the DIF contains a component dedicated to library services, the proposed project would be subject to payment to these library funding mechanisms, which is deemed adequate to offset the incremental increase in demand for library services from implementation of the proposed project.

In regards to healthcare facilities, the Office of Statewide Health Planning and Development (OSHPD) suggests that new healthcare facilities are developed in response to perceived market demand by free enterprise. The project area is served by various urgent care facilities, healthcare providers, and hospitals, including the Valley Hospital about 3 miles east of the project site. Given the above, the proposed project would not result in a demand for new or expanded healthcare facilities. As such, impacts under this issue are less than significant and no mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XVI. 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?	☐	☐	☒	☐
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?	☐	☐	☒	☐

SUBSTANTIATION

a. *Less Than Significant Impact* – As addressed in the discussion under XIV, Population and Housing, and XV(d), Public Services, above, the proposed project would subdivide a vacant parcel of land to enable the development of 153 single-family residences. As such, the proposed project may induce population, though not substantially. As stated in the discussion under Population and Housing, an estimated 528 persons may reside at the new Lyon Avenue Project site. The City's Municipal Code Section 16.40.040 states that the parkland dedication requirement for single-family residences is 0.015 acres per unit, or otherwise the developer must provide payment of an in-lieu fee dedicated to park uses. The City assesses DIF for Park and Open Space Facilities under three separate fees on a per dwelling unit basis: Park Facility Improvements, Park Land Acquisitions, and Park Land Improvements. As stated under XV(d), Public Services, above, the Developer of the proposed project will contribute the applicable and commensurate in lieu fee to offset the incremental increased demand for parks and recreation facilities generated by development of the proposed single-family residential development. Thus, while the proposed project would generate new residents that could increase the use of existing neighborhood and regional parks or other recreational facilities, any potential for the project to result in a substantial deterioration of any park or recreational facilities or for an acceleration of physical deterioration of any park or recreational facilities would be minimized through the payment of in lieu fees by the Developer. Implementation of the proposed project would not cause a substantial adverse physical impact to any parks or recreational facilities within the City. Impacts are considered less than significant and no mitigation is required.

b. *Less Than Significant Impact* – The proposed project consists of the subdivision of an existing vacant parcel into 153 single-family lots with one additional lot dedicated to water quality management in the City of San Jacinto. The project will include several park areas, which would not include recreational facility components. The site does not contain any existing recreational facilities on the project site,

and is designated for single-family residential use. As described throughout this Initial Study, the construction of the proposed Lyon Avenue Project would not cause a significant adverse physical effect on the environment under any issue. As a result, no recreational facilities beyond the minor facilities proposed to be provided for resident use only are required to serve the project, thus any impacts under this issue are considered less than significant. No mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XVII. TRANSPORTATION: Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☒	☐	☐
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☒	☐	☐

SUBSTANTIATION: The following information utilized in this section of the Initial Study was obtained from the *Lyon Avenue (Tentative Tract Map No. 38339)(P22-088) Traffic Analysis* (TA) prepared by Urban Crossroads dated October 20, 2023. The TA is provided as Appendix 6a to this Initial Study. Additionally, Urban Crossroads prepared the *Lyon Avenue TTM 38468 Vehicle Miles Traveled (VMT) Screening Evaluation* for this project, it dated July 25, 2023 and provided as Appendix 6b.

a. *Less Than Significant Impact* – The proposed Lyon Avenue Project will consist of the subdivision of a 42.19-acre site to enable the development of 153 single-family residential dwelling units. The project is anticipated to have an Opening Year of 2025. According to the LOS Analysis prepared by Urban Crossroads and provided as Appendix 6a, the project is estimated to generate a total of 1,444 trip-ends per day on a typical weekday with approximately 107 AM peak hour trips, 141 mid-day, and 144 PM peak hour trips.

LOS Analysis Findings

The TA identified potential deficiencies to traffic and circulation under each of the following conditions:

- Existing (2023) Conditions
- Existing plus Ambient Growth (EA) (2026) Conditions
- Existing plus Ambient Growth plus Project (EAP) (2026) Conditions
- Existing plus Ambient Growth plus Cumulative (EAC) (2026) Conditions
- Existing plus Ambient Growth plus Project plus Cumulative (EAPC) (2026) Conditions

Existing Plus Ambient Growth Plus Project Plus Cumulative (EAPC) Conditions, the following lane conditions are anticipated to be consistent with that which is shown on XVII-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for EAPC (2026) conditions (e.g., intersection and roadway improvements at the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for both EAC and EAPC (2026) conditions (e.g., intersection and roadway improvements along the cumulative development's frontages).

Under EAPC Conditions, existing traffic volumes plus an ambient growth factor of 6.12% has been applied, as well as the addition of traffic generated by cumulative development projects, and the addition of project traffic. The weekday ADT volumes and weekday AM and PM peak hour volumes which can be expected for EAPC (2026) traffic conditions are shown on Figure XVII-2. The weekday MD peak hour volumes which can be expected for EAPC (2026) traffic conditions are shown on Figure XVII-3.

EAC and EAPC (2026) peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 Methodologies of this TA. The intersection analysis results are summarized in Table XVII-1 for EAC (2026) traffic conditions and EAPC (2026) conditions.

Table XVII-1
INTERSECTION ANALYSIS FOR EAC AND EAPC (2026) CONDITIONS

			EAC (2026)						EAPC (2026)					
		Traffic	Delay[1] (secs.)			Level of Service			Delay[1] (secs.)			Level of Service		
#	Intersection	Control[2]	AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM
1	Lipizzan Dr. & Appaloosa Dr.	CSS	8.7	10.0	8.7	A	B	A	9.1	12.4	9.3	A	B	A
2	Lipizzan Dr. & Cottonwood Av.	CSS	13.8	14.5	14.1	B	B	B	13.7	15.7	14.1	B	C	B
3	Lyon Av. & De Anza Dr.	AWS	**>100.0**	**>100.0**	28.3	**F**	**F**	D	**>100.0**	**>100.0**	34.8	**F**	**F**	D
4	Lyon Av. & Driveway 1	**CSS**	Future Intersection						10.5	10.4	10.3	B	B	B
5	Lyon Av. & Appaloosa Dr.	CSS	**>100.0**	**>100.0**	21.5	**F**	**F**	C	**>100.0**	**>100.0**	**41.3**	**F**	**F**	**E**
6	Lyon Av. & Cottonwood Av.	AWS	**>100.0**	**>100.0**	**>100.0**	**F**	**F**	**F**	**>100.0**	**>100.0**	**>100.0**	**F**	**F**	**F**

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[2] AWS = All-Way Stop; CSS = Cross-Street Stop; **CSS** = Improvement

The following additional study area intersection is anticipated to operate at an unacceptable LOS during the peak hours with the addition of project traffic under EAP (2026) traffic conditions:

- Lyon Av. & Appaloosa Dr. (#5) – LOS E AM peak hour only

The traffic signal warrant analysis for EAPC (2026) traffic conditions are based on the peak hour volumes traffic signal warrants. The following additional study area intersection is anticipated to meet a traffic signal with the addition of project traffic under EAPC (2026) traffic conditions:

- Lyon Av. & Appaloosa Dr. (#8) – LOS F AM and MD peak hours; LOS E PM peak hour

Based on the City of San Jacinto deficiency criteria discussed in Section 2.5 Deficiency Criteria, roadway intersections were found to be deficient. Improvements necessary to improve project-related traffic deficiencies are shown in Table XVII-2. Table XVII-2 indicates the physical improvements needed to address LOS deficiencies at each of the study area intersections under EAPC (2026) traffic conditions.

Table XVII-2
INTERSECTION ANALYSIS FOR EAP (2026) CONDITIONS WITH IMPROVEMENTS

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1] Northbound L	T	R	Southbound L	T	R	Eastbound L	T	R	Westbound L	T	R	Delay[2] (secs.) AM	MD	PM	Level of Service AM	MD	PM
3	Lyon Av. & De Anza Dr.																			
	Without Improvements	AWS	0	1	0	0	1	0	0	1	0	1	1	0	**>100.0**	**>100.0**	34.8	**F**	**F**	D
	With Improvements	**TS**	**1**	1	0	**1**	1	0	0	1	0	1	1	0	22.6	20.0	16.3	C	B	B
5	Lyon Av. & Appaloosa Dr.																			
	Without Improvements	CSS	0	1	0	0	2	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**41.3**	**F**	**F**	**E**
	With Improvements	**TS**	**1**	1	0	**1**	2	0	0	1	0	0	1	0	12.2	12.4	9.0	B	B	A
6	Lyon Av. & Cottonwood Av.																			
	Without Improvements	AWS	0	1	0	1	1	1	1	1	0	0	1	0	**>100.0**	**>100.0**	**>100.0**	**F**	**F**	**F**
	With Improvements	**TS**	**1**	1	0	1	1	1	1	1	0	**1**	1	0	37.1	52.9	38.2	D	D	D

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right

[2] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross-Street Stop; AWS = All-Way Stop; TS = Traffic Signal; **TS** = Improvement

Transportation improvements within the City of San Jacinto are funded through a combination of improvements constructed by the project, development impact fee programs. project improvements may include a combination of fee payments to established programs, construction of specific improvements, payment of a fair share contribution toward future improvements or a combination of these approaches. Improvements constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate. When off- site improvements are identified with a minor share of responsibility assigned to proposed development, the approving jurisdiction may elect to collect a fair share contribution or require the development to construct improvements. Detailed fair share calculations, for each peak hour, have been provided in Table XVII-3 for the applicable deficient study area intersections. These fees are collected with the proceeds solely used as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected population increases.

Table XVII-3
PROJECT FAIRSHARE CALCULATIONS

#	Intersection		Existing (2023)	Project	EAPC (2026)	Total New Traffic	Project % of New Traffic
3	Lyon Av. & De Anza Dr.						
		AM:	1,028	37	1,547	519	7.1%
		MD:	789	50	1,407	618	8.1%
		PM:	626	51	1,243	617	**8.3%**
5	Lyon Av. & Appaloosa Dr.						
		AM:	992	64	1,491	499	**12.8%**
		MD:	768	69	1,344	576	12.0%
		PM:	561	66	1,128	567	11.6%
6	Lyon Av. & Cottonwood Av.						
		AM:	1,440	43	2,139	699	6.2%
		MD:	1,270	57	2,148	878	6.5%
		PM:	1,238	59	2,127	889	**6.6%**

BOLD = Denotes highest fair share percentage.

In order to minimize impacts to traffic levels of service within the City of San Jacinto from the Lyon Avenue Project, the proposed project will contribute its fair share to improve the following intersections:

- Lyon Avenue & Cottonwood Avenue
- Lyon Avenue & Appaloosa Drive
- Lyon Avenue & De Anza Drive

The fair share contribution shall be enforced through implementation of the following mitigation measure as recommended in the TA and as shown on Table XVII-3.

TRAN-1 The project Developer shall pay its fair share to the City of San Jacinto towards intersection improvements at Lyon Avenue & Cottonwood Avenue, Lyon Avenue & Appaloosa Drive, and Lyon Avenue & De Anza Drive, in the percentages detailed in Table XVII-3.

Furthermore, the following recommendations are necessary to meet the minimum improvements needed to accommodate site access and maintain acceptable peak hour operations for the proposed project. The site adjacent recommendations are shown on Figure XVII-4.

1. Recommendation 1 – Lyon Avenue & Driveway 1 (#4) – The following improvements are necessary to accommodate site access:
   - Project to install a stop control on the eastbound approach (egress project traffic) and a right turn lane.
   - Project to construct a second southbound through lane to be used as a shared through-right turn lane.
2. Recommendation 2 – Lyon Avenue – Lyon Avenue is a north-south street located along the project's eastern boundary. The project is to construct the ultimate half-section of Lyon Avenue as a Major (up to 100-foot right-of-way) along the project's frontage from the project's northern boundary to Appaloosa Drive consistent with the City's standards. Frontage improvements also include pavement, curb-and-gutter, sidewalk, and landscaping improvements.
3. On-site traffic signing and striping should be implemented agreeable with the provisions of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and in conjunction with detailed construction plans for the project site.
4. Sight distance at each project access point should be reviewed with respect to standard California Department of Transportation (Caltrans) and City of San Jacinto sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

The enforcement of these recommendations shall be through the following mitigation measure:

TRAN-2 Recommendation 1 – Lyon Avenue & Driveway 1 (#4) – The following improvements shall be implemented to accommodate site access:

- ***The project shall install a stop control on the eastbound approach (egress project traffic) and a right turn lane.***
- ***The project shall construct a second southbound through lane to be used as a shared through-right turn lane.***

Recommendation 2 – Lyon Avenue – The project shall construct the ultimate half-section of Lyon Avenue as a Major (up to 100-foot right-of-way) along the project's frontage from the project's northern boundary to Appaloosa Drive consistent with the City's standards. Frontage improvements also include pavement, curb-and-gutter, sidewalk, and landscaping improvements.

On-site traffic signing and striping shall be implemented in conformance with the provisions of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and in conjunction with detailed construction plans for the project site.

Sight distance at each project access point shall be reviewed to conform to California Department of Transportation (Caltrans) and City of San Jacinto sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

The above measures are sufficient to address any circulation deficiencies that would result from project generated automobile traffic.

Alternative Modes of Transportation Analysis

The project site is located in an area served by some existing sidewalk and bike lanes. As shown on Figure XVII-4, pedestrian facilities are minimal in the project vicinity as sidewalk exists only along Lyon Avenue along the frontage of Monte Vista Middle School, along Appaloosa Drive and generally in the residential subdivision south of the project site. The project will be required to improve the adjacent sidewalk/curb/gutter to City Standards, which will ensure that development of the project will not adversely impact pedestrian facilities and will ensure that adequate pedestrian circulation is provided adjacent to the project boundaries.

The City of San Jacinto existing bike networks are shown on Figure XVII-5, which has been extracted from the City of San Jacinto General Plan 2040, and the future bike lands are shown on Figure XVII-6. As shown on Figure XVII-5, there is a Class II bike lane along Cottonwood Avenue to the south, Ramona Expressway to the north, and along Sanderson Avenue to the west. The only major Class I bikeway in the City is located along the Ramona Expressway. Proposed bike lanes include a multi-use Class I Bike Lane along Lyon Avenue. Existing and future bike paths are not anticipated to be interrupted by the construction of any off-site improvement, nor site occupancy.

The project area is currently served by Riverside Transit Agency (RTA). RTA Route 42 runs from the Soboba Casino to Downtown San Jacinto to the Hemet Valley Mall, traversing along Cottonwood Avenue with no stops along Lyon Avenue. The nearest stop along this route is at the corner of Cottonwood Avenue and Sandalwood Street to the south/southwest, about one third of a mile from the southeast corner of the project site. The transit route is illustrated on Figure XVII-7, and connects the project area with other routes in the region available through RTA. Additionally, Figure XVII-8, RTA Micro Bus Stops are shown in the vicinity of the project. Transit service is reviewed and updated by RTA periodically to address ridership, budget, and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate. The proposed project is not anticipated to create a significant new demand for transit service. Furthermore, the proposed project would not impact existing transit routes. As such, it is not anticipated the project will result in a significant increase in demand for alternative transportation systems, and will be adequately served by existing systems in the vicinity of the project site. Finally, the project will involve site improvements and improvements to the adjacent sidewalk and roadway.

Construction

During construction, there is a potential to conflict with circulation in the project area as a result of the addition of construction traffic on area roadways. While this impact is temporary—only for the 12-to-15-month duration of construction—implementation of the proposed project would require implementation of a traffic management plan to ensure that site access and City circulation would not be adversely impacted. Thus, the proposed project shall implement the following mitigation measure to ensure that the circulation within the City and project area is not adversely impacted by the proposed project's construction traffic:

TRAN-3 The construction contractor will provide adequate traffic management resources, as determined by the City. The City shall require a construction traffic management plan that complies with the Work Area Traffic Control Handbook, or other applicable standard, to provide adequate traffic control and safety during construction. The traffic management plan shall be

prepared and approved by the City prior to initiation of construction. At a minimum this plan shall include how to minimize the amount of time spent on construction activities; how to minimize disruption of vehicle and alternative modes of transport traffic at all times, but particularly during periods of high traffic volumes as directed by the City; how to maintain safe traffic flow on local streets affected by construction at all times, including through the use of adequate signage, protective devices, flag persons or police assistance to ensure that traffic can flow adequately during construction; the identification of alternative routes that can meet the traffic flow requirements of a specific area, including communication (signs, webpages, etc.) with drivers and neighborhoods where construction activities will occur; designating parking and construction staging areas that would not conflict with the City's operations nor prevent access to adjacent roadways; adopting an emergency response and evacuation plan applicable to the duration of construction; and, at the end of each construction day the site and adjacent roadways shall be prepared for continued utilization without any significant roadway hazards remaining.

Conclusion
With the implementation of the above mitigation measure, the proposed project would not conflict with any adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities, with the implementation of MMs **TRAN-1 through TRAN-3**, above.

Thus, the proposed project is anticipated to have a less than significant potential to conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. Impacts are therefore considered less than significant.

b. *Less Than Significant With Mitigation Incorporated* – Senate Bill 743 mandates that California Environmental Quality Act (CEQA) guidelines be amended to provide an alternative to Level of Service for evaluating transportation impacts. The amended CEQA guidelines, specifically Section 15064.3, recommend the use of Vehicle Miles Traveled (VMT) for transportation impact evaluation. For the purposes of this analysis the recommended VMT analysis methodology and thresholds identified within the Technical Advisory and the City's new analysis methodology have been used. This statewide mandate went into effect July 1, 2020. To aid in this transition, the Governor's Office of Planning and Research (OPR) released a *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December of 2018) (Technical Advisory). Based on OPR's Technical Advisory, the City of San Jacinto has prepared their *City of San Jacinto Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment* (June 2020) (City Guidelines). This analysis has utilized the City Guidelines for the review of applicable VMT screening criteria.

VMT Screening
The City's Guidelines list standardized screening methods for project level VMT analysis that can be used to identify when a proposed land use development project is anticipated to result in a less than significant impact thereby eliminating the need to conduct a full VMT analysis. It is our understanding the City of San Jacinto utilizes the Western Riverside Council of Governments (WRCOG) VMT Screening Tool (Screening Tool). The Screening Tool allows users to select an assessor's parcel number (APN) to determine if a project's location meets one or more of the screening thresholds for land use projects identified in the City Guidelines. The City of San Jacinto VMT screening types, as described within the City Guidelines, are listed below and analyzed on the basis of applicability for this project. A land use project need only to meet one of the above screening thresholds to result in a less than significant impact.

- **Step 1: Transit Priority Area (TPA) Screening**
  - The Technical Advisory and City Guidelines describe those projects located within a Transit Priority Area (TPA) (i.e., within ½ mile of an existing "major transit stop" or an existing stop

along a "high-quality transit corridor"2) may be presumed to have a less than significant impact absent substantial evidence to the contrary. However, the presumption may not be appropriate if a project:

- Has a Floor Area Ratio (FAR) of less than 0.75;
- Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking);
- Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization); or
- Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

  - The Screening Tool was utilized to locate the project site and its proximity to a TPA. Results as shown on Figure XVII-4 identify the project site is not located within ½ mile of an existing major transit stop, or along a high-quality transit corridor.
  - *TPA screening threshold is not met.*

- **Step 2: Low VMT Area Screening**
  - The City Guidelines state that, "residential and office projects located within a low VMT-generating area may be presumed to have a less than significant impact absent substantial evidence to the contrary. In addition, other employment-related and mixed-use land use projects may qualify for the use of screening if the project can reasonably be expected to generate VMT per resident, per worker, or per service population that is similar to the existing land uses in the low VMT area."3 The Screening Tool uses the sub-regional Riverside County Model (RIVCOM) to measure VMT performance within individual traffic analysis zones (TAZ's) within the WRCOG region. The project's physical location is evaluated in the Screening Tool to determine VMT generated by the existing TAZ as compared to the City Guidelines' recommended impact threshold of project generated VMT per service population below the WRCOG Subregional VMT per service population. The WRCOG Subregional VMT per service population was calculated using RIVCOM travel demand model resulting in a WRCOG Subregional average 34.62 VMT per service population.

    The parcel containing the proposed project was selected and the Screening Tool was run for the Origin-Destination VMT per service population measure of VMT. Based on the Screening Tool results (Figure XVII-9), the project TAZ is shown to generate a VMT per service population of 23.6. The project is located in a low VMT area below the WRCOG Subregional VMT per service population.
  - *Low VMT Area screening criteria <u>is met</u>.*

- **Step 3: Project Type Screening**
  - The City Guidelines indicates for small projects that generate low traffic volumes (i.e., fewer than 500 daily trips) and by association low greenhouse gas (GHG) emissions are also assumed to cause a less than significant impact. Trips generated by the project's proposed land use have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, 2021. The project is estimated to generate 1,444 vehicle trip-ends per day. The project exceeds the 500 daily trip thresholds.

    Also, the City Guidelines identify that local serving retail buildings with less than 50,000 square feet or other local serving essential services (e.g., day care centers, public schools, religious assembly uses, etc.) are presumed to have a less than significant impact absent substantial evidence to the contrary. The project does not intend to develop any local serving uses.
  - *Project Type screening criteria is not met.*

Conclusion

In summary, the project was evaluated consistent with the available screening criteria. The project was found to meet the Low VMT Area screening criteria. The proposed project would thus result in a less than significant impact for VMT and therefore would have a less than significant potential to conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).

c. *Less Than Significant Impact* – The proposed project will occur entirely within the project site boundaries, as site access is already provided along Lyon Avenue in support of past use of the site. Large trucks delivering equipment or removing small quantities of excavated dirt or debris can enter the site without major conflicts with the flow of traffic on the roadways used to access the site. Primary access to the site will occur at new entrances along Lyon Avenue and Lipizzan Drive. Internal roadways will be developed in support of the project once the proposed subdivision is approved and the site is developed. Design of driveways, internal roadways, and intersections will be based on City Code, which sets the standard for such design. As the proposed project will be designed to avoid impacting major roadways, site access has been designed such that the project would not increase hazards due to a geometric design feature or incompatible uses, and as such construction traffic is not anticipated to result in any conflicts with the surrounding roadways. Additionally, the proposed project would be required to comply with all applicable fire code and ordinance requirements for construction and access to the site. Emergency response and evacuation procedures would be coordinated with the City and the County, as well as the police and fire departments. In the long term, impacts to any hazards or incompatible uses in existing or planned roadways are anticipated to be less than significant. Occupancy of the proposed project would be similar to the surrounding uses, and the design of the project would not create any hazards to surrounding roadways. Thus, any impacts are considered less than significant without the need for added mitigation.

d. *Less Than Significant With Mitigation Incorporated* – Project access will be designed in accordance with all applicable design and safety standards required by adopted fire codes, safety codes, and building codes established by the City's Engineering and Fire Departments. Primary access to the site will occur at new entrances along Lyon Avenue and Lipizzan Drive. The proposed project will require some offsite improvements, including sidewalks, improved roadway pavement along Lyon Avenue, Lipizzan Drive, and Appaloosa Drive. Construction within and adjacent to these roadways may require partial lane closure; however, the developer will be required to ensure that each roadway can still operate during construction. In order to accomplish this, the project will require implementation of a traffic management plan in order to comply with the City of San Jacinto and the County of Riverside. As such, to mitigate the potential impacts to traffic flow and adequate emergency access, MM **TRAN-1**, provided under issue XVII(a), above, would be required. Ultimately, access to the site must comply with the MM **TRAN-1**, and additionally, access to the site must comply with all City design standards, and would be reviewed by the City to ensure that inadequate design features or incompatible uses do not occur. The proposed project would be required to comply with all applicable fire code and ordinance requirements for construction and access to the site. Emergency response and evacuation procedures would be coordinated with the City, as well as the police and fire departments. Thus, because of the lack of adverse impact on local circulation there is a less than significant potential to impact emergency access during construction or occupancy with the implementation of mitigation. No further mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XVIII. TRIBAL CULTURAL RESOURCES: Would the project cause a substantial change in the significance of tribal cultural resources, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to the California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in sub-division (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

SUBSTANTIATION: Please refer to the discussion under Subsection V, Cultural Resources.

Tribal Cultural Resources: Definition

A Tribal Resource is defined in the Public Resources Code section 21074 and includes the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are either of the following: included or determined to be eligible for inclusion in the California Register of Historical Resources or included in a local register of historical resources as defined in subdivision (k) of Section 5020.1;
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purpose of this paragraph, the lead agency shall consider the significance of the resources to a California American tribe;
- A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape;
- A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "non-unique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal resource if it conforms with the criteria of subdivision (a).

Impact Analysis

a&b. *Less Than Significant With Mitigation Incorporated* – The City of San Jacinto initiated AB 52 consultation with the seven tribes that have requested to be notified of future projects within the City pursuant to AB 52: Soboba Band of Luiseño Indians, Torres Martinez Desert Cahuilla Indians, San Manuel Band of Mission Indians, Morongo Band of Mission Indians, Pechanga Band of Mission

Indians, Rincon Band of Luiseño Indians, and the Agua Caliente Band of Cahuilla Indians. Notification of the proposed project was provided to the tribes and the only tribe that requested consultation under AB 52 was the Soboba Band of Luiseño Indians. The Soboba Band of Luiseño Indians have requested the inclusion of MM **CUL-2**, outlined in the Subsection V, Cultural Resources, in addition to MM **TRC-1**, below. Thus, as a result of the consultation with the tribes, the following mitigation measure has been agreed to by the City of San Jacinto:

TRC-1 ***Prior to grading permit issuance, the developer shall enter into a Treatment and Disposition Agreement (TDA) with the Soboba Band of Luiseño Indians to address treatment and disposition of archaeological, or Tribal Cultural Resources and human remains associated with the Soboba Band of Luiseño Indians that may be uncovered or otherwise discovered during ground-disturbing activities related to the Project, if monitoring deemed necessary by Soboba Band of Luiseño Indians. The TDA will establish provisions for tribal monitoring and shall be submitted to the Planning Division once it has been executed.***

Please refer to MM **CUL-2** for the additional mitigation requested by the Soboba Band of Luiseño Indians. With the incorporation of these mitigation measures, the proposed project has a less than significant potential to cause a substantial change in the significance of tribal cultural resources, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to the California Native American tribe and that is either **a)** Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or **b)** A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. No further mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XIX. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) 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?	☐	☐	☒	☐
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

SUBSTANTIATION

a. Water

Less Than Significant Impact – Water will be provided by EMWD as the proposed project is located within EMWD's service area. Water service is available through a connection located adjacent to the project site. As previously stated under Section X, Hydrology and Water Quality, the EMWD's Urban Water Management Plan (2020) identifies sufficient water resources to meet demand in its service area. The anticipated available water supply within Eastern's retail service area is anticipated to be greater than the demand for water in the future, which indicates that Eastern has available capacity to serve the proposed project without requiring the construction of new water facilities beyond those that would be developed within the project site to serve residences within the project site. Given that the proposed project would not result in any significant and unavoidable impacts under any issue, the development of internal water supply infrastructure is standard, and would not result in any significant impacts. As no other water infrastructure is anticipated to be required to serve the proposed project, development of the Lyon Avenue Project would not result in a significant environmental effect related to the relocation or construction of new or expanded water facilities. Impacts are less than significant.

Wastewater

Less Than Significant Impact – Wastewater collection will be provided by Eastern Municipal Water District and the project will connect to the sewer main adjacent to the project site. Municipal wastewater is delivered to one of Eastern's five regional water reclamation facilities which treat 46 million gallons of wastewater per day. EMWD is responsible for the collection, transmission, treatment, and disposal of wastewater within its service area, which includes portions of the City of San Jacinto. As such, the project would connect to Eastern's existing wastewater collection system

within the adjacent roadway, and would install an internal wastewater collection system to treat sewage generated by residents of the Lyon Avenue Project, the development of which is not anticipated to cause a significant impact. Therefore, development of the Lyon Avenue Project would not result in a significant environmental effect related to the relocation or construction of new or expanded wastewater facilities. Impacts are less than significant.

Stormwater

Less Than Significant Impact – The surface runoff from the site, nonpoint source storm water runoff, will be managed in accordance with the WQMP as discussed in the Hydrology and Water Quality Section (Section X) of this Initial Study. Onsite flows will be collected at the northwestern corner of the project site within the planned retention basin developed within the site. The onsite drainage system will capture the incremental increase in runoff from the project site associated with project development. The system will be designed to capture any excess runoff from the project site after development. Therefore, surface water will be adequately managed, and would require the installation of an internal stormwater collection system, the development of which is not anticipated to cause a significant impact. Thus, development of Lyon Avenue Project would not result in a significant environmental effect related to the relocation or construction of new or expanded stormwater facilities. Impacts are less than significant.

Electric Power

Less Than Significant Impact – Southern California Edison (SCE) will provide electricity to the site and the power distribution system located adjacent to the site will be able to supply sufficient electricity. The effort to connect to the existing electrical system, and to install electricity connections within the project site to serve future residents of the Lyon Avenue Project with electricity is not anticipated to result in significant impacts, as evidenced by the discussions in preceding sections. Therefore, development of the Lyon Avenue Project would not result in a significant environmental effect related to the relocation or construction of new or expanded electric power facilities. Impacts are less than significant.

Natural Gas

Less Than Significant Impact – Natural gas, if required, will be supplied by the Southern California Gas Company. The site will connect to the existing natural gas line adjacent to the project site. The effort to connect to the existing gas line within the adjacent roadway, and to install natural gas lines within the project site to serve future residents of the Lyon Avenue Project with natural gas, should it be determined to be required, is not anticipated to result in significant impacts, as evidenced by the discussions in preceding sections. Therefore, development of the Lyon Avenue Project would not result in a significant environmental effect related to the relocation or construction of new or expanded natural gas facilities. Impacts are less than significant.

Telecommunications

Less Than Significant Impact – Development of the Lyon Avenue Project would require a connection to telecommunication services, such as wireless internet service and phone service. This can be accomplished through connection to existing services that are available to the developer at the project site. Additionally, telecommunication service is available at the project site through Frontier. Therefore, development of the Lyon Avenue Project would not result in a significant environmental effect related to the relocation or construction of new or expanded telecommunications facilities. Impacts are less than significant.

b. *Less Than Significant Impact* – Please refer to the discussion under Hydrology, Section X(b) above. The Lyon Avenue Project proposes the subdivision of a 42.19-acre parcel to enable the development of 153 single-family residences within the City of San Jacinto. The proposed single-family residential project that will consist of 153 dwelling units, is anticipated to demand about 73.93 AFY of water from EMWD. The available water supply within Eastern's retail service area is anticipated to be greater than the demand for water in the future, which indicates that Eastern has available capacity to serve the proposed project. As such, given that Eastern's 2020 Urban Water Management Plan indicates

that the water district anticipates sufficient water supply will be available to serve the project's daily/annual demand, the project would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years. Impacts under this issue are considered less than significant.

c. *Less Than Significant Impact* – Municipal wastewater is delivered to the one of Eastern's five regional water reclamation facilities which treat 46 million gallons of wastewater per day (MGD). The District is responsible for the collection, transmission, treatment, and disposal of wastewater within its service area, which includes portions of the City of San Jacinto, California. EMWD's San Jacinto Valley Regional Water Reclamation Facility (SJVRWRF) treats approximately 7 MGD of wastewater and has capacity of 14 MGD. Based on a sewer generation rate of 179.92 gallons per day per capita,[23] the project is estimated to generate approximately 95,024 gallons per day (GPD) of wastewater (528 x 179.92 = 95,024 GPD) and represents less than about 1.4% percent of the 7 MGD available wastewater treatment capacity at the SJVRWRF. Furthermore, given that there are commercial and industrial uses served by EMWD for wastewater collection, the consideration of wastewater generated on gallons per capita per day basis tends to overestimate demand for residential uses. Regardless, given the available capacity at the SJVRWRF, it is anticipated that the District has available capacity to accommodate the anticipated wastewater generated from the new residences developed on the site. As such, it is anticipated that there will be available capacity to accommodate the demand generated by the proposed project. Impacts under this issue are less than significant.

d&e. *Less Than Significant Impact* – The proposed project will generate demand for solid waste service system capacity and has a potential to contribute to potentially significant cumulative demand impacts on the solid waste system. According to the California Department of Resources and Recycling (CalRecycle) Jurisdiction Per Capita Disposal Trend Profile for the City of San Jacinto (2016-2021),[24] San Jacinto residents generated an average of about 4.04 pounds of waste per resident per day between 2016 and 2021. It is estimated that the proposed 153 single-family residences would generate about 2,133 pounds per day or 389.29 tons per year (4.04 x 528 x 365 = 778,588 pounds per year / 2,000 = 389.29 tons per year) beyond that which is generated by the project at present from the existing residential site use. The project also must comply with the City's mandatory source reduction and recycling program, while mandates 50% of solid waste be diverted and recycled per the state's solid waste diversion requirements under AB 939. However, AB 341 (Chapter 476, Statutes of 2011) increased the statewide solid waste diversion goal to 75 percent by 2020. The law also mandates recycling for commercial and multifamily residential land uses. Therefore, with the mandated 75% diversion rate, the proposed project would contribute 44.8 tons per year to the area solid waste collection. With the County's mandatory source reduction and recycling program, the proposed project is not forecast to cause a significant adverse impact to the waste disposal system. Additionally, as this project would be developed after 2022, future residents would be required to comply with SB1383, otherwise known as "California's Short-Lived Climate Pollutant Reduction" law, often called SB 1383, which establishes methane reduction targets for California. California SB 1383 sets goals to reduce disposal of organic waste in landfills, including edible food. [25] The bill's purpose is to reduce greenhouse gas emissions, such as methane, and address food insecurity in California. This requires jurisdictions to implement mandatory organic waste collection and recycling in a statewide effort to divert organic waste from landfills with goals to:

- Reduce organic waste disposal 50% by 2020 and 75% by 2025
- Recover at least 20% of currently disposed surplus edible food by 2025

As such, much of the waste generated by residents of the proposed project will be required to be diverted from landfills, and as such, the amount of waste generated by the proposed project that would end up in landfills is at least half of the tonnage quoted above. Descriptions of the primary

[23] EMWD, 2023. Wastewater Service. https://www.emwd.org/wastewater-service (accessed 07/25/23)
[24] CalRecycle, 2023. Jurisdiction Review Reports. https://www2.calrecycle.ca.gov/LGCentral/AnnualReporting/ReviewReports (accessed 07/25/23)
[25] County of Santa Clara, 2023. Understand Senate Bill (SB) 1383. https://reducewaste.sccgov.org/food-recovery/understand-senate-bill-sb-1383#3925188384-318395615 (accessed 07/21/23)

disposal facilities to which waste generated within the City would be hauled and their capacity are summarized below.

El Sobrante Sanitary Landfill is located at 10910 Dawson Canyon Road east of Interstate 15 in the Gavilan Hills. According to the State of California's Solid Waste Information System, the landfill is active and permitted with a projected closure date of August 1, 2047. The site is currently permitted to a capacity of 6,229,670 cubic yards with a remaining capacity of 3,834,470 cubic yards and permitted throughput of 400 tons per day.[26]

Badlands disposal site is located at 31125 Ironwood Ave, Moreno Valley 92373. According to the State of California's Solid Waste Information System, the landfill is active and permitted with a Projected closure date of January 1, 2022. The site is currently permitted to a capacity of 34,400,000 cubic yards with a remaining capacity of 15,748,799 cubic yards and permitted throughput of 4,800 tons per day.[27]

Lamb Canyon disposal site is located on Lamb Canyon Road three miles south of Beaumont 92223. According to the State of California's Solid Waste Information System, the landfill is active and permitted with a Projected closure date of April 1, 2029. The site is currently permitted to a capacity of 38,935,653 cubic yards with a remaining capacity of 19,242,950 cubic yards and permitted throughput of 5,000 tons per day.[28]

In addition to operational waste, the proposed project would generate construction waste from the demolition of the onsite and adjacent concrete and asphalt. Any construction and demolition (C&D) waste will be recycled to the maximum extent feasible and any residual materials will be delivered to one of several C&D disposal sites in the area surrounding the project site. Many of these C&D materials can be reused or recycled, thus prolonging the supply of natural resources and potentially saving money in the process. The proposed project would require demolition that is anticipated to generate C&D waste. As such, it is assumed that about 100 15-yard dumpsters or about 40 40-yard dumpsters would be required in a given year in support of the construction and demolition efforts anticipated to be required to develop the Lyon Avenue Project. Construction waste reduction/diversion would be the focus of recycling/reuse. Because of increased construction recycling efforts resulting from CalGreen and other regulations, opportunities for construction recycling are becoming easier to find as there are many located within the County of Riverside according to CalRecycle. These facilities accept materials such as: appliances, cardboard, metals, wood, asphalt, concrete, soil, block rock, brick, carpet and padding, concrete with rebar, drywall, gravel, rock, roof tile, and tile. The facilities that accept C&D materials, combined with the landfills in the surrounding area, have adequate capacity to serve the proposed project construction and occupancy. Solid waste will be disposed of in accordance with existing regulations at an existing licensed landfill, such as the Lamb Canyon Landfill.

Any hazardous materials collected on the project site during either construction or occupancy of the project will be transported and disposed of by a permitted and licensed hazardous materials service provider. Therefore, the project is expected to comply with all regulations related to solid waste under federal, state, and local statutes. To further reduce potential impacts to solid waste facilities due to the large scale of the materials that may require disposal or recycling, the following mitigation measure will be implemented:

[26] CalRecycle, 2023. SWIS Facility/Site Activity Details El Sobrante Landfill (33-AA-0217) https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2256?siteID=2402 (accessed 07/25/23)
[27] CalRecycle, 2023. SWIS Facility/Site Activity Details Badlands Sanitary Landfill (33-AA-0006) https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2245?siteID=2367 (accessed 07/25/23)
[28] CalRecycle, 2023. SWIS Facility/Site Activity Details Lamb Canyon Sanitary Landfill (33-AA-0007) https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2246?siteID=2368 (accessed 07/25/23)

UTIL-1 The contract with demolition and construction contractors shall include the requirement that all materials that can be recycled shall be salvaged and recycled. This includes, but is not limited to, wood, metals, concrete, road base, and asphalt. The developer shall submit a recycling plan to the City for review and approval prior to the start of demolition/construction activities to accomplish this objective.

Therefore, with the above mitigation measure, the project is expected to comply with all regulations related to solid waste under federal, state, and local statutes and be served by a landfill(s) with sufficient permitted capacity to accommodate the project's solid waste disposal needs. No further mitigation is necessary.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XX. WILDFIRE: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire?	☐	☐	☒	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐

SUBSTANTIATION

a. *Less Than Significant Impact* – The proposed project is not located within a Very High Fire Hazard Severity Zone in a Local Responsibility Area (LRA) or State Responsibility Area (SRA), shown on Figure XX-1. Please review the discussion under Subchapter IX(g), Hazards and Hazardous Materials. The project is located within an area containing residential uses, and vacant land adjacent to the project site. The proposed project site is not located in a Wildland Fire Protection Agreement Area and it does not contain a heavy fuel load at present because the site contains some remnants of past development including wood fencing, asphalt, and concrete and is presently covered with weeds. The site also contains several trees. Thus, vegetation within the project site is minimal beyond that which is in place in support of the past landscaping within the project site. Refer to the aerial view of the project site provided as Figure 2 in addition to Photos 1, 2, and 3 for a review of the vegetation within the project site.

The City of San Jacinto reviews all proposed projects and provides conditions of approval for setbacks; building and fire sprinkler requirements; roofing design and material and construction requirements, fuel modification; and other measures, as appropriate, to reduce the risk to the development and surrounding uses to fire hazards. Furthermore, given the suburban residential

setting within which the project is located and the separation from the mountains by both development and local roadways, it is not anticipated that the development of the Lyon Avenue Project within the project site would substantially impair an adopted emergency response or evacuation plan. Furthermore, the project would improve surrounding roadways to provide access to the project site, which would enhance emergency access in the project area.

b. *Less Than Significant Impact* – The proposed project is characterized by essentially flat topography that has been disturbed by the existing and past use of the site in support of the existing residential and grazing uses at the site. The vacant project site contains some remnants of past development including wood fencing, asphalt, and concrete and is presently covered with weeds. The potential for significant exposure of site occupants to pollutant concentrations from a wildfire would be minimal. The project site itself is not anticipated to be exposed to wildfire, particularly once developed because the site will be cleared, which will minimize fire risk, and furthermore, the proposed project is not located within a high or very high fire hazard severity zone. Based on the site location set away from the nearby mountains and hills where fire risk within and adjacent to the City is greatest, and the condition of the site and surrounding area, the project will have a less than significant potential to exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire. No mitigation is required.

c. *Less Than Significant Impact* – The project will require associated infrastructure in support of the Lyon Avenue Project occupancy as follows: the project will require a potable water connection to the Eastern Municipal Water District's service area; the project will require a wastewater connection to the sewer main; electricity provided by SCE will require a connection to power lines in the adjacent roadway; the project will require connection to the City stormwater system through a new storm water collection line; the site may require connection to the existing natural gas line in the roadways adjacent to the project site. This portion of the City of San Jacinto is developed, but contains some adjacent vacant land. Generally, the site is surrounded by residential development, in addition to the San Jacinto Reservoir and the Monte Vista Middle School, with a few vacant parcels located directly adjacent to the project site. Therefore, the project would not have a significant potential to exacerbate wildfire risk or to result in temporary or ongoing impacts to the environment. Impacts under this issue are considered less than significant.

d. *Less Than Significant Impact* – The discussion under Section VII, Geology and Soils, concluded that the project would not have a significant potential to experience landslides or slope instability. Once constructed, the project site will remain essentially flat, and the drainage will be managed in an efficient manner that would not expose people or structures to significant risk. Furthermore, as discussed under Section X, Hydrology and Water Quality, the project is not located in an area containing a significant flood hazard, and the project site is anticipated to remain stable should a wildfire occur at or near the project site. As discussed above, the project is not anticipated to be exposed to substantial fire risk because of the lack of fuel to spread wildfire surrounding the site. Therefore, the development of the Lyon Avenue Project at this site is anticipated to have a less than significant potential to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. No mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XXI. MANDATORY FINDINGS OF SIGNIFICANCE:				
a) Does the project have the potential to substantially 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, substantially 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: The analysis in this Initial Study and the findings reached indicate that the proposed project can be implemented without causing any new project specific or cumulatively considerable unavoidable significant adverse environmental impacts. Mitigation is required to control certain potential environmental impacts of the proposed project to a less than significant impact level. The following findings are based on the detailed analysis contained within this Initial Study of all environmental topics and the implementation of the mitigation measures identified in the previous text and summarized following this section.

a. *Less Than Significant With Mitigation Incorporated* – The project has no potential to cause a significant impact on any biological or cultural resources. The project has been identified as having no potential to degrade the quality of the natural environment, substantially reduce 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, or reduce the number or restrict the range of a rare or endangered plant or animal. The project requires mitigation to address BUOW preconstruction surveys and to protect nesting birds, which is anticipated to ensure that impacts occurring as a result of implementation of the project would be less than significant. Based on the historic disturbance of the site, and its current disturbed condition, the potential for impacting cultural resources is low. The Cultural Resources Report (Appendix 3) determined that no cultural resources of importance were found at the project site, so it is not anticipated that any resources could be affected by the project because no cultural resources exist. However, because it is not known what could be accidentally unearthed upon any excavation activities, contingency mitigation measures are provided to ensure that, in the unlikely event that any resources are found, they are protected from any potential impacts. Please see biological and cultural sections of this Initial Study.

b. *Less Than Significant With Mitigation Incorporated* – Based on the analysis in this Initial Study, the proposed Lyon Avenue Project has the potential to cause impacts that are individually or cumulatively considerable. The proposed subdivision that would result in the development of 153 single-family residential units would contribute to cumulative impacts as a result of the resources required to support the demands of the new residents of the Lyon Avenue Project. However, the proposed project's contribution to such cumulative impacts would not be cumulatively considerable. The issues

of Aesthetics, Air Quality, Biology, Cultural Resources, Energy, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Transportation, Tribal Cultural Resources, and Utilities and Service Systems require the implementation of mitigation measures to reduce impacts to a less than significant level and ensure that cumulative effects are not cumulatively considerable. All other environmental issues were found to have no significant impacts without implementation of mitigation. The potential cumulative environmental effects of implementing the proposed project have been determined to be less than considerable and thus, would result in a less than significant cumulative impact.

c. *Less Than Significant With Mitigation Incorporated* – The proposed project includes activities that have a potential to cause direct substantial adverse effects on humans. The issues of Air Quality, Geology and Soils, Hazards and Hazardous Materials, and Noise require the implementation of mitigation measures to reduce human impacts to a less than significant level. All other environmental issues were found to have no significant impacts on humans without implementation of mitigation. The potential for direct human effects from implementing the proposed project have been determined to be less than significant with mitigation.

Conclusion

This document evaluated all CEQA issues contained in the Initial Study Checklist form. The evaluation determined that either no impact or less than significant impacts would be associated with the issues of Agricultural and Forestry Resources, Greenhouse Gas Emissions, Land Use and Planning, Mineral Resources, Population/Housing, Public Services, Recreation, and Wildfire. The issues of Aesthetics, Air Quality, Biology, Cultural Resources, Energy, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Transportation, Tribal Cultural Resources, and Utilities and Service Systems require the implementation of mitigation measures to reduce impacts to a less than significant level. The required mitigation has been proposed in this Initial Study to reduce impacts for these issues to a less than significant impact.

Based on the findings in this Initial Study, the City of San Jacinto proposes to adopt a Mitigated Negative Declaration (MND) for the Lyon Avenue Project: TTM No. 38339. A Notice of Intent to Adopt a Mitigated Negative Declaration (NOI) will be issued for this project by the City. The Initial Study and NOI will be circulated for 20 days of public comment. At the end of the 20-day review period, a final MND package will be prepared and it will be reviewed by the City for possible adoption at a future Planning Commission meeting, the date for which has yet to be determined. If you or your agency comments on the MND/NOI for this project, you will be notified about the meeting date in accordance with the requirements in Section 21092.5 of CEQA (statute).

Note: Authority cited: Sections 21083 and 21083.05, Public Resources Code. Reference: Section 65088.4, Gov. Code; Sections 21080(c), 21080.1, 21080.3, 21083, 21083.05, 21083.3, 21093, 21094, 21095, and 21151, Public Resources Code; *Sundstrom v. County of Mendocino*,(1988) 202 Cal.App.3d 296; *Leonoff v. Monterey Board of Supervisors*, (1990) 222 Cal.App.3d 1337; *Eureka Citizens for Responsible Govt. v. City of Eureka* (2007) 147 Cal.App.4th 357; *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th at 1109; San *Franciscans Upholding the Downtown Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656.

Revised 2019
Authority: Public Resources Code sections 21083 and 21083.09
Reference: Public Resources Code sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3/ 21084.2 and 21084.3

SUMMARY OF MITIGATION MEASURES

Air Quality

AQ-1 The development of the project site shall be required to comply with South Coast Air Quality Management District Rule 403 – Fugitive Dust. This rule is intended to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (human-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. Rule 403 applies to any activity or human-made condition capable of generating fugitive dust. Applicable dust suppression requirements from Rule 403 are summarized below.

- Nontoxic chemical soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more).
- Active sites shall be watered at least twice daily. (Locations where grading is to occur will be thoroughly watered prior to earthmoving.)
- All trucks hauling dirt, sand, soil, or other loose materials shall be covered, or at least 0.6 m (2 ft) of freeboard (vertical space between the top of the load and top of the trailer) maintained in accordance with the requirements of California Vehicle Code (CVC) Section 23114.
- Construction access roads shall be paved at least 30 m (100 ft) onto the site from the main road.
- Traffic speeds on all unpaved roads shall be reduced to 15 mph or less.

AQ-2 Exhaust Emissions Control. The following measures shall be incorporated into project plans and specifications for implementation:

- Utilize off-road construction equipment that has met or exceeded the maker's recommendations for vehicle/equipment maintenance schedule.
- Contactors shall utilize Tier 3 or better heavy equipment.
- Enforce 5-minute idling limits for both on-road trucks and off-road equipment.

AQ-3 The development of the site shall be required to use electric or alternative fueled construction equipment where technically feasible and/or commercially available, where the electric or alternatively fueled equipment can perform adequately when compared to gasoline or diesel fueled equipment.

AQ-4 The development of the site shall be required to utilize "Super-Compliant" low VOC paints which have been reformulated to exceed the regulatory VOC limits put forth by SCAQMD's Rule 1113. Super-Compliant low VOC paints shall be no more than 10g/L of VOC. Alternatively, Future AGSP Development may utilize building materials that do not require the use of architectural coatings. This measure will apply to all future projects

AQ-5 The development of the site shall be required to sweep all streets at least once a day using SCAQMD Rule 1186 certified street sweepers if visible soil materials are carried to adjacent streets.

AQ-6 The contract with demolition and construction contractors shall include the requirement that all materials that can be recycled shall be salvaged and recycled. This includes, but is not limited to, wood, metals, concrete, road base, and asphalt. The developer shall submit a recycling plan to the City for review and approval prior to the start of demolition/construction activities to accomplish this objective.

AQ-7 The project applicant shall require that all building structures meet or exceed 2020 Title 24, Part 6 Standards and meet Green Building Code Standards.

AQ-8 The project applicant shall require that all faucets, toilets and showers installed in the proposed structures utilize low-flow fixtures that would reduce indoor water demand by 20% per CalGreen Standards.

AQ-9 The project applicant shall require that a water-efficient irrigation system be installed that conforms to the requirements of City codes.

AQ-10 The project applicant shall require that ENERGY STAR-compliant appliances are installed on-site.

AQ-11 The project applicant shall require that high-efficiency lighting be installed that is at least 34% more efficient than standard lighting.

AQ-12 No wood burning devices shall be installed in any dwelling units, consistent with SCAQMD Rule 445.

Biological Resources

BIO-1 Pre-construction surveys for BUOW should be conducted no more than 3 days prior to commencement of project-related ground disturbance to verify that BUOW remain absent from the project area.

BIO-2 If burrowing owl are discovered within the project footprint during construction activities, a site-specific BUOW protection and/or passive relocation plan shall be prepared to determine suitable buffers and/or artificial burrow construction locations to minimize impacts to this species. If a BUOW is found on-site at the time of construction, all activities likely to affect the animal(s) shall cease immediately and regulatory agencies shall be contacted to determine appropriate management actions.

BIO-3 The State of California prohibits the “take” of active bird nests. To avoid an illegal take of active bird nests, any grubbing, brushing or tree removal should be conducted outside of the State identified nesting season (typically February 1 through September 1). Alternatively, nesting bird surveys shall be conducted by a qualified avian biologist no more than three (3) days prior to vegetation clearing or ground disturbance activities. Preconstruction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If active nests are found during the preconstruction nesting bird surveys, a Nesting Bird Plan (NBP) shall be prepared and implemented by the qualified avian biologist. At a minimum, the NBP shall include guidelines for addressing active nests, establishing buffers, ongoing monitoring, establishment of avoidance and minimization measures, and reporting. The size and location of all buffer zones, if required, shall be based on the nesting species, individual/pair’s behavior, nesting stage, nest location, its sensitivity to disturbance, and intensity and duration of the disturbance activity. To avoid impacts to nesting birds, any grubbing or vegetation removal should occur outside peak breeding season (typically February 1 through September 1).

Cultural Resources

CUL-1 In the event that cultural resources are discovered during project activities, all work in the immediate vicinity of the find (within a 60-foot buffer) shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period. The archaeological professional shall assess the find, determine its significance, and make recommendations for appropriate mitigation measures within the guidelines of the California Environmental Quality Act.

CUL-2 If human remains, grave goods, ceremonial items, and/or sacred items are encountered, work will immediately halt within the immediate area and any nearby area reasonably suspected to overlie adjacent remains, and a 100-foot environmentally sensitive area (ESA) boundary will be

established to protect the find from impact, and the Soboba Band of Luiseno Indians and the City of San Jacinto Planning Division shall be immediately notified.

In accordance with Section 7050.5 of the California Health and Safety Code and State CEQA Guidelines Section 15064.5(e), if human remains are found, the Riverside County Coroner's office shall be notified by the permittee within 24 hours of the discovery. County Coroner's determination regarding the origin of the remains and any required notification is described in Section 7050.5 of the California Health and Safety Code and State CEQA Guidelines Section 15064.5(e). No further excavation or disturbance of the potential human remains, or any area reasonably suspected to overlie additional remains, shall occur until a determination has been made, any notifications have been sent and received, and the Riverside County Coroner's Office has cleared the site.

Geology and Soils

GEO-1 Based upon the geotechnical investigation (Appendix 4a of this document), all of the recommended site-specific ground motion parameters (Table 2) identified in Appendix 4a (beginning on Page 6) shall be implemented by the Developer. Implementation of these specific measures will address all of the identified geotechnical constraints identified at project site, including remediation to address groundshaking.

GEO-2 Stored backfill material shall be covered with water resistant material during periods of heavy precipitation to reduce the potential for rainfall erosion of stored backfill material. If covering is not feasible, then measures such as the use of straw bales or sandbags shall be used to capture and hold eroded material on the project site for future cleanup.

GEO-3 All exposed, disturbed soil (trenches, stored backfill, etc.) shall be sprayed with water or soil binders twice a day, or more frequently if fugitive dust is observed migrating from the site within which the Lyon Avenue Project is being constructed.

GEO-4 Based upon the geotechnical investigation (Appendix 4a of this document), all of the recommended design measures identified in Appendix 4a (listed on pages 7-12) shall be implemented by the Developer. Implementation of these specific measures will address all of the geotechnical constraints identified at project site.

GEO-5 Should any paleontological resources be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection should be performed immediately by a qualified paleontologist. Responsibility for making this determination shall be with the City's onsite inspector. The paleontological professional shall assess the find, determine its significance, and determine appropriate mitigation measures within the guidelines of the California Environmental Quality Act that shall be implemented to minimize any impacts to a paleontological resource.

Hazards and Hazardous Materials

HAZ-1 Prior to and during grading and construction, should an accidental release of a hazardous material occur, the following actions will be implemented: construction activities in the immediate area will be immediately stopped; appropriate regulatory agencies will be notified; immediate actions will be implemented to limit the volume and area impacted by the contaminant; the contaminated material, primarily soil, shall be collected and removed to a location where it can be treated or disposed of in accordance with the regulations in place at the time of the event; any transport of hazardous waste from the property shall be carried out by a registered hazardous waste transporter; and testing shall be conducted to verify that any residual concentrations of the accidentally released material are below the regulatory remediation goal at the time of the event. All of the above sampling or remediation activities related to the contamination will be conducted

under the oversight of Riverside County Certified Unified Program Agency (CUPA) Site Mitigation Unit (SMU). All of the above actions shall be documented and made available to the appropriate regulatory agencies prior to closure (a determination of the regulatory agency that a site has been remediated to a threshold that poses no hazard to humans) of the contaminated area.

Hydrology and Water Quality

HYD-1 The Developer shall incorporate an appropriate safety factor into the design of the retention basin that accounts for long-term saturation and potential silting of surface soils. The safety factor shall be determined with consideration of other factors considered in the storm water retention system design—specifically storm water volume estimates—and the safety factors associated with the related design components.

HYD-2 The developer will select best management practices from the range of practices identified by the City and reduce future non-point source pollution in surface water runoff discharges from the site to the maximum extent practicable, both during construction and following development. The Storm Water Pollution Prevention Plan (SWPPP) and Water Quality Management Plan (WQMP) shall be submitted to the City for review and approval prior to ground disturbance and the identified BMPs installed in accordance with schedules contained in these documents.

Noise

NOI-1 No construction activities shall occur during the hours of 7 PM through 7 AM Monday through Saturday, and no construction activities shall occur on Sunday unless emergency construction work must be performed and is authorized by the City manager or his or her designee.

NOI-2 No radios or other sound equipment shall be used at this site unless required for emergency response by the contractor.

NOI-3 The City shall require the Applicant/Developer to require that all construction equipment be operated with mandated noise control equipment (mufflers or silencers). Enforcement will be accomplished by random field inspections by applicant personnel during construction activities.

NOI-4 Equipment not in use for five minutes shall be shut off.

NOI-5 Equipment shall be maintained and operated such that loads are secured from rattling or banging.

NOI-6 Construction employees shall be trained in the proper operation and use of equipment consistent with these mitigation measures, including no unnecessary revving of equipment.

NOI-7 The City shall require the Applicant/Developer to establish a noise complaint response program and shall respond to any noise complaints received for this Project by measuring noise levels at the affected receptor site. If the noise level exceeds an Ldn of 65 dBA exterior or an Ldn of 45 dBA interior at the receptor, the Applicant/Developer will implement adequate measures (which may include portable sound attenuation walls, use of quieter equipment, shift of construction schedule to avoid the presence of sensitive receptors, etc.) to reduce noise levels to the greatest extent feasible.

NOI-8 All residential units located within 500 feet of the construction site shall be sent a notice regarding the construction schedule of the proposed project. A sign, legible at a distance of 50 feet shall also be posted at the construction site. All notices and the signs shall indicate the dates and duration of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register complaints.

NOI-9 During future initiation of construction activities with heavy equipment within 200 feet of occupied residences and school structures, vibration field tests shall be conducted at the nearest occupied residences upon receipt. If vibrations exceed 72 VdB, the construction activities shall be revised (smaller equipment, reduced activity) to reduce vibration below this threshold.

Transportation

TRAN-1 The project Developer shall pay its fair share to the City of San Jacinto towards intersection improvements at Lyon Avenue & Cottonwood Avenue, Lyon Avenue & Appaloosa Drive, and Lyon Avenue & De Anza Drive, in the percentages detailed in Table XVII-3.

TRAN-2 Recommendation 1 – Lyon Avenue & Driveway 1 (#4) – The following improvements shall be implemented to accommodate site access:

- The project shall install a stop control on the eastbound approach (egress project traffic) and a right turn lane.
- The project shall construct a second southbound through lane to be used as a shared through-right turn lane.

Recommendation 2 – Lyon Avenue – The project shall construct the ultimate half-section of Lyon Avenue as a Major (up to 100-foot right-of-way) along the project's frontage from the project's northern boundary to Appaloosa Drive consistent with the City's standards. Frontage improvements also include pavement, curb-and-gutter, sidewalk, and landscaping improvements.

On-site traffic signing and striping shall be implemented in conformance with the provisions of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and in conjunction with detailed construction plans for the project site.

Sight distance at each project access point shall be reviewed to conform to California Department of Transportation (Caltrans) and City of San Jacinto sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

TRAN-3 The construction contractor will provide adequate traffic management resources, as determined by the City. The City shall require a construction traffic management plan that complies with the Work Area Traffic Control Handbook, or other applicable standard, to provide adequate traffic control and safety during construction. The traffic management plan shall be prepared and approved by the City prior to initiation of construction. At a minimum this plan shall include how to minimize the amount of time spent on construction activities; how to minimize disruption of vehicle and alternative modes of transport traffic at all times, but particularly during periods of high traffic volumes as directed by the City; how to maintain safe traffic flow on local streets affected by construction at all times, including through the use of adequate signage, protective devices, flag persons or police assistance to ensure that traffic can flow adequately during construction; the identification of alternative routes that can meet the traffic flow requirements of a specific area, including communication (signs, webpages, etc.) with drivers and neighborhoods where construction activities will occur; designating parking and construction staging areas that would not conflict with the City's operations nor prevent access to adjacent roadways; adopting an emergency response and evacuation plan applicable to the duration of construction; and, at the end of each construction day the site and adjacent roadways shall be prepared for continued utilization without any significant roadway hazards remaining.

Tribal Cultural Resources

TRC-1 Prior to grading permit issuance, the developer shall enter into a Treatment and Disposition Agreement (TDA) with the Soboba Band of Luiseño Indians to address treatment and disposition of archaeological, or Tribal Cultural Resources and human remains associated with the Soboba Band of Luiseño Indians that may be uncovered or otherwise discovered during ground-disturbing activities related to the Project, if monitoring deemed necessary by Soboba Band of Luiseño Indians. The TDA will establish provisions for tribal monitoring and shall be submitted to the Planning Division once it has been executed.

Utilities and Service Systems

UTIL-1 The contract with demolition and construction contractors shall include the requirement that all materials that can be recycled shall be salvaged and recycled. This includes, but is not limited to, wood, metals, concrete, road base, and asphalt. The developer shall submit a recycling plan to the City for review and approval prior to the start of demolition/construction activities to accomplish this objective.

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FIGURES



FIGURE 1

Tom Dodson & Associates
Environmental Consultants

Regional Location



FIGURE 2

Tom Dodson & Associates
Environmental Consultants

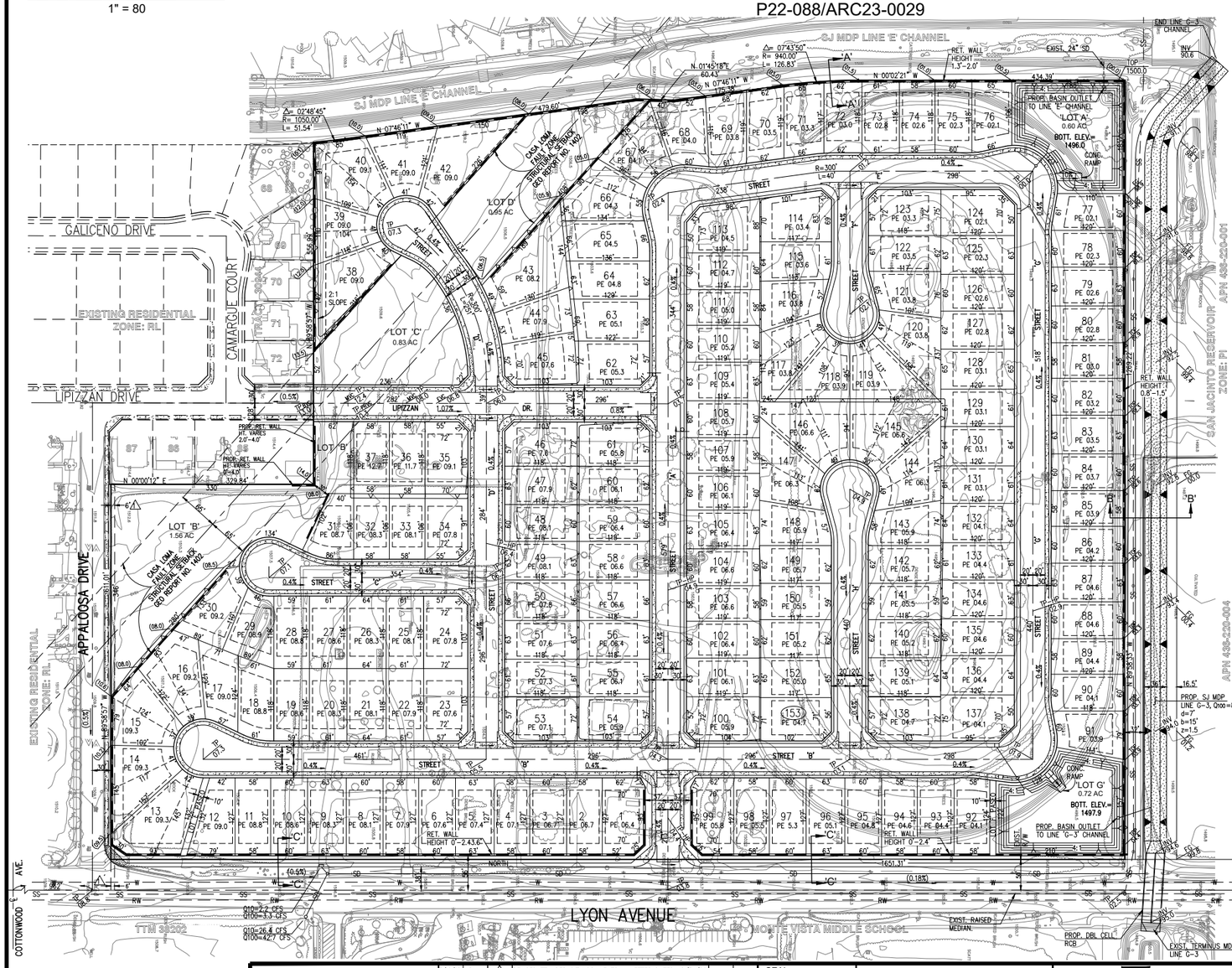
Site Location

IN THE CITY OF SAN JACINTO
TENTATIVE TRACT MAP NO. 38468
P22-088/ARC23-0029

0 20 40 60 80
1" = 80

NORTH

NOTE:
SEE SHEET 2 FOR LOT AREA TABLES AND SECTIONS.


SJ MDP LINE 'E' CHANNEL
GALICENO DRIVE
CAMARGUE COURT
LIPIZZAN DRIVE
APPALOOSA DRIVE
COTTONWOOD AVE.
LYON AVENUE
EXISTING RESIDENTIAL ZONE: RL
SAN JACINTO RESERVOIR ZONE: PI
APN 438-220-001
APN 438-220-004
TTM 38202
LOT 'A' 0.60 AC
LOT 'B' 1.56 AC
LOT 'C' 0.83 AC
LOT 'D' 0.69 AC
LOT 'G' 0.72 AC
STREET 'A'
STREET 'B'
STREET 'C'
CASA LOMA FAULT TRENCH STRUCTURAL SETBACK GEO REPORT NO. 1402
PROP. BASIN OUTLET TO LINE 'E' CHANNEL
PROP. BASIN OUTLET TO LINE 'G-3' CHANNEL
PROP. RET. WALL HT. VARIES 2.0'-4.0'
RET. WALL HEIGHT 1.5'-2.0'
RET. WALL HEIGHT 0.8'-1.5'
RET. WALL HEIGHT 0'-2.4'
RET. WALL HEIGHT 0'-2.4.6'
CONC. RAMP
PROP. SJ MDP LINE G-3, Q100=810cfs n=.7 z=1.5
EXIST. TERMINUS MDP LINE G-3
PROP. DBL CELL RCB
EXIST. RAISED MEDIAN
MORTE VISTA MIDDLE SCHOOL
Q10=2.2 CFS Q100=3.3 CFS
Q10=26.4 CFS Q100=42.7 CFS
END LINE G-3 CHANNEL
EXIST. 24" SD
PROP. 24" SD
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PROP. 8316" SD
PROP. 8322" SD
PROP. 8328" SD
PROP. 8334" SD
PROP. 8340" SD
PROP. 8346" SD
PROP. 8352" SD
PROP. 8358" SD
PROP. 8364" SD
PROP.

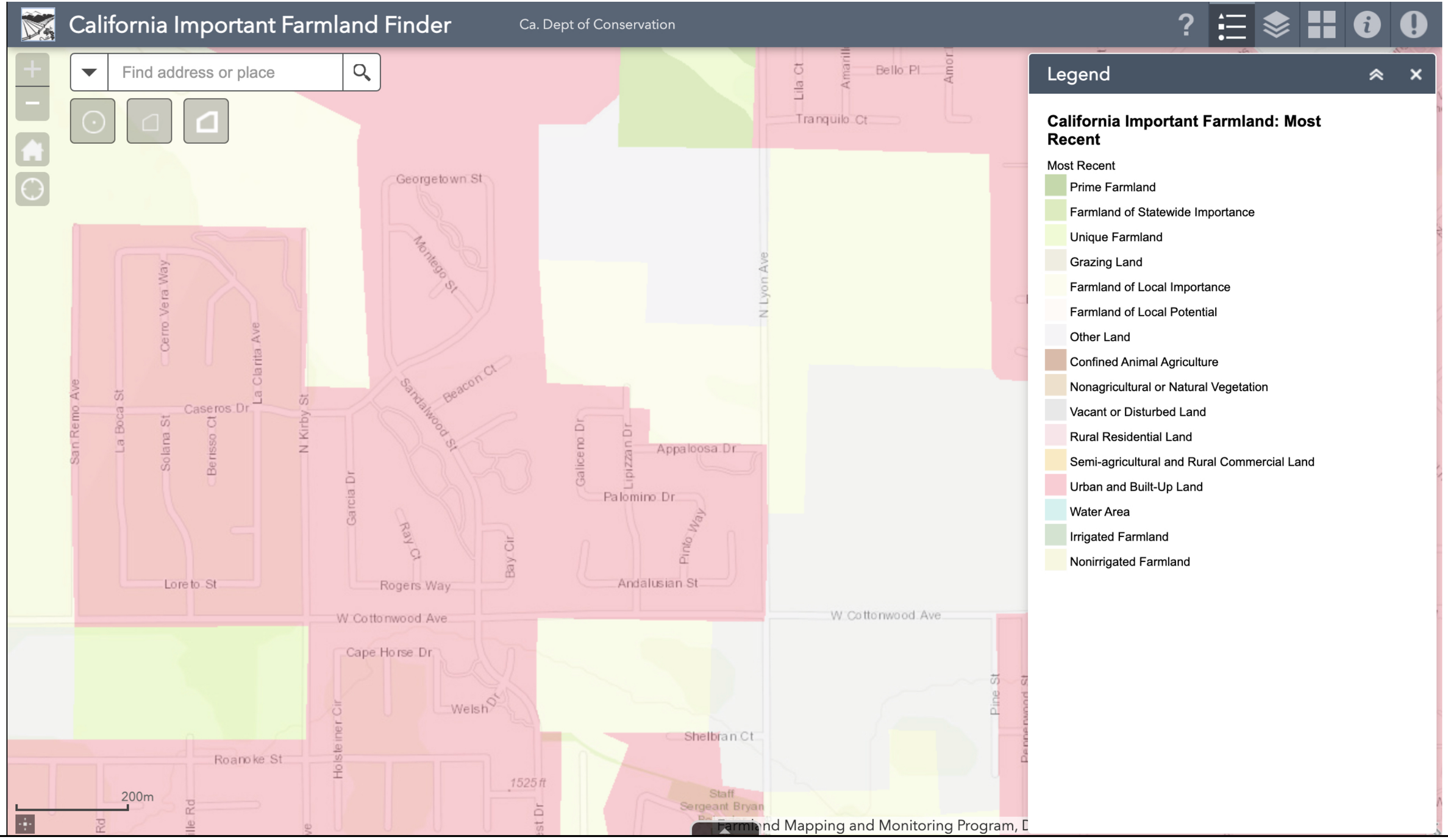


FIGURE II-1

Tom Dodson & Associates
Environmental Consultants

California Important Farmland Finder Map



SOURCE: Google Earth

FIGURE 3

Aerial Photograph of Project Area

42.19-acre Lyons Development Project

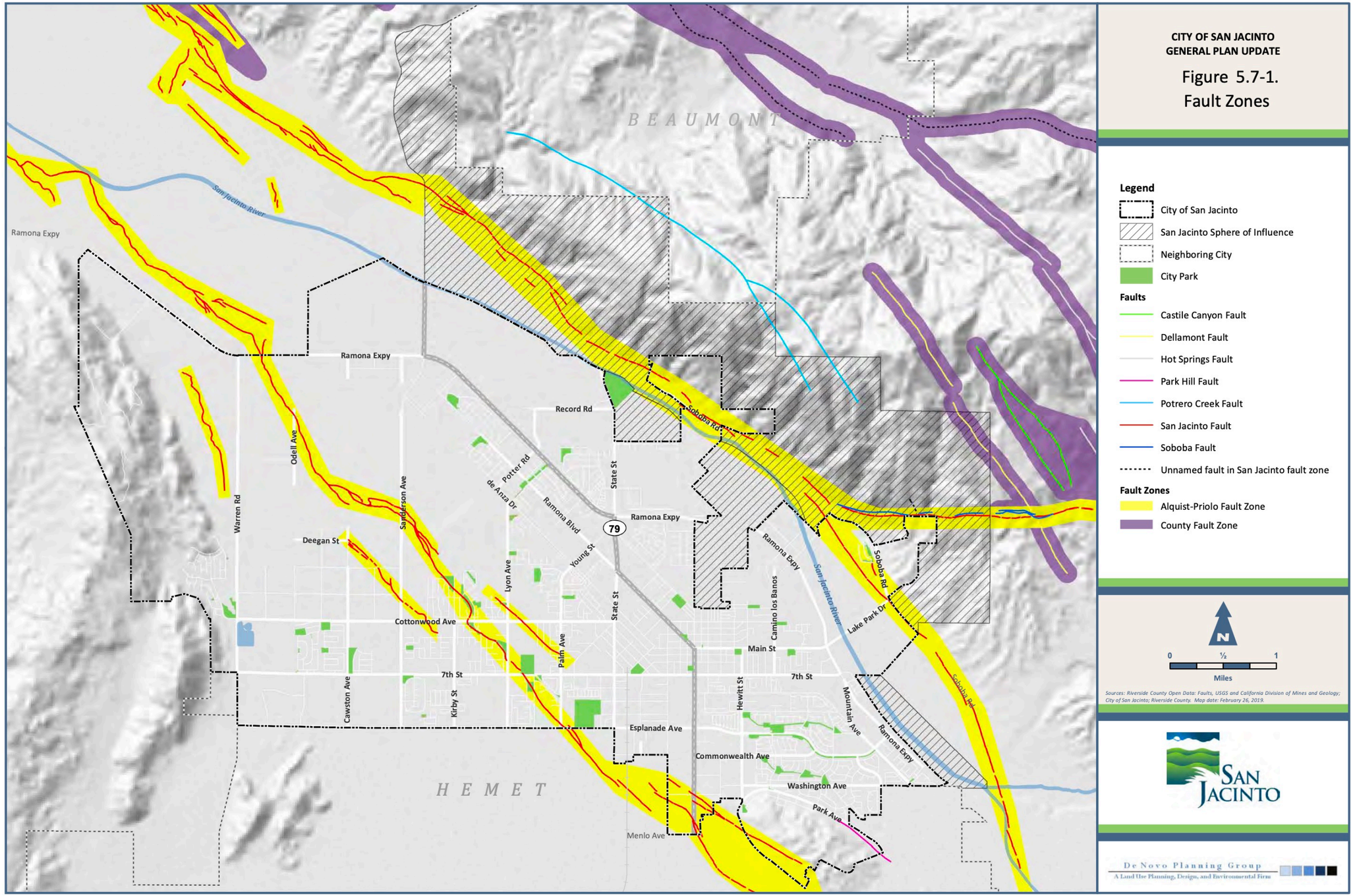
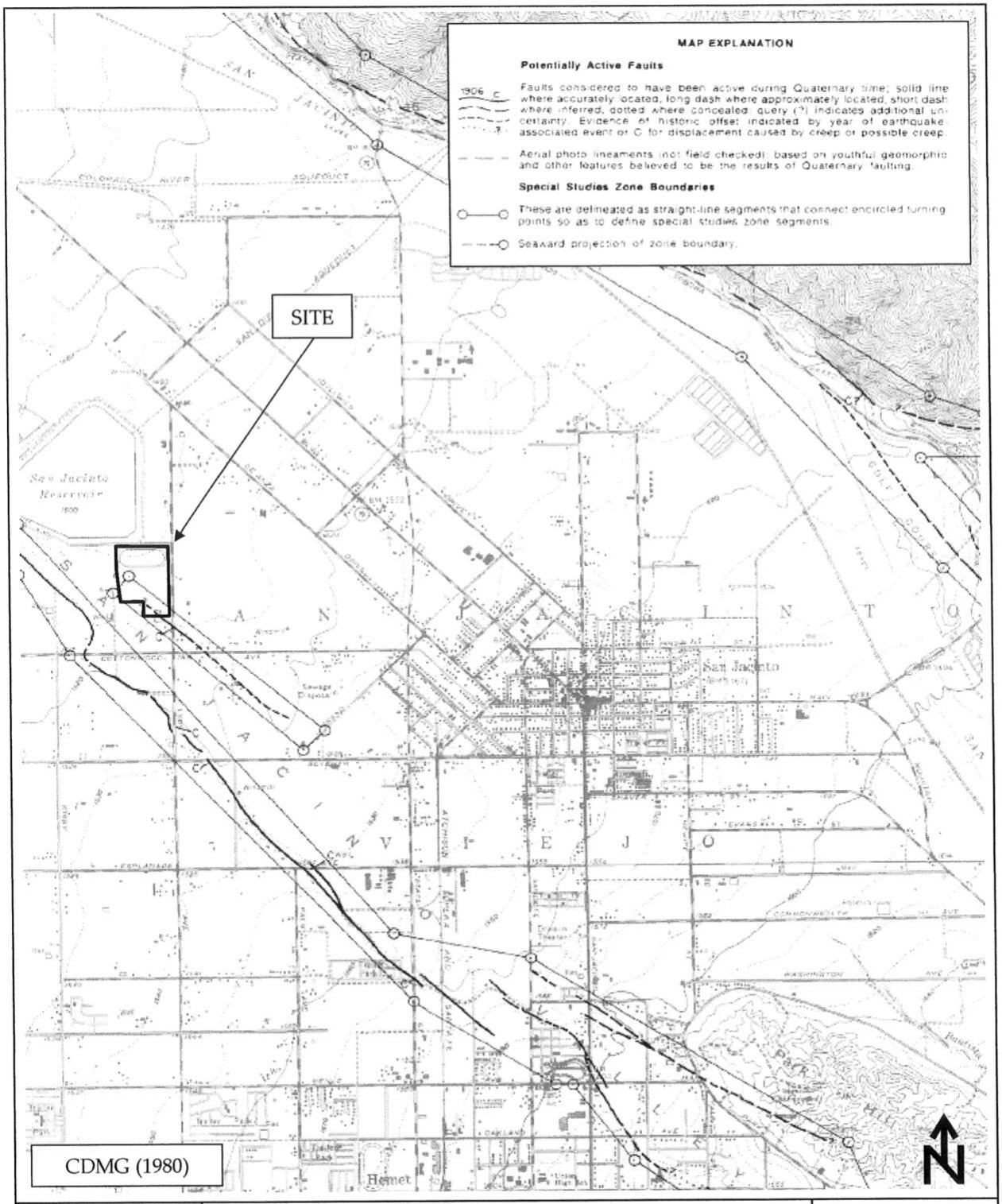


FIGURE VII-1

Tom Dodson & Associates
Environmental Consultants

Fault Zones



	FAULT ZONE MAP	FIGURE
Sladden Engineering	Project Number: 644-22032 Report Number: 22-08-114 Date: August 22, 2022	4

FIGURE VII-2

Tom Dodson & Associates
Environmental Consultants

Fault Zone Map

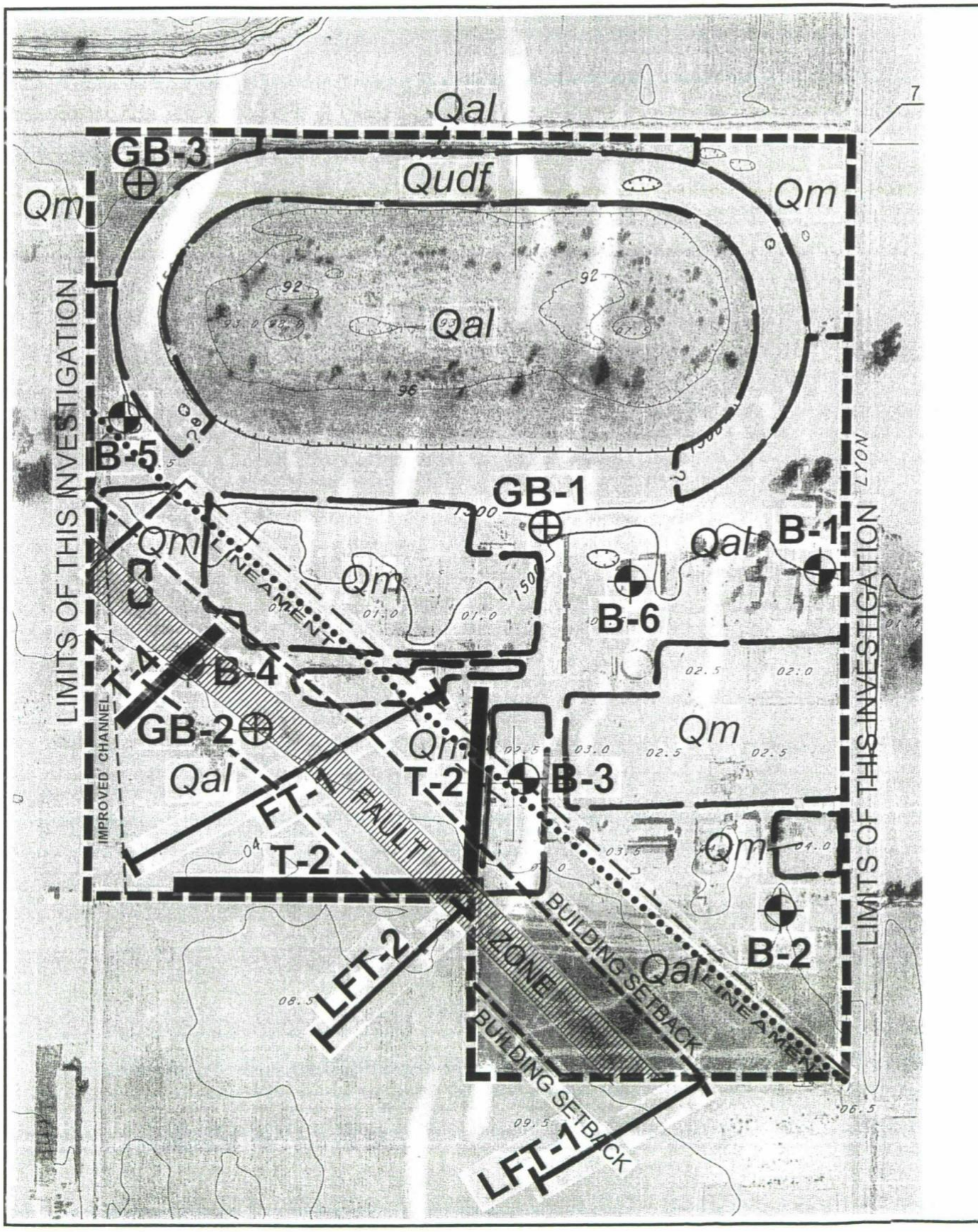


FIGURE VII-3

Tom Dodson & Associates
Environmental Consultants

Fault Setbacks

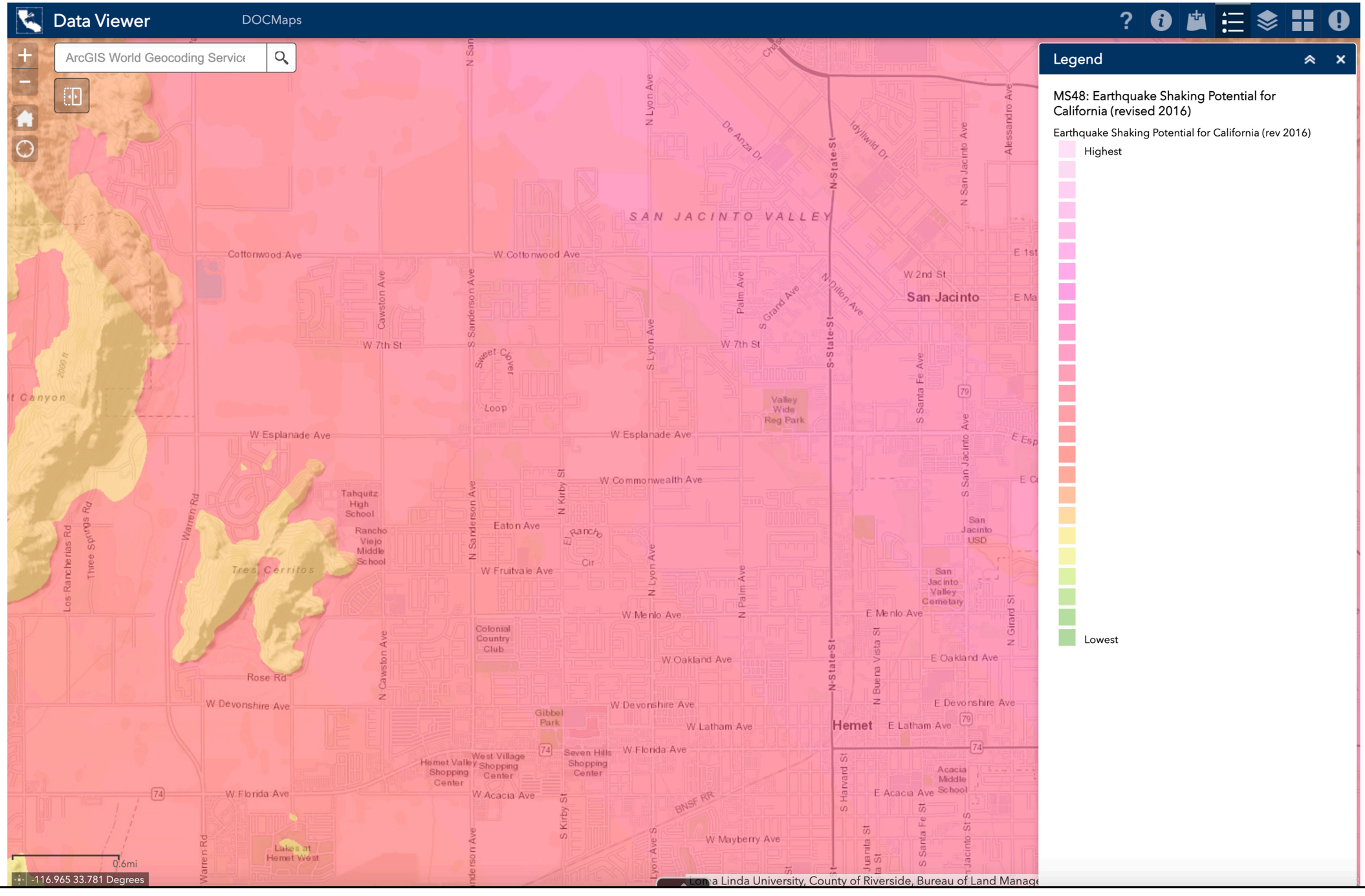


FIGURE VII-4

Tom Dodson & Associates
Environmental Consultants

Earthquake Shaking Potential

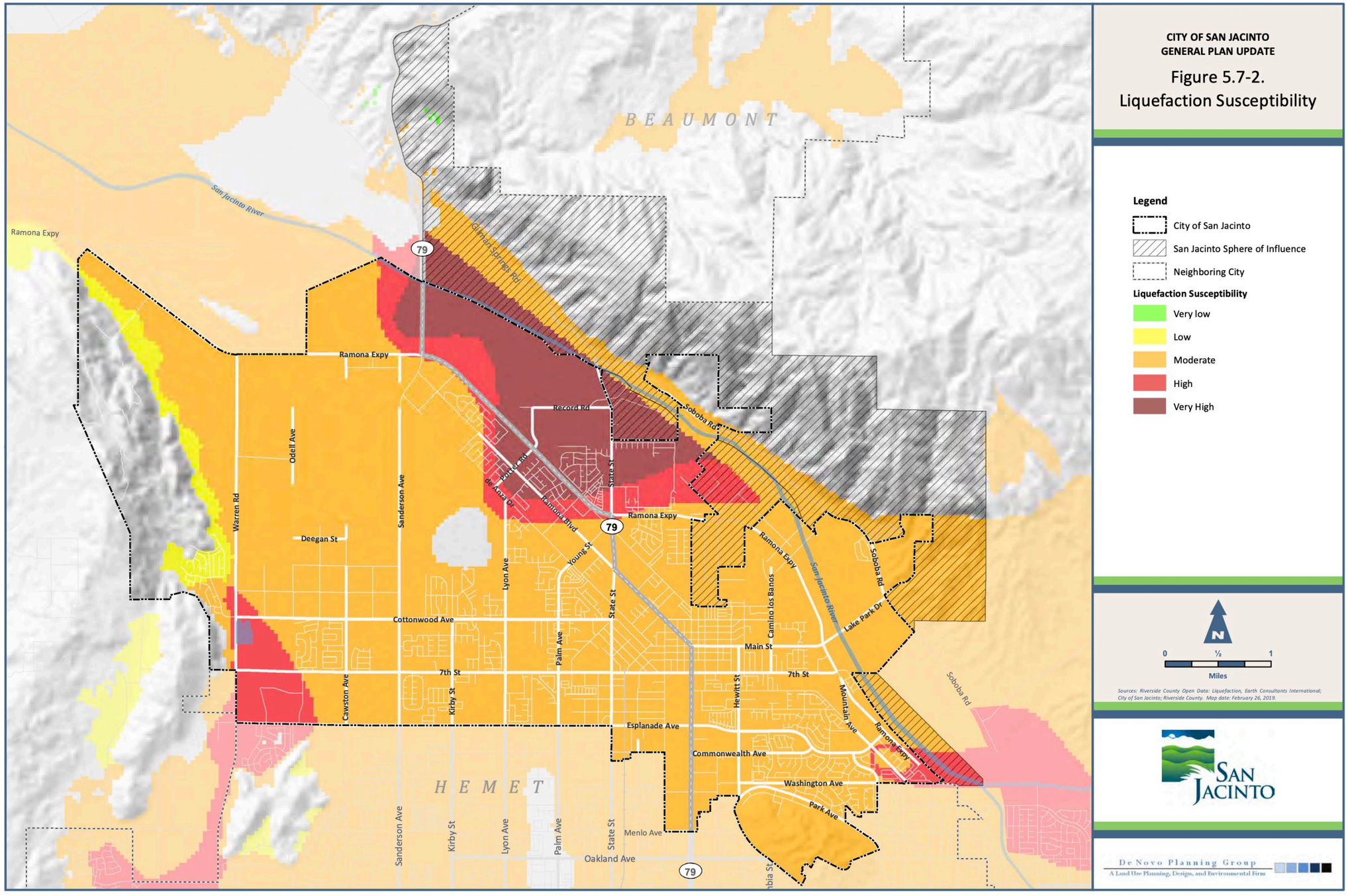
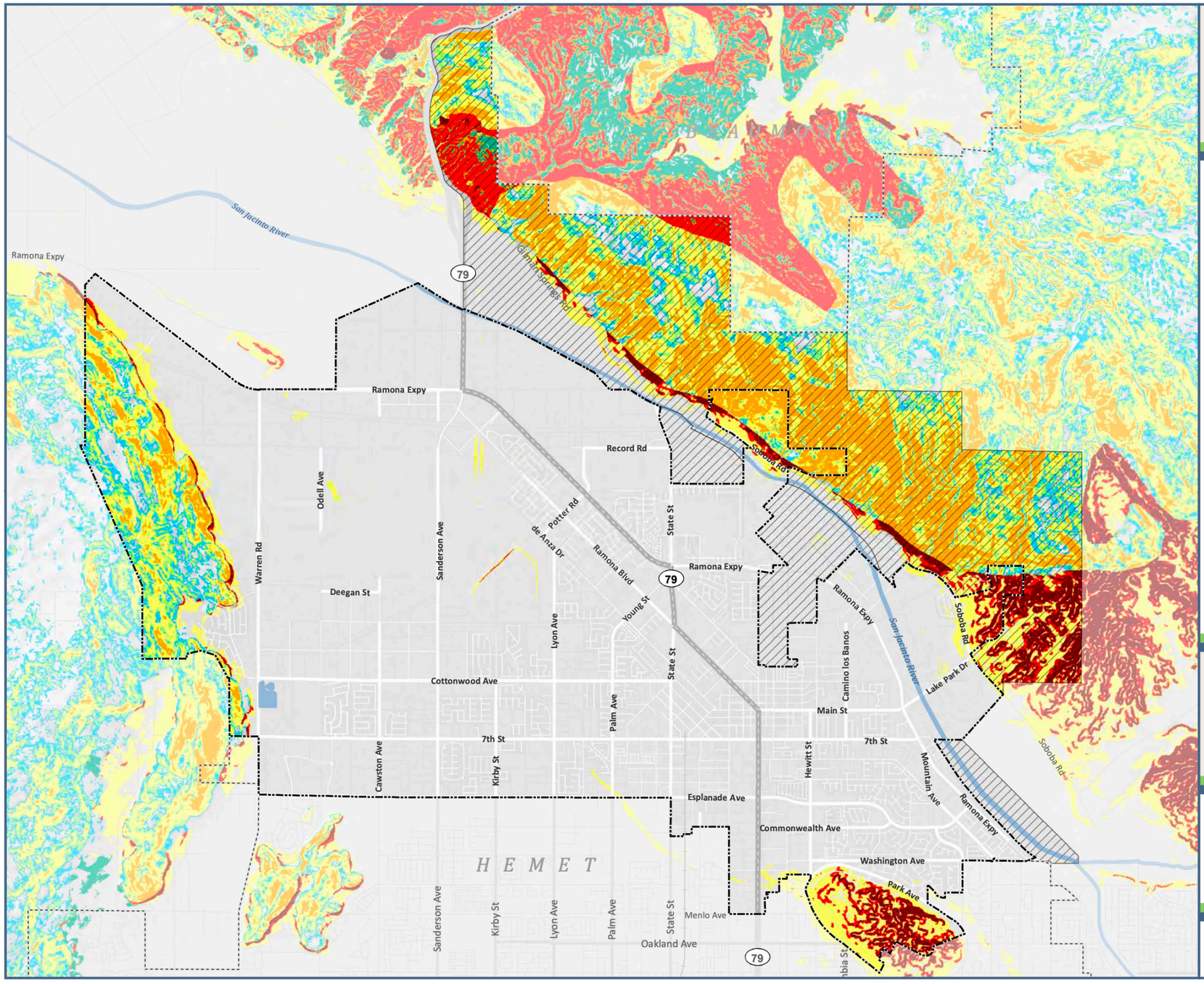


FIGURE VII-5

Tom Dodson & Associates
Environmental Consultants

Liquefaction Susceptibility



CITY OF SAN JACINTO
GENERAL PLAN UPDATE

Figure 5.7-5.
Landslide Susceptibility

Legend

- City of San Jacinto
- San Jacinto Sphere of Influence
- Neighboring City

Landslide Susceptibility Class

0 (Least Susceptible) … 3 … 5 … 6 … 7 … 8 … 9 … 10 (Most Susceptible)

Increasing Susceptibility

Landslide Susceptibility Class Matrix*

		Rock Strength		
		Strong	Intermediate	Weak
Slope Classification	Flat	0	0	0
	Increasing Slope	0	5	7
		0	5	7
		3	8	9
		6	9	10
		7	9	10
		8	9	10
	Very Steep	8	9	10

* On the most basic level, weak rocks and steep slopes are most likely to generate landslides. This map shows the relative likelihood of deep-seated landsliding based on regional estimates of rock strength and steepness of slopes.

N

0 ½ 1

Miles

Sources: California Geological Survey, Susceptibility of Deep-Seated Landslides in California (MS58), 2011; City of San Jacinto; Riverside County. Map date: February 26, 2019.

SAN JACINTO

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A Land Use Planning, Design, and Environmental Firm

FIGURE VII-6

Tom Dodson & Associates
Environmental Consultants

Landslide Susceptibility

CITY OF SAN JACINTO
GENERAL PLAN UPDATE

Figure 5.7-6.
Paleontological Sensitivity

Legend

- City of San Jacinto
- San Jacinto Sphere of Influence

Paletontological Sensitivity

- High Sensitivity at Surface
- High Sensitivity with Depth
- Low Sensitivity

N

0 ½ 1

Miles

Sources: Duke CRM. Map date: March 30, 2022.

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A Land Use Planning, Design, and Environmental Firm

FIGURE VII-7

Tom Dodson & Associates
Environmental Consultants

Paleontological Sensitivity

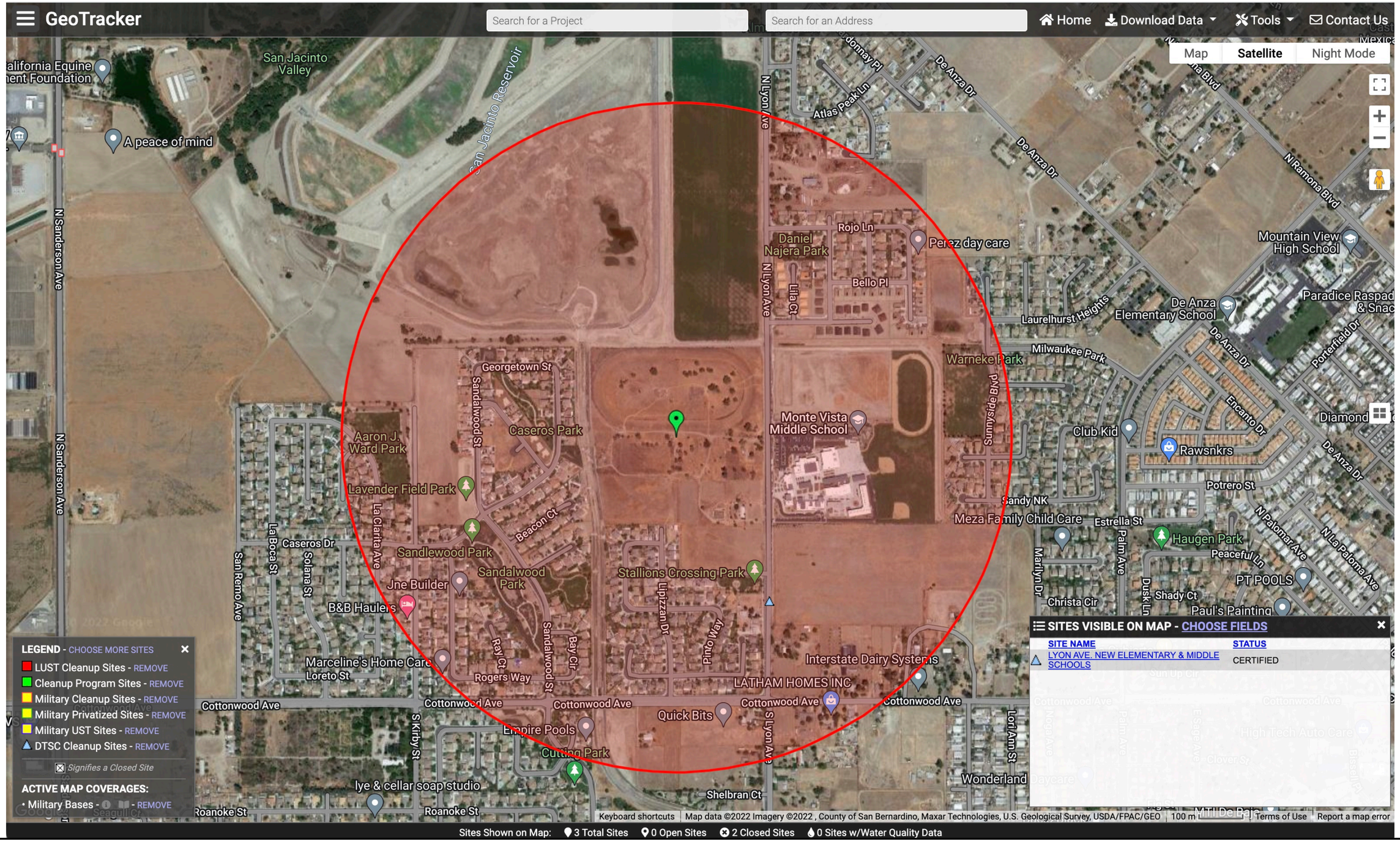


FIGURE IX-1

Tom Dodson & Associates
Environmental Consultants

GeoTracker

CA.GOV

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
ENVIROSTOR

Tools | Reports | Community Involvement | How to Use EnviroStor | ESI | DTSC Web

LYON AVE. NEW ELEMENTARY & MIDDLE SCHOOLS (60001838)

SIGN UP FOR EMAIL ALERTS

425 NORTH LYON AVENUE
SAN JACINTO, CA 92582
RIVERSIDE COUNTY
SITE TYPE: SCHOOL

PROJECT MANAGER: ASLAM SHAREEF
SUPERVISOR: SHAHIR HADDAD
OFFICE: SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH
SCHOOL DISTRICT: SAN JACINTO UNIFIED SCHOOL DISTRICT
CENSUS TRACT: 6065051300
CALENVIROSCREEN PERCENTILE SCORE: 45-50%

Summary | Activities | Community Involvement | Site/Facility Docs | Map | Related Sites | CalEnviroScreen

Site Information

CLEANUP STATUS
CERTIFIED AS OF 1/21/2020

SITE TYPE: SCHOOL
NATIONAL PRIORITIES LIST: NO
ACRES: 39 ACRES
APN: 436-280-010
CLEANUP OVERSIGHT AGENCIES:
DTSC - SITE CLEANUP PROGRAM - LEAD AGENCY

SCHOOL DISTRICT: SAN JACINTO UNIFIED SCHOOL DISTRICT
ENVIROSTOR ID: 60001838
SITE CODE: 404883
SPECIAL PROGRAM:
FUNDING: SCHOOL DISTRICT
ASSEMBLY DISTRICT: 65, 42
SENATE DISTRICT: 23

Regulatory Profile

PAST USE(S) THAT CAUSED CONTAMINATION
AGRICULTURAL - ORCHARD

POTENTIAL CONTAMINANTS OF CONCERN
METALS
ORGANOCHLORINE PESTICIDES (8081 OCPS)

POTENTIAL MEDIA AFFECTED
SOIL

Site History

The Site is proposed for the construction of an elementary and a middle school. The Site (within Assessor's Parcel Number 436-280-010) is approximately 39 acres of vacant land (located at 425 N. Lyon Avenue in San Jacinto, Riverside County, California) previously occupied by a rural residential dwelling, located near the southwest corner of the parcel, and historic agricultural use. The site is surrounded by residential development to the north and east. Warneke Park is adjacent to the site along the northeast boundary. Vacant agricultural land is located to the south. San Jacinto Reservoir is located to the northwest across Lyon Avenue. The site is assessable from Lyon Avenue and is bordered by dirt access roads along the northern and southern site boundaries. The site is east of 215 Freeway and west of State Street.

FIGURE IX-2

The proposed school site was used primarily as pasture land from the early 1900s through the mid-1960s. The historic residence was constructed in the late 1940s near the southwestern portion of the proposed school site and was demolished prior to 2005. The site was historically used for pasture but based on a review of historic aerial photographs the site was used for irrigated agriculture during the mid to late 1960s.

1938 – The site is vacant undeveloped land with some trees located along Lyon Avenue. No structures are seen.

1953 – The residence is now seen located near the southwestern portion of the site. The remainder of the site appears relatively unchanged in comparison with the 1938 aerial photograph.

1967 - The southern area of the site appears to be irrigated agriculture. The trees along Lyon Avenue are no longer seen.

1980 - The site appears to no longer being used for agriculture. The remainder of the site appears relatively unchanged in comparison with the 1967 aerial photograph.

1989 - The site appears relatively unchanged in comparison to the 1980 aerial photograph.

2002 - The residential structure does not appear to be present. The site appears relatively unchanged in comparison to the 1989 aerial photograph.

2006 – The site appears relatively unchanged in comparison to the 2002 aerial photograph.

During the PEA, the Site soil was investigated for residual pesticides from historic agricultural use and possible termiticides and lead from lead-based paint near the former structure/residence.

Based on SSI Report review (approved on March 18, 2014) and a site visit that was conducted on November 6, 2013, a release or threatened release of hazardous material or the presence of a naturally occurring hazardous material, which would pose a threat to public health or the environment under unrestricted land use, was indicated at the Site. Therefore, DTSC concurs with the conclusion of the SSI Report that a response action for the Site is required and hereby approves the SSI Report. The response should include a Removal Action Workplan (RAW) to mitigate the Site for chlordane.

Per the e-mail response received from the District on July 31, 2014, the Site is put on hold until further notice.

04/10/2018: District sent letter, dated 04/10/18, requesting reactivation of Site in order to implement the response action for the Site.

DTSC is in the process of scheduling a Scoping meeting with the District and the consultant.

On April 11, 2018, the District notified DTSC of its intent to proceed with Site activity. Based on the SSI, a RAW was conducted at the Site. The RAW was approved by DTSC on September 5, 2018, which proposed excavation and offsite disposal of impacted soil. The Removal Action Completion Report (RACR) describes the remediation of chlordane impacted soil at the Site. A total of approximately 140 cubic yards of impacted soil was excavated from the Site.

DTSC processed Certification of the Site on January 21, 2020

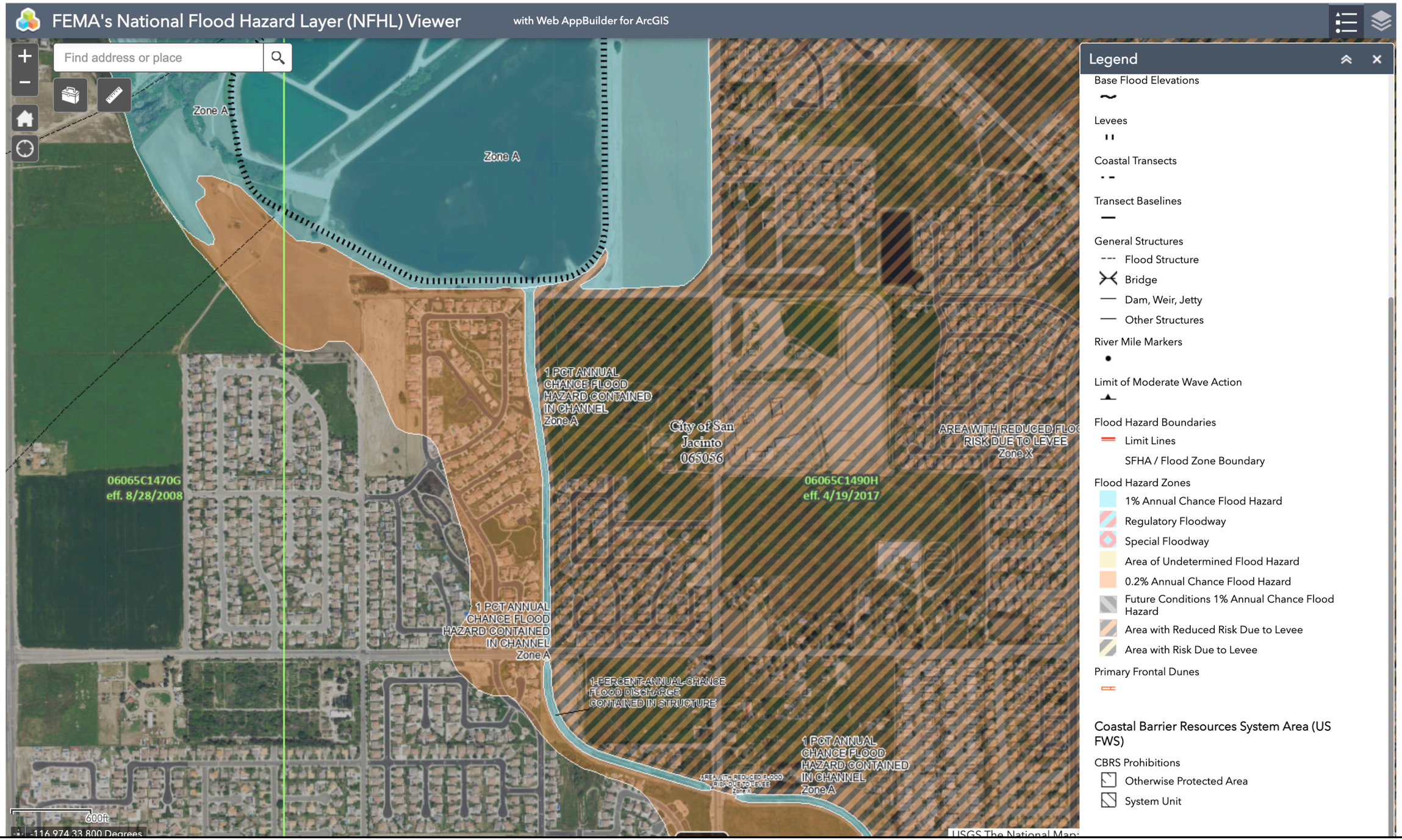
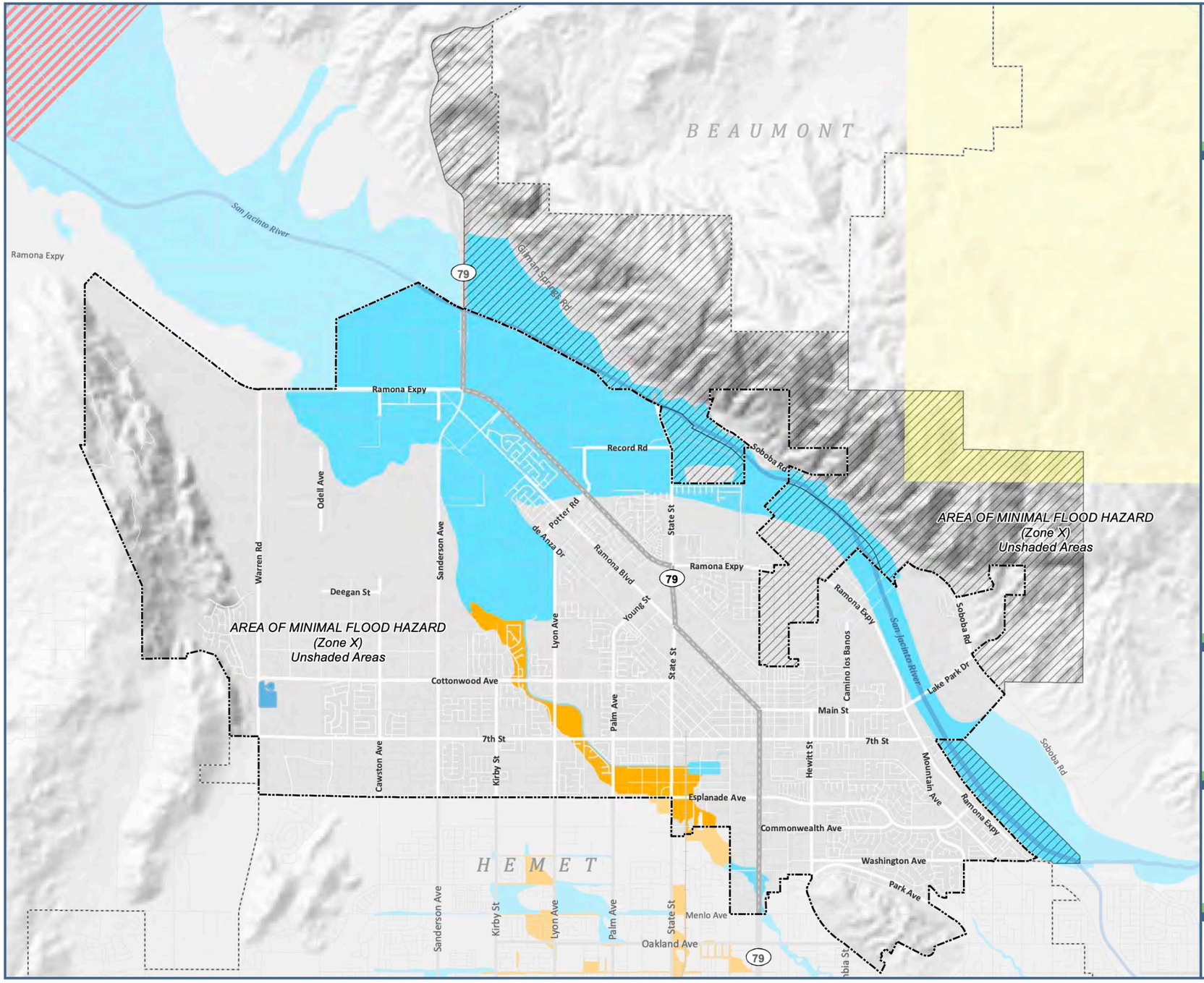


FIGURE X-1

Tom Dodson & Associates
Environmental Consultants

FEMA National Flood Hazard Layer Viewer



CITY OF SAN JACINTO
GENERAL PLAN UPDATE

Figure 5.10-4.
FEMA Flood Map

Legend

- City of San Jacinto
- Neighboring City
- San Jacinto Sphere of Influence

FEMA Designation

- 100-year Flood Zone
- 500-year Flood Zone
- Regulatory Floodway
- No Data Available

N

0 ½ 1

Miles

Sources: FEMA NFHL_0605C, Latest LOMR Effective Date 2/6/2019; City of San Jacinto; Riverside County. Map date: February 21, 2019.

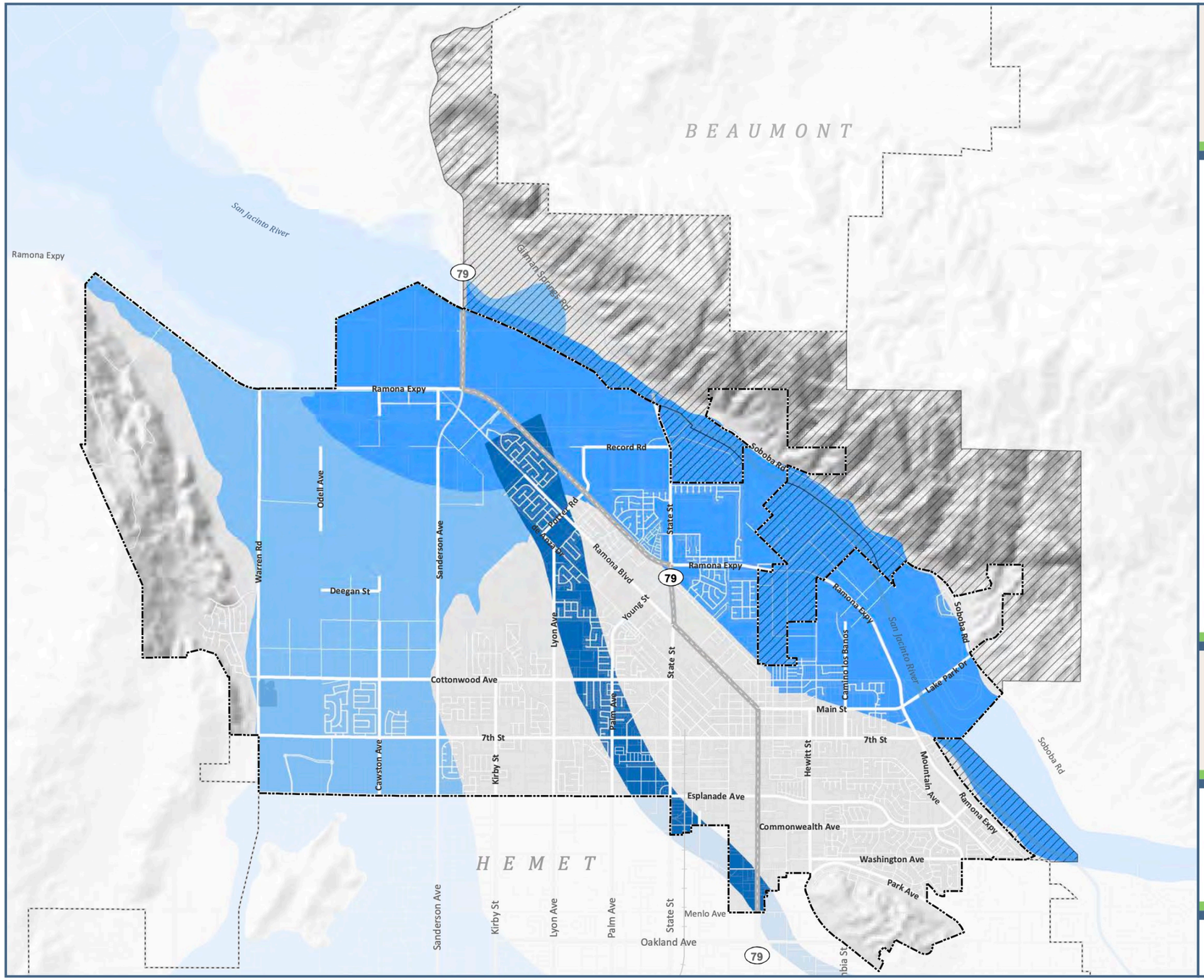
SAN JACINTO

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A Land Use Planning, Design, and Environmental Firm

FIGURE X-2

Tom Dodson & Associates
Environmental Consultants

FEMA Flood Map



CITY OF SAN JACINTO
GENERAL PLAN UPDATE

Figure 5.10-5.
Dam Inundation Map

Legend

- City of San Jacinto
- San Jacinto Sphere of Influence
- Neighboring City

Inundation Areas by Source

- Diamond Valley Lake
- Lake Hemet
- Little Lake

N

0 ½ 1
Miles

Sources: CalOES Statewide Dam Inundation Layer, ArcGIS Online, accessed 2/21/2019; City of San Jacinto; Riverside County. Map date: February 21, 2019.

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A Land Use Planning, Design, and Environmental Firm

FIGURE X-3

Tom Dodson & Associates
Environmental Consultants

Dam Inundation

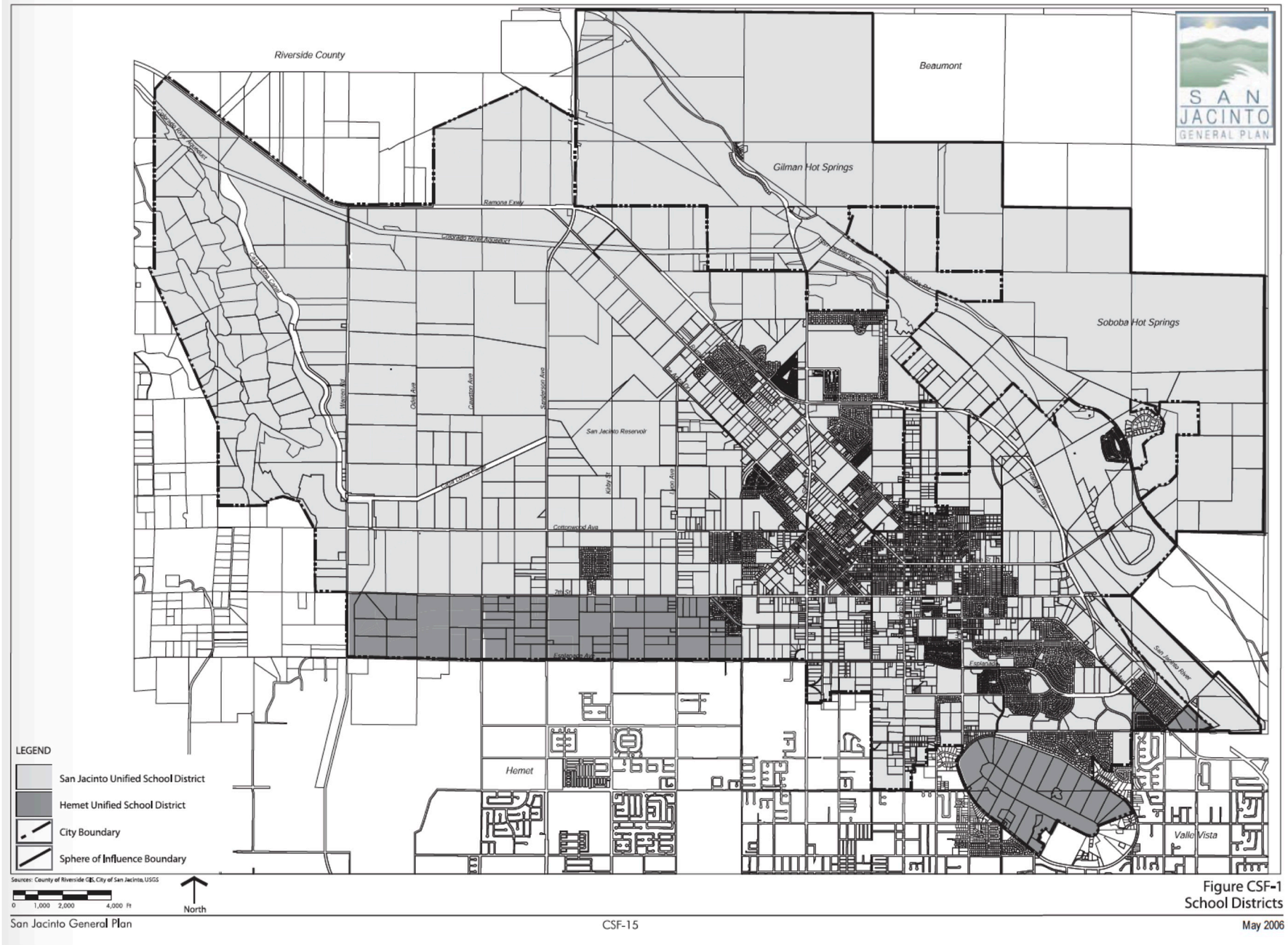


Figure CSF-1
School Districts

FIGURE XV-1

Tom Dodson & Associates
Environmental Consultants

San Jacinto School District Map

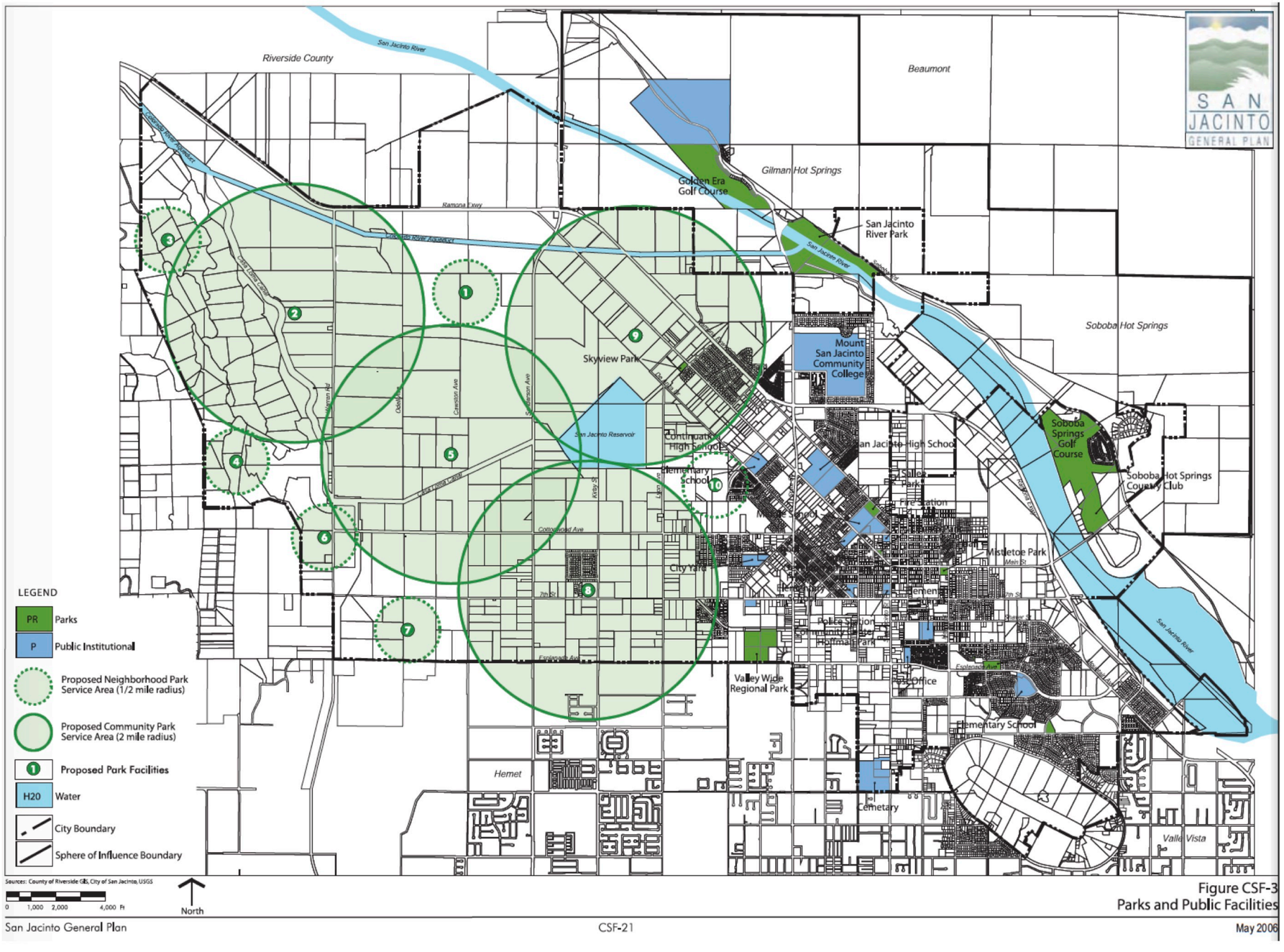
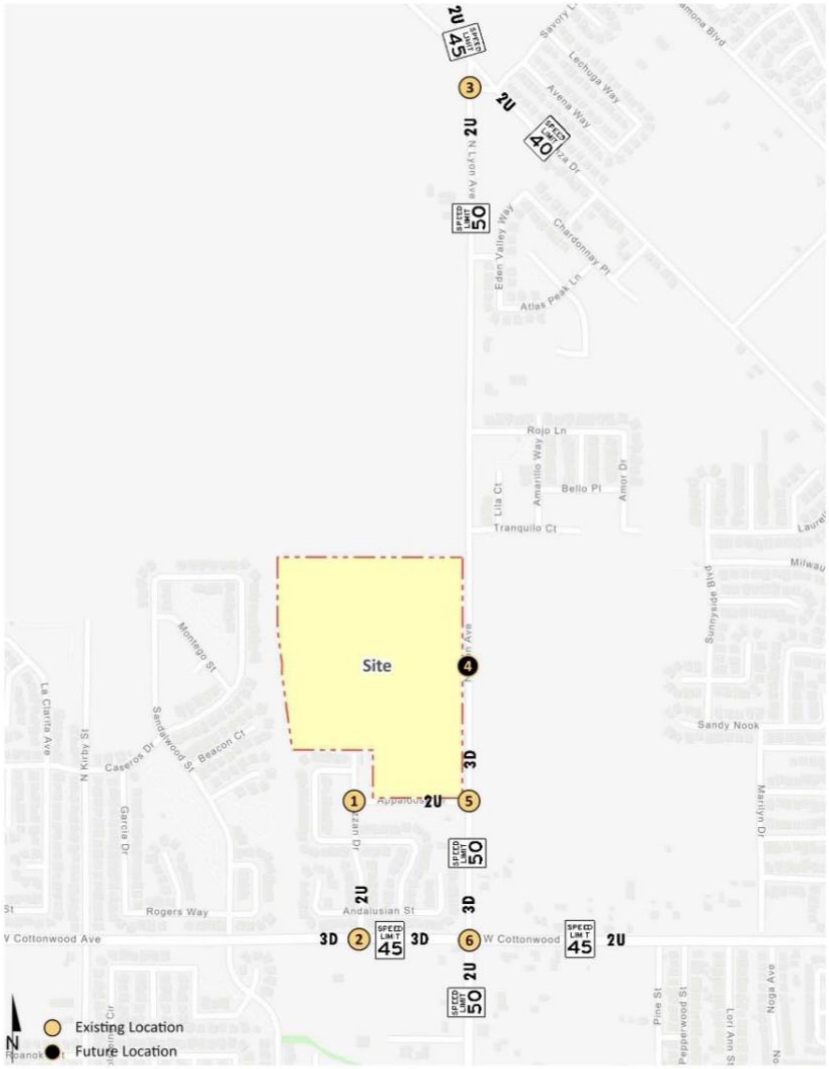


Figure CSF-3
Parks and Public Facilities

FIGURE XV-2

Tom Dodson & Associates
Environmental Consultants

Parks and Public Facilities



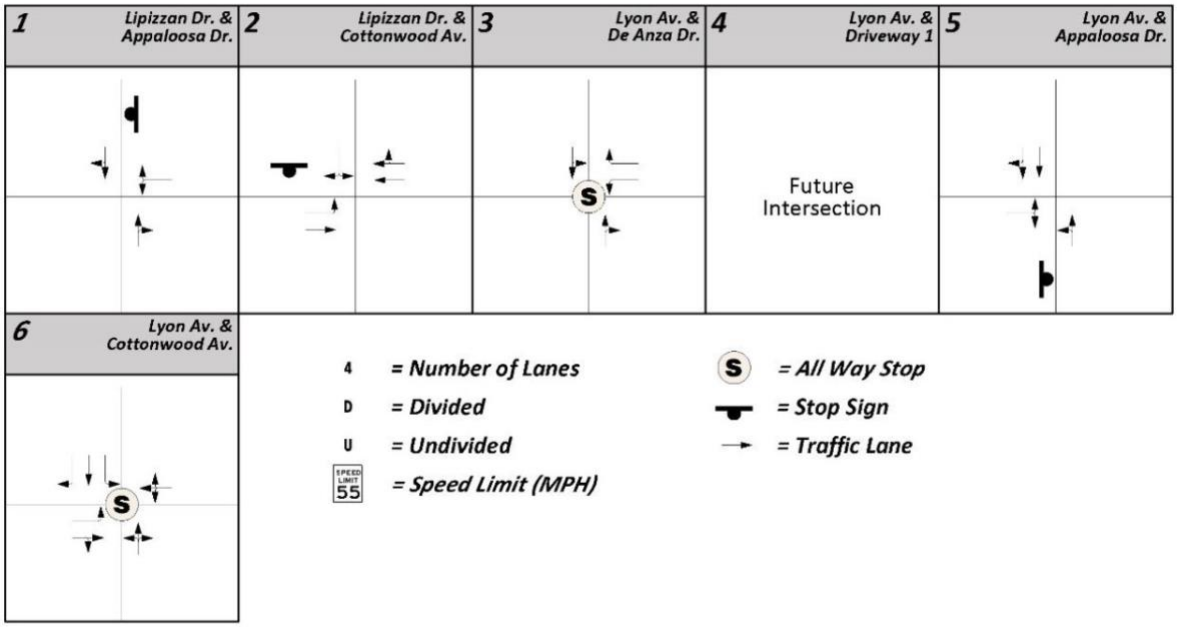
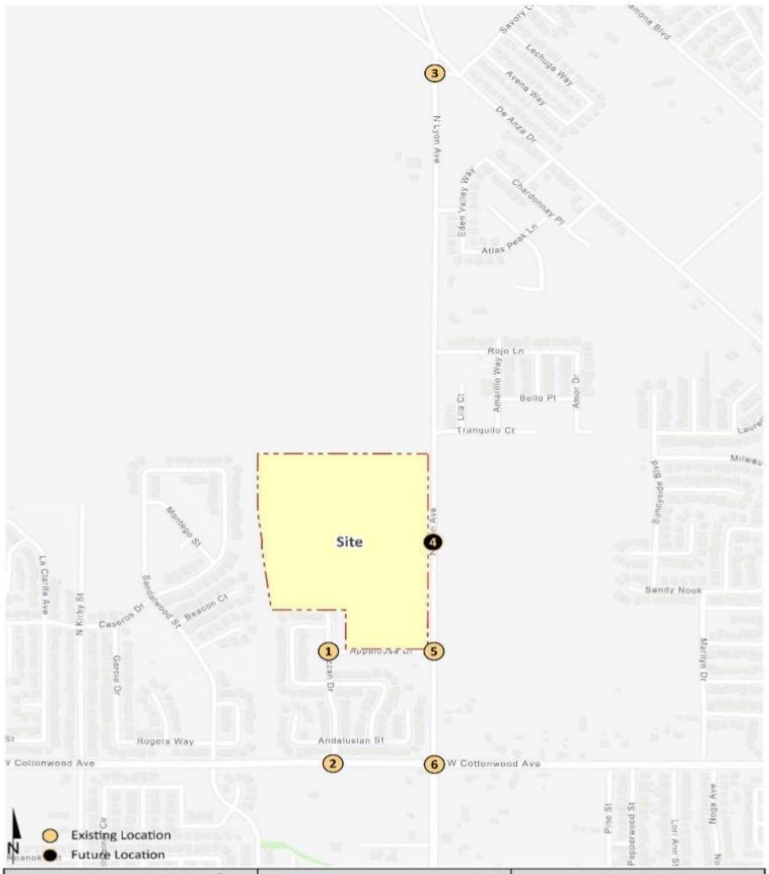


FIGURE XVII-1

Tom Dodson & Associates
Environmental Consultants

Roadway Configurations

EXHIBIT 6-3: EAPC (2026) AM, PM, AND ADT TRAFFIC VOLUMES



1 Lipizzan Dr. & Appaloosa Dr.	2 Lipizzan Dr. & Cottonwood Av.	3 Lyon Av. & De Anza Dr.
1,100 / 800	1,350 / 14,650	9,950 / 3,750
28(16) ↲ 34(24) ↳	45(29) ↲ 18(15) ↳	12(38) ↲ 294(404) ↓ 73(76) ↳
↱ 14(30)	↱ 14(29)	↱ 77(36)
← 15(10)	← 460(614)	← 12(38)
		↰ 179(65)
13(39) ↑ 32(6) ↱	36(47) ↳	33(22) ↳
	721(622) →	33(22) →
		99(66) ↲
		35(113) ↰ 416(284) ↑ 284(79) ↱
750	15,250	3,000 / 11,500

4 Lyon Av. & Driveway 1	5 Lyon Av. & Appaloosa Dr.	6 Lyon Av. & Cottonwood Av.
11,950	12,300 / 950	12,300 / 12,350
8(27) ↲ 567(520) ↓	39(12) ↲ 549(505) ↓ 7(21) ↳	217(135) ↲ 303(354) ↓ 71(52) ↳
	↱ 19(13)	↱ 169(62)
		← 224(458)
	↰ 33(22)	↰ 26(39)
28(19) ↲	81(23) ↳	256(162) ↳
826(499) →	11(4) ↲	462(425) →
		20(49) ↲
	14(26) ↰ 726(464) ↑ 12(37) ↱	32(49) ↰ 320(313) ↑ 39(28) ↱
450 / 11,950	700 / 12,050	14,650 / 9,600

##(##) AM(PM) Peak Hour Intersection Volumes

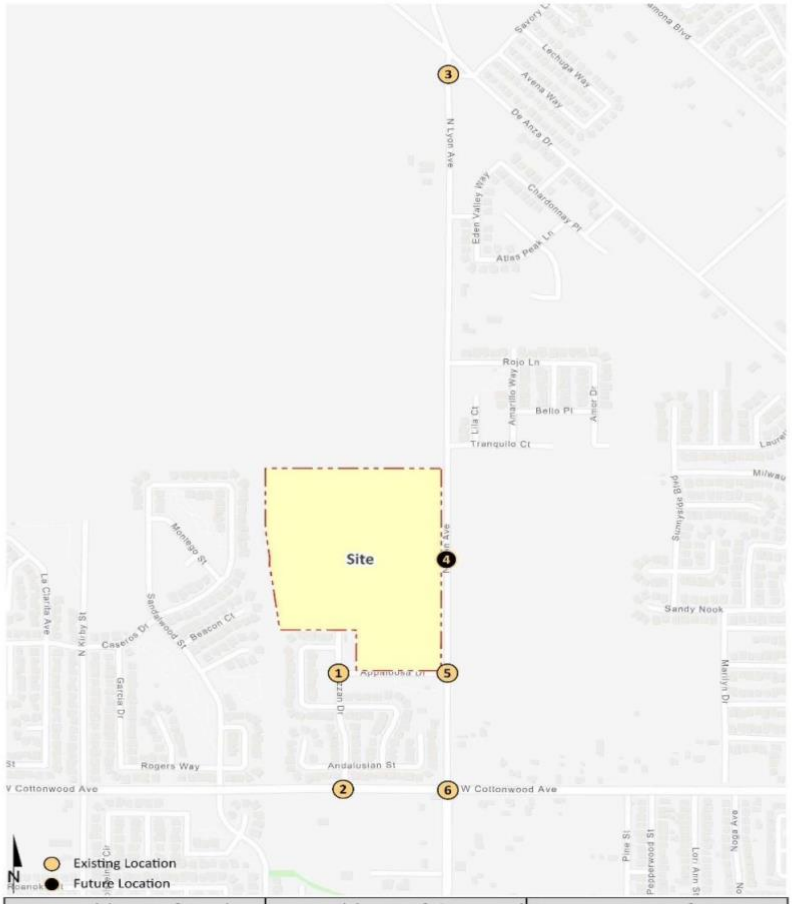
Average Daily Trips

FIGURE XVII-2

Tom Dodson & Associates
Environmental Consultants

Traffic Volumes

EXHIBIT 6-4: EAPC (2026) MD TRAFFIC VOLUMES



1 Lipizzan Dr. & Appaloosa Dr.	2 Lipizzan Dr. & Cottonwood Av.	3 Lyon Av. & De Anza Dr.
← 23 ↳ 31 ↰ 69 ↱ 30 → 35 ↱ 56	← 90 ↳ 14 ↰ 29 ← 564 → 95 → 620	← 32 ← 330 ↳ 73 ↰ 57 ← 32 ↰ 156 → 27 → 27 ↳ 81 ↰ 95 → 289 ↱ 207
4 Lyon Av. & Driveway 1	**5 Lyon Av. & Appaloosa Dr.**	**6 Lyon Av. & Cottonwood Av.**
← 23 ← 532 → 611 ↳ 23	← 46 ← 490 ↳ 18 ↰ 15 ↰ 27 → 47 ↰ 72 → 548 ↱ 32 ↳ 48	← 196 ← 326 ↳ 83 ← 145 ← 338 ↰ 37 → 194 ↰ 58 → 301 ↱ 29 ↳ 400 → 41

MD Peak Hour Intersection Volumes

FIGURE XVII-3

Tom Dodson & Associates
Environmental Consultants

Traffic Volumes

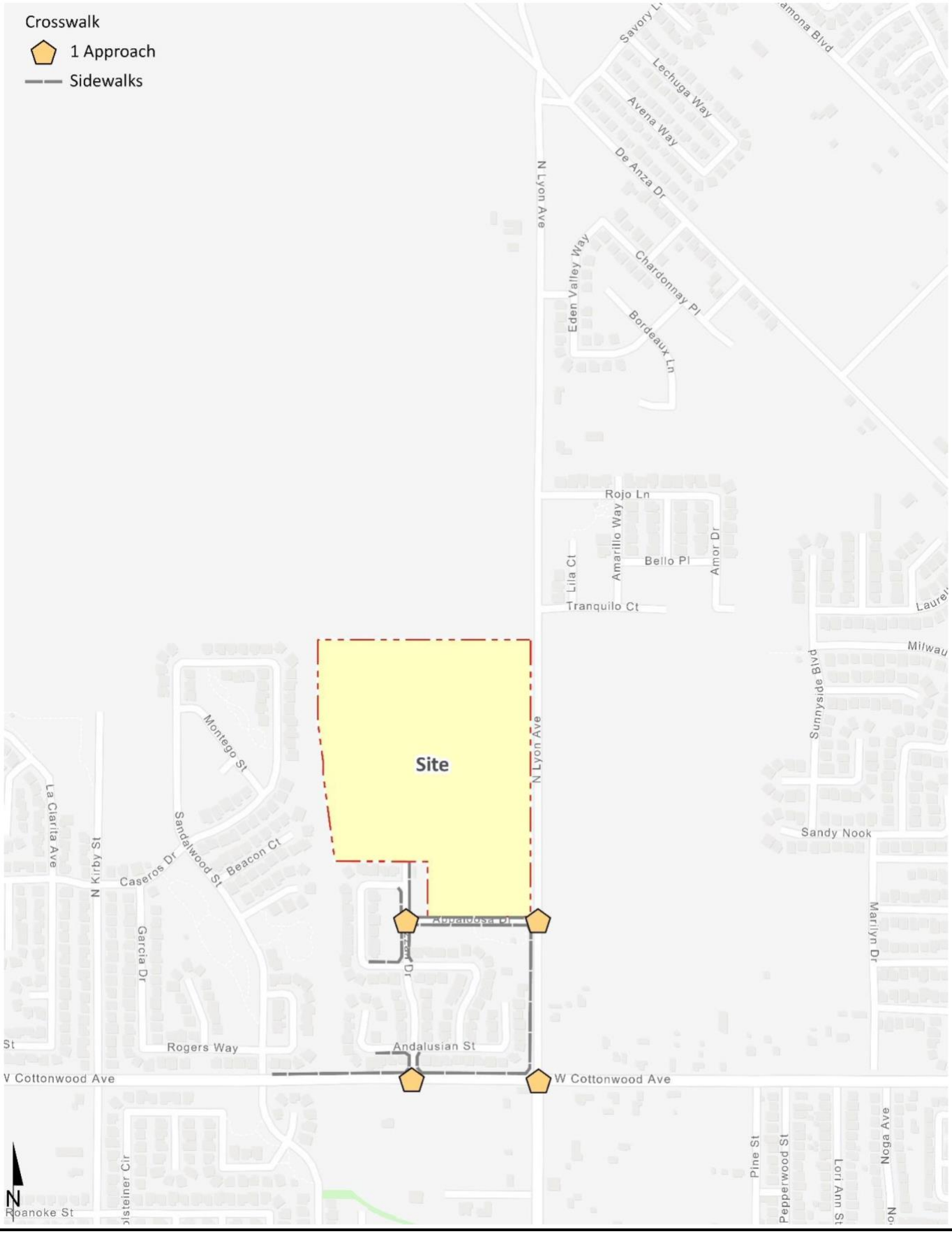


FIGURE XVII-4

Tom Dodson & Associates
Environmental Consultants

Pedestrian Facilities

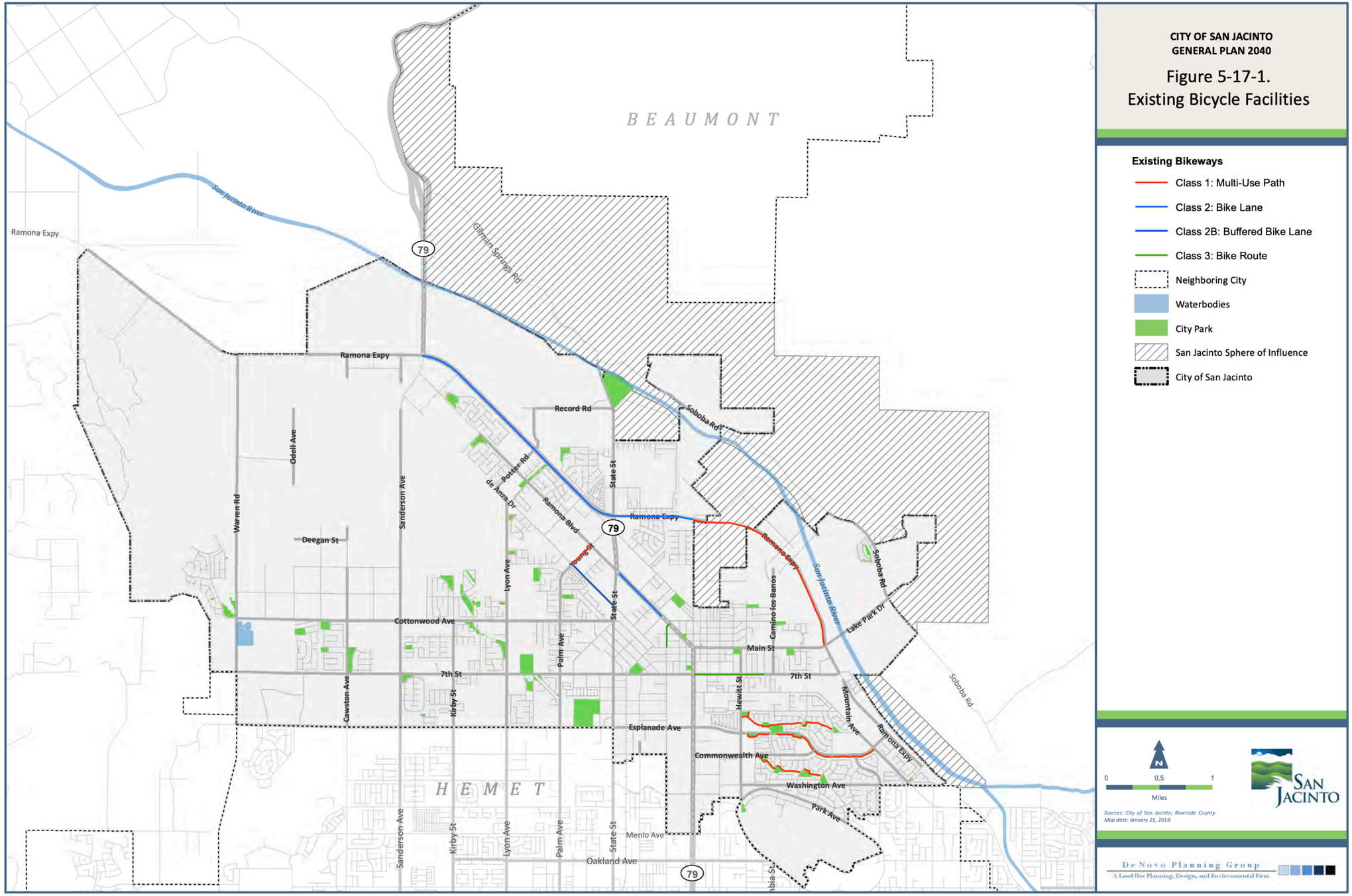


FIGURE XVII-5

Tom Dodson & Associates
Environmental Consultants

Existing Bicycle Facilities

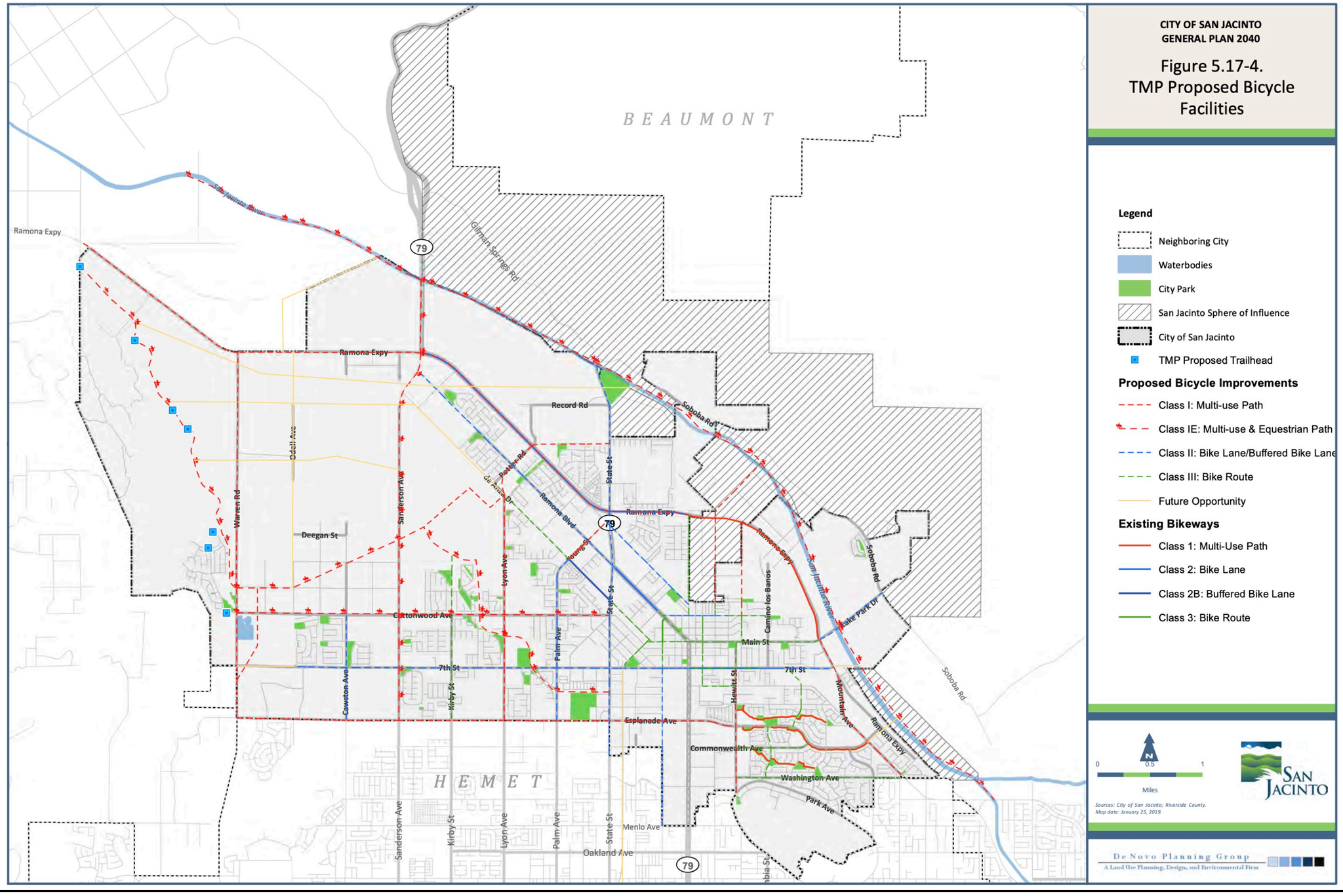


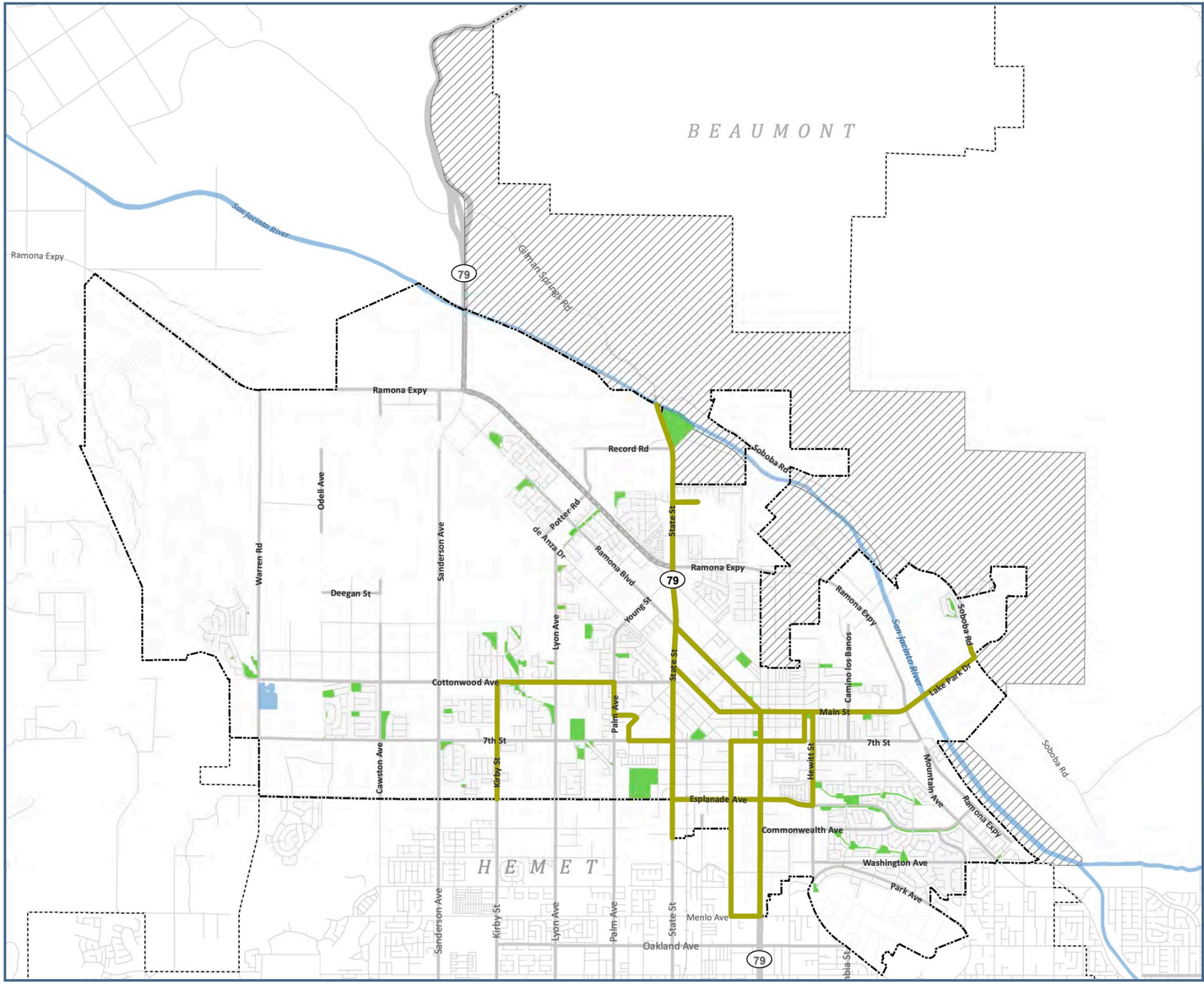
FIGURE XVII-6

Tom Dodson & Associates
Environmental Consultants

Proposed Bicycle Facilities

CITY OF SAN JACINTO
GENERAL PLAN 2040

Figure 5.17-2.
Existing Transit Routes



Legend

- Riverside Transit Agency Routes
- City of San Jacinto
- Neighboring City
- San Jacinto Sphere of Influence
- City Park
- Waterbodies

N

0 0.5 1
Miles

Sources: City of San Jacinto; Riverside County.
Map date: January 25, 2019.

SAN JACINTO

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FIGURE XVII-7

Tom Dodson & Associates
Environmental Consultants

Existing Transit Routes

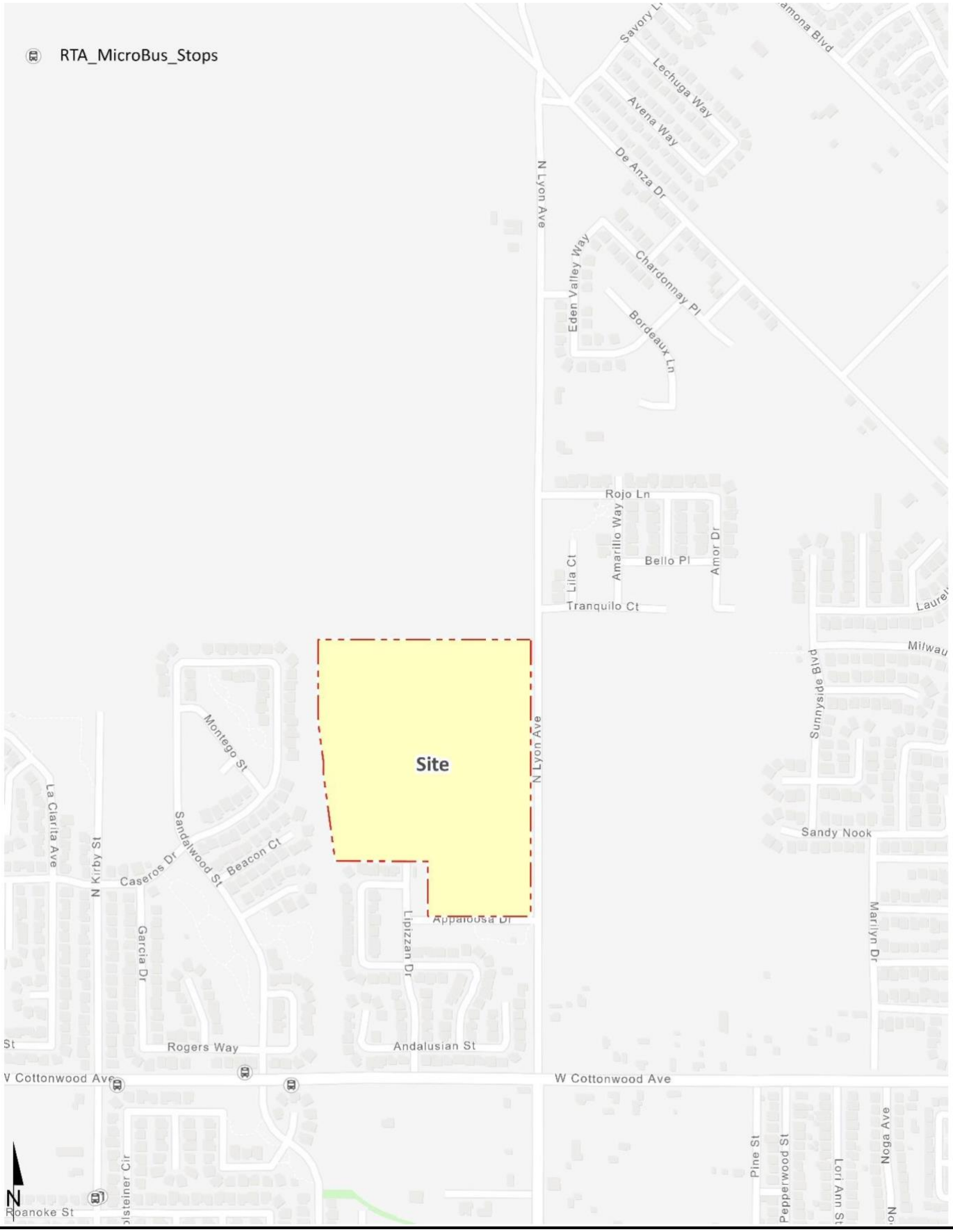


FIGURE XVII-8

Tom Dodson & Associates
Environmental Consultants

Transit Routes

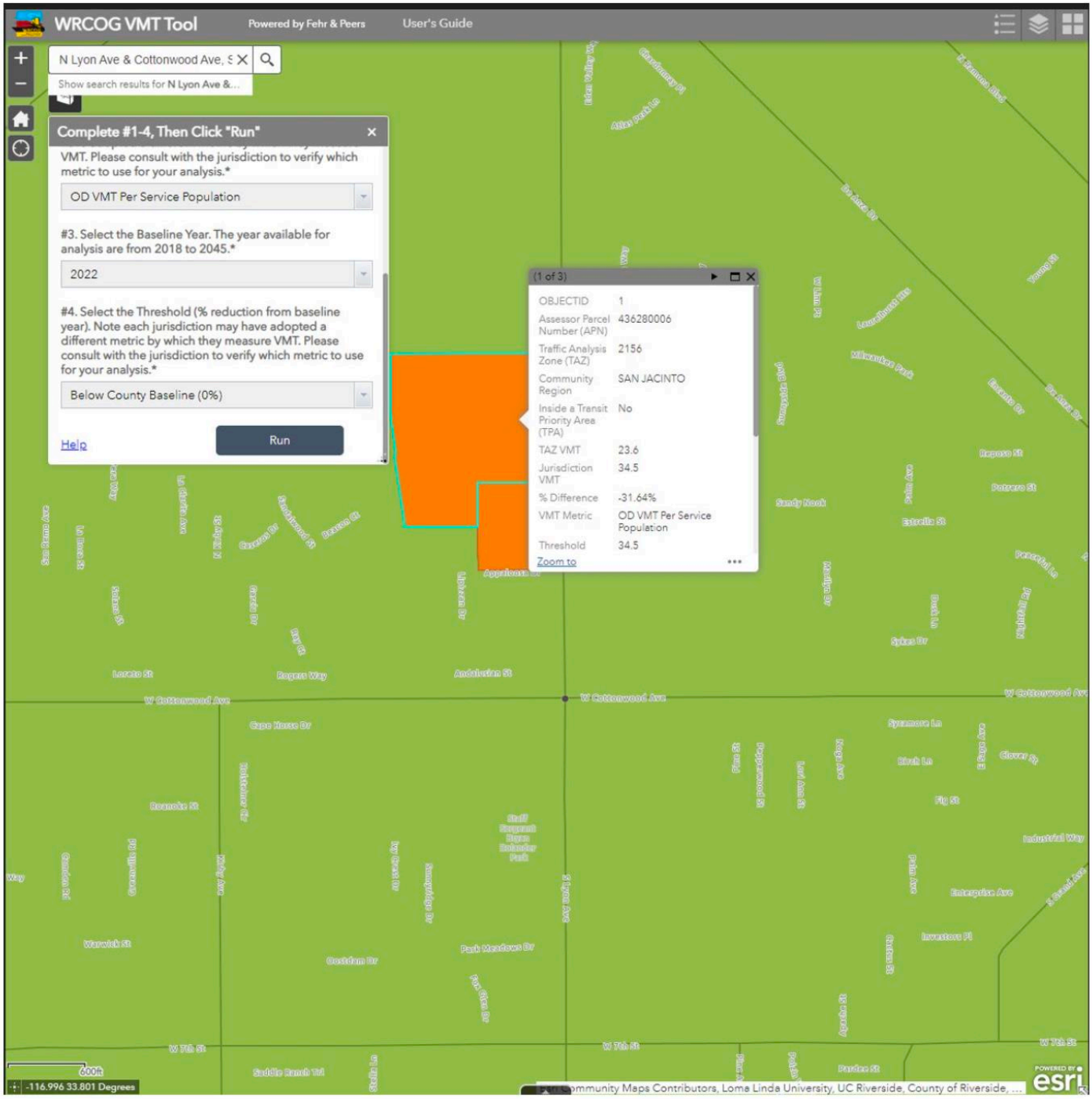


FIGURE XVII-9

Tom Dodson & Associates
Environmental Consultants

VMT

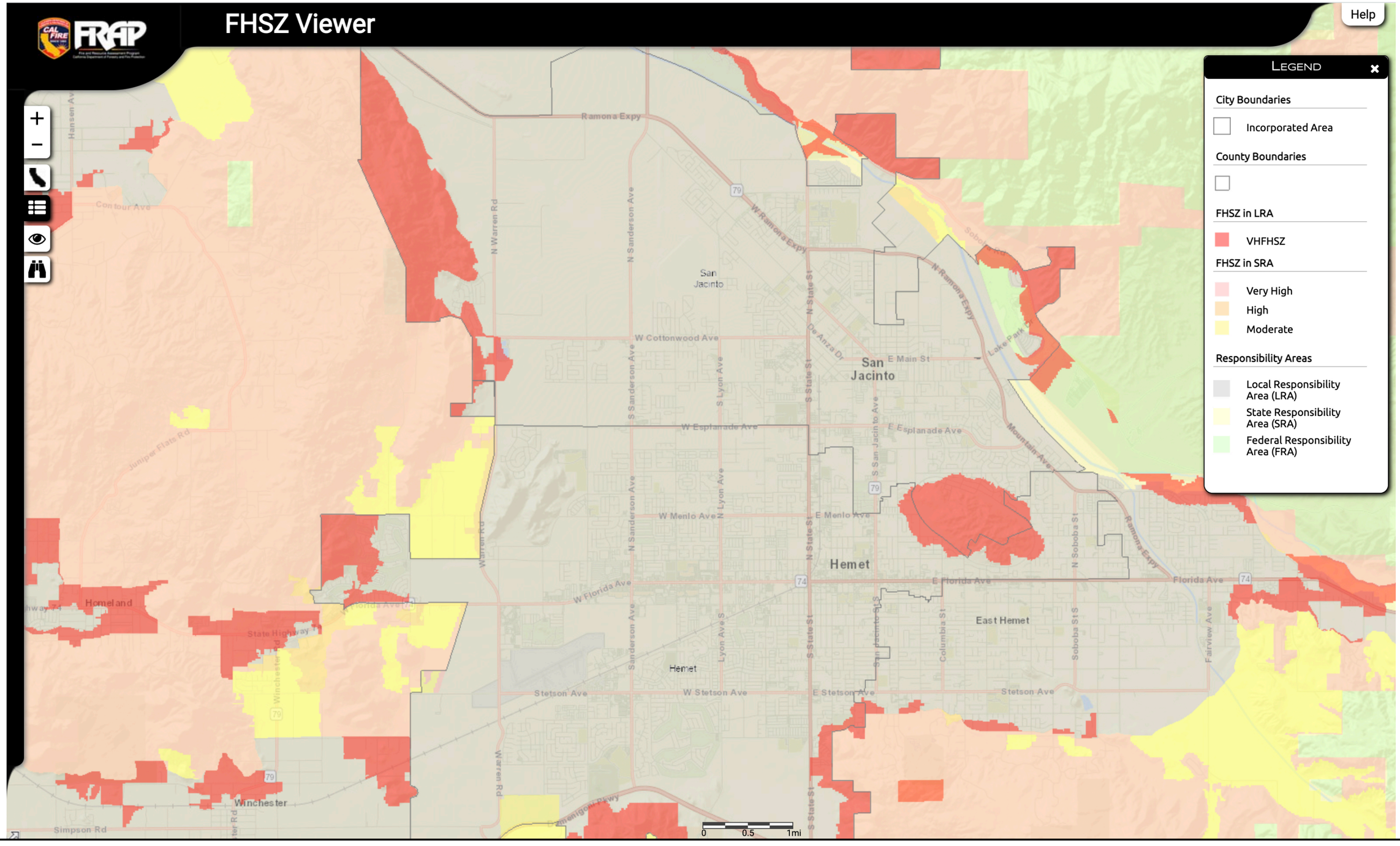


FIGURE XX-1

Tom Dodson & Associates
Environmental Consultants

FHSZ Viewer

APPENDIX 1a

AIR QUALITY and GHG IMPACT ANALYSES

TTM NO.. 38468
LYON AVENUE PROJECT

SAN JACINTO, CALIFORNIA

prepared by:

Sara Friedman Gerrick
Senior Engineer
Gerrick Environmental

Prepared for:

Tom Dodson & Associates
Attn: Kaitlyn Dodson
PO Box 2307
San Bernardino, CA 92406-2307

Date:

July 21, 2023

Project No.: P23-029 A

BACKGROUND

The project is located at on the west side of Lyon Avenue in San Jacinto. The site is essentially flat and contains an existing several existing structures. Conversion of the site to 153 single family residential units will require demolition of any on-site structures. In addition to the homes there will be 289,700 sf of paved surfaces.

AIR QUALITY IMPACT

STANDARDS OF SIGNIFICANCE

The SCAQMD has designated significant emissions levels as surrogates for evaluating regional air quality impact significance independent of chemical transformation processes. Projects with daily emissions that exceed any of the following emission thresholds are recommended by the SCAQMD to be considered significant under CEQA guidelines.

Daily Emissions Thresholds

Pollutant	Construction	Operations
ROG	75	55
NOx	100	55
CO	550	550
PM-10	150	150
PM-2.5	55	55
SOx	150	150
Lead	3	3

Source: SCAQMD CEQA Air Quality Handbook, November, 1993 Rev.

CONSTRUCTION ACTIVITY IMPACTS

CalEEMod was developed by the SCAQMD to provide a model by which to calculate both construction emissions and operational emissions from a variety of land use projects. It calculates both the daily maximum and annual average emissions for criteria pollutants as well as total or annual greenhouse gas (GHG) emissions.

The existing on-site structures will be demolished as part of the Project. The project proposes construction of 153 detached single-family dwellings on 42.19 acres and 289,700 sf of paved surfaces (6.65 acres). Estimated construction emissions were modeled using CalEEMod2020.4.0 to identify maximum daily emissions for each pollutant using default durations and equipment fleets found in CalEEMod for the proposed use.

Construction Activity Equipment Fleet

Phase Name and Duration	Equipment
Demolition (30 days)	1 Concrete Saw
	3 Excavators
	2 Dozers
Grading (45 days)	1 Grader
	2 Excavators
	1 Dozer
	2 Scrapers
	2 Loader/Backhoes
Construction (440 days)	1 Crane
	1 Generator Set
	1 Welder
	3 Forklifts
	3 Loader/Backhoes
Paving (35 days)	2 Pavers
	2 Paving Equipment
	2 Rollers

Utilizing the indicated equipment fleet and durations the following worst-case daily construction emissions are calculated by CalEEMod:

Construction Activity Emissions
Maximum Daily Emissions (pounds/day)

Maximal Construction Emissions	ROG	NOx	CO	SO_2	PM-10	PM-2.5
2024	3.3	32.4	28.4	0.1	5.1	2.7
2025	2.0	14.8	22.6	0.1	2.9	1.2
2026	51.8	14.8	22.2	0.1	2.9	1.2
SCAQMD Thresholds	75	100	550	150	150	55

*****with mandatory compliance with SCAQMD Rule 403

Peak daily construction activity emissions are estimated be below SCAQMD CEQA thresholds with required compliance with SCAQMD Rule 403 for fugitive dust which requires watering of dust at least three times a day during grading activities.

LOCALIZED SIGNIFICANCE THRESHOLDS

The SCAQMD has developed analysis parameters to evaluate ambient air quality on a local level in addition to the more regional emissions-based thresholds of significance. These analysis elements are called Localized Significance Thresholds (LSTs).

For the proposed project, the primary source of possible LST impact would be during construction. LSTs are applicable for a sensitive receptor where it is possible that an individual could remain for 24 hours such as a residence, hospital or convalescent facility.

LSTs are only applicable to the following criteria pollutants: oxides of nitrogen (NOx), carbon monoxide (CO), and particulate matter (PM-10 and PM-2.5). LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor.

LST screening tables are available for 25, 50, 100, 200 and 500 meter source-receptor distances. For this project, there are adjacent residential uses such that the most conservative 25-meter distance was modeled.

The SCAQMD has issued guidance on applying CalEEMod to LSTs. LST pollutant screening level concentration data is currently published for 1, 2 and 5 acre sites. LSTs are based on the ambient concentrations of that pollutant and the distance to the nearest sensitive receptor. LST analysis for construction is applicable for all projects of five acres and less; however, it can be used as screening criteria for larger projects to determine whether dispersion modeling may be required. For this project based on methodology established by the SCAQMD for the use of CalEEMod construction emissions to LST thresholds, a daily construction area of 3.0 acres was used[1] in this analysis, derived with interpolation of the available tables.

The following thresholds and emissions are therefore determined (pounds per day):

LST and Project Emissions (pounds/day)

LST 3 acre/25 meters Hemet/San Jacinto Valley	**CO**	**NOx**	**PM-10**	**PM-2.5**
LST Threshold	1,388	280	9	5
Max On-Site Emissions*				
2024	28	32	5	3
2025	23	15	3	1
2026	22	15	3	1

*only on-site emissions, excludes mobile source

LSTs were compared to the maximum daily construction activities. Emissions meet the LST for construction thresholds. LST impacts are less-than-significant.

[1] http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf?sfvrsn=2 Fact Sheet for Applying CalEEMod to Localized Significance Thresholds

OPERATIONAL IMPACTS

Operational emissions were calculated using CalEEMod2020.4.0 for an assumed project build-out year of 2026 as a target for full occupancy. The project would generate 1,443 daily trips according to the traffic report prepared for this analysis. In addition to mobile sources from vehicles, general development causes smaller amounts of "area source" air pollution to be generated from on-site energy consumption (primarily space heating, hot water and landscaping). These sources represent a minimal percentage of the total project NOx and CO burdens, and a few percent of other pollutants. The inclusion of such emissions adds negligibly to the total significant project-related emissions burden as shown below.

Daily Operational Impacts

	Operational Emissions (lbs/day)					
Source	**ROG**	**NOx**	**CO**	**SO_2**	**PM-10**	**PM-2.5**
Area *	6.7	2.4	13.6	0.0	0.2	0.3
Energy	0.1	1.1	0.5	0.0	0.1	0.1
Mobile	4.3	5.5	42.0	0.1	10.5	2.8
Total	**11.1**	**9.0**	**56.1**	**0.1**	**10.8**	**3.2**
SCAQMD Threshold	55	55	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

Source: CalEEMod2020.4.0 Output in Appendix
*natural gas hearths (no wood burning fireplaces)

The project would not cause any operational emissions to exceed their respective SCAQMD CEQA significance thresholds. Operational emission impacts are judged to be less than significant. No impact mitigation for operational activity emissions is considered necessary to support this finding.

GHG EMISSIONS THRESHOLDS

On December 5, 2008, the SCAQMD Governing Board adopted an Interim quantitative GHG Significance Threshold for industrial projects where the SCAQMD is the lead agency (e.g., stationary source permit projects, rules, plans, etc.) of 10,000 Metric Tons (MT) CO_2 equivalent/year CO_2e. In September 2010, the SCAQMD CEQA Significance Thresholds GHG Working Group released revisions which recommended a threshold of 3,000 MT CO_2e for all land use projects. This 3,000 MT/year recommendation has been used as a guideline for this analysis. In the absence of an adopted numerical threshold of significance, project related GHG emissions in excess of the guideline level are presumed to trigger a requirement for enhanced GHG reduction at the project level.

PROJECT GHG EMISSIONS GENERATION

Construction Activity GHG Emissions

During project construction, the CalEEMod2020.4.0 computer model predicts that the construction activities will generate the annual CO_2e emissions identified below.

Construction Emissions (Metric Tons CO_2e)

	CO_2e
Year 2024	576.1
Year 2025	628.4
Year 2026	86.9
Total	1,291.4
Amortized	**43.1**

CalEEMod Output provided in appendix

SCAQMD GHG emissions policy from construction activities is to amortize emissions over a 30-year lifetime. The amortized level is also provided. GHG impacts from construction are considered individually less-than-significant.

Project Operational GHG Emissions

The input assumptions for operational GHG emissions calculations and the GHG conversion from consumption to annual regional CO_2e emissions are summarized in the CalEEMod2020.4.0 output files found in the appendix of this report.

The total operational and annualized construction emissions for the proposed project are identified as follows:

Operational Emissions 2026

Consumption Source	
Area Sources	35.9
Energy Utilization	449.5
Mobile Source	1593.6
Waste	90.3
Water	49.2
Construction	43.1
Total	**2,261.6**
Guideline Threshold	3,000
Exceeds Threshold?	No

Total project GHG emissions would be substantially below the proposed significance threshold of 3,000 MT suggested by the SCAQMD. Hence, the project would not result in generation of a significant level of greenhouse gases.

CONSISTENCY WITH GHG PLANS, PROGRAMS AND POLICIES

The City of San Jacinto is participating the Western Riverside Council of Governments (WRCOG) Subregional Climate Action Plan. The WRCOG Subregional CAP establishes a community-wide emissions reduction target of 15% below 2010, following guidance from CARB and the Governor's Office of Planning and Research. CARB and the California Attorney General have determined this approach to be consistent with the state-wide AB 32 goal of reducing emissions to 1990 levels.

The project's total operational and amortized construction emissions are 2,261.6 MT CO2e per year and do not exceed the SCAQMD draft threshold. The proposed project would also be anticipated to be consistent with the WRCOG Subregional CAP with the following project design features, which include standard rules and requirements and recognized building design elements which will help reduce GHG emissions.

Operational Design Features:

- No wood burning fireplaces will be installed in any residential dwelling.
- The future residences would be outfitted with low flow toilets and energy efficient appliances. Solar would be installed concurrent with development of each residence as required by the California Energy Code.
- The project will include a landscaping consistent with the requirements of the City's Development Code Chapter 17.325, Water Efficient Landscape and Irrigation. Additionally, the proposed subdivision would comply with the City's Landscape Design Guidelines.
- The project will comply with the mandatory requirements of California Building Standards Code Title 24 Part 6 (Energy Code) and Title 24 Part 11 (CAL Green).
- The project will comply with the mandatory requirements of City of San Jacinto/CalRecycle's residential recycling program.
- The homeowner's association will encourage residents and landscape maintenance crews to use electric landscaping equipment, such as lawn mowers and leaf blowers. Therefore, the project will not conflict with an applicable plan, policy, or regulation for the purpose of reducing the emissions of greenhouse gases and the impact is considered less than significant.

CALEEMOD2020.4.0 COMPUTER MODEL OUTPUT

- **DAILY EMISISONS**
- **ANNUAL EMISSIONS**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Lyon 153

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	153.00	Dwelling Unit	22.70	275,400.00	438
Other Asphalt Surfaces	289.70	1000sqft	6.65	289,700.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - actual site acreage

Construction Phase -

Vehicle Trips - 9.43 trip gen rate per traffic analysis

Construction Off-road Equipment Mitigation -

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	49.68	22.70
tblVehicleTrips	ST_TR	9.54	9.43
tblVehicleTrips	SU_TR	8.55	9.43

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleTrips	WD_TR	9.44	9.43

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					
2024	3.2862	32.4172	28.4068	0.0640	9.4271	1.3364	10.7635	3.7130	1.2295	4.9425	0.0000	6,202.1700	6,202.1700	1.9478	0.2108	6,252.1650
2025	2.0002	14.8624	22.5558	0.0540	2.3883	0.5540	2.9424	0.6427	0.5213	1.1640	0.0000	5,348.2125	5,348.2125	0.6471	0.2049	5,425.4457
2026	51.8128	14.8113	22.1920	0.0533	2.3883	0.5535	2.9419	0.6427	0.5208	1.1635	0.0000	5,275.9083	5,275.9083	0.7163	0.1994	5,351.4289
Maximum	**51.8128**	**32.4172**	**28.4068**	**0.0640**	**9.4271**	**1.3364**	**10.7635**	**3.7130**	**1.2295**	**4.9425**	**0.0000**	**6,202.1700**	**6,202.1700**	**1.9478**	**0.2108**	**6,252.1650**

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					
2024	3.2862	32.4172	28.4068	0.0640	3.8130	1.3364	5.1494	1.4843	1.2295	2.7137	0.0000	6,202.1700	6,202.1700	1.9478	0.2108	6,252.1650
2025	2.0002	14.8624	22.5558	0.0540	2.3883	0.5540	2.9424	0.6427	0.5213	1.1640	0.0000	5,348.2125	5,348.2125	0.6471	0.2049	5,425.4457
2026	51.8128	14.8113	22.1920	0.0533	2.3883	0.5535	2.9419	0.6427	0.5208	1.1635	0.0000	5,275.9083	5,275.9083	0.7163	0.1994	5,351.4289
Maximum	**51.8128**	**32.4172**	**28.4068**	**0.0640**	**3.8130**	**1.3364**	**5.1494**	**1.4843**	**1.2295**	**2.7137**	**0.0000**	**6,202.1700**	**6,202.1700**	**1.9478**	**0.2108**	**6,252.1650**

Lyon 153 - Riverside-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	39.53	0.00	33.72	44.59	0.00	30.66	0.00	0.00	0.00	0.00	0.00	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	46.5226	3.3200	90.4487	0.1992		11.7575	11.7575		11.7575	11.7575	1,433.1385	2,776.7919	4,209.9304	4.2958	0.0973	4,346.3129
Energy	0.1279	1.0927	0.4650	6.9700e-003		0.0884	0.0884		0.0884	0.0884		1,394.9724	1,394.9724	0.0267	0.0256	1,403.2620
Mobile	4.3018	5.5111	41.9902	0.0988	10.4154	0.0749	10.4903	2.7784	0.0702	2.8486		10,066.9131	10,066.9131	0.4752	0.4575	10,215.1187
Total	**50.9522**	**9.9239**	**132.9039**	**0.3049**	**10.4154**	**11.9207**	**22.3361**	**2.7784**	**11.9160**	**14.6945**	**1,433.1385**	**14,238.6774**	**15,671.8159**	**4.7977**	**0.5803**	**15,964.6936**

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	6.6984	2.4297	13.6122	0.0153		0.2548	0.2548		0.2548	0.2548	0.0000	2,938.7919	2,938.7919	0.0778	0.0535	2,956.6685
Energy	0.1279	1.0927	0.4650	6.9700e-003		0.0884	0.0884		0.0884	0.0884		1,394.9724	1,394.9724	0.0267	0.0256	1,403.2620
Mobile	4.3018	5.5111	41.9902	0.0988	10.4154	0.0749	10.4903	2.7784	0.0702	2.8486		10,066.9131	10,066.9131	0.4752	0.4575	10,215.1187
Total	**11.1280**	**9.0336**	**56.0674**	**0.1210**	**10.4154**	**0.4180**	**10.8334**	**2.7784**	**0.4133**	**3.1917**	**0.0000**	**14,400.6774**	**14,400.6774**	**0.5797**	**0.5365**	**14,575.0492**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	N20	CO2e
Percent Reduction	78.16	8.97	57.81	60.31	0.00	96.49	51.50	0.00	96.53	78.28	100.00	-1.14	8.11	87.92	7.55	8.70

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/8/2024	2/16/2024	5	30	
2	Grading	Grading	3/16/2024	5/17/2024	5	45	
3	Building Construction	Building Construction	5/18/2024	1/23/2026	5	440	
4	Paving	Paving	1/24/2026	3/13/2026	5	35	
5	Architectural Coating	Architectural Coating	3/14/2026	5/1/2026	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 135

Acres of Paving: 6.65

Residential Indoor: 557,685; Residential Outdoor: 185,895; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 17,382 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

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
Architectural Coating	1	35.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	177.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

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	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922		3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**		**0.9602**	**0.9602**		**0.8922**	**0.8922**		**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

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		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		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0510	0.0301	0.5130	1.4300e-003	0.1677	7.5000e-004	0.1684	0.0445	6.9000e-004	0.0452		144.3160	144.3160	3.1200e-003	3.2700e-003	145.3683
Total	**0.0510**	**0.0301**	**0.5130**	**1.4300e-003**	**0.1677**	**7.5000e-004**	**0.1684**	**0.0445**	**6.9000e-004**	**0.0452**		**144.3160**	**144.3160**	**3.1200e-003**	**3.2700e-003**	**145.3683**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

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	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922	0.0000	3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**		**0.9602**	**0.9602**		**0.8922**	**0.8922**	**0.0000**	**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

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		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		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0510	0.0301	0.5130	1.4300e-003	0.1677	7.5000e-004	0.1684	0.0445	6.9000e-004	0.0452		144.3160	144.3160	3.1200e-003	3.2700e-003	145.3683
Total	**0.0510**	**0.0301**	**0.5130**	**1.4300e-003**	**0.1677**	**7.5000e-004**	**0.1684**	**0.0445**	**6.9000e-004**	**0.0452**		**144.3160**	**144.3160**	**3.1200e-003**	**3.2700e-003**	**145.3683**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

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					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286		6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**9.2036**	**1.3354**	**10.5390**	**3.6538**	**1.2286**	**4.8823**		**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

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		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		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0681	0.0402	0.6840	1.9000e-003	0.2236	1.0000e-003	0.2246	0.0593	9.2000e-004	0.0602		192.4214	192.4214	4.1600e-003	4.3600e-003	193.8244
Total	**0.0681**	**0.0402**	**0.6840**	**1.9000e-003**	**0.2236**	**1.0000e-003**	**0.2246**	**0.0593**	**9.2000e-004**	**0.0602**		**192.4214**	**192.4214**	**4.1600e-003**	**4.3600e-003**	**193.8244**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

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					3.5894	0.0000	3.5894	1.4250	0.0000	1.4250			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286	0.0000	6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**3.5894**	**1.3354**	**4.9248**	**1.4250**	**1.2286**	**2.6535**	**0.0000**	**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

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		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		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0681	0.0402	0.6840	1.9000e-003	0.2236	1.0000e-003	0.2246	0.0593	9.2000e-004	0.0602		192.4214	192.4214	4.1600e-003	4.3600e-003	193.8244
Total	**0.0681**	**0.0402**	**0.6840**	**1.9000e-003**	**0.2236**	**1.0000e-003**	**0.2246**	**0.0593**	**9.2000e-004**	**0.0602**		**192.4214**	**192.4214**	**4.1600e-003**	**4.3600e-003**	**193.8244**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

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		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0710	2.0911	0.8511	0.0110	0.4099	0.0181	0.4280	0.1180	0.0173	0.1353		1,167.4597	1,167.4597	0.0125	0.1723	1,219.1048
Worker	0.6023	0.3557	6.0535	0.0169	1.9784	8.8300e-003	1.9873	0.5247	8.1200e-003	0.5328		1,702.9290	1,702.9290	0.0368	0.0386	1,715.3461
Total	**0.6733**	**2.4468**	**6.9046**	**0.0279**	**2.3884**	**0.0269**	**2.4153**	**0.6427**	**0.0254**	**0.6682**		**2,870.3887**	**2,870.3887**	**0.0494**	**0.2108**	**2,934.4509**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

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		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0710	2.0911	0.8511	0.0110	0.4099	0.0181	0.4280	0.1180	0.0173	0.1353		1,167.4597	1,167.4597	0.0125	0.1723	1,219.1048
Worker	0.6023	0.3557	6.0535	0.0169	1.9784	8.8300e-003	1.9873	0.5247	8.1200e-003	0.5328		1,702.9290	1,702.9290	0.0368	0.0386	1,715.3461
Total	**0.6733**	**2.4468**	**6.9046**	**0.0279**	**2.3884**	**0.0269**	**2.4153**	**0.6427**	**0.0254**	**0.6682**		**2,870.3887**	**2,870.3887**	**0.0494**	**0.2108**	**2,934.4509**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

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		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0701	2.0739	0.8415	0.0108	0.4099	0.0181	0.4280	0.1180	0.0173	0.1353		1,146.8806	1,146.8806	0.0130	0.1689	1,197.5317
Worker	0.5627	0.3188	5.6297	0.0163	1.9784	8.3800e-003	1.9868	0.5247	7.7100e-003	0.5324		1,644.8575	1,644.8575	0.0332	0.0360	1,656.4159
Total	**0.6328**	**2.3927**	**6.4711**	**0.0271**	**2.3883**	**0.0265**	**2.4148**	**0.6427**	**0.0250**	**0.6677**		**2,791.7382**	**2,791.7382**	**0.0462**	**0.2049**	**2,853.9476**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

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		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0701	2.0739	0.8415	0.0108	0.4099	0.0181	0.4280	0.1180	0.0173	0.1353		1,146.8806	1,146.8806	0.0130	0.1689	1,197.5317
Worker	0.5627	0.3188	5.6297	0.0163	1.9784	8.3800e-003	1.9868	0.5247	7.7100e-003	0.5324		1,644.8575	1,644.8575	0.0332	0.0360	1,656.4159
Total	**0.6328**	**2.3927**	**6.4711**	**0.0271**	**2.3883**	**0.0265**	**2.4148**	**0.6427**	**0.0250**	**0.6677**		**2,791.7382**	**2,791.7382**	**0.0462**	**0.2049**	**2,853.9476**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2026

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

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		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0692	2.0531	0.8334	0.0106	0.4099	0.0180	0.4279	0.1180	0.0172	0.1353		1,126.0143	1,126.0143	0.0134	0.1655	1,175.6655
Worker	0.5284	0.2885	5.2739	0.0158	1.9784	7.9300e-003	1.9864	0.5247	7.3000e-003	0.5320		1,593.4197	1,593.4197	0.0301	0.0339	1,604.2654
Total	**0.5976**	**2.3417**	**6.1073**	**0.0264**	**2.3883**	**0.0260**	**2.4143**	**0.6427**	**0.0245**	**0.6673**		**2,719.4340**	**2,719.4340**	**0.0435**	**0.1994**	**2,779.9308**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2026

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

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		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0692	2.0531	0.8334	0.0106	0.4099	0.0180	0.4279	0.1180	0.0172	0.1353		1,126.0143	1,126.0143	0.0134	0.1655	1,175.6655
Worker	0.5284	0.2885	5.2739	0.0158	1.9784	7.9300e-003	1.9864	0.5247	7.3000e-003	0.5320		1,593.4197	1,593.4197	0.0301	0.0339	1,604.2654
Total	**0.5976**	**2.3417**	**6.1073**	**0.0264**	**2.3883**	**0.0260**	**2.4143**	**0.6427**	**0.0245**	**0.6673**		**2,719.4340**	**2,719.4340**	**0.0435**	**0.1994**	**2,779.9308**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2026

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.4978					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4130**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

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		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		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0448	0.0245	0.4469	1.3400e-003	0.1677	6.7000e-004	0.1683	0.0445	6.2000e-004	0.0451		135.0356	135.0356	2.5500e-003	2.8700e-003	135.9547
Total	**0.0448**	**0.0245**	**0.4469**	**1.3400e-003**	**0.1677**	**6.7000e-004**	**0.1683**	**0.0445**	**6.2000e-004**	**0.0451**		**135.0356**	**135.0356**	**2.5500e-003**	**2.8700e-003**	**135.9547**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2026

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.4978					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4130**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

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		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		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0448	0.0245	0.4469	1.3400e-003	0.1677	6.7000e-004	0.1683	0.0445	6.2000e-004	0.0451		135.0356	135.0356	2.5500e-003	2.8700e-003	135.9547
Total	**0.0448**	**0.0245**	**0.4469**	**1.3400e-003**	**0.1677**	**6.7000e-004**	**0.1683**	**0.0445**	**6.2000e-004**	**0.0451**		**135.0356**	**135.0356**	**2.5500e-003**	**2.8700e-003**	**135.9547**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 2026

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	51.5375					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**51.7084**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

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		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		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1045	0.0571	1.0429	3.1200e-003	0.3912	1.5700e-003	0.3928	0.1038	1.4400e-003	0.1052		315.0830	315.0830	5.9500e-003	6.7000e-003	317.2276
Total	**0.1045**	**0.0571**	**1.0429**	**3.1200e-003**	**0.3912**	**1.5700e-003**	**0.3928**	**0.1038**	**1.4400e-003**	**0.1052**		**315.0830**	**315.0830**	**5.9500e-003**	**6.7000e-003**	**317.2276**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 2026

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	51.5375					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**51.7084**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

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		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		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1045	0.0571	1.0429	3.1200e-003	0.3912	1.5700e-003	0.3928	0.1038	1.4400e-003	0.1052		315.0830	315.0830	5.9500e-003	6.7000e-003	317.2276
Total	**0.1045**	**0.0571**	**1.0429**	**3.1200e-003**	**0.3912**	**1.5700e-003**	**0.3928**	**0.1038**	**1.4400e-003**	**0.1052**		**315.0830**	**315.0830**	**5.9500e-003**	**6.7000e-003**	**317.2276**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	4.3018	5.5111	41.9902	0.0988	10.4154	0.0749	10.4903	2.7784	0.0702	2.8486		10,066.9131	10,066.9131	0.4752	0.4575	10,215.1187
Unmitigated	4.3018	5.5111	41.9902	0.0988	10.4154	0.0749	10.4903	2.7784	0.0702	2.8486		10,066.9131	10,066.9131	0.4752	0.4575	10,215.1187

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	1,442.79	1,442.79	1442.79	4,930,233	4,930,233
Total	1,442.79	1,442.79	1,442.79	4,930,233	4,930,233

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	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
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.540541	0.056458	0.173793	0.136090	0.025268	0.007074	0.011525	0.018705	0.000610	0.000304	0.023606	0.001094	0.004932
Single Family Housing	0.540541	0.056458	0.173793	0.136090	0.025268	0.007074	0.011525	0.018705	0.000610	0.000304	0.023606	0.001094	0.004932

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	0.1279	1.0927	0.4650	6.9700e-003		0.0884	0.0884		0.0884	0.0884		1,394.9724	1,394.9724	0.0267	0.0256	1,403.2620
NaturalGas Unmitigated	0.1279	1.0927	0.4650	6.9700e-003		0.0884	0.0884		0.0884	0.0884		1,394.9724	1,394.9724	0.0267	0.0256	1,403.2620

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	11857.3	0.1279	1.0927	0.4650	6.9700e-003		0.0884	0.0884		0.0884	0.0884		1,394.9724	1,394.9724	0.0267	0.0256	1,403.2620
Total		**0.1279**	**1.0927**	**0.4650**	**6.9700e-003**		**0.0884**	**0.0884**		**0.0884**	**0.0884**		**1,394.9724**	**1,394.9724**	**0.0267**	**0.0256**	**1,403.2620**

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	11.8573	0.1279	1.0927	0.4650	6.9700e-003		0.0884	0.0884		0.0884	0.0884		1,394.9724	1,394.9724	0.0267	0.0256	1,403.2620
Total		**0.1279**	**1.0927**	**0.4650**	**6.9700e-003**		**0.0884**	**0.0884**		**0.0884**	**0.0884**		**1,394.9724**	**1,394.9724**	**0.0267**	**0.0256**	**1,403.2620**

6.0 Area Detail

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	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	6.6984	2.4297	13.6122	0.0153		0.2548	0.2548		0.2548	0.2548	0.0000	2,938.7919	2,938.7919	0.0778	0.0535	2,956.6685
Unmitigated	46.5226	3.3200	90.4487	0.1992		11.7575	11.7575		11.7575	11.7575	1,433.1385	2,776.7919	4,209.9304	4.2958	0.0973	4,346.3129

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.4942					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.5555					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	40.0915	3.1745	77.8084	0.1985		11.6874	11.6874		11.6874	11.6874	1,433.1385	2,754.0000	4,187.1385	4.2739	0.0973	4,322.9728
Landscaping	0.3814	0.1455	12.6402	6.7000e-004		0.0701	0.0701		0.0701	0.0701		22.7919	22.7919	0.0219		23.3402
Total	**46.5226**	**3.3200**	**90.4487**	**0.1992**		**11.7575**	**11.7575**		**11.7575**	**11.7575**	**1,433.1385**	**2,776.7919**	**4,209.9304**	**4.2958**	**0.0973**	**4,346.3129**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

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	0.4942					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.5555					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.2673	2.2842	0.9720	0.0146		0.1847	0.1847		0.1847	0.1847	0.0000	2,916.0000	2,916.0000	0.0559	0.0535	2,933.3283
Landscaping	0.3814	0.1455	12.6402	6.7000e-004		0.0701	0.0701		0.0701	0.0701		22.7919	22.7919	0.0219		23.3402
Total	**6.6984**	**2.4297**	**13.6122**	**0.0153**		**0.2548**	**0.2548**		**0.2548**	**0.2548**	**0.0000**	**2,938.7919**	**2,938.7919**	**0.0778**	**0.0535**	**2,956.6685**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Lyon 153 - Riverside-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Lyon 153

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	153.00	Dwelling Unit	22.70	275,400.00	438
Other Asphalt Surfaces	289.70	1000sqft	6.65	289,700.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - actual site acreage

Construction Phase -

Vehicle Trips - 9.43 trip gen rate per traffic analysis

Construction Off-road Equipment Mitigation -

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	49.68	22.70
tblVehicleTrips	ST_TR	9.54	9.43
tblVehicleTrips	SU_TR	8.55	9.43

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleTrips	WD_TR	9.44	9.43

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

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	tons/yr										MT/yr					
2024	0.2763	2.3405	2.7385	6.3800e-003	0.4048	0.0963	0.5012	0.1355	0.0899	0.2253	0.0000	568.8434	568.8434	0.1021	0.0158	576.0963
2025	0.2527	1.9556	2.8402	6.9000e-003	0.3066	0.0723	0.3790	0.0826	0.0680	0.1507	0.0000	619.1907	619.1907	0.0766	0.0245	628.3976
2026	0.9482	0.2987	0.4915	9.7000e-004	0.0296	0.0130	0.0426	7.9400e-003	0.0121	0.0200	0.0000	85.9341	85.9341	0.0167	1.7100e-003	86.8603
Maximum	**0.9482**	**2.3405**	**2.8402**	**6.9000e-003**	**0.4048**	**0.0963**	**0.5012**	**0.1355**	**0.0899**	**0.2253**	**0.0000**	**619.1907**	**619.1907**	**0.1021**	**0.0245**	**628.3976**

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	tons/yr										MT/yr					
2024	0.2763	2.3405	2.7385	6.3800e-003	0.2785	0.0963	0.3749	0.0853	0.0899	0.1752	0.0000	568.8430	568.8430	0.1021	0.0158	576.0959
2025	0.2527	1.9556	2.8402	6.9000e-003	0.3066	0.0723	0.3790	0.0826	0.0680	0.1507	0.0000	619.1903	619.1903	0.0766	0.0245	628.3973
2026	0.9482	0.2987	0.4915	9.7000e-004	0.0296	0.0130	0.0426	7.9400e-003	0.0121	0.0200	0.0000	85.9340	85.9340	0.0167	1.7100e-003	86.8602
Maximum	**0.9482**	**2.3405**	**2.8402**	**6.9000e-003**	**0.3066**	**0.0963**	**0.3790**	**0.0853**	**0.0899**	**0.1752**	**0.0000**	**619.1903**	**619.1903**	**0.1021**	**0.0245**	**628.3973**

Lyon 153 - Riverside-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**17.05**	**0.00**	**13.69**	**22.19**	**0.00**	**12.66**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-8-2024**	**4-7-2024**	0.6247	0.6247
2	**4-8-2024**	**7-7-2024**	0.8385	0.8385
3	**7-8-2024**	**10-7-2024**	0.5928	0.5928
4	**10-8-2024**	**1-7-2025**	0.5929	0.5929
5	**1-8-2025**	**4-7-2025**	0.5450	0.5450
6	**4-8-2025**	**7-7-2025**	0.5480	0.5480
7	**7-8-2025**	**10-7-2025**	0.5543	0.5543
8	**10-8-2025**	**1-7-2026**	0.5571	0.5571
9	**1-8-2026**	**4-7-2026**	0.7459	0.7459
10	**4-8-2026**	**7-7-2026**	0.4544	0.4544
		Highest	0.8385	0.8385

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	tons/yr										MT/yr					
Area	1.6529	0.0579	2.5526	2.5600e-003		0.1549	0.1549		0.1549	0.1549	16.2515	33.8144	50.0659	0.0510	1.1000e-003	51.6684
Energy	0.0233	0.1994	0.0849	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	447.0654	447.0654	0.0227	6.4500e-003	449.5527
Mobile	0.6745	1.0702	6.9873	0.0170	1.8644	0.0136	1.8780	0.4980	0.0128	0.5108	0.0000	1,568.4916	1,568.4916	0.0800	0.0775	1,593.5855
Waste						0.0000	0.0000		0.0000	0.0000	36.4531	0.0000	36.4531	2.1543	0.0000	90.3111
Water						0.0000	0.0000		0.0000	0.0000	3.1626	35.4020	38.5646	0.3278	8.0300e-003	49.1535
Total	**2.3507**	**1.3275**	**9.6248**	**0.0208**	**1.8644**	**0.1846**	**2.0489**	**0.4980**	**0.1837**	**0.6817**	**55.8672**	**2,084.7734**	**2,140.6406**	**2.6358**	**0.0931**	**2,234.2712**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

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	tons/yr										MT/yr					
Area	1.1551	0.0467	1.5922	2.7000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	35.6514	35.6514	3.1200e-003	6.1000e-004	35.9101
Energy	0.0233	0.1994	0.0849	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	447.0654	447.0654	0.0227	6.4500e-003	449.5527
Mobile	0.6745	1.0702	6.9873	0.0170	1.8644	0.0136	1.8780	0.4980	0.0128	0.5108	0.0000	1,568.4916	1,568.4916	0.0800	0.0775	1,593.5855
Waste						0.0000	0.0000		0.0000	0.0000	36.4531	0.0000	36.4531	2.1543	0.0000	90.3111
Water						0.0000	0.0000		0.0000	0.0000	3.1626	35.4020	38.5646	0.3278	8.0300e-003	49.1535
Total	**1.8529**	**1.3164**	**8.6643**	**0.0185**	**1.8644**	**0.0408**	**1.9052**	**0.4980**	**0.0400**	**0.5380**	**39.6157**	**2,086.6105**	**2,126.2261**	**2.5879**	**0.0926**	**2,218.5129**

	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	N20	CO2e
Percent Reduction	**21.18**	**0.84**	**9.98**	**11.01**	**0.00**	**77.89**	**7.02**	**0.00**	**78.26**	**21.09**	**29.09**	**-0.09**	**0.67**	**1.81**	**0.53**	**0.71**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/8/2024	2/16/2024	5	30	
2	Grading	Grading	3/16/2024	5/17/2024	5	45	
3	Building Construction	Building Construction	5/18/2024	1/23/2026	5	440	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4	Paving	Paving	1/24/2026	3/13/2026	5	35	
5	Architectural Coating	Architectural Coating	3/14/2026	5/1/2026	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 135

Acres of Paving: 6.65

Residential Indoor: 557,685; Residential Outdoor: 185,895; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 17,382 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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
Architectural Coating	1	35.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	177.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2024

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	tons/yr										MT/yr					
Off-Road	0.0337	0.3132	0.2956	5.8000e-004		0.0144	0.0144		0.0134	0.0134	0.0000	50.9941	50.9941	0.0143	0.0000	51.3508
Total	**0.0337**	**0.3132**	**0.2956**	**5.8000e-004**		**0.0144**	**0.0144**		**0.0134**	**0.0134**	**0.0000**	**50.9941**	**50.9941**	**0.0143**	**0.0000**	**51.3508**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.8000e-004	6.5900e-003	2.0000e-005	2.4700e-003	1.0000e-005	2.4800e-003	6.6000e-004	1.0000e-005	6.7000e-004	0.0000	1.8211	1.8211	4.0000e-005	5.0000e-005	1.8360
Total	**6.8000e-004**	**4.8000e-004**	**6.5900e-003**	**2.0000e-005**	**2.4700e-003**	**1.0000e-005**	**2.4800e-003**	**6.6000e-004**	**1.0000e-005**	**6.7000e-004**	**0.0000**	**1.8211**	**1.8211**	**4.0000e-005**	**5.0000e-005**	**1.8360**

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	tons/yr										MT/yr					
Off-Road	0.0337	0.3132	0.2956	5.8000e-004		0.0144	0.0144		0.0134	0.0134	0.0000	50.9940	50.9940	0.0143	0.0000	51.3507
Total	**0.0337**	**0.3132**	**0.2956**	**5.8000e-004**		**0.0144**	**0.0144**		**0.0134**	**0.0134**	**0.0000**	**50.9940**	**50.9940**	**0.0143**	**0.0000**	**51.3507**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.8000e-004	6.5900e-003	2.0000e-005	2.4700e-003	1.0000e-005	2.4800e-003	6.6000e-004	1.0000e-005	6.7000e-004	0.0000	1.8211	1.8211	4.0000e-005	5.0000e-005	1.8360
Total	**6.8000e-004**	**4.8000e-004**	**6.5900e-003**	**2.0000e-005**	**2.4700e-003**	**1.0000e-005**	**2.4800e-003**	**6.6000e-004**	**1.0000e-005**	**6.7000e-004**	**0.0000**	**1.8211**	**1.8211**	**4.0000e-005**	**5.0000e-005**	**1.8360**

3.3 Grading - 2024

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	tons/yr										MT/yr					
Fugitive Dust					0.2071	0.0000	0.2071	0.0822	0.0000	0.0822	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0724	0.7285	0.6238	1.4000e-003		0.0301	0.0301		0.0276	0.0276	0.0000	122.6689	122.6689	0.0397	0.0000	123.6608
Total	**0.0724**	**0.7285**	**0.6238**	**1.4000e-003**	**0.2071**	**0.0301**	**0.2371**	**0.0822**	**0.0276**	**0.1099**	**0.0000**	**122.6689**	**122.6689**	**0.0397**	**0.0000**	**123.6608**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3600e-003	9.6000e-004	0.0132	4.0000e-005	4.9500e-003	2.0000e-005	4.9700e-003	1.3100e-003	2.0000e-005	1.3300e-003	0.0000	3.6422	3.6422	9.0000e-005	9.0000e-005	3.6720
Total	**1.3600e-003**	**9.6000e-004**	**0.0132**	**4.0000e-005**	**4.9500e-003**	**2.0000e-005**	**4.9700e-003**	**1.3100e-003**	**2.0000e-005**	**1.3300e-003**	**0.0000**	**3.6422**	**3.6422**	**9.0000e-005**	**9.0000e-005**	**3.6720**

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	tons/yr										MT/yr					
Fugitive Dust					0.0808	0.0000	0.0808	0.0321	0.0000	0.0321	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0724	0.7285	0.6238	1.4000e-003		0.0301	0.0301		0.0276	0.0276	0.0000	122.6688	122.6688	0.0397	0.0000	123.6606
Total	**0.0724**	**0.7285**	**0.6238**	**1.4000e-003**	**0.0808**	**0.0301**	**0.1108**	**0.0321**	**0.0276**	**0.0597**	**0.0000**	**122.6688**	**122.6688**	**0.0397**	**0.0000**	**123.6606**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3600e-003	9.6000e-004	0.0132	4.0000e-005	4.9500e-003	2.0000e-005	4.9700e-003	1.3100e-003	2.0000e-005	1.3300e-003	0.0000	3.6422	3.6422	9.0000e-005	9.0000e-005	3.6720
Total	**1.3600e-003**	**9.6000e-004**	**0.0132**	**4.0000e-005**	**4.9500e-003**	**2.0000e-005**	**4.9700e-003**	**1.3100e-003**	**2.0000e-005**	**1.3300e-003**	**0.0000**	**3.6422**	**3.6422**	**9.0000e-005**	**9.0000e-005**	**3.6720**

3.4 Building Construction - 2024

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	tons/yr										MT/yr					
Off-Road	0.1192	1.0890	1.3095	2.1800e-003		0.0497	0.0497		0.0467	0.0467	0.0000	187.7978	187.7978	0.0444	0.0000	188.9080
Total	**0.1192**	**1.0890**	**1.3095**	**2.1800e-003**		**0.0497**	**0.0497**		**0.0467**	**0.0467**	**0.0000**	**187.7978**	**187.7978**	**0.0444**	**0.0000**	**188.9080**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.5300e-003	0.1778	0.0700	8.9000e-004	0.0328	1.4700e-003	0.0342	9.4500e-003	1.4000e-003	0.0109	0.0000	85.8774	85.8774	9.1000e-004	0.0127	89.6785
Worker	0.0434	0.0307	0.4198	1.2700e-003	0.1576	7.1000e-004	0.1583	0.0418	6.6000e-004	0.0425	0.0000	116.0419	116.0419	2.7100e-003	2.9600e-003	116.9903
Total	**0.0489**	**0.2084**	**0.4898**	**2.1600e-003**	**0.1903**	**2.1800e-003**	**0.1925**	**0.0513**	**2.0600e-003**	**0.0534**	**0.0000**	**201.9193**	**201.9193**	**3.6200e-003**	**0.0156**	**206.6688**

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	tons/yr										MT/yr					
Off-Road	0.1192	1.0889	1.3095	2.1800e-003		0.0497	0.0497		0.0467	0.0467	0.0000	187.7976	187.7976	0.0444	0.0000	188.9078
Total	**0.1192**	**1.0889**	**1.3095**	**2.1800e-003**		**0.0497**	**0.0497**		**0.0467**	**0.0467**	**0.0000**	**187.7976**	**187.7976**	**0.0444**	**0.0000**	**188.9078**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.5300e-003	0.1778	0.0700	8.9000e-004	0.0328	1.4700e-003	0.0342	9.4500e-003	1.4000e-003	0.0109	0.0000	85.8774	85.8774	9.1000e-004	0.0127	89.6785
Worker	0.0434	0.0307	0.4198	1.2700e-003	0.1576	7.1000e-004	0.1583	0.0418	6.6000e-004	0.0425	0.0000	116.0419	116.0419	2.7100e-003	2.9600e-003	116.9903
Total	**0.0489**	**0.2084**	**0.4898**	**2.1600e-003**	**0.1903**	**2.1800e-003**	**0.1925**	**0.0513**	**2.0600e-003**	**0.0534**	**0.0000**	**201.9193**	**201.9193**	**3.6200e-003**	**0.0156**	**206.6688**

3.4 Building Construction - 2025

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	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.7900e-003	0.2840	0.1115	1.4100e-003	0.0528	2.3700e-003	0.0551	0.0152	2.2600e-003	0.0175	0.0000	135.9200	135.9200	1.5300e-003	0.0200	141.9260
Worker	0.0654	0.0443	0.6296	1.9700e-003	0.2539	1.0900e-003	0.2550	0.0674	1.0100e-003	0.0684	0.0000	180.6158	180.6158	3.9500e-003	4.4400e-003	182.0381
Total	**0.0742**	**0.3283**	**0.7411**	**3.3800e-003**	**0.3066**	**3.4600e-003**	**0.3101**	**0.0826**	**3.2700e-003**	**0.0859**	**0.0000**	**316.5358**	**316.5358**	**5.4800e-003**	**0.0245**	**323.9641**

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	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.7900e-003	0.2840	0.1115	1.4100e-003	0.0528	2.3700e-003	0.0551	0.0152	2.2600e-003	0.0175	0.0000	135.9200	135.9200	1.5300e-003	0.0200	141.9260
Worker	0.0654	0.0443	0.6296	1.9700e-003	0.2539	1.0900e-003	0.2550	0.0674	1.0100e-003	0.0684	0.0000	180.6158	180.6158	3.9500e-003	4.4400e-003	182.0381
Total	**0.0742**	**0.3283**	**0.7411**	**3.3800e-003**	**0.3066**	**3.4600e-003**	**0.3101**	**0.0826**	**3.2700e-003**	**0.0859**	**0.0000**	**316.5358**	**316.5358**	**5.4800e-003**	**0.0245**	**323.9641**

3.4 Building Construction - 2026

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	tons/yr										MT/yr					
Off-Road	0.0116	0.1060	0.1367	2.3000e-004		4.4800e-003	4.4800e-003		4.2200e-003	4.2200e-003	0.0000	19.7132	19.7132	4.6300e-003	0.0000	19.8290
Total	**0.0116**	**0.1060**	**0.1367**	**2.3000e-004**		**4.4800e-003**	**4.4800e-003**		**4.2200e-003**	**4.2200e-003**	**0.0000**	**19.7132**	**19.7132**	**4.6300e-003**	**0.0000**	**19.8290**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2026

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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.7000e-004	0.0183	7.2000e-003	9.0000e-005	3.4400e-003	1.5000e-004	3.5900e-003	9.9000e-004	1.5000e-004	1.1400e-003	0.0000	8.6920	8.6920	1.0000e-004	1.2800e-003	9.0755
Worker	4.0100e-003	2.6100e-003	0.0384	1.2000e-004	0.0165	7.0000e-005	0.0166	4.3900e-003	6.0000e-005	4.4500e-003	0.0000	11.3981	11.3981	2.3000e-004	2.7000e-004	11.4850
Total	**4.5800e-003**	**0.0209**	**0.0456**	**2.1000e-004**	**0.0200**	**2.2000e-004**	**0.0202**	**5.3800e-003**	**2.1000e-004**	**5.5900e-003**	**0.0000**	**20.0901**	**20.0901**	**3.3000e-004**	**1.5500e-003**	**20.5605**

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	tons/yr										MT/yr					
Off-Road	0.0116	0.1060	0.1367	2.3000e-004		4.4800e-003	4.4800e-003		4.2200e-003	4.2200e-003	0.0000	19.7131	19.7131	4.6300e-003	0.0000	19.8290
Total	**0.0116**	**0.1060**	**0.1367**	**2.3000e-004**		**4.4800e-003**	**4.4800e-003**		**4.2200e-003**	**4.2200e-003**	**0.0000**	**19.7131**	**19.7131**	**4.6300e-003**	**0.0000**	**19.8290**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2026

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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.7000e-004	0.0183	7.2000e-003	9.0000e-005	3.4400e-003	1.5000e-004	3.5900e-003	9.9000e-004	1.5000e-004	1.1400e-003	0.0000	8.6920	8.6920	1.0000e-004	1.2800e-003	9.0755
Worker	4.0100e-003	2.6100e-003	0.0384	1.2000e-004	0.0165	7.0000e-005	0.0166	4.3900e-003	6.0000e-005	4.4500e-003	0.0000	11.3981	11.3981	2.3000e-004	2.7000e-004	11.4850
Total	**4.5800e-003**	**0.0209**	**0.0456**	**2.1000e-004**	**0.0200**	**2.2000e-004**	**0.0202**	**5.3800e-003**	**2.1000e-004**	**5.5900e-003**	**0.0000**	**20.0901**	**20.0901**	**3.3000e-004**	**1.5500e-003**	**20.5605**

3.5 Paving - 2026

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	tons/yr										MT/yr					
Off-Road	0.0160	0.1502	0.2551	4.0000e-004		7.3200e-003	7.3200e-003		6.7400e-003	6.7400e-003	0.0000	35.0337	35.0337	0.0113	0.0000	35.3170
Paving	8.7100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0247**	**0.1502**	**0.2551**	**4.0000e-004**		**7.3200e-003**	**7.3200e-003**		**6.7400e-003**	**6.7400e-003**	**0.0000**	**35.0337**	**35.0337**	**0.0113**	**0.0000**	**35.3170**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2026

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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	4.6000e-004	6.7100e-003	2.0000e-005	2.8900e-003	1.0000e-005	2.9000e-003	7.7000e-004	1.0000e-005	7.8000e-004	0.0000	1.9887	1.9887	4.0000e-005	5.0000e-005	2.0039
Total	**7.0000e-004**	**4.6000e-004**	**6.7100e-003**	**2.0000e-005**	**2.8900e-003**	**1.0000e-005**	**2.9000e-003**	**7.7000e-004**	**1.0000e-005**	**7.8000e-004**	**0.0000**	**1.9887**	**1.9887**	**4.0000e-005**	**5.0000e-005**	**2.0039**

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	tons/yr										MT/yr					
Off-Road	0.0160	0.1502	0.2551	4.0000e-004		7.3200e-003	7.3200e-003		6.7400e-003	6.7400e-003	0.0000	35.0337	35.0337	0.0113	0.0000	35.3169
Paving	8.7100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0247**	**0.1502**	**0.2551**	**4.0000e-004**		**7.3200e-003**	**7.3200e-003**		**6.7400e-003**	**6.7400e-003**	**0.0000**	**35.0337**	**35.0337**	**0.0113**	**0.0000**	**35.3169**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2026

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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	4.6000e-004	6.7100e-003	2.0000e-005	2.8900e-003	1.0000e-005	2.9000e-003	7.7000e-004	1.0000e-005	7.8000e-004	0.0000	1.9887	1.9887	4.0000e-005	5.0000e-005	2.0039
Total	**7.0000e-004**	**4.6000e-004**	**6.7100e-003**	**2.0000e-005**	**2.8900e-003**	**1.0000e-005**	**2.9000e-003**	**7.7000e-004**	**1.0000e-005**	**7.8000e-004**	**0.0000**	**1.9887**	**1.9887**	**4.0000e-005**	**5.0000e-005**	**2.0039**

3.6 Architectural Coating - 2026

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	tons/yr										MT/yr					
Archit. Coating	0.9019					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9900e-003	0.0201	0.0317	5.0000e-005		9.0000e-004	9.0000e-004		9.0000e-004	9.0000e-004	0.0000	4.4682	4.4682	2.4000e-004	0.0000	4.4743
Total	**0.9049**	**0.0201**	**0.0317**	**5.0000e-005**		**9.0000e-004**	**9.0000e-004**		**9.0000e-004**	**9.0000e-004**	**0.0000**	**4.4682**	**4.4682**	**2.4000e-004**	**0.0000**	**4.4743**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 2026

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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6300e-003	1.0600e-003	0.0157	5.0000e-005	6.7300e-003	3.0000e-005	6.7600e-003	1.7900e-003	3.0000e-005	1.8100e-003	0.0000	4.6403	4.6403	1.0000e-004	1.1000e-004	4.6757
Total	**1.6300e-003**	**1.0600e-003**	**0.0157**	**5.0000e-005**	**6.7300e-003**	**3.0000e-005**	**6.7600e-003**	**1.7900e-003**	**3.0000e-005**	**1.8100e-003**	**0.0000**	**4.6403**	**4.6403**	**1.0000e-004**	**1.1000e-004**	**4.6757**

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	tons/yr										MT/yr					
Archit. Coating	0.9019					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9900e-003	0.0201	0.0317	5.0000e-005		9.0000e-004	9.0000e-004		9.0000e-004	9.0000e-004	0.0000	4.4682	4.4682	2.4000e-004	0.0000	4.4743
Total	**0.9049**	**0.0201**	**0.0317**	**5.0000e-005**		**9.0000e-004**	**9.0000e-004**		**9.0000e-004**	**9.0000e-004**	**0.0000**	**4.4682**	**4.4682**	**2.4000e-004**	**0.0000**	**4.4743**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 2026

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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6300e-003	1.0600e-003	0.0157	5.0000e-005	6.7300e-003	3.0000e-005	6.7600e-003	1.7900e-003	3.0000e-005	1.8100e-003	0.0000	4.6403	4.6403	1.0000e-004	1.1000e-004	4.6757
Total	**1.6300e-003**	**1.0600e-003**	**0.0157**	**5.0000e-005**	**6.7300e-003**	**3.0000e-005**	**6.7600e-003**	**1.7900e-003**	**3.0000e-005**	**1.8100e-003**	**0.0000**	**4.6403**	**4.6403**	**1.0000e-004**	**1.1000e-004**	**4.6757**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	tons/yr										MT/yr					
Mitigated	0.6745	1.0702	6.9873	0.0170	1.8644	0.0136	1.8780	0.4980	0.0128	0.5108	0.0000	1,568.4916	1,568.4916	0.0800	0.0775	1,593.5855
Unmitigated	0.6745	1.0702	6.9873	0.0170	1.8644	0.0136	1.8780	0.4980	0.0128	0.5108	0.0000	1,568.4916	1,568.4916	0.0800	0.0775	1,593.5855

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	1,442.79	1,442.79	1442.79	4,930,233	4,930,233
Total	1,442.79	1,442.79	1,442.79	4,930,233	4,930,233

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	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
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.540541	0.056458	0.173793	0.136090	0.025268	0.007074	0.011525	0.018705	0.000610	0.000304	0.023606	0.001094	0.004932
Single Family Housing	0.540541	0.056458	0.173793	0.136090	0.025268	0.007074	0.011525	0.018705	0.000610	0.000304	0.023606	0.001094	0.004932

5.0 Energy Detail

Lyon 153 - Riverside-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	216.1120	216.1120	0.0182	2.2100e-003	217.2269
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	216.1120	216.1120	0.0182	2.2100e-003	217.2269
NaturalGas Mitigated	0.0233	0.1994	0.0849	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	230.9533	230.9533	4.4300e-003	4.2300e-003	232.3258
NaturalGas Unmitigated	0.0233	0.1994	0.0849	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	230.9533	230.9533	4.4300e-003	4.2300e-003	232.3258

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.3279e+006	0.0233	0.1994	0.0849	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	230.9533	230.9533	4.4300e-003	4.2300e-003	232.3258
Total		**0.0233**	**0.1994**	**0.0849**	**1.2700e-003**		**0.0161**	**0.0161**		**0.0161**	**0.0161**	**0.0000**	**230.9533**	**230.9533**	**4.4300e-003**	**4.2300e-003**	**232.3258**

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	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.3279e+006	0.0233	0.1994	0.0849	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	230.9533	230.9533	4.4300e-003	4.2300e-003	232.3258
Total		**0.0233**	**0.1994**	**0.0849**	**1.2700e-003**		**0.0161**	**0.0161**		**0.0161**	**0.0161**	**0.0000**	**230.9533**	**230.9533**	**4.4300e-003**	**4.2300e-003**	**232.3258**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.21859e+006	216.1120	0.0182	2.2100e-003	217.2269
Total		**216.1120**	**0.0182**	**2.2100e-003**	**217.2269**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.21859e+006	216.1120	0.0182	2.2100e-003	217.2269
Total		**216.1120**	**0.0182**	**2.2100e-003**	**217.2269**

6.0 Area Detail

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	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	tons/yr										MT/yr					
Mitigated	1.1551	0.0467	1.5922	2.7000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	35.6514	35.6514	3.1200e-003	6.1000e-004	35.9101
Unmitigated	1.6529	0.0579	2.5526	2.5600e-003		0.1549	0.1549		0.1549	0.1549	16.2515	33.8144	50.0659	0.0510	1.1000e-003	51.6684

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	tons/yr										MT/yr					
Architectural Coating	0.0902					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0139					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.5011	0.0397	0.9726	2.4800e-003		0.1461	0.1461		0.1461	0.1461	16.2515	31.2298	47.4814	0.0485	1.1000e-003	49.0217
Landscaping	0.0477	0.0182	1.5800	8.0000e-005		8.7600e-003	8.7600e-003		8.7600e-003	8.7600e-003	0.0000	2.5846	2.5846	2.4900e-003	0.0000	2.6467
Total	**1.6529**	**0.0579**	**2.5526**	**2.5600e-003**		**0.1549**	**0.1549**		**0.1549**	**0.1549**	**16.2515**	**33.8144**	**50.0659**	**0.0510**	**1.1000e-003**	**51.6684**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

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	tons/yr										MT/yr					
Architectural Coating	0.0902					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0139					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	3.3400e-003	0.0286	0.0122	1.8000e-004		2.3100e-003	2.3100e-003		2.3100e-003	2.3100e-003	0.0000	33.0669	33.0669	6.3000e-004	6.1000e-004	33.2634
Landscaping	0.0477	0.0182	1.5800	8.0000e-005		8.7600e-003	8.7600e-003		8.7600e-003	8.7600e-003	0.0000	2.5846	2.5846	2.4900e-003	0.0000	2.6467
Total	**1.1551**	**0.0467**	**1.5922**	**2.6000e-004**		**0.0111**	**0.0111**		**0.0111**	**0.0111**	**0.0000**	**35.6514**	**35.6514**	**3.1200e-003**	**6.1000e-004**	**35.9101**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	38.5646	0.3278	8.0300e-003	49.1535
Unmitigated	38.5646	0.3278	8.0300e-003	49.1535

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	9.96857 / 6.28453	38.5646	0.3278	8.0300e-003	49.1535
Total		**38.5646**	**0.3278**	**8.0300e-003**	**49.1535**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	9.96857 / 6.28453	38.5646	0.3278	8.0300e-003	49.1535
Total		**38.5646**	**0.3278**	**8.0300e-003**	**49.1535**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	36.4531	2.1543	0.0000	90.3111
Unmitigated	36.4531	2.1543	0.0000	90.3111

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	179.58	36.4531	2.1543	0.0000	90.3111
Total		**36.4531**	**2.1543**	**0.0000**	**90.3111**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	179.58	36.4531	2.1543	0.0000	90.3111
Total		**36.4531**	**2.1543**	**0.0000**	**90.3111**

9.0 Operational Offroad

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX 1b

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Cumulative Projects List

Significant Projects Under Review

PROJ23-0029 (USE23-0024 and SUB23-0008) – 710 Cawston Avenue (Chacon Farms Residential Community): A proposal for a master planned development on approximately 76.30 gross acres. The Chacon Farms Community will include a range of residential product types and densities, which includes 209 single-family homes and 424 multi-family homes. The project also includes active and passive open spaces that are interconnected by trails/paths. Application Types: General Plan Amendment (PLAN23-0004), Change of Zone (PLAN23-0005), Vesting Tentative Tract Map (SUB23-0008), Planned Development Permit (USE23-0024), and a Site Plan and Design Review (USE23-0025). Zoning: Rural Residential (RR). Environmental: Initial Study. APN's: 432-260-009, 432-260-026 and 432-260-027.

PROJ23-0022 (USE23-0009 & SUB23-0005) – The Magnet Shopping Center: A proposal for a 114,523-square-foot Commercial/Retail Shopping Center that includes a convenience store and gas station, an approximately 16,000 sf grocery store pad, and an automated carwash with 3 drive thru lanes and self-serving vacuums (MUP). In addition, the shopping center includes three (3) drive thru restaurants (MUP each), an approximately 7,000 square-foot auto parts store pad, 4 retail pads for larger tenants with a total of 56,00 sf, and 2 shop pads with a total 13,000 sf for retail and restaurant uses, with incidental uses including outdoor dining (MUP) and an (ATM MUP). The proposal also includes a Vesting Tentative Parcel Map (VTPM38831) to subdivide approximately 14.5 acres into 14 parcels that range from 0.38 acres to 1.54 acres. Application Type: Vesting Tentative Parcel Map (SUB23-0005), 5 Minor Use Permits (USE23-0010/11/12/13/14), and Site Plan and Design Review (USE23-0009). Zoning: Commercial General (CG). Environmental: Initial Study. Location: Southeast corner of State Street and Ramona Expressway. APN(s): 434-080-026 & 025.

PROJ24-0065 (USE24-0035, USE24-0036, SUB24-0011 – TTM38872) A proposal for a Master Planned Development on approximately 24-acres. The project will include two product types, which includes 126 Alley Cluster homes and 123 small lot detached homes. The project also includes two community parks at the center of the development and a water quality basin/dog park. Application Type: Planned Development Permit (USE24-0035), Site Plan and Design Review (USE24-0036), Tentative Tract Map (SUB24-0011). Zoning: Mixed Use. Environmental: TBD. Location: E. Esplanade Avenue and S Hewitt Street. APN: 439-180-011.

USE23-0008 (Idyllwild Apartments): A proposal for a 36-unit apartment complex with 1, 2, and 3 bedroom units (12 of each). Application Type: Site Plan and Design Review (SPDR). Zoning: Residential, High Density (RH). Environmental: TBD. Location: Southeast of the intersection of Idyllwild Drive and Penny Lane. APN: 434-353-023.

ARC23-0009 – San Jacinto Medical Office Buildings: A proposal for two-phase project that consists of two, 2-story medical and office use buildings and on-site improvements. Application Type: Site Plan and Design Review. Zoning: Commercial General (CG). Environmental: Previously Analyzed. Location: 1310 State Street. APN: 433-300-034.

P21-067 – TTM 38019: A submittal by Mike Record on behalf of Yorba LLC., for a proposed Subdivision of 149 residential lots, with a minimum lot size of 5,000 square feet, 1

commercial lot and 2 open spaces for landscape and drainage purposes on 42.8 acres. Application Type: Subdivision Application, Zone Map Change, General Plan Map Amendment, Environmental Assessment, Planned Development, and Tentative Tract Map. Initial Environmental Determination: TBD. Zoning: Industrial Light (IL), and Residential Medium Density (RM). Location: Northwest corner of Ramona Expressway and Potter Road. APN(s): 436-070-006-018.

P23-006 – Demler Farms: A proposal for a 78,072 square-foot, ground-mounted solar array with equipment pads on approximately 2 acres of the ~82-acre Demler Egg Ranch site. The solar electrical system is approximately 1 megawatt (DC) and proposed for onsite use (non-commercial). Application Type: Minor Use Permit. Zoning: Residential, Low Density (RL). Environmental: TBD. Location: 1455 N. Warren Rd. APN: 432-030-014.

P23-003 – Sanderson Crossroads Shopping Center: A proposal to add a 20,000 square-foot market, 10,000 square feet of inline restaurant/retail shops, and four (4) drive through restaurants to an existing shopping center. The proposal also includes the addition of 194,103 self-storage facility with one- and three-story buildings and a total of 1,146 storage units on approximately 6 acres. The existing shopping center currently includes a convenience store and service station and two (2) retail buildings. Application Type: Conditional Use Permit. Zoning: Community Commercial (CC). Environmental: TBD. Location: Southwest corner of Sanderson and Cottonwood. APN: 432-270-020.

P22-125 – Wright Septic: A proposal by Allen Griffith on behalf of Wright Septic to allow for a Contractor's Storage Yard, consisting of outdoor material, on-site truck parking, and the conversion on an existing structure on a 4.71-acre parcel. Application Type: Conditional Use Permit (CUP), and Site Plan and Design Review (SPDR). Zoning: Industrial Light (IL). Environmental: TBD. Location: 880 Cottonwood Avenue. APN(s): 435-260-001, 002; 435-020-007.

P22-129 – San Jacinto Commerce Center: A submittal by Landon Browning on behalf of Shea Properties to establish the San Jacinto Commerce Center Specific Plan for an Industrial Park with up to 15 warehouses totaling approximately 7,900,000 square feet on 475.24 acres. The project also includes a Site Plan and Design Review for the development of four speculative industrial buildings totaling approximately 4,180,000 square feet (Phase 1). Application Type(s): Site Plan and Design Review, Specific Plan. Land Use/Zoning: Villages of San Jacinto SP. Environmental: Environmental Impact Report. Location: West side of Sanderson Avenue, approximately 0.5 miles south of Ramona Expressway. APN(s) 432-030-006, 010 and 011.

P22-078 – Valley Reseda Phase II -TTM38634: A proposal to subdivide approximately 173,657 gross acres into 12 residential and non-residential lots and 2 letter lots for future right-of-way dedication. Future single-family residential lots proposed to be further subdivided through a separate and future tract map. Application Type: Tentative Tract Map, Planned Development Permit, and Environmental Assessment. Zoning: Residential, Medium Density (RM) and Commercial General (CG). Environmental: Initial Study. Location: East side of Sanderson Avenue and southwest of De Anza Drive. APN(s): 436-030-002, 436-170-001 and a portion of 436-030-001.

P22-123 – Warren Foothill Specific Plan/Tract Map: A proposal for a new specific plan ("SP") with 36 planning areas for residential, recreational/open space, and commercial (optional) uses. The specific plan plans for 757 single-family (low to medium density)

residential lots on ~28 acres, parks and open space areas on ~76 acres, and 160 high density residential units on ~11 acres (11-acre lot may be used for commercial uses). Tentative tract map 38365 (TTM38365) proposes to subdivide the project site into single-family lots as proposed in the SP, one high density or commercial lot, and other lots for water quality facilities, parks, and open space. Other associated actions in support of the project include a general plan amendment to designate site as Specific Plan Area ("SPA"), a change of zone to rezone the site as SP, and a development agreement to set development requirements. Application Type: General Plan Amendment, Change of Zone, Specific Plan, Tentative Tract Map, Development Agreement and Environmental Assessment. Zoning: Residential, Low Density (RL). Environmental: Initial Study. Location: West of Warren Road and North of Upperline Avenue.

P22-079 – Revision to Esplanade Specific Plan and TTM32955: A proposal to revise approved Tentative Tract Map 32955, phases 32955-2, -3,-4 within Planning Areas 1 – 3, 5, 7 and 8 of the Esplanade Specific Plan for 852 single-family residential lots and one, ~36.1-acre mixed use lot with capacity for ~194 multi-family units. The project includes an amendment to approved SP 01-02 (the *Esplanade Specific Plan*) and revisions to several improvements to match and support revisions to the associated tract map. Application Type: Specific Plan Amendment, Tentative Tract Map Revision, and Environmental Assessment. Zoning: Specific Plan (Esplanade). Environmental: Initial Study. Location: Northeast corner of Esplanade Avenue and Warren Road.

P21-127 – Green Acres: A submittal for an Outdoor Cultivation Cannabis Oriented Business located on a 25.34-acre parcel. The applicant will utilize 6.3 acres of this parcel with approximately 3.47 acres of cultivation canopy. Application Type: Cannabis Oriented Business Land Use Permit, Environmental Assessment. Zoning: Office Park (OP). Environmental: Initial Study/MND. Location: North of Cottonwood, east of Warren Rd. APN: 432-120-005.

P22-110 – Kirby Villas TTM 38509: A proposal to subdivide approximately 4.95 acres into 27 single-family residential lots and 5 lettered lots (roads, parking, basin). Application Type: Tentative Tract Map. Zoning: Residential, Medium Density (RM). Environmental: TBD. Location: 1436 S. Kirby Street. APN: 436-450-015.

P22-004 – Tract 34271: A submittal by Cornell Kasbergen to annex 43.68 acres into the City of San Jacinto and subdivide the property into 152 lots for single-family homes and 5 lettered lots for a park, basin, and open space areas. The project also includes a lot line adjustment between two lots. Application Types: Annexation, Tentative Tract Map, Change of Zone, Lot Line Adjustment, and Environmental. Zoning: Agriculture (A-2-10) - County of Riverside, Proposed Zone: Low Density Residential (RL). Environmental: Mitigated Negative Declaration. Location: South of Ramona Expressway, extending between Alessandro Avenue and Vernon Street. APN(s): 433-070-030, 433-070-050, and 434-180-007.

P22-022 – McLeish Ranch: A submittal of TTM 38203 to subdivide approximately 96 acres into 424 single-family lots, one basin lettered-lot, and 14 landscape/open space lettered-lots. The project also includes a Planned Development Permit to modify various design standards. Application Type: Tentative Tract Map, Planned Development Permit, and Environmental Assessment. Zoning: Residential, Low Density (RL). Environmental: Initial Study. Location: Northwest corner of Lyon Avenue and De Anza Drive. APN(s): 436-080-001, 002, and 006.

P22-088 – Cormen Leigh TTM38468: A proposal to subdivide 42.19 acres into 153 single-family residential lots with four lettered lots for detention basins, water quality and open space. Zoning: Residential, Low Density (RL). Application Type: Tentative Tract Map. Environmental: Initial Study/MND. Location: West side of Lyon Avenue, approximately 962 feet north of Cottonwood Avenue. APN's: 436-280-006/-007.

P21-097 – SJ44: A submittal for the construction of 44 single-family residential homes on approximately 5.8 acres. Application Type: Site Plan and Design Review. Zoning: Residential, Medium Density (RM). Environmental: Previously Analyzed. Location: Ramona Boulevard and Tiger Lane. APN: 434-110-023 and -024.

P22-037 – Oso Farms, LLC: A submittal by Hugo Tinoco on behalf of Oso Farms, LLC., to establish a Cannabis Oriented Business Land Use Permit for Outdoor Cultivation of Cannabis on 23 Acres. Application Type: Cannabis Oriented Business Land Use Permit, and Environmental Assessment. Zoning: Office Park (OP). Environmental: Mitigated Negative Declaration. Location: North side of Ramona Boulevard, and west of Cawston Avenue.

P21-106 – Ramona Land Development: A submittal by Andrew Kotyuk to on behalf of Ramona Land Development, LLC., to establish a Cannabis Oriented business for outdoor cultivation on 17.1 acres. Application Type: Cannabis Oriented Business Land Use Permit, Environmental. Initial Environmental Determination: Mitigated Negative Declaration. Zoning: Office Park (OP). Location: North of Cottonwood Avenue, South of Ramona Expressway, East of N. Warren, and West of N. Sanderson. APN: Portion of 430-100-002.

P21-076 – Bray Map TTM 38202: A proposal to subdivide approximately 33.8 acres into 181 single family residential lots with a minimum lot size of 5,000 square feet and 4 lettered lots for basins and open space. Application Type: Tentative Tract Map, Planned Development Permit, and Environmental. Initial Environmental Determination: Initial Study. Zoning: Residential Low Density (RL). Location: 291 N. Lyon Avenue. APN: 436-280-011 – 014 and 025.

P22-029 – Trifecta Investment LLC: A submittal by Trifecta Investment Group LLC., for a Cannabis Oriented Business Land Use Permit to establish an outdoor cultivation facility on 65.61 acres. Application Type: Cannabis Oriented Business Land Use Permit. Initial Environmental Determination: Mitigated Negative Declaration. Zoning: Office Park (OP). Location: West of Sanderson Avenue approximately 1,800 feet. APN: 430-130-079.

P20-011 - The Sanderson Ranch - Tentative Tract Map 37867: A submittal by Fred Pugh to subdivide 50.08 acres into a total of 117 lots. The project will consist of 90 single-family dwellings, 6 multi-tenant dwelling lots, and various other supporting uses. Application Type: Tentative Tract Map. Initial Environmental Determination: TBD. Zoning: Residential, Medium Density (RM). Location: Sanderson Avenue, approximately 1400 feet North of Cottonwood Ave. APN(s): 436-170-018, 436-170-019, and 436-170-020.

P21-010 – Silver Beach Grand San Jacinto: A proposal by Tony Tang on behalf of Golden Ocean Realty, LLC, to subdivide 37.87 acres into 138 single-family lots and two lettered lots with Tentative Tract Map 38066. Application Type: Tentative Tract Map. Initial Environmental Determination: Mitigated Negative Declaration. Zoning: Residential, Medium (RM). Location: SW of Ramona Blvd. APN(s): 436-040-006, 436-040,008, and a portion of 436-030-001.

P20-091 – We Architects Group: A submittal by Richard Bostwick on behalf of We Architects Group, to establish a Cannabis Oriented Business within a proposed 18,534 square foot building and a 1,758 square foot mezzanine on 1.37 acres. Application Type: Cannabis Oriented Business Land Use Permit and Site Plan and Design Review. Initial Environmental Determination: Categorical Exemption (In-fill). Zoning: Industrial Light (IL). Location: South of W. Esplanade Avenue and East of S. Buena Vista Street. APN(s): 435-211-025 and 435-211-026.

P21-064 – Soyland Industrial: A submittal for the construction of 4,000 square-foot industrial speculative metal building on approximately 0.3 acres. Application Type: Site Plan and Design Review and Variance. Zoning: Industrial, Light (IL). Environmental: Categorical Exemption. Location: 572 Grand Avenue. APN: 435-292-024.

P22-084 – Alessandro Annexation: A proposal to annex 160 acres into the City of San Jacinto. Application Types: Annexation. Zoning: Various - County of Riverside, Proposed Zone: Various – City Zoning. Environmental: Categorical Exemption. Location: South of Ramona Expressway, extending between San Jacinto Avenue and Vernon Street. APN(s): 88 lots/APNs.

Approved Projects

P22-036 – Monte Vista: A submittal by RJ Hernandez on behalf of Monte Vista Homes for a Site Plan & Design Review for the construction of 36 single-family residential homes on approximately 5.6 acres. Application Type: Site Plan and Design Review. Zoning: Residential, Medium Density (RM). Environmental: Previously Analyzed. Location: East of Kirby and 350 feet north of Esplanade. APN: 436-450-016.

P22-020 Rancho Estudillo Plaza (phase 2): A proposal to subdivide 6.69 acres into 4 commercial parcels and 3 lettered lots; establish a car wash with one automated car wash lane and self-service vacuuming (in place of a previously approved drive-thru); revise a second previously approved drive-thru restaurant building; and change the site layout and architectural design for the second phase of an approved commercial plaza. Application Type: Tentative Parcel Map (TPM38359), Minor Use Permits, and Site Plan and Design Review. Applicant: Maple Lane Group, LLC. Land Use Designation: Community Commercial (CC). Zoning: Residential, Low Density (RL). Environmental: Initial Study. Location: Northeast Corner of Sanderson Avenue and Seventh Street. APN: 436-360-011.

P21-128 – Rancho Madrina TR32247: A proposal by Sean Motlagh on behalf of KB Homes for a Site Plan & Design review to complete the build out of 150 homes on approximately 44.8 acres within Tentative Tract 32247. Application Type: Site Plan & Design Review. Initial Environmental Determination: Previously Analyzed. Zoning: Residential-Low Density (RL). Location: East of S. Lyon Avenue, North of W. 7th Street. APN(s): 431-190-009 thru 012.

P21-079 – Renaissance Valley Academy: A proposal to expand an existing charter school to add ~5 acres to the campus to accommodate an additional 250 students. Application Type: Conditional Use Permit and Site Plan & Design Review. Zoning: Public Institutional (PI). Environmental: TBD. Location: 1091 W. Esplanade Avenue. APNs: 435-190-053.

P20-046 – High Girl, Inc: A proposal by John Beverly Land on behalf of High Girl, Inc. to establish a Cannabis Oriented Business within two proposed buildings totaling 34,145 square feet on 2 acres. The proposal includes a microbusiness consisting of 18,360 square foot building for cultivation, and a 15,785 square foot building for manufacturing, distribution and retail sales, (dispensary). Application Types: Cannabis Oriented Business Land Use Permit, Site Plan & Design Review, and Environmental Review. Initial Environmental Determination: Categorical Exemption (In-fill). Zoning: The project site is zoned Industrial Light (IL). Location: 490 W. Seventh Street. APN(s): 435-240-043.

P20-087 - Rancho de Alamo (TTM 37881): A proposal by Fred J Pugh on behalf of Mayers & Associates for Tentative Tract Map 37881 to subdivide 37.1 acres into 191 residential lots. Application Type: Tentative Tract Map. Zoning: Residential, Medium Density (RM). Environmental: TBD. Location: Cottonwood and Cawston Ave. APN(s) 432-130-006/7.

P21-108 – Dutch Bros: A submittal by Daniel Batty on behalf of DMSD Property, LLC., for a Site Plan & Design Review and a Minor Use Permit for the construction of a 950 square foot coffee shop with drive-thru service. Application Type: Site Plan & Design Review, and Minor Use Permit. Zoning: Commercial General (CG). Environmental: Exempt. Location: Vacant parcel adjacent to 770 West Ramona Expressway. APN 434-080-036.

P21-129 – Popeyes: A proposal by Dawood Beshay on behalf of DMSD Property, LLC., for a Site Plan & Design Review and a Minor Use Permit for the construction of a Popeye's Restaurant with drive-thru service. Application Type: SPDR, MUP, Environmental Assessment. Zoning: Commercial General (CG). Environmental: TBD. Location: South side of Ramona Expressway, approximately 350 feet west of State Street. APN(s) 434-080-036.

SPDR 17-07 & Zone Change 17-05)- A proposal of the Soboba Band of Luiseño Indians for a Site Plan Design Review to construct a 14,583 square foot multi-tenant retail building, a 9,360-square-foot multi-tenant retail building, two fast- food restaurants with drive-thru service, and a service station with a convenience store and car wash. The project also includes a Change of Zone from Neighborhood Commercial to Commercial General The project is located on the south side of Main Street, extending between Ramona Expressway and Donna Way. (APN's 433-160-027, 032, 033, 024, 028, 029, 034).

P20-018 – 33 Holdings Canna-Park: A proposal by Micah Anderson of 33 Holdings Canna-Park to establish a Cannabis Oriented Business that consist of a Microbusiness with Cultivation, Manufacturing, Distribution and Retail. The project also includes a Site Plan & Design Review for the construction of a two story building with 21,811 square feet of gross floor area and the merger of two parcels on 1.34 acres. Application Type: Cannabis Oriented Business Land Use Permit, Variance Application. Initial Environmental Determination: TBD. Zoning: Industrial Light (IL). Location: 770 Cottonwood Ave. APN: 435-261-004, and 435-261-005.

P21-091 – Sunterra (TTM 38107): A submittal by Peter Kulmaticki on behalf of SRDP, LLC., to establish a Tentative Tract Map to subdivide approximately 38.15 acres into a proposed 215 single-family residential sub-division with a minimum lots size of 4,000 square feet with three landscape lots and one water quality basin. Application Type: Tentative Tract Map, PDP, Environmental. Initial Environmental Determination: TBD. Zoning: Residential, Medium Density (RM). Location: Southwest Corner of Sanderson Avenue and Ramona Blvd. APN: 432-030-012.

KPC PROMENADE

The applicant proposes a Zone Change from existing Zoning of Low Density Residential (LDR) to General Commercial (CG). The site proposal consists of; 6,300 square feet of Retail, 3,500 square foot convenience store, 12,800 square feet of restaurant, 6,000 square foot of Medical Office/Urgent Care, (8) pump Gas Station with Carwash and 125,000 square feet for a Hotel (120 rooms). At the west side of the property, the applicant proposes Senior Housing, 69 (1) bedroom units, and 45 (2) bedroom units. Initial Environmental Determination: MND Application Type: GPA 16-1, ZC 16-1, MUP 16-2, MUP 16-3, MUP 16-4, SPDR 16-7; Site Location: Northwest corner of Ramona Expressway and Main Street.

P22-023 – TTM38339: A submittal by DeRicci Keller on behalf of Tulloch Holdings, LLC, to subdivide approximately 20 acres into 76 single-family residential lots. Application Type: Tentative Tract Map, and Environmental Assessment. Zoning: Residential, Low Density (RL). Environmental: TBD. Location: 393 Kirby Street. APN: 436-490-011.

P21-071 – SJ Warehouse LLC: A submittal by Caspar Chou on behalf of SJ Warehouse, LLC for a Cannabis Oriented Business Land Use Permit to establish a Cannabis Indoor Cultivation and Distribution operation in a new 11,008 square foot building on 0.63 acres. Application Type: Cannabis Oriented Business Land Use Permit, Environmental, Site Plan and Design Review. Initial Environmental Determination: TBD. Zoning: Light Industrial (IL). Location: 220 N. Greco Court. APN: 435-055-042.

P21-074 – 1612 S. Santa Fe Avenue: A submittal by Kreg McCoy on behalf of SIPKOI for a Cannabis Oriented Land Use Permit to establish a Cannabis Microbusiness within an existing 10,000 square foot building on 2.22 acres and a variance to establish a dispensary within 500 feet of another dispensary. Application Type: Cannabis Oriented Business Land Use Permit, Environmental, Site Plan and Design Review and Variance. Initial Environmental Determination: Exempt. Zoning: Industrial. Location: 1612 S. Santa Fe. APN: 439-070-064.

Approved & Under Construction

P21-102 – TR37230 - Mountain Bridge: A submittal by Nicole Balchunas on behalf of Century Communities to build 81 single family detached homes on approximately 14.5 acres in a previously entitled Tract. Application Type: SPDR. Initial Environmental Determination: Nothing Further Required. Zoning: Residential, Medium Density (RM). Location: Northeast corner of Hewitt Street and Esplanade Ave. APN: 437-310-029.

P21-103 – TR37229 - Mountain Bridge: A submittal by Nicole Balchunas on behalf of Century Communities to build 73 single family detached homes on approximately 11.8 acres in a previously entitled Tract. Application Type: SPDR. Initial Environmental Determination: Nothing Further Required. Zoning: Residential, Medium Density (RM). Location: East side of Hewitt Street, extending between Esplanade Avenue and Commonwealth Avenue. APN: 439-180-015.

P20-052 – Walmart Fueling Station: A submittal by Brady Carlucci of Sevan Multisite Solutions on behalf of Walmart Inc. to add a Fueling Station consisting of eight pumps (16 fueling stations) to an existing Walmart Supercenter on a 0.55-acre parcel. Application Types: Site Plan & Design Review, Minor Use Permit, and a Variance. Initial Environmental Determination: Nothing Further Required Zoning: Commercial General (CG). Location: 1861 S San Jacinto Ave. APN: 439-120-038-2.

Site Plan Design Review (Project P19-003). A proposal by Demler Egg Ranch for the redevelopment of the Demler Egg Ranch. The project site consists of 246.4 acres on APN's 432-030-001(RL and OSR), 432-030-002 (RL and OSR), and 432-030-003 (RL, RH, OSR). The existing ranch consists of approximately 1,024,080 square feet of existing poultry houses with additional miscellaneous buildings. Initial Environmental Determination: Exempt. Location: The site is bound by Warren Road on the west, Odell Street on the east, and Record Road on the north.

P20-022 –Dollar Tree: A submittal by Kathryn Smith of Sterling Commercial Properties on behalf of Dollar Tree for the construction of a 10,050 square-foot retail building and a Tentative Parcel Map 37863 to subdivide 16.51 acres into nine parcels for commercial use. Parcel 5, a 1.22-acre lot, will be developed for the Dollar Tree retail building. Application Types: Tentative Parcel Map, Site Plan & Design Review, and Environmental Review: Initial Environmental Determination: TBD. Zoning: Commercial General (CG). Location: NEC of Sanderson Ave and Esplanade Ave. APN: 432-280-028.

P21-125 – Ashford Pointe: A proposal by Dean Pernicone on behalf of DR Horton, for a Site Plan & Design Review to build 89 single-family detached homes on TR 31294, 30878, and 32250. Application Type: Site Plan & Design Review, Landscape and Irrigation. Zoning: Residential Low Density (RL). Environmental: Previously Analyzed. Location: Both sides of 7th Street extending between Kirby Street and Ivy Street. APNs: 436-610-001 -013, 436-611-001 – 019, 436-612-001 – 020, 436-541-039, 436-530-001 – 014, and 436-520-001 - 022.

P21-057 – Starling Pointe/Place: A proposal to build 369 single-family detached homes on TR 30379 and 32582. Application Type: Site Plan & Design Review. Zoning: Residential Low Density (RL). Environmental: Previously Analyzed. Location: Both sides of Vernon Avenue, south of Ramona Expressway and north of Artesian Street. APNs: 434-230-001 - -002, 434-250-001, 434-271-001, 434-300-002, -011 - -013.

P22-087 – San Jacinto Valley Academy: A proposal to expand an existing charter school to add 6.93 acres to the campus to accommodate a maximum of 2,400 students. Application Type: Conditional Use Permit and Site Plan & Design Review. Zoning: Public Institutional (PI). Environmental: IS/MND. Location: 480 N. San Jacinto Avenue. APNs: 434-200-009, -010, -013, and -019.

Esplanade Specific Plan/TTM32955: Tentative Tract Map 32955 for 622 SFR lots (~300 under development). Application Type: Specific Plan Amendment, Tentative Tract Map. Zoning: Specific Plan (Esplanade). Environmental: IS/MND. Location: Northeast corner of Esplanade Avenue and Warren Road.

P21-030 – TS Farms LLC: A submittal by Tony Huang on behalf of TS Farms, LLC., to establish a Cannabis Oriented Business for Outdoor Cultivation of Cannabis on 60.53 acres. Application Type: Cannabis Oriented Business Land Use Permit. Initial Environmental Determination: Categorical Exemption (existing facilities, new construction of small structures). Zoning: Residential, Medium Density (RM). Location: West of Sanderson Avenue, approximately 2,500 feet North of Cottonwood Avenue. APN(s): 432-130-008, 432-130-009, & 432-130-001.

P20-061 – SoCal Innovative: A proposal by Hugo Gutierrez to establish an Outdoor Cannabis Cultivation Business on 2.70 acres. Application Type: Cannabis Oriented Business Land Use Permit. Initial Environmental Determination: Negative Declaration. Zoning: Residential, Medium Density (RM). Location: 450 N. Sanderson Road. APN: 432-130-002-1.

P20-062 – Kommon Farms, Inc.: A proposal by Stephen Kim for an Outdoor Cannabis Cultivation Business on 2.70 acres. Application Type: Cannabis Oriented Business Land Use Permit. Initial Environmental Determination: Mitigated Negative Declaration. Zoning: Medium Density Residential (RM). Location: 450 N. Sanderson Road. APN: 432-130-002-1.

APPENDIX 2

Biological Resources Assessment, Jurisdictional Delineation Report & MSHCP Consistency Analysis



42.19-Acre Lyon Avenue Project on APN#436-280-006-7

Biological Resources Assessment, Jurisdictional Delineation Report And MSHCP Consistency Analysis

November 2023

Tom Dodson & Associates

Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved

Distribution of copies

Revision	Issue approved	Date issued	Issued to	Comments

42.19 Acre Lyon Avenue Project on APN#436-280-006-7

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Executive Summary

Tom Dodson & Associates to conduct a Biological Resources Assessment, Jurisdictional Delineation and MSHCP Consistency Analysis for a proposed residential development on an approximately 42.19-acre parcel located in the City of San Jacinto, Riverside County, California. The Subject Parcel falls entirely within the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) area and the City of San Jacinto is a signatory to the MSHCP.

In September of 2023, TDA biologists conducted a Biological Resources Assessment survey to address potential effects of the Project on designated Critical Habitats and/or special status species. Results of the Biological Resources Assessment are intended to provide sufficient baseline information to the Project Proponent and, if required, to City and/or County planning officials and federal and state regulatory agencies to determine if the Project is likely to result in any adverse effects on sensitive biological resources and to identify mitigation measures to offset those effects. Data regarding biological resources in the Project vicinity were obtained through literature review and field investigation. Available databases and documentation relevant to the Project Area were reviewed for documented occurrences of sensitive species that could potentially occur in the Project vicinity, including the U.S. Fish and Wildlife Service designated Critical Habitat online mapper and Information for Planning and Consultation System, as well as the most recent versions of the California Natural Diversity Database (CNDDB) and California Native Plant Society Electronic Inventory.

The result of the reconnaissance-level field survey was that no state or federally listed species were identified within the Project Area and the Project is not within or adjacent any federal Critical Habitat. Due to the environmental conditions on site and the adjacent disturbances, the Subject Parcel is not suitable to support any of the listed species that have been documented in the Project vicinity. Furthermore, the Subject Parcel does not contain any sensitive habitats, including any USFWS designated Critical Habitat for any federally listed species, and the Project will not result in any loss or adverse modification of Critical Habitat.

The Subject Parcel is mapped within a MSHCP Burrowing Owl Survey Area. Therefore, a burrowing owl habitat suitability assessment and floristic botanical field survey were conducted by TDA in September of 2023 that included 100 percent visual coverage within and adjacent the Subject Parcel. The result of the survey was that no evidence of BUOW was found in the survey area and the Project Area is not suitable to support this species at the time of survey.

TDA' biologists also assessed the Subject Parcel for the presence of state and/or federal jurisdictional waters that may potentially be impacted by the Project. The jurisdictional waters assessment was conducted in accordance with the U.S. Army Corps of Engineers *Wetlands Delineation Manual, Jurisdictional Determination Form Instructional Guidebook, Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*. The result of the jurisdictional waters assessment is that there are no wetland or non-wetland jurisdictional waters within the Subject Parcel. Therefore, the Project will not impact any jurisdictional waters and no state or federal jurisdictional waters permitting will be required under current regulation. Additionally, the Subject Parcel does not support any MSHCP riparian/riverine areas or vernal pools.

This report describes biological resources and identifies state and/or federally listed species with potential to occur in the area and presents representative site photographs. The results and conclusions presented in this report are considered preliminary and valid under current regulatory context. Additionally, according to protocol and standard practices, the results of the habitat assessment surveys will remain valid for the period of one year, or until August 2022, after which time, if the site has not been disturbed in the interim, another survey may be required to determine the persisting absence of special status species and to verify environmental conditions on site. Regardless of survey results and conclusions given herein, if any state or federally listed species are found on site during Project-related work activities, all activities likely to affect the animal(s) should cease immediately and regulatory agencies should be contacted to determine appropriate management actions.

1. Introduction

On behalf of Tom Dodson & Associates., TDA Engineering Group, Inc. (TDA) has prepared this Biological Resources Assessment (BRA) report for an approximately 42.19-acre property (Subject Parcel) (Site) located in the City of San Jacinto, Riverside County, California. The Subject Parcel is zoned for residential development and currently consists of vacant land generally surrounded by existing development. The BRA fieldwork was conducted by TDA biologist Lisa Patterson in September 2023. The purpose of the BRA survey was to address potential effects of developing the Subject Parcel (Project) on designated Critical Habitats and/or any species currently listed or formally proposed for listing as endangered or threatened under the federal Endangered Species Act (ESA) and/or the California Endangered Species Act (CESA), as well as any species otherwise designated as sensitive by the California Department of Fish and Wildlife (CDFW [formerly California Department of Fish and Game]) and/or the California Native Plant Society (CNPS).

The Project Area was assessed for sensitive species known to occur locally. Attention was focused on those state and/or federally listed as threatened or endangered species and California Fully Protected species that have been documented in the vicinity of the Project Area, whose habitat requirements are present within or adjacent to the Project Area. Results of the habitat assessment are intended to provide sufficient baseline information to the Project Proponent and, if required, to City, County or other local government planning officials and federal and state regulatory agencies, including the U.S. Fish and Wildlife Service (USFWS) and CDFW, respectively, to determine if the Project is likely to result in any adverse effects on sensitive biological resources and to identify mitigation measures to offset those effects.

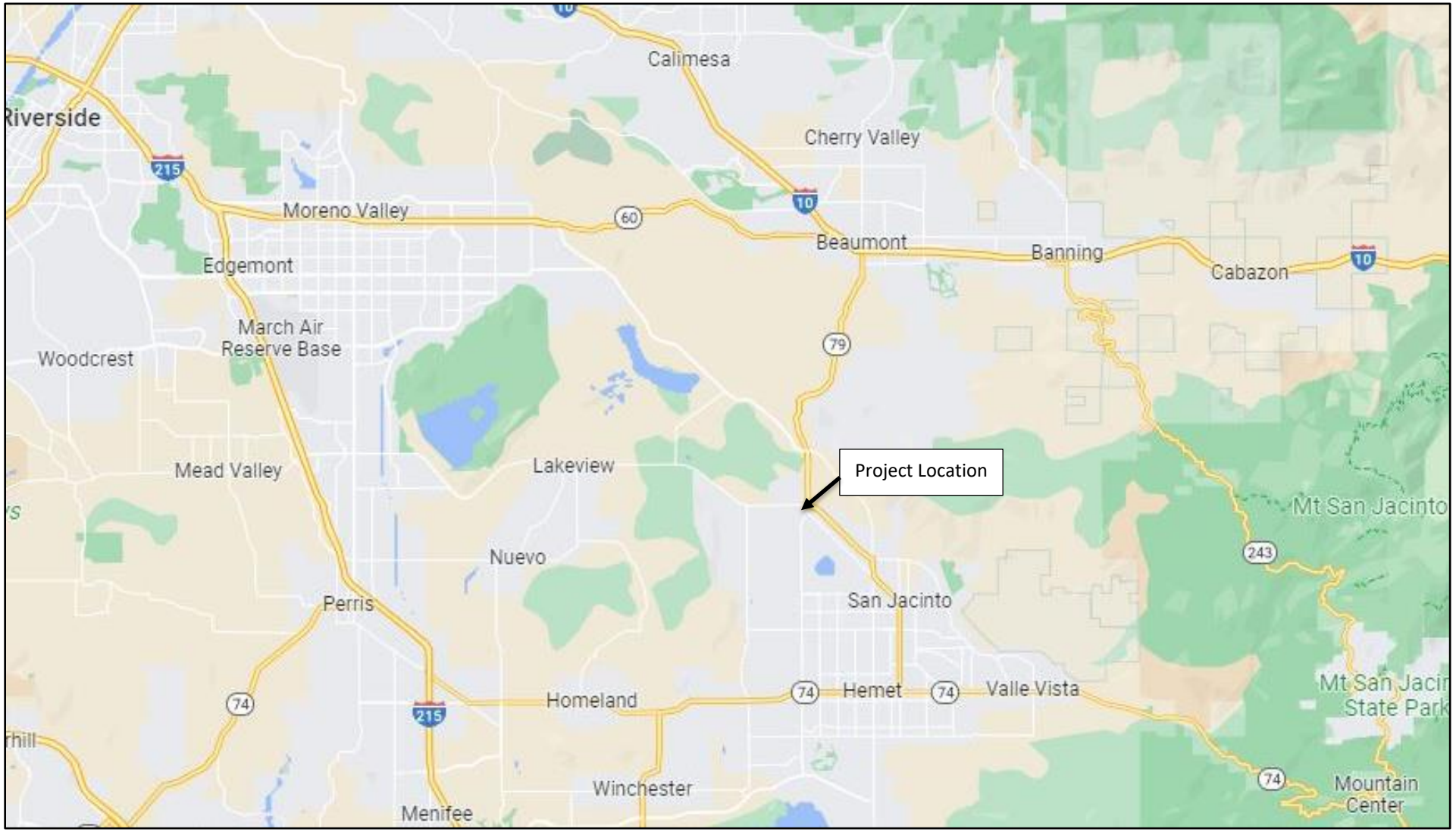
In addition to the BRA survey, TDA' biologists assessed the Project Area for the presence of state and/or federal jurisdictional waters potentially subject to regulation by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA), Regional Water Quality Control Board (RWQCB) under Section 401 of the CWA and Porter Cologne Water Quality Control Act, and CDFW under Section 1600 of the California Fish and Game Code (FGC), respectively.

TDA also prepared a Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Consistency Analysis, which is included in the scope of this report. As part of the City of San Jacinto's approval process, a Western Riverside County MSCHP compliance report is required. The purpose of this report is to assess whether the proposed Project is consistent with the conditions and provisions identified in the MSCHP. The City of San Jacinto is signatory to the MSHCP Implementing Agreement and thereby a permittee responsible for meeting the terms and conditions outlined in the MSHCP and the Biological Opinion issued for the MSHCP. Therefore, the City of San Jacinto has the responsibility to ensure the projects they approve are consistent with the MSHCP and will not preclude the overall conservation goals and reserve design from being accomplished.

According to the MSHCP, the Subject Parcel is mapped within a burrowing owl (*Athene cunicularia* [BUOW]) Survey Area. Therefore, in addition to the BRA survey and jurisdictional waters assessment, a BUOW habitat suitability assessment was conducted for the Project Area in accordance with the MSHCP requirements.

1.1 Location

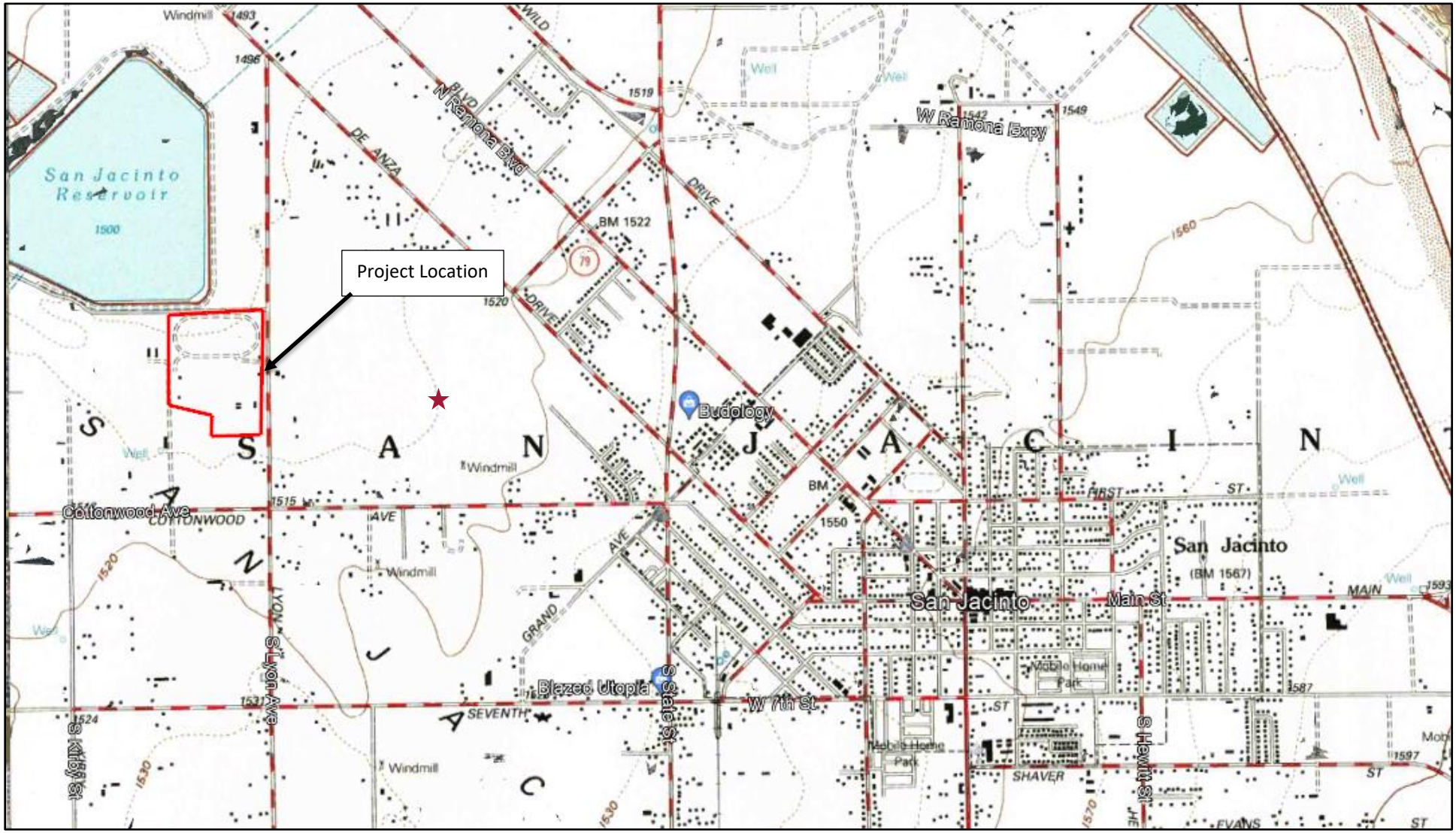
The Subject Parcel is located in the City of San Jacinto, Riverside County, California. The proposed project is located on the west side of Lyon Avenue, approximately 137 feet north of Cottonwood Avenue. in the City of San Jacinto, Riverside County, California. The site mapped within Assessor's Parcel Numbers (APNs) 436-280-006 & -007, and in Section 28, Township 4 South, Range 1 West SBMM as found on the USGS – San Jacinto Quadrangle, 7.5 Minute Series topographic map. The geographic coordinates are as follows: 33.792707°, -116.991877° (See Figures 1& 2 for Regional Location Map and Site Location Map).



SOURCE: Google Maps

FIGURE 1

Regional Location
49.19-Ac Lyons Development Project



SOURCE: USGS 7.5 Min Topo "San Jacinto" Quad.

FIGURE 2

Topographic Map of Project Location
42.19-acre Lyons Development Project



SOURCE: Google Earth

FIGURE 3

Aerial Photograph of Project Area
42.19-acre Lyons Development Project

1.2 Environmental Setting

The Project Area lies in the geographically based ecological classification known as the Inland Valleys – Level IV ecoregion, of the Southern California/Northern Baja Coast – Level III ecoregion (Griffith et al. 2016). The goal of regional ecological classifications is to reduce variability based on spatial covariance in climate, geology, topography, climax vegetation, hydrology, and soils. The Inland Valleys ecoregion is a heavily urbanized ecoregion that historically consisted of the alluvial fans and basin floors immediately south of the San Gabriel and San Bernardino Mountains (Griffith et al. 2016).

The Project Area is situated in the San Jacinto Valley, between the Santa Ana Mountains to the west/southwest and the San Jacinto Mountains the east/northeast. The topography of the Project Area consists of flat urban landscape, comprised of vacant land and surrounding residential and commercial development. The elevation of the Subject Parcel is approximately 1,400 feet above mean sea level (amsl).

The Project Area is within a hot-summer Mediterranean climate (Csa), subject to both seasonal and annual variations in temperature and precipitation. Average annual maximum temperatures within the Project Area peak at 94.4 degrees Fahrenheit (° F) in August and fall to an average annual minimum temperature of 39.1° F in January. Average annual precipitation is greatest from December through March and reaches a peak in February (2.20 inches). Precipitation is lowest in the month of July (0.04 inches). Annual total precipitation averages 10.21 inches.

Hydrologically, the Project Area is situated within the Gilman Hot Springs Hydrologic Sub-Area (HSA 802.21). The Gilman Hot Springs HSA comprises a 193,598-acre drainage area, within the larger San Jacinto Valley Watershed (HUC 18070202). The San Jacinto River is the major hydrogeomorphic feature within the San Jacinto Watershed. The nearest tributaries to the San Jacinto River.

Soils within the Subject Parcel are predominantly comprised of Traver fine sandy loma, Chino silt loam, Dello fine sandy loam, and Grangeville sandy loam. The Dominant soils are drained and alkali 0-5percent slopes.

The City of San Jacinto consists of a mix of urban landscapes and isolated patches of undeveloped, grassland, and coastal sage scrub habitats. The Subject Parcel is within an urban landscape that no longer supports any native habitat. Surrounding uses consists of flood control, commercial and residential developed areas with non-native landscaped vegetation. The entirety of the property cleared/graded vacant lands. (Figure 3).

2. Assessment Methodology

2.1 Biological Resources Assessment

Data regarding biological resources in the Project vicinity were obtained through literature review, desktop evaluation and field investigation. Prior to performing the field survey, available databases, and documentation relevant to the Project Area were reviewed for documented occurrences of sensitive species that could potentially occur in the Project vicinity. The USFWS designated Critical Habitat online mapper, USFWS threatened and endangered species occurrence data overlay, and the most recent versions of the California Natural Diversity Database (CNDDB) and California Native Plant Society Electronic Inventory (CNPSEI) databases were searched for sensitive species data in the *San Jacinto* USGS 7.5-Minute Series Quadrangle. These databases contain records of reported occurrences of state and federally listed species or otherwise sensitive species and habitats that may occur within the vicinity of the Project site (approximately 3 miles). Other available technical information on the biological resources of the area was also reviewed including previous surveys and recent findings.

2.1.1 Biological Resources Assessment Field Survey

TDA' biologist Lisa Patterson conducted a biological resources assessment of the Project Area on May 22, 2022. The reconnaissance-level field survey included a floristic botanical survey and a burrowing owl (*Athene cunicularia*) habitat suitability assessment survey, which consisted of a pedestrian survey that encompassed the entire Subject Parcel and included 100 percent visual coverage of the site and adjacent earthen flood control channel to the north. Wildlife species were detected during field surveys by sight, calls, tracks, scat, and/or other sign. In addition to species observed, expected wildlife usage of the site was determined based on known habitat preferences of regional wildlife species and knowledge of their relative distributions in the area. The focus of the faunal species survey was to identify potential habitat for special status wildlife that may occur within the Project vicinity.

2.2 Jurisdictional Delineation

On September 21,2023, Ms. Patterson also evaluated the Subject Parcel for the presence of riverine/riparian/wetland habitat and jurisdictional waters, i.e. Waters of the U.S. (WOTUS), as regulated by the USACE and RWQCB, and/or jurisdictional streambed and associated riparian habitat as regulated by the CDFW. Prior to the field visit, aerial photographs of the Project Area were viewed and compared with the surrounding USGS 7.5-Minute Topographic Quadrangle maps to identify drainage features within the survey area as indicated from topographic changes, blue-line features, or visible drainage patterns. The USFWS National Wetland Inventory (NWI) and Environmental Protection Agency (EPA) Water Program "My Waters" Google Earth Pro data layers were also reviewed to determine whether any hydrologic features and wetland areas had been documented within the vicinity of the site. Similarly, the United States Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS) "Web Soil Survey" was reviewed for soil types found within the Project Area to identify the soil series in the area and to check these soils to determine whether they are regionally identified as hydric soils. Upstream and downstream connectivity of waterways (if present) were reviewed on Google Earth Pro aerial photographs and topographic maps to determine jurisdictional status. The lateral extent of potential USACE jurisdiction was measured at the Ordinary High-Water Mark (OHWM) in accordance with regulations set forth in 33CFR part 328 and the USACE guidance documents listed below:

- *USACE – Corps of Engineers Wetlands Delineation Manual, Wetlands Research Program Technical Report Y-87-1 (on-line edition), January 1987 - Final Report.*
- *USACE – A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (A Delineation Manual), August 2008.*
- *USACE – Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), September 2008.*
- *USACE – Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (Minimum Standards), January 2016.*
- *2023 Amended Waters rule (September 8, 2023)*

To be considered a *jurisdictional wetland* under the federal CWA, Section 404, an area must possess three (4) wetland characteristics: hydrophytic *vegetation*, hydric *soils*, and wetland *hydrology*, and must abut a traditionally Navigable Water (a) 1 – Impoundment (a)2, or Relatively Permanent Tributary (a) 3 Water of the United States.

- *Hydrophytic vegetation*: Hydrophytic vegetation is plant life that grows, and is typically adapted for life, in permanently or periodically saturated soils. The hydrophytic vegetation criterion is met if more than 50 percent of the dominant plant species from all strata (tree, shrub, and herb layers) is considered hydrophytic. Hydrophytic species are those included on the 2018 National Wetland Plant Lists for the Arid West Region (USACE 2018). Each species on the lists is rated with a wetland indicator category, as shown in Table 1. To be considered hydrophytic, the species must have *wetland indicator status*, i.e., be rated as OBL, FACW or FAC.

Table 1. Wetland Indicator Vegetation Categories

Category	Probability
Obligate Wetland (OBL)	Almost always occur in wetlands (estimated probability >99%)
Facultative Wetland (FACW)	Usually occur in wetlands (estimated probability 67 to 99%)
Facultative (FAC)	Equally likely to occur in wetlands and non-wetlands (estimated probability 34 to 66%)
Facultative Upland (FACU)	Usually occur in non-wetlands (estimated probability 67 to 99%)
Obligate Upland (UPL)	Almost always occur in non-wetlands (estimated probability >99%)

- *Hydric Soil*: Soil maps from the USDA-NRCS Web Soil Survey (USDA 2021) were reviewed for soil types found within the Project Area. Hydric soils are saturated or inundated long enough during the growing season to develop anaerobic conditions that favor growth and regeneration of hydrophytic vegetation. There are several indirect indicators that may signify the presence of hydric soils including hydrogen sulfide generation, the presence of iron and manganese concretions, certain soil colors, gleying, and the presence of mottling. Generally, hydric soils are dark in color or may be gleyed (bluish, greenish, or grayish), resulting from soil development under anoxic (without oxygen) conditions. Bright mottles within an otherwise dark soil matrix indicate periodic saturation with intervening periods of soil aeration. Hydric indicators are particularly difficult to observe in sandy soils, which are often recently deposited soils of flood plains (entisols) and usually lack sufficient fines (clay and silt) and organic material to allow use of soil color as a reliable indicator of hydric conditions. Hydric soil indicators in sandy soils include accumulations of organic matter in the surface horizon, vertical streaking of subsurface horizons by organic matter, and organic pans.

  The hydric soil criterion is satisfied at a location if soils in the area can be inferred or observed to have a high groundwater table, if there is evidence of prolonged soil saturation, or if there are any indicators suggesting a long-term reducing environment in the upper part of the soil profile. Reducing conditions are most easily assessed using soil color. Soil colors were evaluated using the Munsell Soil Color Charts (Munsell 2000). Soil pits are dug (when necessary) to an approximate depth of 16-20 inches to evaluate soil profiles for indications of anaerobic and redoximorphic (hydric) conditions in the subsurface.

- *Wetland Hydrology*: The wetland hydrology criterion is satisfied at a location based upon conclusions inferred from field observations that indicate an area has a high probability of being inundated or saturated (flooded, ponded, or tidally influenced) long enough during the growing season to develop anaerobic conditions in the surface soil environment, especially the root zone (USACE 1987 and USACE 2008).

Evaluation of CDFW jurisdiction followed guidance in the Fish and Game Code and *A Review of Stream Processes and Forms in Dryland Watersheds* (CDFW, 2010). Specifically, CDFW jurisdiction would occur where a stream has a definite course showing evidence of where waters rise to their highest level and to the extent of associated riparian vegetation.

3. Results

3.1 Existing Biological and Physical Conditions

The Project Area consists of the approximately 42.19-acre Subject Parcel, as well as any adjacent undeveloped areas that may be impacted directly or indirectly by the proposed Project. The Subject Parcel consists of cleared/graded vacant lot surrounded by urban landscape predominantly consisting of commercial and residential development to the north and commercial development to the west. Although there are other undeveloped lots adjacent to the site, as a whole those lots are surrounded by developed areas. (Figure 3). Existing disturbances within the Subject Parcel include frequent disking.

3.1.1 Habitat

The Subject Parcel is completely disturbed and no longer supports any native communities. The site was utilized as an equestrian facility in excess of 40 years. The site was developed with dwellings, barns, paddocks, arenas, and a racetrack. The buildings have been demolished, and fencing roads, and landscape trees remain scattered throughout the site. In the early 2000's the surrounding are began transitioning from rural and agriculture into track housing. Today the site has high density residential development to the south, west, and north-east; commercial to the east; the San Jacinto Reservoir to the north; and a small agricultural/equestrian facilities on the north and east sides. The site only supports those species found in urban and disturbed environments.

The predominant wildlife species observed or otherwise detected during the reconnaissance-level survey were birds, including house sparrow (*Passer domesticus*), Pigeon (*Columba livia*), and Cassin's kingbird (*Tyrannus vociferans*). Evidence of other species observe or detected include California ground squirrel (Otospermophilus beecheyi), and domestic dog (Canis lupis familiaris)

3.2 Special Status Species and Habitats

According to the CNDDB, 41 sensitive species (12 plant species, 29 animal species) and have been documented in the *San Jacinto* USGS 7.5-Minute Series Quadrangle. This list of sensitive species and habitats includes any state and/or federally listed threatened or endangered species, California Fully Protected species, CDFW designated Species of Special Concern (SSC), and otherwise Special Animals. "Special Animals" is a general term that refers to all the taxa the CNDDB is interested in tracking, regardless of their legal or protection status. This list is also referred to as the list of "species at risk" or "special status species." The CDFW considers the taxa on this list to be those of greatest conservation need.

3.2.1 Special Status Species

Of the 41 sensitive species documented within the within the *San Jacinto* quad, 15 are state and/or federally listed as threatened, endangered, or candidate species. However, the Subject Parcel consists entirely of disturbed, vacant lot surrounded by urban landscape, and the habitat requirements for these listed species are absent from the Project Area. No state and/or federally listed threatened or endangered species, or other sensitive species were observed within the Project Area during the reconnaissance-level field survey and due to the environmental conditions on site, none are expected to occur. A complete list of all sensitive species identified by the CNDDB as potentially occurring in the Project vicinity and Figure 4 – CNDDB Occurrence Map are provided in Appendix A.

Although not state or federally listed as a threatened or endangered species, BUOW are considered a state and federal SSC and this species is protected by international treaty under the Migratory Bird Treaty Act of 1918 and by State law under the California FGC (FGC #3513 & #3503.5). Additionally, the Subject Parcel is within a MSHCP BUOW Survey Area, and this species has been documented in the Project vicinity (approximately 3 miles). Therefore, BUOW will be included in the discussion below.

Burrowing Owl – SSC

The BUOW is a ground dwelling owl typically found in arid prairies, fields, and open areas where vegetation is sparse and low to the ground. The BUOW is heavily dependent upon the presence of mammal burrows, with ground squirrel burrows being a common choice, in its habitat to provide shelter from predators, inclement weather and to provide a nesting place (Coulombe 1971). They are also known to make use of human-created structures, such as cement culverts and pipes, for burrows. According to the definition provided in the *2012 CDFG Staff Report on Burrowing Owl Mitigation*, "Burrowing owl habitat generally includes, but is not limited to, short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey." BUOW spend a great deal of time standing on dirt mounds at the entrance to a burrow or perched on a fence post or other low to the ground perch from which they hunt for prey. They feed primarily on insects such as grasshoppers, June beetles and moths, but will also take small rodents, birds, and reptiles. They are active during the day and night but are considered a crepuscular owl; generally observed in the early morning hours or at twilight. The breeding season for BUOW is February 1 through August 31.

BUOW have disappeared from significant portions of their range in the last 15 years and, overall, nearly 60 percent of the breeding groups of owls known to have existed in California during the 1980s had disappeared by the early 1990s (Burrowing Owl Consortium 1993). The BUOW is not listed under the state or federal ESAs but is considered both a state and federal SSC. Additionally, the BUOW is a migratory bird protected by the international treaty under the Migratory Bird Treaty Act of 1918 and by State law under the California FGC (FGC #3513 & #3503.5).

> *Findings*: BUOW have not been documented within the Subject Parcel. According to the literature review, the nearest documented BUOW occurrence (2007) is approximately 0.7 miles east of the Subject Parcel (CNDDB 2022). The BUOW habitat assessment survey was structured, in part, to detect BUOW. The survey consisted of walking transects spaced approximately 10 meters (30 feet) apart to provide 100 percent visual coverage of the Subject Parcel, including the adjacent earthen flood control channel to the north. The result of the survey was that no evidence of BUOW was found in the survey area and much of the Subject Parcel is not suitable to support this species. BUOW prefer short or sparse vegetation and the entire site has zero vegetation, with a shrub cover > 90 percent.
>
> No BUOW individuals or sign including castings, feathers or whitewash were observed within the Subject Parcel during the habitat assessment survey. Furthermore, no burrow surrogates or appropriately sized fossorial mammal dens were observed within the Subject Parcel. Therefore, BUOW are considered absent from the Project Area at the time of survey and the Project is not likely to adversely affect this species.

3.2.2 Special Status Habitats

The Subject Parcel does not contain any sensitive habitats, including any USFWS designated Critical Habitat for any federally listed species. The nearest Critical Habitat unit is approximately 1 mile to the east of the Subject Parcel for San Bernardino Merriam's kangaroo rat, and approximately 4 miles to the west for Spreading navarretia (Navarretia fossalis). However, no portion of the Subject Parcel is within or adjacent this Critical Habitat unit, or any other Critical Habitat. Therefore, the Project will not result in any loss or adverse modification of USFWS designated Critical Habitat, or any other special status habitats.

3.3 Jurisdictional Delineation

The Subject Parcel is within the Gilman Hot Springs HSA (HSA 802.21). The Gilman Hot Springs HSA comprises a 193,598-acre drainage area, within the larger San Jacinto Valley Watershed (HUC 18070202). The San Jacinto Watershed is bound on the west/northwest by the Santa Ana Watershed, on the east/northeast by the Whitewater River Watershed, and on the south by the Santa Margarita and Aliso-San Onofre Watersheds. The San Jacinto Watershed encompasses the San Jacinto, Moreno, San Jacinto, and Menifee Valleys, as well a portion of the Santa Jacinto Mountains to the east, The Badlands to the north, and the Elsinore Mountains to the southwest. The San Jacinto Watershed is approximately 765.26 square miles in area. The San Jacinto River is the major hydrogeomorphic feature within the San Jacinto Watershed and

the nearest tributaries to the San Jacinto River are two unnamed flood control channels that border the Subject Parcel: a man-made, concrete lined channel that flows northward along the western border of the Subject Parcel, and an earthen channel that flows westward along the northern border of the Subject Parcel. This feature is outside the project site.

Waters of the U.S.

The USACE has authority to permit the discharge of dredged or fill material in WOTUS under Section 404 of the CWA" WOTUS are defined as: "The territorial seas and traditional navigable waters; perennial and intermittent tributaries that contribute surface water flow to such waters; certain lakes, ponds, and impoundments of jurisdictional waters; and wetlands adjacent to other jurisdictional waters." (85 FR 22250).

There are no wetland or non-wetland WOTUS within the Subject Parcel or adjacent to the subject parcel. The Project will not result in any permanent or temporary impacts to WOTUS. Therefore, the Project would be exempt from CWA Section 404/401 permitting.

State Lake/Streambed

There are no "waters of the State" within the Subject Parcel and the Project will not result in any permanent or temporary impacts to jurisdictional waters of the State. Therefore, the Project would be exempt from FGC Section 1602 and RWQCB permitting as well.

3.4 MSHCP Consistency Analysis

Western Riverside County MSHCP

The Western Riverside County MSHCP is a criteria-based plan and identification of planning units on which to base the Criteria is necessary for such a criteria-based plan. The MSHCP Conservation Area is comprised of a variety of existing and proposed Cores, Extensions of Existing Cores, Linkages, Constrained Linkages and Non-contiguous Habitat Blocks. The MSHCP coverage area is divided into Area Plans based on the Riverside County's General Plan Area Plan boundaries. Each of the Area Plans has: 1) established conservation criteria, 2) species specific surveys that may be required based on an on-site Habitat Assessment or field investigation, and 3) resources and areas identified for conservation. In each Area Plan, Core Habitat areas and Linkages have been identified.

The MSHCP is intended to satisfy the legal requirements to authorize the "take" of species covered under the Plan during otherwise lawful activities, by providing for the conservation of the Covered Species. There are 146 species covered by the MSHCP. Surveys are not required for 106 of these covered species. The remaining 40 species are conditionally covered under the MSHCP and may require focused surveys for proposed development projects. The 40 species that are not fully covered under the MSHCP include four birds, three mammals, three amphibians, three crustaceans, 14 Narrow Endemic Plants, and 13 Criteria Area plants. The need to conduct focused surveys for all but six of these 40 species is determined by the presence of suitable habitat within designated 'survey areas' mapped for each of the species. The remaining six species that require focused surveys throughout the entire MSHCP area are associated with riparian/riverine areas and vernal pools and include three riparian obligate bird species and three vernal pool associated fairy shrimp species.

The Subject Parcel is located within the MSHCP's San Jacinto Valley Area Plan. According to the Western Riverside County Regional Conservation Authority's online MSHCP Information Tool query, the Subject Parcel is within the San Jacinto Habitat Management Unit (HMU) but is not mapped within or adjacent a Criteria Cell or Cell Group, and therefore not targeted for conservation. Furthermore, the Subject Parcel is not mapped within any required survey areas for amphibians, mammals, invertebrates, or other Criteria Area Species. However, Burrowing Owl Surveys are required within the Subject Parcel. Therefore, in addition to the BRA survey, a BUOW habitat suitability assessment survey was conducted for the Project Area in accordance with the MSHCP requirements.

Subunit Area/Cell Criteria

Pursuant to Section 3.3.12 of the MSHCP, Subunits are areas within an Area Plan that contain target conservation acreages along with a description of the planning species, biological issues, and considerations.

> *Findings*: According to the Western Riverside County MSHCP GIS overlay, the Subject Parcel is not located within a Subunit Area or Criteria Cell. No further discussion on this subject is required in this analysis.

Amphibian, Mammal, Invertebrate and Other Criteria Area Species

Pursuant to Section 6.3.2 of the MSHCP, additional surveys may be needed for certain species in conjunction with Plan implementation to achieve coverage for these species.

> *Findings*: According to the Western Riverside County MSHCP GIS overlay, the Subject Parcel is not located in an area where additional surveys are required for any amphibians, mammals, invertebrates, or other Criteria Area species. No further discussion on this subject is required in this analysis.

Burrowing Owl

Pursuant to Section 6.3.2 of the MSHCP, surveys shall be conducted within suitable habitat for BUOW, according to accepted protocols.

> *Findings*: According to the Western Riverside County MSHCP GIS overlay, the Subject Parcel is located in an area where surveys are required for BUOW. As discussed in Section 3.2.1 (above), a BUOW habitat suitability assessment survey that included 100 percent visual coverage of the Subject Parcel and adjacent earthen flood control channel was conducted by TDA on September 21,2023. The result of the survey was that no evidence of BUOW was found in the survey area and all of the Subject Parcel is not suitable to support this species. BUOW prefer short or sparse vegetation and the undisked portion of the Subject Parcel consists mostly of the residential dwelling and outbuilding, dense ruderal vegetation, with a shrub cover > 90 percent, and landscape trees.
>
> No BUOW individuals or sign including castings, feathers or whitewash were observed within the Subject Parcel during the habitat assessment survey. Additionally, there are many trees and raptor purchases that typically preclude burrowing owls. No surrogates or appropriately sized fossorial mammal dens with evidence of owl use were observed within the Subject Parcel. Therefore, BUOW are considered absent from the Project Area at the time of survey and the Project is not likely to adversely affect this species.

Narrow Endemic Plant Survey Area

Pursuant to Section 6.1.3 of the MSHCP, additional surveys may be needed for certain species in conjunction with Plan implementation in order to achieve coverage for these species. This section discusses those additional survey needs and procedures. Surveys shall be conducted within suitable Habitat for the following species according to accepted protocols. For the plant species listed below, surveys shall be conducted within the Criteria Area as shown in *Figure 6-2*. The habitat suitability assessment procedures described in *Section 6.1.3* may also be used for these plant species. The following species are listed for the project site: Below is a discussion of habitat type, suitability of the site, and findings:

Munz's onion (*Allium munzii*): Mesic exposures or seasonally moist microsites in grassy openings in coastal sage scrub, chaparral, juniper woodland, valley and foothill grasslands in clay soils. Munz's onion is restricted to clay soils with the exception of one population documented to occur in association with pyroxenite outcrops.

San Diego ambrosia (*Ambrosia pumila*): Open floodplain terraces or on in the watershed margins of vernal pools. This species occurs in a variety of associations that are dominated by sparse non-native grasslands or ruderal habitat in association with river terraces, vernal pools, and alkali playas. Garretson gravelly fine sandy loams when in association with floodplains, and on Las Posas loam in close proximity to silty, alkaline soils of the Willows series.

Many-stemmed dudleya (Dudleya multicaulis) : clay soils in barrens, rocky places, and ridgelines as well as thinly vegetated openings in chaparral, coastal sage scrub, and southern needlegrass grasslands on clay soils.

Spreading navarretia (*Navarretia fossalis*): Vernal pools and depressions and ditches in areas that once supported vernal pools. Saline-alkaline

California Orcutt grass (*Orcuttia californica*): Vernal pools, alkaline soils and southern basaltic claypan

Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*): Alkali playa, alkali annual grassland, and alkali vernal pools. Alkali soils.

Findngs: The site has been completely disturbed. The past use appeasr to be an equestrian facility with training track, stalls, pastures, and dwelling(s). There is no native habitat, nor suitable habitat for any of the identified narrow endemics. There are no vernal pools or topographic depressions with evidence of ponding. Although many of the soils are alkaline, the soils appear to have been disturbed by agricultural activities and ranching. Therefore, these species are considered absent from the site.

Riparian/Riverine Areas and Vernal Pools

The MSHCP describes the protection of Riparian/Riverine Areas and Vernal Pools within the MSHCP Plan Area as important to the conservation of certain amphibian, avian, fish, invertebrate and plant species. The MSHCP describes guidelines to ensure that the biological functions and values for species inside the MSHCP Conservation Areas are maintained, as outlined in Volume 1, Section 6.1.2.

Pursuant to Section 6.1.2 of the MSHCP, Riparian/Riverine areas are lands which contain habitat dominated by trees, shrubs, persistent emergent vegetation, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from nearby fresh water sources, or areas with freshwater flow during all or a portion of the year. Riverine habitat includes all wetlands and deep-water habitats contained in natural or artificial channels periodically or continuously containing flowing water or which forms a connecting link between the two bodies of standing water. Riverine habitat is bounded on the landward side by upland, by the channel bank (including natural and man-made levees), or by wetlands dominated by trees, shrubs, persistent emergent, mosses, or lichens. In braided streams, the system is bounded by the banks forming the outer limits of the depression within which the braiding occurs. Springs

discharging into a channel are considered part of the riverine habitat. The term riparian is used to define the type of wildlife habitat found along the banks of a river, stream, lake or other body of water. Riparian habitats are ecologically diverse and can be found in many types of environments including grasslands, wetlands, and forests.

Pursuant to Section 6.1.2 of the MSHCP, Vernal Pools are seasonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (soils, vegetation, and hydrology) during the wetter portion of the growing season but normally lack wetlands indicators of hydrology and/or vegetation during the drier portion of the growing season. Obligate hydrophytes and facultative wetlands plant species are normally dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season. The determination that an area exhibits vernal pool characteristics should consider (1) the length of time the area exhibits upland and wetland characteristics, and (2) the manner in which the area fits into the overall ecological system as a wetland. Evidence concerning the persistence of an area's wetness can be obtained from its history, vegetation, soils, and drainage characteristics, uses to which it has been subjected, and weather and hydrologic records.

> *Findings*: No Riparian/Riverine areas were found within the Subject Parcel. There are no natural or man-made features that support any aquatic resources, stream-dependent wildlife resources, or riparian habitats within the Subject Parcel. Additionally, no vernal pools were identified within the Subject Parcel and based on a review of historic aerial imagery and USGS topographic maps, no vernal pools or other natural wetland features existed historically within the Subject Parcel.

Urban/Wildlands Interface

Section 6.1.4 of the MSHCP presents guidelines to minimize indirect effects of projects adjacent to MSCHP Conservation Areas. These guidelines are intended to reduce potential Edge Effects that could adversely affect biological resources within the MSHCP Conservation Areas. This section provides mitigation measures for impacts associated with Drainage, Toxics, Lighting, Noise, Invasives, Barriers, and Grading/Land Development.

> *Findings*: There are no MSCHP Conservation Areas within or adjacent to the Subject Parcel. No further discussion on this subject is required in this analysis.

4. Conclusions and Recommendations

4.1 Sensitive Biological Resources

A reconnaissance level BRA survey of the Subject Parcel was conducted by TDA on September 21, 2023 to identify potential habitat for special status wildlife within the Project Area. No sensitive species were observed within the Project Area during the reconnaissance-level field survey and due to the environmental conditions on site, none are expected to occur. The Subject Parcel is completely disturbed and no longer supports any native habitats (see attached Site Photos). The Subject Parcel consists of vacant cleared/graded lands surrounded by urban landscape consisting commercial and residential developments. Existing disturbances within the Subject Parcel include frequent disking. Due to the environmental conditions on site and the adjacent disturbances, the Subject Parcel is likely not suitable to support any of the listed species that have been documented in the Project vicinity (within approximately 3 miles). Furthermore, the Subject Parcel does not contain any sensitive habitats, including any USFWS designated Critical Habitat for any federally listed species, and the Project will not result in any loss or adverse modification of Critical Habitat.

Burrowing Owl

The Subject Parcel is within a MSHCP Burrowing Owl Survey Area. Therefore, a BUOW habitat suitability assessment was conducted on September 21, 2023, that included 100 percent visual coverage of any potentially suitable BUOW habitat within the Project Area. The result of the survey was that no evidence of BUOW was found in the survey area and much of the Subject Parcel is not suitable to support this species. No BUOW individuals or sign including castings, feathers or whitewash were observed and BUOW are considered absent from the Project Area at the time of survey. Although the Project is not likely to adversely affect this species, there is still a low potential for the Subject Parcel to become occupied by BUOW between the time the survey was conducted and the commencement of Project-related site disturbance. Therefore, the following precautionary avoidance measures are recommended to ensure the Project does not result in any impacts to BUOW:

- Pre-construction surveys for BUOW should be conducted no more than 3 days prior to commencement of Project-related ground disturbance to verify that BUOW remain absent from the Project Area.

The BUOW is a state and federal SSC and is also protected under the MBTA and by state law under the California FGC (FGC #3513 & #3503.5). In general, impacts to BUOW can be avoided by conducting work outside of their nesting season (peak BUOW breeding season is identified as April 15th to August 15th). However, if all work cannot be conducted outside of nesting season, a project specific BUOW protection and/or passive relocation plan can be prepared to determine suitable buffers and/or artificial burrow construction locations. Regardless of survey results and conclusions given herein, BUOW are protected by applicable state and federal laws. As such, if a BUOW is found on-site at the time of construction, all activities likely to affect the animal(s) should cease immediately and regulatory agencies should be contacted to determine appropriate management actions. Importantly, nothing given in this report is intended to authorize any form of disturbance to BUOW. Such authorization must come from the appropriate regulatory agencies, including CDFW and/or USFWS.

Nesting Birds

The Project Area is marginally suitable to support nesting birds, including open ground nesting species. Most native bird species are protected from unlawful take by the MBTA (Appendix D). In December 2017, the Department of the Interior (DOI) issued a memorandum concluding that the MBTA's prohibitions on take apply "[…] only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs" (DOI 2017). Then in April 2018, the USFWS issued a guidance memorandum that further clarified that the take of migratory birds or their active nests (i.e., with eggs or young) that is incidental to, and not the purpose of, an otherwise lawful activity does not constitute a violation of the MBTA (USFWS 2018).

However, the State of California provides additional protection for native bird species and their nests in the FGC (Appendix D). Bird nesting protections in the FGC include the following (Sections 3503, 3503.5, 3511, 3513 and 3800):

- Section 3503 prohibits the take, possession, or needless destruction of the nest or eggs of any bird.

- Section 3503.5 prohibits the take, possession, or needless destruction of any nests, eggs, or birds in the orders Falconiformes (new world vultures, hawks, eagles, ospreys, and falcons, among others), and Strigiformes (owls).

- Section 3511 prohibits the take or possession of Fully Protected birds.

- Section 3513 prohibits the take or possession of any migratory nongame bird or part thereof, as designated in the MBTA. To avoid violation of the take provisions, it is generally required that Project-related disturbance at active nesting territories be reduced or eliminated during the nesting cycle.

- Section 3800 prohibits the take of any non-game bird (i.e., bird that is naturally occurring in California that is not a gamebird, migratory game bird, or fully protected bird).

In general, impacts to all bird species (common and special status) can be avoided by conducting work outside of the nesting season, which is generally February 1st through August 31st. However, if all work cannot be conducted outside of nesting season, the following is recommended:

- To avoid impacts to nesting birds (common and special status) during the nesting season, a qualified Avian Biologist should conduct pre-construction nesting bird surveys prior to Project-related disturbance to suitable nesting areas to identify any active nests. If no active nests are found, no further action would be required. If an active nest is found, the biologist should set appropriate no-work buffers around the nest which would be based upon the nesting species, its sensitivity to disturbance, nesting stage and expected types, intensity and duration of disturbance. The nest(s) and buffer zones should be field checked weekly by a qualified biological monitor. The approved no-work buffer zone should be clearly marked in the field, within which no disturbance activity should commence until the qualified biologist has determined the young birds have successfully fledged and the nest is inactive.

4.2 Jurisdictional Waters

In addition to the BRA and BUOW habitat suitability assessment survey, TDA also assessed the Subject Parcel for the presence of any state and/or federal jurisdictional waters. The result of the jurisdictional waters assessment is that there are no wetland or non-wetland WOTUS or waters of the State within the Subject Parcel that would potentially be subject to regulation by the USACE under Section 404 of the CWA, the RWQCB under Section 401 of the CWA and/or Porter Cologne Water Quality Control Act, or the CDFW under Section 1602 of the California FGC, respectively. Therefore, the Project will not impact any jurisdictional waters and no state or federal jurisdictional waters permitting will be required.

4.3 MSHCP Consistency Analysis

The Project is consistent with the MSHCP policies found in Sections 3 and 6 of the MSHCP, which include Riparian/Riverine Areas/Vernal Pools, Narrow Endemic Plant Species, Criteria Area Species, Urban/Wildlands Interface, and Surveys for Special Status Species (BUOW). The Subject Parcel is within the Western Riverside County MSHCP boundary but is not within or adjacent any MSHCP Criteria Cells or Cell Groups. Therefore, implementation of the MSHCP Section 6.1.4 Guidelines Pertaining to the Urban/Wildlands Interface is not required. The Project Proponent should be prepared to pay the MSHCP fees and restrict all Project related impacts to existing right-of-way and/or other areas outside of Conserved Lands. No conservation or avoidance measures are expected, and development of the Subject Parcel would be consistent with the San Jacinto Area Plan conservation criteria and overall conservation goals and objectives set forth in the MSHCP.

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Appendix A. CNDDB and Ipac Reports

Special Status Species Occurrence Potential Analysis

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
Abronia villosa var aurita	Chaparral sand-verbena	None/None	1B1	Chaparral, coastal scrub, desert dunes. 60-1570 m.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Agelaius tricolor	tricolored blackbird	None/ Threatened	G1G2	Highly colonial species requiring open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Antrozous pallidus	pallid bat	None/ None	G4S3	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is zero.
Allium marvinii	Yucaipa onion	None/ None	G1, S1S2	Chaparral: In openings on clay soils. 850-1070 m	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **low**.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
Ambrosia pumila	San Diego Ambrosia	Endangered/None		This species is adapted to upper floodplain fringes, floodplains, and open grasslands in proximity to wetland areas or adjoining depressions containing vernal pools or similar structures. Currently only known from 16 populations in the U.S. Fourteen of them are in San Diego County, two exist in Riverside County	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is zero.
Anaxyrus calilfornicus	Arroyo Toad	Endangered/		The arroyo toad is found along medium-to-large streams in coastal and desert drainages in central and southern California, and Baja California	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Anniella stebbinsi	Southern California legless lizard	None/None	G3 S3	Generally, south of the Transverse Range, extending to northwestern Baja California. Occurs in sandy or loose loamy soils under sparse vegetation. Disjunct populations in the Tehachapi and Piute Mountains in Kern County. Variety of habitats; generally in moist, loose soil. They prefer soils with a high moisture content.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
Antrozous pallidus	pallid bat	None/None	G4, S3	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Aquila chrysaetos	golden eagle	None/None	G5, S3	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	The subject parcel has low quality foraging habitat, and the probability of nesting is zero. The probability of casual foraging is low due to the relatively small area and being surrounded by development.
Arizona elegans occidentalis	California glossy snake	None/ None	G5T2; S2; CDFW: SSC	Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular ranges, south to Baja California. Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.	This species has not been documented in the Project vicinity and the Subject Parcel is completely disturbed. Occurrence potential is **low**.
Athene cunicularia	burrowing owl	None/ None	G4; S3; CDFW: SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	There is some marginally suitable habitat for this species in the Project Area but no evidence of BUOW was found in the survey area and most of the Subject Parcel is not suitable to support this species. Occurrence potential is **low**.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
Aspidoscelis hyperythra	orange-throated whiptail	None/ None	G5, S2S3	Inhabits low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats. Prefers washes and other sandy areas with patches of brush and rocks. Perennial plants necessary for its major food: termites	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Astragalus pachypus var. jaegeri	Jaeger's milk-vetch	None/ None	G4T1. S1	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland. Dry ridges and valleys and open sandy slopes; often in grassland and oak-chaparral. 365-1040 m.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Atriplex coronata var. notatior	San Jacinto Valley crownscale	Endangered/ None	G4T1,S1,1B.1	Playas, valley and foothill grassland, vernal pools.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Bombus crotchii	Crotch bumble bee	None/ Candidate Endangered	G3G4; S1S2	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.	The food plant genera required by this species are not present on the Subject Parcel in sufficient quantity to support this species. Occurrence potential is low.
Brodiaea filifolia	thread-leaved brodiaea	Threatened/ Endangered	G2; S2; CNPS: 1B.1	Chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools. Usually associated with annual grassland and vernal pools; often surrounded by shrubland habitats. Occurs in openings on clay soils. 15-1030 m.	The entire site has been subject to previous disking and/or material dumping and is no longer suitable to support this species. Occurrence potential is low.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
Buteo regalis	ferruginous hawk	None/ None		Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats. Eats mostly lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.	The subject parcel has low quality foraging habitat, and the probability of nesting is zero. The probability of casual foraging is low due to the relatively small area and being surrounded by development.
Branchinecta lynchi	Vernal pool fairy shrimp	Threatened/None		Inhabit temporary ponds, vernal pools, and other ponded features that are absent from running water.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Calochortus plummerae	Plummer's mariposa-lily	None/ None	G4; S4; 4.2	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest. Occurs on rocky and sandy sites, usually of granitic or alluvial material. Can be very common after fire. 60-2500 m	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Centromadia pungens ssp. *laevis*	smooth tarplant	None/ None	G3G4T2; S2; CNPS: 1B.1	Valley and foothill grassland, chenopod scrub, meadows and seeps, playas, riparian woodland. Alkali meadow, alkali scrub; also, in disturbed places. 5-1170 m.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	None/ None	G5T3T4; S3S4; CDFW: SSC	Coastal scrub, chaparral, grasslands, sagebrush, etc. in western San Diego County. Sandy, herbaceous areas, usually in association with rocks or coarse gravel.	No suitable habitat for this species exists in the Project Area. Occurrence potential is **low**.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
Chorizanthe parryi var. *parryi*	Perry's spined spineflower	None/ None	G5T3; S3; CNPS: 1B.2	Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, vernal pools. Gabbroic clay. 30-1630 m.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Coccyzus americanus occidentalis	western yellow-billed cuckoo	Threatened/Endangered	G5T2T3, S1	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Corynorhinus townsendii	Townsend's big-eared bat	None/ None	G4,S2	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	
Crotalus ruber	red-diamond rattlesnake	None/ None	G4; S3; CDFW: SSC	Chaparral, woodland, grassland, & desert areas from coastal San Diego County to the eastern slopes of the mountains. Occurs in rocky areas and dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	No suitable habitat for this species exists in the Project Area. Occurrence potential is **low**.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
Danaus plexippus	Monarch Butterfly	Candidate/None		During their development, both larvae and their milkweed hosts are vulnerable to weather extremes, predators, parasites, and diseases; commonly fewer than 10% of monarch eggs and caterpillars survive. Their wintering habitat typically provides access to streams, plenty of sunlight (enabling body temperatures that allow flight), and appropriate roosting vegetation, and is relatively free of predators. Overwintering, roosting butterflies have been seen on basswoods, elms, sumacs, locusts, oaks, oranges, mulberries, pecans, willows, cottonwoods, and mesquites.[75] While breeding, monarch habitats can be found in agricultural fields, pasture land, prairie remnants, urban and suburban residential areas, gardens, trees, and roadsides – anywhere where there is access to larval host plants	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **low**.
Dipodomys merriami parvus	San Bernardino' kangaroo rat	Endangered/ Candidate Threatened	G2; S2	Alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and flood plains. Needs early to intermediate seral stages.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
Dipodomys stephensi	Stephens' kangaroo rat	Threatened/ Threatened	G2; S2	Primarily annual & perennial grasslands, but also occurs in coastal scrub & sagebrush with sparse canopy cover. Prefers buckwheat, chamise, brome grass and filaree. Will burrow into firm soil.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Emys marmorata	Emys marmorata	None/None	G3G4,S3	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Empidonax traillii extimus	Southwestern Willow Flycatcher	Endangered/Endangered	G5T4Q; S4; CDFW: WL	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Imperata brevifolia	California satintail	None/ None	G3,S3	Coastal scrub, chaparral, riparian scrub, mojavean desert scrub, meadows and seeps (alkali), riparian scrub. Mesic sites, alkali seeps, riparian areas. 3-1495 m	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Lasiurus xanthinus	western yellow bat	None/ None	G4G5; S3; CDFW: SSC	Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in trees, particularly palms. Forages over water and among trees.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
Neotoma lepida intermedia	San Diego desert woodrat	None/ None	G5T3T4, S3S4	Coastal scrub of Southern California from San Diego County to San Luis Obispo County. Moderate to dense canopies preferred. They are particularly abundant in rock outcrops, rocky cliffs, and slopes	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Navarretia fossalis	spreading navarretia	Threatened/ None	G2; S2; CNPS: 1B.1	Vernal pools, chenopod scrub, marshes and swamps, playas. San Diego hardpan and San Diego claypan vernal pools; in swales & vernal pools, often surrounded by other habitat types. 15-850 m.	The entire site has been subject to previous disking and/or material dumping and is no longer suitable to support this species. Additionally, there are no swales or vernal pools on site. Occurrence potential is **zero**.
Neolarra alba	white cuckoo bee	None/None	GH, SH	Known only from localities in Southern California. Cleptoparasitic in the nests of perdita bees. Most Perdita species are extreme specialists (oligoleges) with respect to pollen and will only collect pollen from a few closely related species or genera of plants. The most common species of Perdita in southern California (Perdita acacia) utilizes the following hosts ; Agavaceae/Asteraceae (Ericameria nauseosa) (Gutierrezia microcephala), Fabaceae (Acacia greggii)	The entire site has been subject to previous disking and/or material dumping and is no longer suitable to support this species. Additionally, it is unlikely the site supports sufficient host species for the presence of Perdita, and therefore the liklyhood of this species occurring on site is **low**.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
Onychomys torridus ramona	southern grasshopper mouse	None/ None	G5T3; S3; CDFW: SSC	Desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover. Feeds almost exclusively on arthropods, especially scorpions and orthopteran insects.	No suitable habitat for this species exists in the Project Area. Occurrence potential is **low**.
Perognathus longimembris brevinasus	Los Angeles pocket mouse	None/ None	G5T2; S1S2; CDFW: SSC	Lower elevation grasslands and coastal sage communities in and around the Los Angeles Basin. Open ground with fine, sandy soils. May not dig extensive burrows, hiding under weeds and dead leaves instead.	No suitable habitat for this species exists in the Project Area. Occurrence potential is **low**.
Phrynosoma blainvillii	coast horned lizard	None/ None	G3G4; S3S4; CDFW: SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	No suitable habitat for this species exists in the Project Area. Occurrence potential is **low**.
Polioptila californica californica	coastal California gnatcatcher	Threatened/ None	G4G5T3Q; S2; CDFW: SSC	Obligate, permanent resident of coastal sage scrub below 2,500 ft in Southern California. Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Pseudognaphalium leucocephalum	white rabbit-tobacco	None/ None	G4,S2	Riparian woodland, cismontane woodland, coastal scrub, chaparral. Sandy, gravelly sites. 35-515 m	

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
Spea hammondii	western spadefoot	None/ None	G2G3; S3; CDFW: SSC	Occurs primarily in grassland habitats but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	The aquatic habitats required by this species are absent from the Project Area. Therefore, this species is considered **absent** from the Project Area.
Streptocephalus woottoni	Riverside fairy shrimp	Endangered/None		Inhabit temporary ponds, vernal pools, and other ponded features that are absent from running water.	The Subject Parcel does not support any suitable habitat for this species. Occurrence potential is **zero**.
Taxidea taxus	American badger	None/None	G5, S3	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	The aquatic habitats required by this species are absent from the Subject Parcel. Therefore, this species is considered **absent** from the Subject Parcel.
Trichocoronis wrightii var. wrightii	Wright's trichocoronis	None/None	G4T3,S1,2B.1	Marshes and swamps, riparian forest, meadows and seeps, vernal pools.	The aquatic habitats required by this species are absent from the Subject Parcel. Therefore, this species is considered **absent** from the Subject Parcel.
Vireo bellii pusillus	least Bell's vireo	Endangered/ Endangered	G5T2, S2	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	The aquatic habitats required by this species are absent from the Subject Parcel. Therefore, this species is considered **absent** from the Subject Parcel.

Coding and Terms

E = Endangered T = Threatened C = Candidate FP = Fully Protected SSC = Species of Special Concern R = Rare

State Species of Special Concern: An administrative designation given to vertebrate species that appear to be vulnerable to extinction because of declining populations, limited acreages, and/or continuing threats. Raptor and owls are protected under section 3502.5 of the California Fish and Game code: "It is unlawful to take, possess or destroy any birds in the orders Falconiformes or Strigiformes or to take, possess or destroy the nest or eggs of any such bird."

State Fully Protected: The classification of Fully Protected was the State's initial effort in the 1960's to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, mammals, amphibians and reptiles. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

Global Rankings (Species or Natural Community Level):
G1 = Critically Imperiled – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
G2 = Imperiled – At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
G3 = Vulnerable – At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
G4 = Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
G5 = Secure – Common; widespread and abundant.

Subspecies Level: Taxa which are subspecies or varieties receive a taxon rank (T-rank**)** attached to their G-rank. Where the G-rank reflects the condition of the entire species, the T-rank reflects the global situation of just the subspecies. For example: the Point Reyes mountain beaver, *Aplodontia rufa* ssp. *phaea* is ranked G5T2. The G-rank refers to the whole species range i.e., *Aplodontia rufa.* The T-rank refers only to the global condition of ssp. *phaea*.

State Ranking:
S1 = Critically Imperiled – Critically imperiled in the State because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the State.
S2 = Imperiled – Imperiled in the State because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the State.
S3 = Vulnerable – Vulnerable in the State due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the State.
S4 = Apparently Secure – Uncommon but not rare in the State; some cause for long-term concern due to declines or other factors.
S5 = Secure – Common, widespread, and abundant in the State.

California Rare Plant Rankings (CNPS List):
1A = Plants presumed extirpated in California and either rare or extinct elsewhere.
1B = Plants rare, threatened, or endangered in California and elsewhere.
2A = Plants presumed extirpated in California, but common elsewhere.
2B = Plants rare, threatened, or endangered in California, but more common elsewhere.
3 = Plants about which more information is needed; a review list.
4 = Plants of limited distribution; a watch list.

Threat Ranks:
.1 = Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 = Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
.3 = Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Appendix B. Site Photos:

Photograph #1 Typical Site View looking east.



Photograph #2 Typical Site View looking south

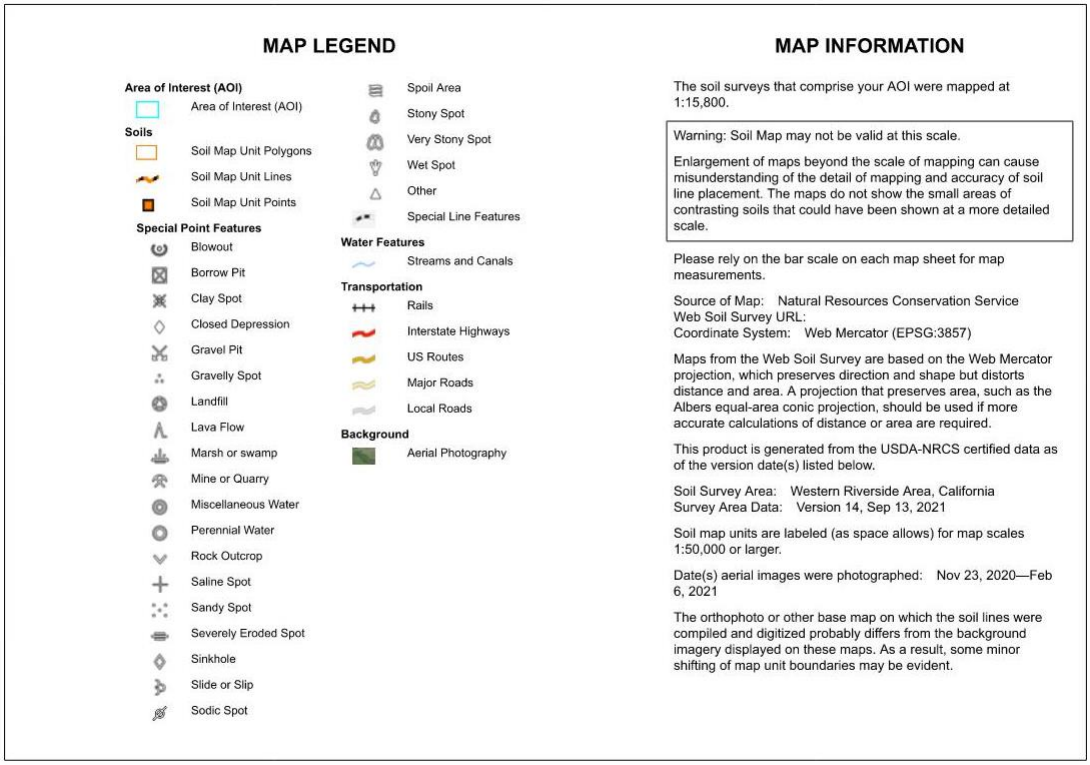


Appendix C. Soil Map



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GpB	Grangeville sandy loam, drained, saline-alkali, 0 to 5 percent slopes	0.7	2.7%
RuF	Rough broken land	3.2	11.9%
SeA	San Emigdio fine sandy loam, 0 to 2 percent slopes, occassional frost	16.4	62.0%
SfA	San Emigdio fine sandy loam, deep, 0 to 2 percent slopes	6.2	23.4%
Totals for Area of Interest		**26.5**	**100.0%**



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 14, Sep 13, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 23, 2020—Feb 6, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Appendix D. Species List

List of Plant Species Observed within the Subject Parcel

Scientific Name	Common Name	Life Form
Anacardiaceae	**Pepper Tree Family**	
Schinus molle	Pepper Tree	Tree
Arecaceae	**Palm Family**	
Washingtonia robusta	Mexican fan Palm	Tree
Boraginaceae	**Borage family**	
Amsinckia intermedia	common fiddleneck	annual herb
Chenopodiaceae	**Goosefoot Family**	
*Salsola tragus***	Russian thistle**	annual herb
Moraceae	Mulberry Family	
Morus alba	Fruitless Mulberry	Tree
Myrtales	**Eucalyptus family**	
Eucalyptus sp.	Gumtree/Eucalyptus	Tree
Pinaceae	Pine Family	
Pinus insignis	Monterey pine	Tree
Poaceae	**Grass Family**	
Bromus spp.**	brome grasses**	annual grasses
Salicaseae	**Salix Family**	
Populus Fremontii	Cottonwood	Tree
Simaroubaceae	Sumac	Tree
Ailanthus altissima	Tree of Heaven	
Zygophyllaceae	**Caltrop Family**	
*Tribulus terrestris***	puncture vine**	annual herb

*non-native, **invasive species

List of Animal Species Observed within the Subject Parcel

Scientific Name	Common Name	Life Form
Columbidae	**Pigeons and Doves**	**Avian**
Columba livia	Rock Pigeon	

Scientific Name	Common Name	Life Form
Passeridae	**Old World Sparrows**	**Avian**
Passer domesticus	House sparrow	
Tyrannidae	**Tyrant Flycatchers**	**Avian**
Tyrannus verticalis	Western Kingbird	
Canidae	**Canines**	**Mammal**
Canis lupus familiaris	Domestic Dog	
Sciuridae	**Squirrels, chipmunks, Prairie dogs**	**Mammals**
Otospermophilus beecheyi	Beechey ground squirrel	

Appendix E. Regulatory Framework

Federal Regulations

Clean Water Act

The purpose of the Clean Water Act (CWA) of 1977 is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Section 404 of the CWA prohibits the discharge of dredged or fill material into "waters of the United States" (WOTUS) without a permit from the United States Army Corps of Engineers (USACE). The definition of waters of the United States includes rivers, streams, estuaries, territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas "that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 Code of Federal Regulations [CFR] 328.3 7b). The U.S. Environmental Protection Agency (EPA) also has authority over wetlands and may override a USACE permit. Substantial impacts to wetlands may require an individual permit. Projects that only minimally affect wetlands may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; in California this certification or waiver is issued by the Regional Water Quality Control Board (RWQCB).

Federal Endangered Species Act (ESA)

The federal Endangered Species Act (ESA) of 1973 protects plants and wildlife that are listed by the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) as endangered or threatened. Section 9 of the ESA (USA) prohibits the taking of endangered wildlife, where taking is defined as any effort to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (50 CFR 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any endangered plant on federal land and removing, cutting, digging up, damaging, or destroying any endangered plant on non-federal land in knowing violation of state law (16 United States Code [USC] 1538). Under Section 7 of the ESA, federal agencies are required to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect an endangered species (including plants) or its Critical Habitat. Through consultation and the issuance of a biological opinion, the USFWS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity, provided the action will not jeopardize the continued existence of the species. The ESA specifies that the USFWS designate habitat for a species at the time of its listing in which are found the physical or biological features "essential to the conservation of the species," or which may require "special Management consideration or protection..." (16 USC § 1533[a][3].2; 16 USC § 1532[a]). This designated Critical Habitat is then afforded the same protection under the ESA as individuals of the species itself, requiring issuance of an Incidental Take Permit prior to any activity that results in "the destruction or adverse modification of habitat determined to be critical" (16 USC § 1536[a][2]).

Interagency Consultation and Biological Assessments

Section 7 of ESA provides a means for authorizing the "take" of threatened or endangered species by federal agencies, and applies to actions that are conducted, permitted, or funded by a federal agency. The statute requires federal agencies to consult with the USFWS or National Marine Fisheries Service (NMFS), as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to

jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of Critical Habitat for these species. If a Proposed Project "may affect" a listed species or destroy or modify Critical Habitat, the lead agency is required to prepare a biological assessment evaluating the nature and severity of the potential effect.

Habitat Conservation Plans

Section 10 of the federal ESA requires the acquisition of an Incidental Take Permit (ITP) from the USFWS by non-federal landowners for activities that might incidentally harm (or "take") endangered or threatened wildlife on their land. To obtain a permit, an applicant must develop a Habitat Conservation Plan that is designed to offset any harmful impacts the proposed activity might have on the species.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 U.S.C. Sections 661 to 667e et seq.) applies to any federal Project where any body of water is impounded, diverted, deepened, or otherwise modified. Project proponents are required to consult with the USFWS and the appropriate state wildlife agency.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (The Eagle Act) (1940), amended in 1962, was originally implemented for the protection of bald eagles (Haliaeetus leucocephalus). In 1962, Congress amended the Eagle Act to cover golden eagles (Aquila chrysaetos), a move that was partially an attempt to strengthen protection of bald eagles, since the latter were often killed by people mistaking them for golden eagles. This act makes it illegal to import, export, take (molest or disturb), sell, purchase, or barter any bald eagle or golden eagle or part thereof. The golden eagle, however, is accorded somewhat lighter protection under the Eagle Act than that of the bald eagle.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 implements international treaties between the United States and other nations created to protect migratory birds, any of their parts, eggs, and nests from activities, such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. As authorized by the MBTA, the USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR Part 13 General Permit Procedures and 50 CFR part 21 Migratory Bird Permits. The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the California Fish and Game Code (CFGC).

Executive Orders (EO)

Invasive Species – EO 13112 (1999): Issued on February 3, 1999, promotes the prevention and introduction of invasive species and provides for their control and minimizes the economic, ecological, and human health impacts that invasive species cause through the creation of the Invasive Species Council and Invasive Species Management Plan.

Migratory Bird – EO 13186 (2001): Issued on January 10, 2001, promotes the conservation of migratory birds and their habitats and directs federal agencies to implement the Migratory Bird Treaty Act. Protection and Enhancement of Environmental Quality – EO 11514 (1970a), issued on March 5, 1970, supports the purpose and policies of the National Environmental Policy Act (NEPA) and directs federal agencies to take measures to meet national environmental goals.

Migratory Bird Treaty Reform Act

The Migratory Bird Treaty Reform Act (Division E, Title I, Section 143 of the Consolidated Appropriations Act, 2005, PL 108–447) amends the Migratory Bird Treaty Act (16 U.S.C. Sections 703 to 712) such that nonnative birds or birds that have been introduced by humans to the United States or its territories are excluded from protection under the Act. It defines a native migratory bird as a species present in the United States and its territories as a result of natural biological or ecological processes. This list excluded two additional species commonly observed in the United States, the rock pigeon (Columba livia) and domestic goose (Anser domesticus).

Birds of Conservation Concern

Birds of Conservation Concern (BCC) is a USFWS list of bird species identified to have the highest conservation priority, and with the potential for becoming candidates for listing as federally threatened or endangered. The chief legal authority for BCC is the Fish and Wildlife Conservation Act of 1980 (FWCA). Other authorities include the FESA, the Fish and Wildlife Act of 1956, and the Department of the Interior U.S Code (16 U.S.C. § 701). The 1988 amendment to the FWCA (Public Law 100-653, Title VIII) requires the Secretary of the Interior, through the USFWS, to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973" (USFWS, 2008a).

State Regulations

California Fish and Game Code Sections 1600 through 1606 of the CFGC

This section requires that a Streambed Alteration Application be submitted to the CDFW for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." The CDFW reviews the proposed actions and, if necessary, submits to the applicant a proposal for measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by the Department and the applicant is the Streambed Alteration Agreement. Often, Projects that require a Streambed Alteration Agreement also require a permit from the USACE under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the Streambed Alteration Agreement may overlap.

California Endangered Species Act

The California Endangered Species Act (CESA) (Sections 2050 to 2085) establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats by protecting "all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and

plants, and their habitats, threatened with extinction and those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation." Animal species are listed by the CDFW as threatened or endangered, and plants are listed as rare, threatened, or endangered. However, only those plant species listed as threatened or endangered receive protection under the California ESA.

CESA mandates that state agencies do not approve a Project that would jeopardize the continued existence of these species if reasonable and prudent alternatives are available that would avoid a jeopardy finding. There are no state agency consultation procedures under the California ESA. For Projects that would affect a species that is federally and state listed, compliance with ESA satisfies the California ESA if the California Department of Fish and Wildlife (CDFW) determines that the federal incidental take authorization is consistent with the California ESA under Section 2080.1. For Projects that would result in take of a species that is state listed only, the Project sponsor must apply for a take permit, in accordance with Section 2081(b).

Fully Protected Species

Four sections of the California Fish and Game Code (CFGC) list 37 fully protected species (CFGC Sections 3511, 4700, 5050, and 5515). These sections prohibit take or possession "at any time" of the species listed, with few exceptions, and state that "no provision of this code or any other law will be construed to authorize the issuance of permits or licenses to 'take' the species," and that no previously issued permits or licenses for take of the species "shall have any force or effect" for authorizing take or possession.

Bird Nesting Protections

Bird nesting protections (Sections 3503, 3503.5, 3511, 3513 and 3800) in the CFGC include the following:

Section 3503 prohibits the take, possession, or needless destruction of the nest or eggs of any bird.

Section 3503.5 prohibits the take, possession, or needless destruction of any nests, eggs, or birds in the orders Falconiformes (new world vultures, hawks, eagles, ospreys, and falcons, among others), and Strigiformes (owls).

Section 3511 prohibits the take or possession of Fully protected birds.

Section 3513 prohibits the take or possession of any migratory nongame bird or part thereof, as designated in the MBTA. To avoid violation of the take provisions, it is generally required that Project-related disturbance at active nesting territories be reduced or eliminated during the nesting cycle.

Section 3800 prohibits the take of any non-game bird (i.e., bird that is naturally occurring in California that is not a gamebird, migratory game bird, or fully protected bird).

Native Plant Protection Act

The Native Plant Protect Act (NPPA) (1977) (CFGC Sections 1900-1913) was created with the intent to "preserve, protect, and enhance rare and endangered plants in this State." The NPPA is administered by CDFW. The Fish and Game Commission has the authority to designate native plants as endangered or rare and to protect endangered and rare plants from take. CESA (CFGC 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the Fish and Game Code.

APPENDIX 3

HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY

TENTATIVE TRACT MAP NO. 38468

Assessor's Parcel Nos. 436-280-006 and -007
City of San Jacinto, Riverside County, California

For Submittal to:

Community Development Department, Planning Division
City of San Jacinto
595 South San Jacinto Avenue
San Jacinto, CA 92583

Prepared for:

Tom Dodson & Associates
2150 North Arrowhead Avenue
San Bernardino, CA 92405

Prepared by:

CRM TECH
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Colton, CA 92324

Bai "Tom" Tang, Principal Investigator
Michael Hogan, Principal Investigator

July 29, 2023
CRM TECH Contract Number 3917

Title: Historical/Archaeological Resources Survey: Tentative Tract Map No. 38468, Assessor's Parcel Nos. 436-280-006 and -007, City of San Jacinto, Riverside County, California

Author(s): Breidy Q. Vilcahuaman, Archaeologist/Report Writer
Terri Jacquemain, Historian/Architectural Historian
Daniel Ballester, Archaeologist

Consulting Firm: CRM TECH
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Date: July 29, 2023

For Submittal to: Community Development Department, Planning Division
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(951) 487-7330

Prepared for: Kaitlyn Dodson-Hamilton, Vice President
Tom Dodson & Associates
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(909) 882-3612

USGS Quadrangle: San Jacinto, Calif., 7.5' quadrangle; portion of Rancho San Jacinto Viejo land grant, T4S R1W, San Bernardino Baseline and Meridian

Project Size: Approximately 42 acres

Keywords: San Jacinto Valley, southwestern Riverside County; horse track recorded during this study as Site 3917-1H (*temporary designation, pending primary number assignment*); not a "historical resource" under CEQA

MANAGEMENT SUMMARY

Between July 2022 and July 2023, at the request of Tom Dodson & Associates, CRM TECH performed a cultural resources study on approximately 42 acres of former ranch land in the City of San Jacinto, Riverside County, California. The subject property of the study encompasses Assessor's Parcel Numbers 436-280-006 and -007, located at the northwest corner of Lyon Avenue and Appaloosa Drive, in a portion of Rancho San Jacinto Viejo land grant within T4S R1W, San Bernardino Baseline and Meridian.

The study is part of the environmental review process for the proposed subdivision of the property as Tentative Tract Map Number 38468 for single-family residential development. The City of San Jacinto, as the lead agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA). The purpose of the study is to provide the City with the necessary information and analysis to determine whether the proposed project would cause substantial adverse changes to any "historical resources," as defined by CEQA that may exist in the project area. In order to identify such resources, CRM TECH initiated a historical/archaeological resources records search and a Native American Sacred Lands File search, pursued historical background research, and carried out an intensive-level field survey.

As a result of these research procedures, a horse racetrack constructed between 1967 and 1972 in the northern portion of the project area was recorded into the California Historical Resources Inventory and designated temporarily as Site 3917-1H, pending the assignment of an official identification number. It does not, however, appear to meet any of the criteria for listing in the California Register of Historical Resources, thus it does not constitute a "historical resource" under CEQA provisions. No other potential "historical resources" were encountered within the project area throughout the course of this study.

The State of California Native American Heritage Committee reported the presence of unspecified Native American cultural resource(s) in the project vicinity and referred further inquiry to nearby tribal organizations. According to current CEQA guidelines, the identification of potential "tribal cultural resources" is beyond the scope of this study and needs to be addressed through government-to-government consultations between the City of San Jacinto and the pertinent Native American groups pursuant to Assembly Bill (AB) 52.

Based on these findings, CRM TECH recommends to the City of San Jacinto a tentative conclusion of *No Impact* on cultural resources, pending completion of the AB 52 consultation process. No other cultural resources investigation is recommended for this project unless development plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are encountered during any earth-moving operations associated with the project, all work within 50 feet of the discovery should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. Human remains unearthed during the project will need to be treated in accordance with Health and Safety Code §7050.5 and Public Resources Code §5097.98.

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INTRODUCTION

Between July 2022 and July 2023, at the request of Tom Dodson & Associates, CRM TECH performed a cultural resources study on approximately 42 acres of former ranch land in the City of San Jacinto, Riverside County, California (Fig. 1). The subject property of the study encompasses Assessor's Parcel Numbers 436-280-006 and -007, located at the northwest corner of Lyon Avenue and Appaloosa Drive, in a portion of Rancho San Jacinto Viejo land grant within T4S R1W, San Bernardino Baseline and Meridian (Figs. 2, 3).

The study is part of the environmental review process for the proposed subdivision of the property as Tentative Tract Map Number 38468 for single-family residential development. The City of San Jacinto, as the lead agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA; PRC §21000, et seq.). The purpose of the study is to provide the City with the necessary information and analysis to determine whether the proposed project would cause substantial adverse changes to any "historical resources," as defined by CEQA that may exist in the project area.

In order to identify such resources, CRM TECH initiated a historical/archaeological resources records search and a Native American Sacred Lands File search, pursued historical background research, and carried out an intensive-level field survey. The following report is a complete account of the methods, results, and final conclusion of the study. Personnel who participated in the study are named in the appropriate sections below, and their qualifications are provided in Appendix 1.

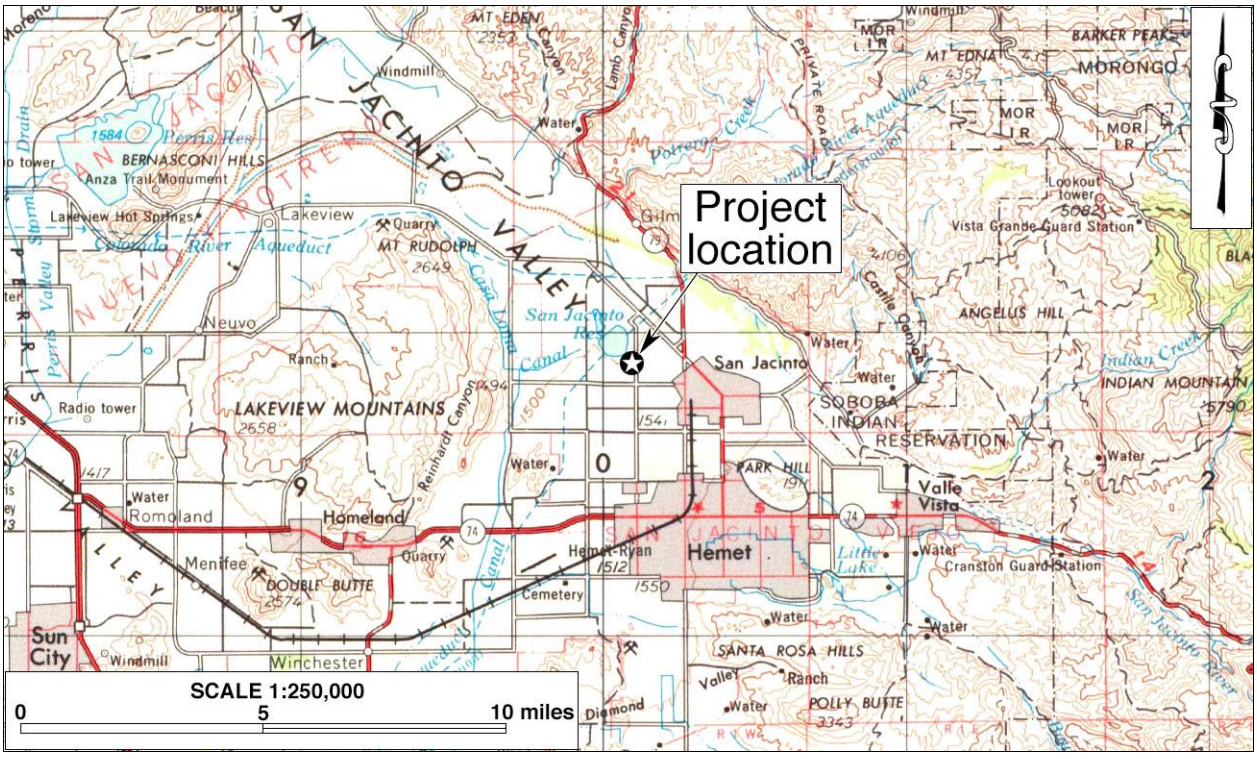


Figure 1. Project vicinity. (Based on USGS Santa Ana, Calif., 120'x60' quadrangle [USGS 1979a])

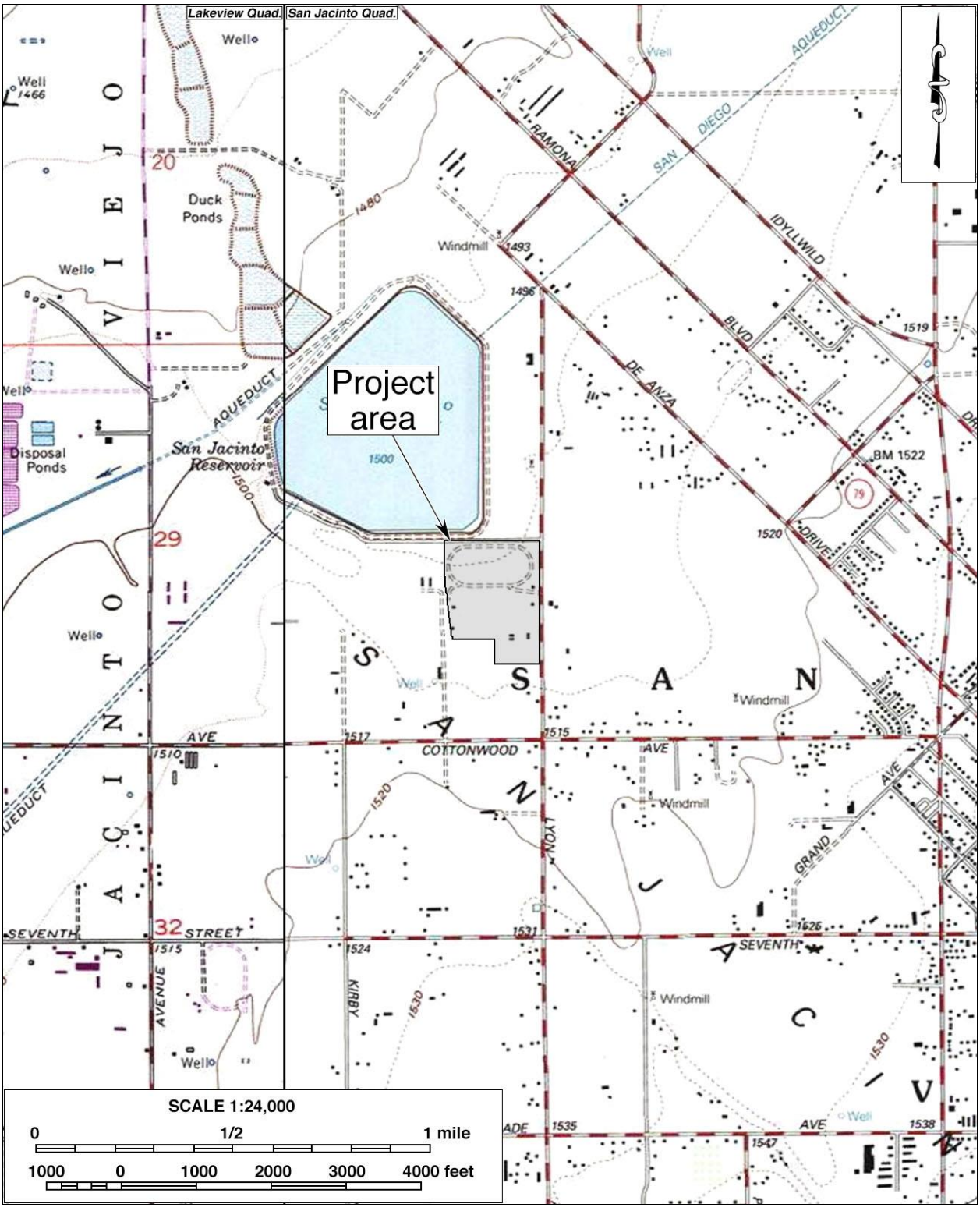


Figure 2. Project location. (Based on USGS Lakeview and San Jacinto, Calif., 7.5' quadrangles [USGS 1979b; 1996])



Figure 3. Recent satellite image of the project area.

SETTING

CURRENT NATURAL SETTING

The City of San Jacinto is situated at the southeastern end of the San Jacinto Valley, a semi-arid inland alluvial valley that extends generally in a northwest-southeast direction. The valley is one of several sub-basins of the San Jacinto watershed, which is bounded on the northeast by the San Jacinto Mountains and on the southwest by the Santa Ana Mountains. Regional climate and environmental norms are typical of southern California's inland valleys, with temperatures reaching over 100 degrees Fahrenheit in summer and dipping to near freezing in winter. The average annual precipitation is approximately 12 inches, occurring mostly during the winter months.

The project area is irregularly shaped and occupies approximately 42 acres in a formerly agricultural area in the southern portion of the city. It is bounded on the north by the San Jacinto Reservoir and vacant land, on the south and the west by existing single-family residential neighborhoods, and on the east by open land and the Monte Vista Middle School. Previous development on the property is currently represented by the remains of a former ranch, including foundations of residences, barns and outbuildings, along with a horse racetrack in the northern portion of the property (Fig. 3).

Elevations in the project area range approximately between 1,494 feet and 1,509 feet above mean sea level, inclining slightly toward the north over generally level terrain. Soils are predominantly sandy loam with some pebbles. Vegetation includes cottonwood, eucalyptus, pine, and palm trees, prickly pear cactus, Russian tumbleweeds, hairy thornapple, coyote brush, Thurber's sandpaper plant, aphanisma, salt grass, sunflowers, and other low-lying grasses and brush of the California chaparral shrub community (Fig. 4).



Figure 4. Overview of the current natural setting of the project area. (Photograph taken on August 12, 2022; view to the northeast)

CULTURAL SETTING

Prehistoric Context

The earliest evidence of human occupation in western Riverside County was discovered below the surface of an alluvial fan in the northern portion of the Lakeview Mountains, overlooking the San Jacinto Valley, with radiocarbon dates clustering around 9,500 B.P. (Horne and McDougall 2008). Another site found near the shoreline of Lake Elsinore, close to the confluence of Temescal Wash and the San Jacinto River, yielded radiocarbon dates between 8,000 and 9,000 B.P. (Grenda 1997). Additional sites with isolated Archaic dart points, bifaces, and other associated lithic artifacts from the same age range have been found in the nearby Cajon Pass area of San Bernardino County, typically atop knolls with good viewsheds (Basgall and True 1985; Goodman and McDonald 2001; Goodman 2002; Milburn et al. 2008).

The cultural prehistory of southern California has been summarized into numerous chronologies, including those developed by Chartkoff and Chartkoff (1984), Warren (1984), and others. Specifically, the prehistory of western Riverside County has been addressed by O'Connell et al. (1974), McDonald et al. (1987), Keller and McCarthy (1989), Grenda (1993), Goldberg (2001), and Horne and McDougall (2008). Although the beginning and ending dates of different cultural horizons vary regionally, the general framework of the prehistory of Riverside County can be divided into three primary periods:

- Paleoindian Period (ca. 18,000-9,000 B.P.): Native peoples of this period created fluted spearhead bases designed to be hafted to wooden shafts. The distinctive method of thinning bifaces and spearhead preforms by removing long, linear flakes leave diagnostic Paleoindian markers at tool-making sites. Other artifacts associated with the Paleoindian toolkit include choppers, cutting tools, retouched flakes, and perforators. Sites from this period are very sparse across the landscape and most are deeply buried.
- Archaic Period (ca. 9,000-1,500 B.P.): Archaic sites are characterized by abundant lithic scatters of considerable size with many biface thinning flakes, bifacial preforms broken during manufacture, and well-made groundstone bowls and basin metates. As a consequence of making dart points, many biface thinning waste flakes were generated at individual production stations, which is a diagnostic feature of Archaic sites.
- Late Prehistoric Period (ca. 1,500 B.P.-contact): Sites from this period typically contain small lithic scatters from the manufacture of small arrow points, expedient groundstone tools such as tabular metates and unshaped manos, wooden mortars with stone pestles, acorn or mesquite bean granaries, ceramic vessels, shell beads suggestive of extensive trading networks, and steatite implements such as pipes and arrow shaft straighteners.

Ethnohistoric Context

According to current ethnohistorical scholarship, the traditional territories of several Native American groups, including the Luiseño, the Serrano, the Gabrielino, and the Cahuilla, overlapped one another in the present-day Riverside-San Bernardino region during the Late Prehistoric Period, but the San Jacinto Valley area is generally recognized as a part of the traditional homeland of the Luiseño, a Takic-speaking people whose territory extended from present-day Riverside to Escondido

and Oceanside. In modern anthropological literature, the leading sources on Luiseño culture and history are Kroeber (1925), Strong (1929), and Bean and Shipek (1978). The following ethnohistoric discussion is based primarily on these sources.

The name Luiseño derived from Mission San Luis Rey, which held jurisdiction over most of the Luiseño territory during the Mission Period. Prior to European contact, the Luiseño were known as *Páyómkawitchum*. Luiseño history, as recorded in traditional songs, tells the creation story from the birth of the first people, the *kaamalam*, to the sickness, death, and cremation of *Wiyoot*, the most powerful and wise one, at Lake Elsinore. The Luiseño society was based on autonomous lineages or kin groups, which represented the basic political unit among most southern California Indians. Each Luiseño lineage possessed a permanent base camp, or village, on the valley floor and another in the mountain regions for acorn collection. Luiseño villages were usually located in sheltered canyons or near year-round sources of water, always in proximity to subsistence resources.

Luiseño subsistence was defined by the surrounding landscape, exploiting nearly all of the resources available in a highly developed seasonal mobility system, including cultivating and gathering wild plants, fishing, and hunting. They collected seeds, roots, wild berries, acorns, wild grapes, strawberries, wild onions, and prickly pear cacti, and hunted deer, elks, antelopes, rabbits, wood rats, and a variety of insects. Bows and arrows, rabbit sticks, traps, nets, clubs, and slings were the main hunting tools. Each lineage had exclusive hunting and gathering rights in their procurement ranges. These boundaries were respected and only crossed with permission.

As the landscape defined their subsistence practices, the tending and cultivation practices of the Luiseño helped shape the landscape. The practice of controlled burning of chaparral and oak woodland areas created an open countryside with more accessible foraging material for animals, which in turn led to more successful hunting. It also increased the ease with which plant foods could be gathered and prevented out-of-control wildfires by eliminating dead undergrowth before it accumulated to dangerous levels. Coppicing, or trimming plants to the ground, resulted in straighter growth for basketry and arrow-making materials. Granitic outcroppings were used for pounding and grinding nuts and seeds, which left their mark in the resulting bedrock milling features, the most common archaeological remains found in the region.

It is estimated that when Spanish colonization of Alta California began in 1769, the Luiseño had approximately 50 active villages with an average population of 200 each, although other estimates place the total Luiseño population at 4,000-5,000 (Bean and Shipek 1978:557). Some of the villages were forcefully moved to the Spanish missions, while others were largely left intact. Ultimately, Luiseño population declined rapidly after European contact because of harsh living conditions at the missions and, later, on the Mexican ranchos, where the Native people often worked as seasonal ranch hands, as well as diseases such as smallpox.

Once Alta California became a part of the United States, the large number of non-Native settlers further eroded the foundation of traditional Luiseño society. During the latter half of the 19th century, almost all of the remaining Luiseño villages were displaced, their occupants eventually removed to the various reservations including Soboba, Pechanga, and Pala. Currently, language and ceremonies are being revitalized, and some groups have taken to using ethnographic terms such as *Páyómkawitchum* to refer to themselves.

Historic Context

In California, the so-called "historic period" began in 1769, when an expedition sent by the Spanish authorities in Mexico founded Mission San Diego, the first European outpost in Alta California. For several decades after that, Spanish colonization activities were largely confined to the coastal regions and left little impact on the arid hinterland of the territory. The first explorers, among them Pedro Fages and Juan Bautista de Anza, traveled through the San Jacinto Plains as early as 1772-1774, but no Europeans were known to have settled in the vicinity until the beginning of the 19th century.

Throughout much of the Spanish and Mexican Periods in California history, the San Jacinto Valley was nominally under the control of Mission San Luis Rey, which was established near present-day Oceanside in 1798. By 1821, it had become a part of the loosely defined Rancho San Jacinto, a vast cattle ranch for that mission (Gunther 1984:467). The rancho was headquartered on a small hill near the Lakeview Mountains, where an adobe house for the *mayordomo*, known in later years as Casa Loma, was built sometime before 1827 (*ibid.*:102). In the 1840s, after secularization of the mission system, three large land grants were created on the former mission rancho of San Jacinto. Among these was Rancho San Jacinto Viejo, which was granted in 1842 to José Antonio Estudillo, then the *mayordomo* of Mission San Luis Rey. As elsewhere in southern California, cattle raising was the most prevalent economic activity on this and other nearby land grants until the influx of American settlers eventually brought an end to this much-romanticized lifestyle in the second half of the 19th century.

After the American annexation of Alta California in 1848, the first Euroamerican settlers arrived in the San Jacinto Valley in the late 1860s, and settled mostly around the old town of San Jacinto, the earliest non-Indian community in the area. During the great southern California land boom of the 1880s, the new town of San Jacinto was founded in 1883, and soon overtook the old town as the nucleus of the community. In 1888, San Jacinto became the terminus of the newly completed San Jacinto Valley Railway, a Santa Fe subsidiary, and the City of San Jacinto was incorporated in the same year. For almost a century after its birth, San Jacinto remained a small rural town serving one of Riverside County's most important agricultural regions. During recent decades, residential and commercial development has increasingly become the driving force in regional growth, and the forces of urbanization have begun to transform the socioeconomic landscape of the city.

RESEARCH METHODS

RECORDS SEARCH

The historical/archaeological resources records search for this study was provided by the Eastern Information Center (EIC) on August 9, 2022. Located on the campus of the University of California, Riverside, the EIC is the official cultural resource records repository for the County of Riverside in the California Historical Resources Information System. During the records search, EIC staff examined maps and records on file for previously identified cultural resources in or near the project area and existing cultural resources reports pertaining to the project vicinity. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of Historical Interest, or Riverside County Landmarks, as well as those listed in the National

Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Inventory.

NATIVE AMERICAN PARTICIPATION

On July 7, 2022, CRM TECH submitted a written request to the State of California Native American Heritage Commission (NAHC) for a records search in the commission's Sacred Lands File. The NAHC is the State of California's trustee agency for the protection of "tribal cultural resources," as defined by California Public Resources Code §21074 and is tasked with identifying and cataloging properties of Native American cultural value, including places of special religious, spiritual, or social significance and known graves and cemeteries throughout the state. In the meantime, CRM TECH also contacted the nearby Soboba Band of Luiseño Indians for supplemental information on potential Native American cultural resources in the project vicinity and to arrange for tribal participation in the upcoming archaeological fieldwork.

HISTORICAL RESEARCH

Historical research for this study was conducted by CRM TECH historian Terri Jacquemain. Sources consulted during the general background research included mainly published literature in local history, historical maps of the San Jacinto area, and aerial/satellite photographs of the project vicinity. For information specific to historic-period features in the project area, Jacquemain further consulted the archival records of the County of Riverside and the City of San Jacinto, including real property assessment records and building safety records, and various online resources and genealogical databases, such as those available at Ancestry.com and Newspapers.com.

FIELD SURVEY

On August 12, 2022, CRM TECH archaeologists Daniel Ballester, Hunter O'Donnell, and Ash Conner-Ayala carried out the intensive-level field survey of the project area with the assistance of cultural resources monitor Frankie Morreo from the Soboba Band of Luiseño Indians. During the survey, the field personnel walked a series of parallel north-south transects spaced 15 meters (approximately 50 feet) apart across the entire project area.

In this way, the ground surface of the project area was systematically and carefully examined for any evidence of human activities dating to the prehistoric or historic period (i.e., 50 years or older). Ground visibility ranged between poor and excellent (5%-90%) depending on the density of the vegetation. Considering the extent of past ground disturbances by agricultural, construction, ranching, and demolition activities, the survey was deemed adequate for this study.

RESULTS AND FINDINGS

RECORDS SEARCH

According to EIC records, a portion of the project area at the northern end was included in a 1991 survey (Fig. 5), but the property as a whole had not been surveyed for cultural resources prior to this

study, and no such resources were recorded within the project boundaries. Outside the project boundaries but within a one-mile radius, EIC records identify a total of 46 previous studies on various tracks of land and linear features, in all covering about a third of the land within the records search scope. As a result of these and similar studies, a total of 29 historic-period sites and one prehistoric (i.e., Native American) isolate were identified in EIC records within the scope of the records search, as listed in Table 1.

Recorded nearest to the project area was the 1948 Devoe/Bandick ranch complex (33-21063), formerly across Lyon Avenue from the project area and demolished around 1996 (McKenna 2012). Most of the other historic-period sites were buildings recorded during a countywide reconnaissance survey in 1983, but also included the Russian transpolar landing site, which was the end point of a 1937 flight that set a world's nonstop distance record at the time, and the San Diego Aqueduct. The sole prehistoric resource was an isolate (i.e., a locality with fewer than three artifacts) that consisted of a single basin metate recovered during an archaeological monitoring program nearly a half-mile to the southwest of the project area. None of these previously recorded resources were located in the immediate vicinity of the project area, and thus none of them require further consideration during this study.

Table 1. Previously Recorded Cultural Resources within the Scope of the Records Search

Resource #	Description	Resource #	Description
33-006333	Residential property	33-007351	Ranch property
33-007306	Milking barn	33-007352	Residential property
33-007307	Residential property	33-007358	Residential property
33-007309	Residential property	33-007360	Residential property
33-007310	Residential property	33-007361	Residential property
33-007318	Residential property	33-007383	Residential property
33-007319	Wood-frame dairy building	33-007393	Residential property
33-007320	Residential property	33-009697	Russian trans-polar landing site
33-007335	Residential property	33-011265/CA-RIV-6726	Old Aqueduct Road
33-007343	Ranch house	33-014710	Prehistoric isolate: metate
33-007345	Barn	33-014964	Residential property
33-007347	Residential property	33-015734/CA-RIV-8195	San Diego Aqueduct
33-007348	Residential property	33-015735	Sanderson Avenue property
33-007349	Residential property	33-021063/CA-RIV-10911	Devoe/Bandick ranch complex
33-007350	Residential property	33-028508/CA-RIV-12844	Concrete foundation remains

NATIVE AMERICAN PARTICIPATION

In response to CRM TECH's inquiry, the NAHC stated in a letter dated August 15, 2022, that the Sacred Lands File identified unspecified Native American cultural resource(s) in the project vicinity (see App. 2). The commission recommended that local Native American groups be contacted for further information and provided a referral list of 21 individuals associated with 14 local Native American groups. The NAHC's reply is attached to this report in Appendix 2 for reference by the City of San Jacinto in future government-to-government consultations with the pertinent tribal groups, if necessary. As mentioned above, as a part of the study CRM TECH contacted the nearest Native American group to the project location, namely the Soboba Band of Luiseño Indians. As a result, the tribe participated in the archaeological field survey but has not responded to the request for additional information on potential Native American cultural resources in the vicinity.

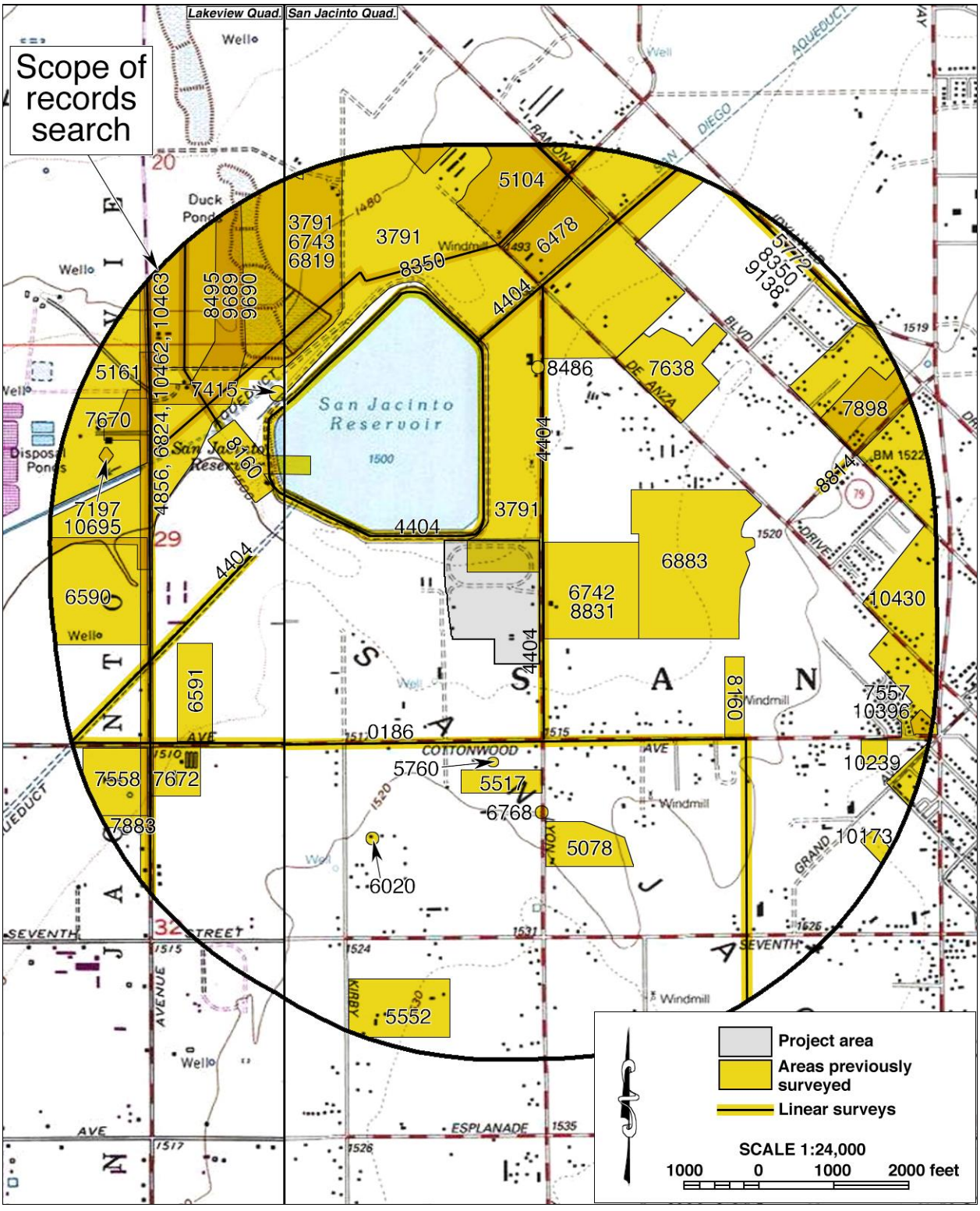


Figure 5. Previous cultural resources studies in the vicinity of the project area, listed by EIC file number. Locations of historical/archaeological resources are not shown as a protective measure.

HISTORICAL RESEARCH

In the mid-19th century, when the U.S. government conducted the first systematic land survey in the San Jacinto Valley, no evidence of any settlement or development activities were recorded in the project vicinity, although a road was noted passing roughly a half-mile to the northeast of this location (Fig. 6). In the 1890s-1930s, the project vicinity remained sparsely settled, and a few roads, including Lyon Avenue, were the only notable feature within or adjacent to the project boundaries until the San Jacinto Reservoir was built to the northwest of this location in the 1940s (Figs. 7-9). Throughout the 1890s-1950s era, the project area remained vacant (*ibid.*).

Despite the reservoir located nearby, the western portion of the project area retained geographic characteristics related to seasonal flooding into the mid-1960s, while the eastern portion appeared to be have been prepared for agriculture or graded by 1966 (NETR Online 1966). The following year, the entire project area had been so primed (NETR Online 1967). By 1972 the horse racetrack was in place, along with a few structures that appear to include a stable and barn on the western side and two mobile homes along Lyon Avenue (NETR Online 1972). The owner of the property at the time, William H. Cotter, secured installation permits for the mobile homes in that year (County of Riverside 1972).

Shortly afterward, James and Marjo Keen acquired the property and built a residence, barn and a few outbuildings in the southeastern portion of the project area around 1976, but by 1983 it was owned by Toy Dee, who obtained permits for at least five horse barns, a low wall, an "agriculture building," a detached garage, and another trailer (County of Riverside 1972-1983; NETR Online 1978; 1985).

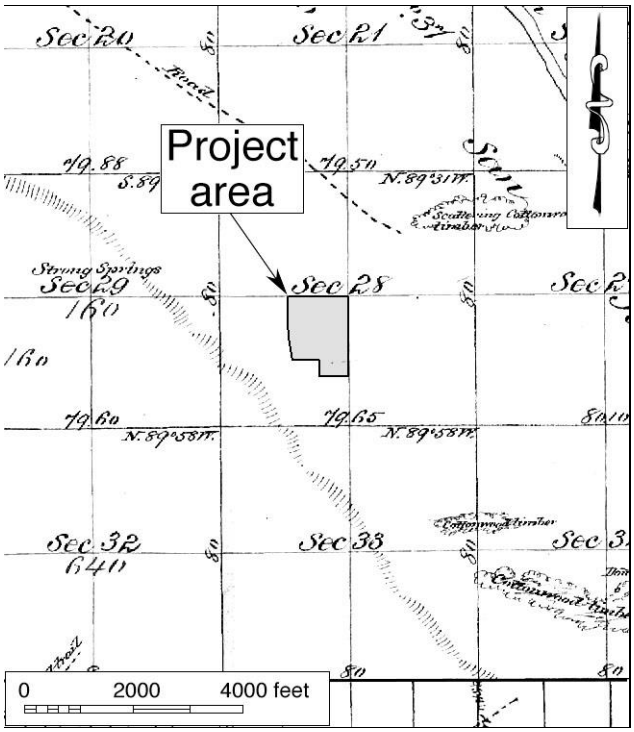


Figure 6. The project area and vicinity in 1853-1867. (Source: GLO 1867a; 1867b)

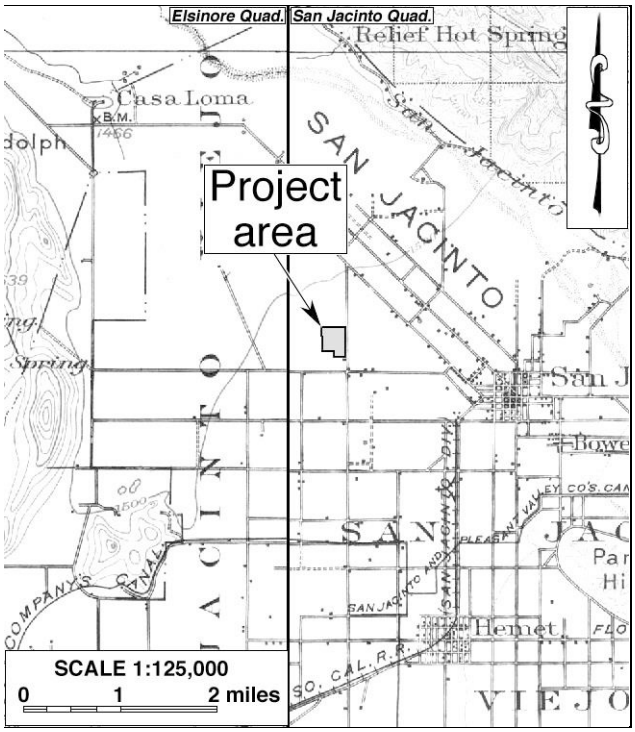


Figure 7. The project area and vicinity in 1897-1898. (Source: USGS 1901a; 1901b)

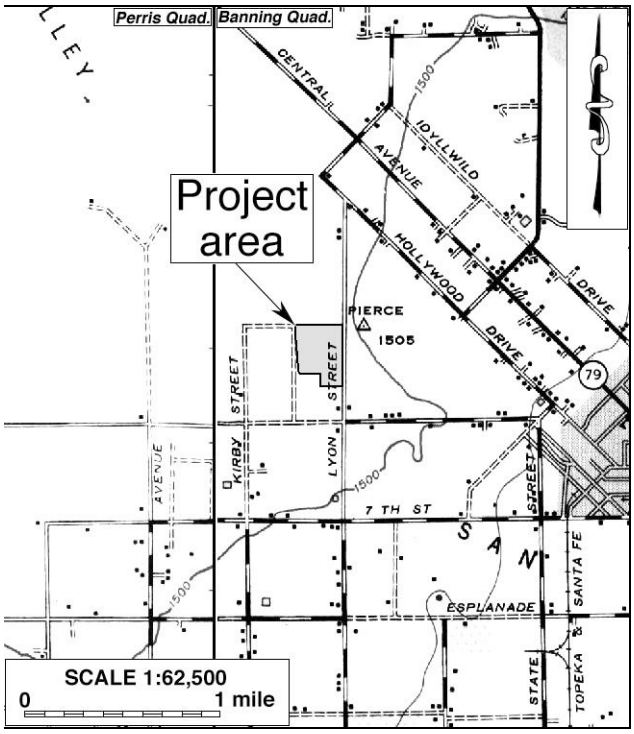


Figure 8. The project area and vicinity in 1939-1941. (Source: USGS 1942; 1943)

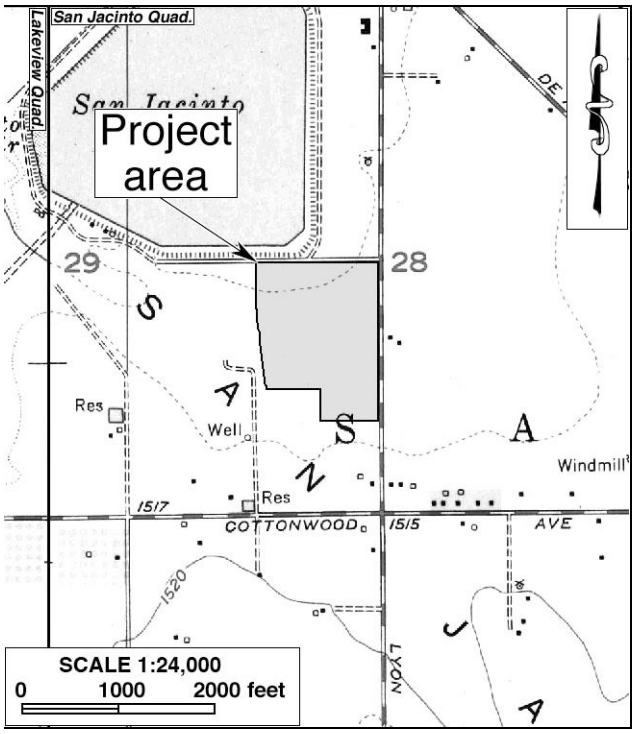


Figure 9. The project area and vicinity in 1949-1951. (Source: USGS 1953a; 1953b)

Despite diligent historical research, archival records yielded little information about these property owners.

The property was nearly fully occupied by these features and their expansion by 1996, including a few small structures in the infield of the horse track (NETR Online 1996). Some small-scale fields, likely alfalfa, had been sowed and irrigated in the southwestern portion of the property by 2002, but by 2009 the track and the rest of the property was clearly in decline (NETR Online 2002-2009). Rehabilitation efforts occurred around 2018, but by 2021 most of the property had been cleared (NETR Online 2018; 2020: Google Earth 2021). The revival efforts around 2018 may have been for use as an auxiliary horse-training facility by a nearby horse ranch, Hideaway Farms, which was established in 1994 but has since changed its name or gone out of business (Manta.com n.d.).

FIELD SURVEY

During the field survey, the 1967-1972 horse racetrack in the northern portion of the project area was recorded into the California Historical Resources Inventory and designated temporarily as Site 3917-1H, pending assignment of an official identification number by the EIC (see App. 3). The track is substantial in size at approximately 1,200x620 feet and is encompassed by an oval earthen berm that is somewhat deteriorated. Foundational remains of some former ranch buildings and other features dating to the 1970-1996 era were noted nearby, but these common features of late historic and modern origin lack any potential for significance. As such, they were not recorded as parts of the site and are excluded from further study.

Field observations confirmed that the ground surface has been extensively disturbed by agricultural, construction, and demolition activities. As a result, the property is littered with an assortment of concrete slabs and foundations of various sizes, building debris, wood and steel fence and corral materials, and piles of modern refuse, none of which is of any historical/archaeological interest.

DISCUSSION

The purpose of this study is to identify any cultural resources in the project area, and to assist the City of San Jacinto in determining whether such resources meet the definition of "historical resources," as provided in the California Public Resources Code. According to PRC §5020.1(j), "'historical resource' includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California."

More specifically, CEQA guidelines state that the term "historical resources" applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources, included in a local register of historical resources, or determined to be historically significant by the Lead Agency (Title 14 CCR §15064.5(a)(1)-(3)). Regarding the proper criteria of historical significance, CEQA guidelines mandate that "generally a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources" (Title 14 CCR §15064.5(a)(3)). A resource may be listed in the California Register if it meets any of the following criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) Is associated with the lives of persons important in our past.
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
(4) Has yielded, or may be likely to yield, information important in prehistory or history. (PRC §5024.1(c)).

In summary of the research results outlined above, the 1967-1972 horse racetrack (Site 3917-1H) is the only potential "historical resource" identified within the project area. While it meets the generally accepted 50-year age threshold for "historical resources," diligent historical research could not establish a close or important association with any persons, events, or pattern of events of recognized significance. The horse racetrack does not exhibit any remarkable qualities in design, construction, engineering, or aesthetics, nor does it demonstrate the potential to yield any information important to the study of local history, which is well documented in published historical accounts. Based on these considerations, and in light of the criteria listed above, Site 3917-1H does not appear eligible for listing in the California Register of Historical Resources and therefore does not meet the statutory definition of "historical resource" under CEQA provisions.

CONCLUSION AND RECOMMENDATIONS

CEQA establishes that a project that may cause a substantial adverse change in the significance of a "historical resource" or a "tribal cultural resource" is a project that may have a significant effect on the environment (PRC §21084.1-2). "Substantial adverse change," according to PRC §5020.1(q), "means demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired."

In conclusion, no "historical resources," as defined by CEQA and associated regulations, were encountered within the project area throughout the course of this study. However, the NAHC has reported the presence of unspecified Native American cultural resource(s) in the project vicinity and referred further inquiry to nearby tribal organizations. According to CEQA guidelines, the identification of potential "tribal cultural resources" is beyond the scope of this study and needs to be addressed through government-to-government consultations between the City of San Jacinto and the pertinent Native American groups pursuant to Assembly Bill (AB) 52. Based on these findings, CRM TECH presents the following recommendations to the City of San Jacinto:

- The project as currently proposed will not cause a substantial adverse change to any known "historical resources."
- A tentative conclusion of *No Impact* on cultural resources appears to be appropriate for this project, pending the completion of the AB 52 consultation process to ensure the proper identification of potential "tribal cultural resources."
- No other cultural resources investigation will be necessary for the proposed project unless development plans undergo such changes as to include areas not covered by this study.
- If buried cultural materials are discovered inadvertently during any earth-moving operations associated with the project, all work within 50 feet of the discovery should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.
- If human remains are discovered, HSC §7050.5 prohibits any further disturbance until the Riverside County Coroner has made the necessary findings as to the origin. Human remains of Native American origin will need to be treated per consultations among the Most Likely Descendant, the City of San Jacinto, and the project proponent in accordance with PRC §5097.98.

REFERENCES

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1867b Plat Map: Township No. 5 South Range No. 1 West, SBBM; surveyed in 1853-1867.
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2001 Archaeological Survey of the Southern California Trials Association Event Area, Little Pine Flats, Mountaintop Ranger District, San Bernardino National Forest, California. San Bernardino National Forest Technical Report 05-12-BB-106. San Bernardino, California.
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1942 Map: Banning, Calif. (15', 1:62,500); aerial photos taken in 1939-1941.
1943 Map: Perris, Calif. (15', 1:62,500); aerial photographs taken in 1939.
1953a Map: Lakeview, Calif. (7.5', 1:24,000); aerial photographs taken in 1951.
1953b Map: San Jacinto, Calif. (7.5', 1:24,000); aerial photos taken in 1949.
1979a Map: Santa Ana, Calif. (120'x60'; 1:250,000); 1959 edition revised.
1979b Map: Lakeview, Calif. (7.5', 1:24,000); 1967 edition photorevised in 1967.
1996 Map: San Jacinto, Calif. (7.5', 1:24,000); 1953 edition photorevised in 1994.
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APPENDIX 1:
PERSONNEL QUALIFICATIONS

PRINCIPAL INVESTIGATOR, HISTORY/ARCHITECTURAL HISTORY
Bai "Tom" Tang, M.A.

Education

1988-1993	Graduate Program in Public History/Historic Preservation, University of California, Riverside.
1987	M.A., American History, Yale University, New Haven, Connecticut.
1982	B.A., History, Northwestern University, Xi'an, China.
2000	"Introduction to Section 106 Review," presented by the Advisory Council on Historic Preservation and the University of Nevada, Reno.
1994	"Assessing the Significance of Historic Archaeological Sites," presented by the Historic Preservation Program, University of Nevada, Reno.

Professional Experience

2002-	Principal Investigator, CRM TECH, Riverside/Colton, California.
1993-2002	Project Historian/Architectural Historian, CRM TECH, Riverside, California.
1993-1997	Project Historian, Greenwood and Associates, Pacific Palisades, California.
1991-1993	Project Historian, Archaeological Research Unit, University of California, Riverside.
1990	Intern Researcher, California State Office of Historic Preservation, Sacramento.
1990-1992	Teaching Assistant, History of Modern World, University of California, Riverside.
1988-1993	Research Assistant, American Social History, University of California, Riverside.
1985-1988	Research Assistant, Modern Chinese History, Yale University.
1985-1986	Teaching Assistant, Modern Chinese History, Yale University.
1982-1985	Lecturer, History, Xi'an Foreign Languages Institute, Xi'an, China.

Cultural Resources Management Reports

Preliminary Analyses and Recommendations Regarding California's Cultural Resources Inventory System (with Special Reference to Condition 14 of NPS 1990 Program Review Report). California State Office of Historic Preservation working paper, Sacramento, September 1990.

Numerous cultural resources management reports with the Archaeological Research Unit, Greenwood and Associates, and CRM TECH, since October 1991.

PRINCIPAL INVESTIGATOR, ARCHAEOLOGY
Michael Hogan, Ph.D., RPA (Registered Professional Archaeologist)

Education

1991	Ph.D., Anthropology, University of California, Riverside.
1981	B.S., Anthropology, University of California, Riverside; with honors.
1980-1981	Education Abroad Program, Lima, Peru.
2002	"Section 106—National Historic Preservation Act: Federal Law at the Local Level," UCLA Extension Course #888.
2002	"Recognizing Historic Artifacts," workshop presented by Richard Norwood, Historical Archaeologist.
2002	"Wending Your Way through the Regulatory Maze," symposium presented by the Association of Environmental Professionals.
1992	"Southern California Ceramics Workshop," presented by Jerry Schaefer.
1992	"Historic Artifact Workshop," presented by Anne Duffield-Stoll.

Professional Experience

2002-	Principal Investigator, CRM TECH, Riverside/Colton, California.
1999-2002	Project Archaeologist/Field Director, CRM TECH, Riverside, California.
1996-1998	Project Director and Ethnographer, Statistical Research, Inc., Redlands, California.
1992-1998	Assistant Research Anthropologist, University of California, Riverside.
1992-1995	Project Director, Archaeological Research Unit, U.C. Riverside.
1993-1994	Adjunct Professor, Riverside Community College, Mt. San Jacinto College, U.C. Riverside, Chapman University, and San Bernardino Valley College.
1991-1992	Crew Chief, Archaeological Research Unit, U.C. Riverside.
1984-1998	Project Director, Field Director, Crew Chief, and Archaeological Technician for various southern California cultural resources management firms.

Research Interests

Cultural Resource Management, Southern Californian Archaeology, Settlement and Exchange Patterns, Specialization and Stratification, Culture Change, Native American Culture, Cultural Diversity.

Cultural Resources Management Reports

Principal investigator for, author or co-author of, and contributor to numerous cultural resources management study reports since 1986.

Memberships

Society for American Archaeology; Society for California Archaeology; Pacific Coast Archaeological Society; Coachella Valley Archaeological Society.

HISTORIAN/REPORT WRITER
Terri Jacquemain, M.A.

Education

2004 M.A., Public History and Historic Resource Management, University of California, Riverside.
- M.A. thesis: Managing Cultural Outreach, Public Affairs and Tribal Policies of the Cabazon Band of Mission Indians, Indio, California; internship served as interim Public Information Officer, Cabazon Band of Mission Indians, June-October, 2002.

2002 B.S., Anthropology, University of California, Riverside.
2001 Archaeological Field School, University of California, Riverside.
1991 A.A., Riverside Community College, Norco Campus.

Professional Experience

2003- Historian/Architectural Historian/Report Writer, CRM TECH, Riverside/Colton, California.
2002-2003 Teaching Assistant, Religious Studies Department, University of California, Riverside.
2002 Interim Public Information Officer, Cabazon Band of Mission Indians.
2000 Administrative Assistant, Native American Student Programs, University of California, Riverside.
1997-2000 Reporter, *Inland Valley Daily Bulletin*, Ontario, California.
1991-1997 Reporter, *The Press-Enterprise*, Riverside, California.

PROJECT ARCHAEOLOGIST/REPORT WRITER
Breidy Q. Vilcahuaman, M.A., RPA (Registered Professional Archaeologist)

Education

2018 M.A., Anthropology, Georgia State University, Atlanta, Georgia.
2005 B.A., Anthropology, University Nacional del Centro del Peru.

Professional Experience

2022- Project Archaeologist, CRM TECH, Colton, California.
2021-2022 Archaeological Technician, Applied Earthwork, Inc., Hemet, California.
2021 Archaeologist/Crew Chief, Historical Research Associates, Inc., Portland, Oregon.
2020-2021 Archaeological Technician, Cogstone Resource Management, Orange, California.
2020 Archaeological Technician, McKenna et al., Whittier, California.

PROJECT ARCHAEOLOGIST/FIELD DIRECTOR
Daniel Ballester, M.S., RPA (Registered Professional Archaeologist)

Education

2013	M.S., Geographic Information System (GIS), University of Redlands, California.
2007	Certificate in Geographic Information Systems (GIS), California State University, San Bernardino.
1998	B.A., Anthropology, California State University, San Bernardino.
1997	Archaeological Field School, University of Las Vegas and UC, Riverside.
1994	University of Puerto Rico, Rio Piedras, Puerto Rico.
2021	"An Introduction to Geoarchaeology: How Understanding Basic Soils, Sediments, and Landforms can make you a Better Archaeologist." SAA Online Seminar.
2002	"Historic Archaeology Workshop," presented by Richard Norwood, Base Archaeologist, Edwards Air Force Base; presented at CRM TECH, Riverside, California.

Professional Experience

2002-	Field Director/GIS Specialist, CRM TECH, Riverside/Colton, California.
2011-2012	GIS Specialist, Caltrans District 8 Project, Garcia and Associates, San Anselmo, CA.
2009-2010	Field Crew Chief, Garcia and Associates, San Anselmo, California.
2009-2010	Field Crew, ECorp, Redlands.
1999-2002	Project Archaeologist, CRM TECH, Riverside, California.
1998-1999	Field Crew, K.E.A. Environmental, San Diego, California.
1998	Field Crew, A.S.M. Affiliates, Encinitas, California.
1998	Field Crew, Archaeological Research Unit, University of California, Riverside.

Cultural Resources Management Reports

Field Director, co-author, and contributor to numerous cultural management reports since 2002.

PROJECT ARCHAEOLOGIST
Hunter C. O'Donnell, B.A.

Education

2016-	M.A. Program, Applied Archaeology, California State University, San Bernardino.
2015	B.A. (*cum laude*), Anthropology, California State University, San Bernardino.
2012	A.A., Social and Behavioral Sciences, Mt. San Antonio College, Walnut, California.
2011	A.A., Natural Sciences and Mathematics, Mt. San Antonio College, Walnut, California.
2014	Archaeological Field School, Santa Rosa Mountains; supervised by Bill Sapp of the United States Forest Service and Daniel McCarthy of the San Manuel Band of Mission Indians.

Professional Experience

2017-	Project Archaeologist, CRM TECH, Colton, California.
2016-2018	Graduate Research Assistant, Applied Archaeology, California State University, San Bernardino.
2016-2017	Cultural Intern, Cultural Department, Pechanga Band of Luiseño Indians, Temecula, California.
2015	Archaeological Intern, U.S. Bureau of Land Management, Barstow, California.
2015	Peer Research Consultant: African Archaeology, California State University, San Bernardino.

PROJECT ARCHAEOLOGIST
Ash Conner-Ayala, B.S.

Education

2021	GIS Certification, Pasadena City College, Pasadena.
2020	B.S., Anthropology, University of California, Riverside.
2019	Paleoanthropology Field School, Dmanisi, Republic of Georgia.
2019	M.A.R.I. CRM Field School, Milford, Utah.

Professional Experience

2021-	Project Archaeologist, CRM TECH, Colton, California.
2021	Field Technician, Bruce Love Consulting, Littlerock, California.
2020	Archaeological Monitor and Field Technician, McKenna et al., Whittier, California.

APPENDIX 2

NATIVE AMERICAN SACRED LANDS FILE SEARCH RESULTS

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

PARLIAMENTARIAN
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COMMISSIONER
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COMMISSIONER
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Luiseño

COMMISSIONER
Stanley Rodriguez
Kumeyaay

EXECUTIVE SECRETARY
Raymond C. Hitchcock
Miwok/Nisenan

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

August 15, 2022

Nina Gallardo
CRM TECH

Via Email to: ngallardo@crmtech.us

Re: Proposed Tentative Tract Map No. 38468 Project, Riverside County

Dear Ms. Gallardo:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were positive. Please contact the tribes on the attached list for more information. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Riverside County
8/15/2022

Agua Caliente Band of Cahuilla Indians
Reid Milanovich, Chairperson
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6800
Fax: (760) 699-6919
laviles@aguacaliente.net

Agua Caliente Band of Cahuilla Indians
Patricia Garcia-Plotkin, Director
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6907
Fax: (760) 699-6924
ACBCI-THPO@aguacaliente.net

Augustine Band of Cahuilla Mission Indians
Amanda Vance, Chairperson
P.O. Box 846 — Cahuilla
Coachella, CA, 92236
Phone: (760) 398 - 4722
Fax: (760) 369-7161
hhaines@augustinetribe.com

Cabazon Band of Mission Indians
Doug Welmas, Chairperson
84-245 Indio Springs Parkway — Cahuilla
Indio, CA, 92203
Phone: (760) 342 - 2593
Fax: (760) 347-7880
jstapp@cabazonindians-nsn.gov

Cahuilla Band of Indians
Daniel Salgado, Chairperson
52701 U.S. Highway 371 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 5549
Fax: (951) 763-2808
Chairman@cahuilla.net

Los Coyotes Band of Cahuilla and Cupeño Indians
Ray Chapparosa, Chairperson
P.O. Box 189 — Cahuilla
Warner Springs, CA, 92086-0189
Phone: (760) 782 - 0711
Fax: (760) 782-0712

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Road — Cahuilla, Serrano
Banning, CA, 92220
Phone: (951) 755 - 5110
Fax: (951) 755-5177
abrierty@morongo-nsn.gov

Morongo Band of Mission Indians
Ann Brierty, THPO
12700 Pumarra Road — Cahuilla, Serrano
Banning, CA, 92220
Phone: (951) 755 - 5259
Fax: (951) 572-6004
abrierty@morongo-nsn.gov

Pala Band of Mission Indians
Shasta Gaughen, Tribal Historic Preservation Officer
PMB 50, 35008 Pala Temecula Rd. — Cupeno, Luiseno
Pala, CA, 92059
Phone: (760) 891 - 3515
Fax: (760) 742-3189
sgaughen@palatribe.com

Pechanga Band of Indians
Paul Macarro, Cultural Resources Coordinator
P.O. Box 1477 — Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6306
Fax: (951) 506-9491
pmacarro@pechanga-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Proposed Tentative Tract Map No. 38468 Project, Riverside County.

Native American Heritage Commission
Native American Contact List
Riverside County
8/15/2022

Pechanga Band of Indians
Mark Macarro, Chairperson
P.O. Box 1477 — Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6000
Fax: (951) 695-1778
epreston@pechanga-nsn.gov

Quechan Tribe of the Fort Yuma Reservation
Jill McCormick, Historic Preservation Officer
P.O. Box 1899 — Quechan
Yuma, AZ, 85366
Phone: (760) 572 - 2423
historicpreservation@quechantribe.com

Quechan Tribe of the Fort Yuma Reservation
Manfred Scott, Acting Chairman
Kw'ts'an Cultural Committee
P.O. Box 1899 — Quechan
Yuma, AZ, 85366
Phone: (928) 750 - 2516
scottmanfred@yahoo.com

Ramona Band of Cahuilla
Joseph Hamilton, Chairperson
P.O. Box 391670 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
admin@ramona-nsn.gov

Ramona Band of Cahuilla
John Gomez, Environmental Coordinator
P. O. Box 391670 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
jgomez@ramona-nsn.gov

Rincon Band of Luiseno Indians
Cheryl Madrigal, Tribal Historic Preservation Officer
One Government Center Lane — Luiseno
Valley Center, CA, 92082
Phone: (760) 297 - 2635
crd@rincon-nsn.gov

Rincon Band of Luiseno Indians
Bo Mazzetti, Chairperson
One Government Center Lane — Luiseno
Valley Center, CA, 92082
Phone: (760) 749 - 1051
Fax: (760) 749-5144
bomazzetti@aol.com

Santa Rosa Band of Cahuilla Indians
Lovina Redner, Tribal Chair
P.O. Box 391820 — Cahuilla
Anza, CA, 92539
Phone: (951) 659 - 2700
Fax: (951) 659-2228
lsaul@santarosa-nsn.gov

Soboba Band of Luiseno Indians
Isaiah Vivanco, Chairperson
P. O. Box 487 — Cahuilla
San Jacinto, CA, 92581 — Luiseno
Phone: (951) 654 - 5544
Fax: (951) 654-4198
ivivanco@soboba-nsn.gov

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 — Cahuilla
San Jacinto, CA, 92581 — Luiseno
Phone: (951) 663 - 5279
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

Torres-Martinez Desert Cahuilla Indians
Cultural Committee,
P.O. Box 1160 — Cahuilla
Thermal, CA, 92274
Phone: (760) 397 - 0300
Fax: (760) 397-8146
Cultural-Committee@torresmartinez-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Proposed Tentative Tract Map No. 38468 Project, Riverside County.

APPENDIX 3

CALIFORNIA HISTORICAL RESOURCES INVENTORY RECORD FORMS

Site 3917-1H

State of California--The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

*Resource Name or # (Assigned by recorder) CRM TECH 3917-1H

P1. Other Identifier:

***P2.** Location: ☐ Not for Publication ☐ Unrestricted **and** (P2b and P2c or P2d. Attach a Location Map as necessary.)

***a. County** Riverside

***b. USGS 7.5' Quad** San Jacinto, Calif. **Date** 1993
T 4S; **R** 1W; (within the Rancho San Jacinto Viejo land grant); S.B. **B.M.**

c. Address 532 N. Lyon Avenue **City** San Jacinto **Zip** 92583

d. UTM: (Give more than one for large and/or linear resources) **Zone** 11 ; 481,785 **mE**/ 3,827,891 **mN**
UTM Derivation: ☐ USGS Quad ☒ GPS (NAD 83)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, decimal degrees, etc., as appropriate) Assessor's Parcel No. APN 436-280-006; approximately 89 feet west of Lyon Avenue and 1,045 feet north of Appaloosa Drive

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries) This dirt racetrack is substantial in size at approximately 1,200x620 feet and is encompassed by an oval earthen berm that is somewhat deteriorated. The track and its infield are currently covered by low grasses. Foundational remains of some former ranch buildings and other features dating to the 1970-1996 era were noted nearby, but these common features of late historic and modern origin lack any potential for significance. As such, they were not recorded as parts of the site.

***P3b. Resource Attributes:** (List attributes and codes) HP 33: Farm/Ranch

***P4. Resources Present:** ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)



P5b. Description of Photo: Taken on August 19, 2022; view to the north (eastern end)

***P6. Date Constructed/Age of Sources:** ☒ Historic ☐ Prehistoric ☐ Both Circa 1967-1972

***P7. Owner and Address:** Third Avenue Storage, LLC, 32823 Temecula Parkway, Temecula, CA 92592

***P8. Recorded by** (Name, affiliation, and address): Daniel Ballester, Hunter O'Donnell, and Ash Conner-Ayala, CRM TECH, 1016 East Cooley Drive, Suite A/B, Colton, CA 92324

***P9. Date Recorded:** August 19, 2022

***P10. Survey Type:** Intensive-level survey for CEQA compliance

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Breidy Vilcahuaman, Terri Jacquemain, and aniel Ballester (2023): Historical/Archaeological Resources Survey: Tentative Tract Map No. 38468, Assessor's Parcel Nos. 436-280-006 and -007, City of San Jacinto, Riverside County, California

***Attachments:** ☐ None ☐ Location Map ☐ Sktech Map ☐ Continuation Sheet ☐ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (List):

State of California--The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
Primary # _____
Trinomial _____

ARCHAEOLOGICAL SITE RECORD

 *Resource Name or # (Assigned by recorder) CRM TECH 3917-1H

A1. Dimensions: a. Length 1,200 feet (E-W) b. Width 620 Feet (N-S)
Method of Measurement: ☐ Paced ☐ Taped ☐ Visual estimate ☒ Other: GPS
Method of Determination (Check any that apply.): ☐ Artifacts ☒ Features ☐ Soil ☐ Vegetation ☐ Topography ☐ Cut bank ☐ Animal burrow ☐ Excavation ☐ Property boundary ☐ Other (Explain): _____
Reliability of Determination: ☒ High ☐ Medium ☐ Low Explain: Feature is clearly visible
Limitations (Check any that apply): ☐ Restricted access ☐ Paved/built over ☐ Site limits incompletely defined ☐ Disturbances ☐ Vegetation ☐ Other (Explain): _____

A2. Depth: _____ ☒ None ☐ Unknown Method of Determination: _____

***A3. Human Remains:** ☐ Present ☒ Absent ☐ Possible ☐ Unknown (Explain): _____

***A4. Features:** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.) See Item P3a on p. 1

***A5. Cultural Constituents:** (Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.) None

***A6. Were Specimens Collected?** ☐ No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)

***A7. Site Condition:** ☐ Good ☒ Fair ☐ Poor (Describe disturbances.): This horse racetrack has been weathered by the elements and been exposed to pedestrian traffic. It is completely covered by low grasses, as is the track's infield. A fence around the track is either missing or broken down.

***A8. Nearest Water** (Type, distance, and direction.): The San Jacinto Reservoir is the nearest water source, located to the north and approximately 160 feet away.

***A9. Elevation:** Approximately 1,504 feet above mean sea level

A10. Environmental Setting: (Describe culturally relevant variables such as vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc.): The site is located in the San Jacinto Valley. The soil consists of loamy sand, with the occasional pebble sized quartz. Vegetation in the area is mostly of the chaparral shrub community and includes buckwheat, Russian tumbleweeds, tree of heaven, hairy thorn apple, coyote brush, Thurber's sandpaper plant, aphanisma, salt grass, sunflower, prickly pear cactus, and other desert shrubs, along with eucalyptus, pine, palm, and cottonwood trees.

A11. Historical Information: Historical aerial images demonstrate that the horse racetrack was built between 1967 and 1972, along with a few structures that appear to include a stable and barn on the western side and two mobile homes along Lyon Avenue. The owner of the property at the time, William H. Cotter, secured installation permits for the mobile homes in that year. Shortly afterward James A. and Marjo P. Keen acquired the property and built a residence, barn, and a few outbuildings in the southeast portion of the property around 1976, but by 1983 it was owned by Toy Dee, who obtained permits for at least five horse barns, a low wall, an "agriculture building," a detached garage, and another trailer. Ranch features were added and removed over time, and eventually fell to disuse. A brief revival of the ranch occurred around 2018, but the property was mostly cleared by 2021.

***A12. Age:** ☐ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☐ 1880-1914 ☐ 1914-1945 ☒ Post 1945 ☐ Undetermined **Describe position in regional prehistoric chronology or factual historic dates if known:** _____

A13. Interpretations: (Discuss data potential, function[s], ethnic affiliation, and other interpretations) _____

A14. Remarks: The site does not appear to meet any of the criteria for listing in the National Register of Historic Places or the California Register of Historical Resources.

A15. References: (Documents, informants, maps, and other references.): Aerial images avaiailable at www.historicaerials.com; Riverside County building permits records for this property.

A16. Photographs: (List subjects, direction of view, and accession numbers or attach a Photograph Record.): _____
Original Media/Negatives Kept at: CRM TECH, Colton, California

***A17. Form Prepared by:** Ash Conner-Ayala **Date:** August 23, 2022
Affiliation and Address: CRM TECH, 1016 East Cooley Drive, Suite A/B, Colton, CA 92324

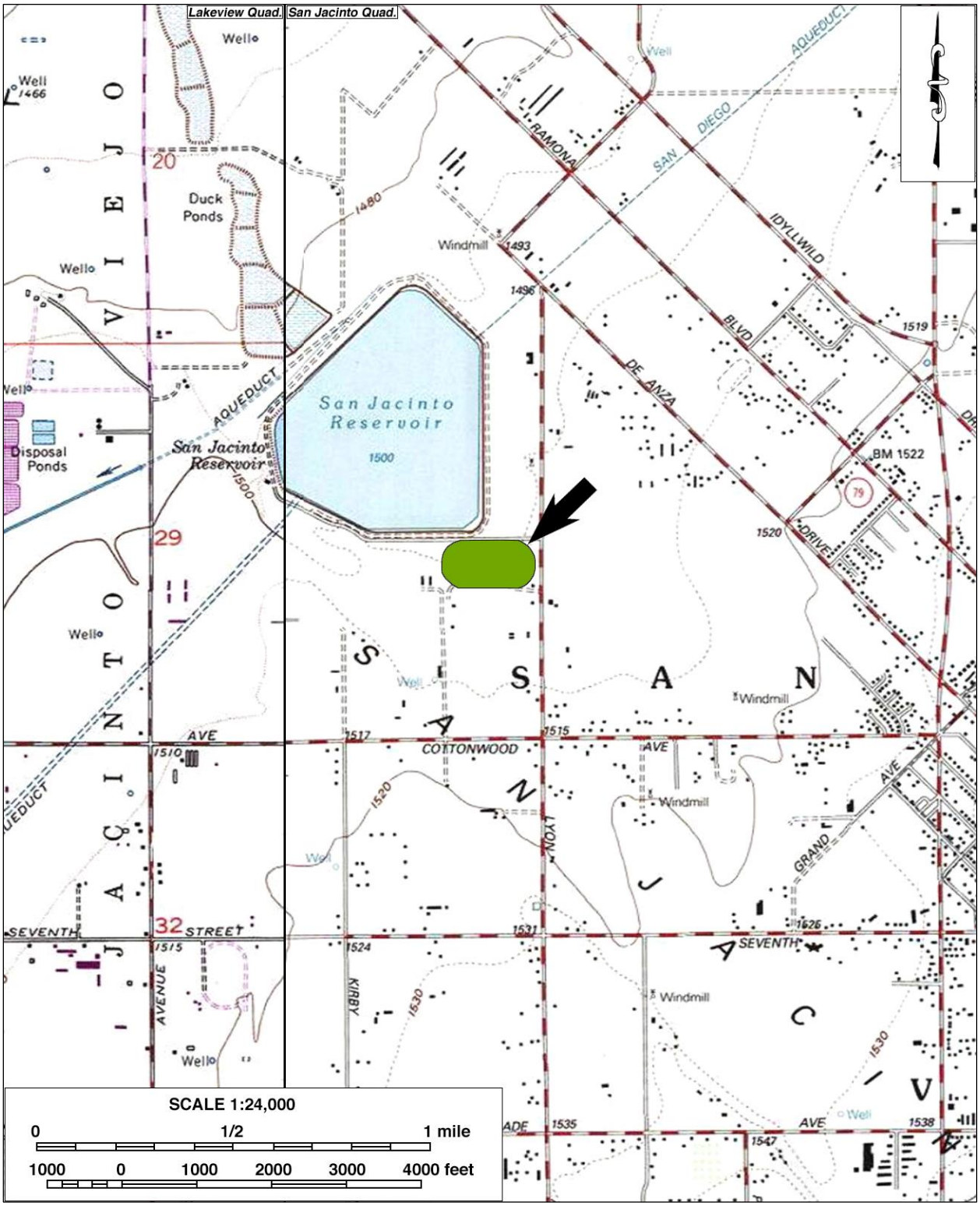
State of California--The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary # _____
HRI # _____
Trinomial _____

*Resource Name or # (Assigned by recorder) CRM TECH 3917-1H

*Map Name: San Jacinto, Calif. *Scale: 1:24,000 *Date of Map: 1993



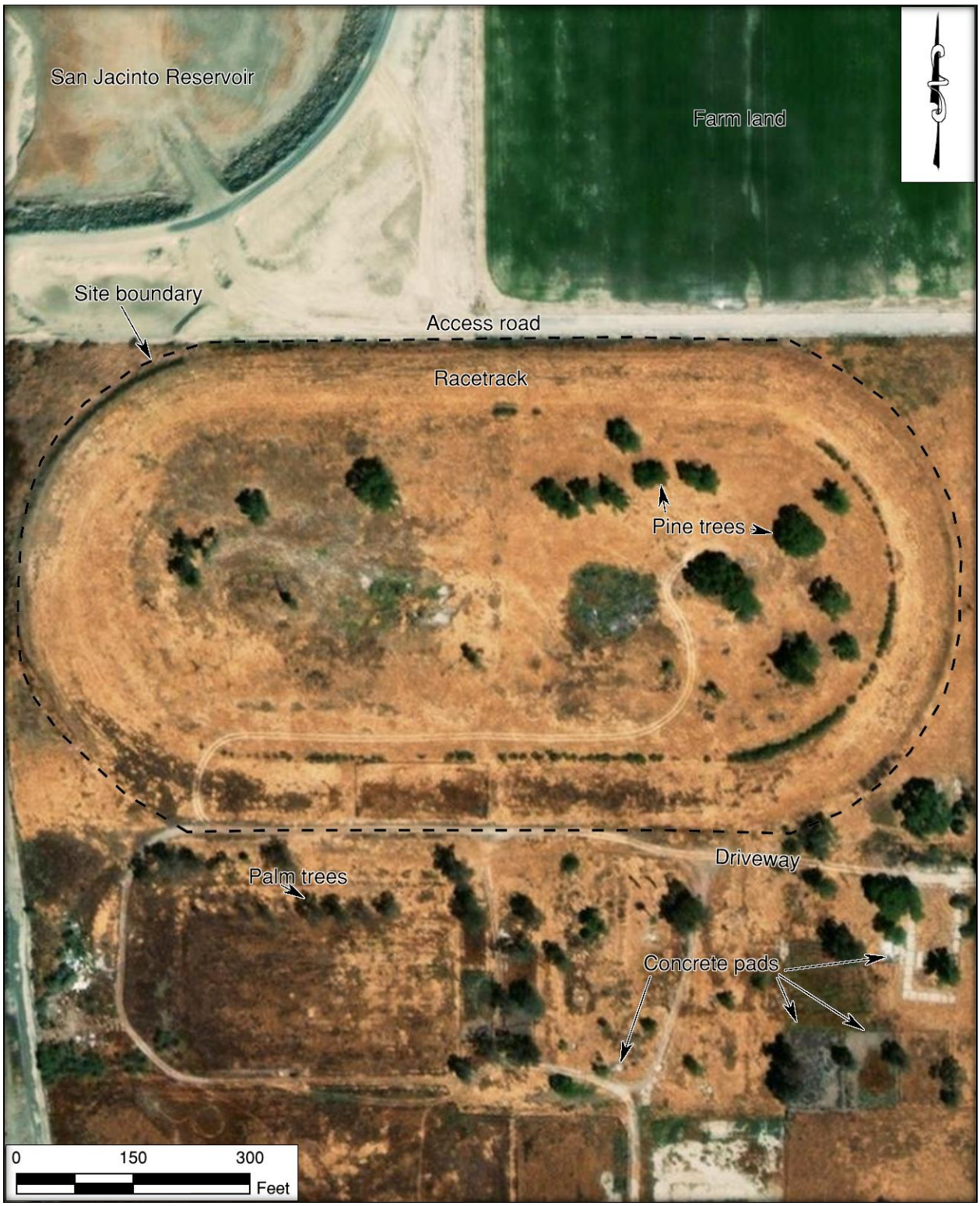
State of California--The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

SKETCH MAP

Primary #
HRI #
Trinomial

Page 4 of 4 *Resource Name or # (Assigned by recorder) CRM TECH 3917-1H

*Drawn by: Ash Conner-Ayala *Date of map: August 23, 2022



DPR 523K (Rev. 1/1995)(Word 9/2013) NOTE: Include bar scale and north arrow.

APPENDIX 4a

GEOTECHNICAL INVESTIGATION
PROPOSED RESIDENTIAL DEVELOPMENT
NWC LYON AVENUE & APPALOOSA DRIVE
TENTATIVE TRACT MAP 38468
APN 436-280-006 & 007
SAN JACINTO, CALIFORNIA

-Prepared By-

Sladden Engineering

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August 22, 2022

Project No. 644-22032
22-08-114

Mr. Jordan Bursch
Corman Leigh Companies
32823 Temecula Parkway
Temecula, California 92592

Subject: Geotechnical Investigation

Project: Proposed Residential Development
NWC Lyon Avenue & Appaloosa Drive
Tentative Tract Map 38468
APN 436-280-006 & 007
San Jacinto, California

Sladden Engineering is pleased to present the results of the geotechnical investigation performed for the residential development proposed for the property (APN 436-280-006 & 007) located on the northwest corner of Lyon Avenue and Appaloosa Drive in the City of San Jacinto, California. Our services were completed in accordance with our proposal for geotechnical engineering services dated April 6, 2022 and your authorization to proceed with the work. The purpose of our investigation was to explore the subsurface conditions at the site to provide recommendations for foundation design and for the design of the various site improvements. Evaluation of environmental issues and hazardous wastes was not included within the scope of services provided.

The opinions, recommendations and design criteria presented in this report are based on our field exploration program, laboratory testing and engineering analyses. Based on the results of our investigation, it is our professional opinion that the proposed project should be feasible from a geotechnical perspective provided that the recommendations presented in this report are implemented in design and carried out through construction.

We appreciate the opportunity to provide service to you on this project. If you have any questions regarding this report, please contact the undersigned.

Respectfully submitted,
SLADDEN ENGINEERING

Matthew J. Cohrt
Principal Geologist

CERTIFIED ENGINEERING GEOLOGIST
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GEOTECHNICAL INVESTIGATION
PROPOSED RESIDENTIAL DEVELOPMENT
NWC LYON AVENUE & APPALOOSA DRIVE
TENTATIVE TRACT MAP 38468
APN 436-280-006 & 007
SAN JACINTO, CALIFORNIA

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INTRODUCTION

This report presents the results of the geotechnical investigation performed for the new residential development proposed for the subject property (APN 436-280-006 & 007) located on the northwest corner of Lyon Avenue and Appaloosa Drive in the City of San Jacinto, California. The subject site is located at approximately 33.7923 degrees north latitude and 116.9914 degrees west longitude. The approximate location of the site is indicated on the Site Location Map (Figure 1).

Our investigation was conducted in order to evaluate the engineering properties of the subsurface materials, to evaluate their *in-situ* characteristics, and to provide engineering recommendations and design criteria for site preparation, foundation design and the design of various site improvements. This study also includes a review of published and unpublished geotechnical and geological literature regarding seismicity at and near the subject site.

PROJECT DESCRIPTION

It is our understanding that the proposed project will consist of constructing a new residential development on the subject site. Retention basins, open spaces, paved roadways, concrete flatwork and various other associated site improvements are also anticipated for the project. For our analyses, we expect that the proposed structures will consist of relatively light weight wood-frame structures supported on conventional shallow spread footings and concrete slabs-on-grade or post tensioned slabs.

Sladden expects that grading will be limited to minor cuts and fills in order to accomplish the desired elevations and to provide adequate gradients for site drainage. This does not include the removal and re-compaction of the loose surface soil and primary foundation bearing soil within the proposed building pad areas. Upon completion of precise grading plans, Sladden should be retained in order to verify that the recommendations presented within in this report are properly incorporated into the design of the proposed project.

Structural foundation loads were not available at the time of this report. Based on our experience with relatively lightweight structures, we expect that isolated column loads will be less than 20 kips and continuous wall loads will be less than 2.0 kips per linear foot. If these assumed loads vary significantly from the actual loads, we should be consulted to verify the applicability of the recommendations provided.

SCOPE OF SERVICES

The purpose of our investigation was to determine specific engineering characteristics of the surface and near surface soil in order to develop foundation design criteria and recommendations for site preparation. Exploration of the site was achieved by advancing four (4) exploratory boreholes to depths ranging from approximately 21 and 51 feet below the existing ground surface (bgs). Specifically, our site characterization consisted of the following tasks:

- Site reconnaissance to assess the existing surface conditions on and adjacent to the site.
- Advancing four (4) exploratory boreholes to depths ranging from approximately 21 and 51 feet bgs in order to characterize the subsurface soil conditions. Representative samples of the soil were classified in the field and retained for laboratory testing and engineering analyses.
- Performing laboratory testing on selected samples to evaluate their engineering characteristics.
- Reviewing geologic literature and discussing geologic hazards.
- Reviewing previous geotechnical and geologic reports conducted for the subject property.
- Performing site-specific ground motion analyses for the subject property.
- Performing engineering analyses to develop recommendations for foundation design and site preparation.
- The preparation of this report summarizing our work at the site.

SITE CONDITIONS

The project site is located on the northwest corner of Lyon Avenue and Appaloosa Drive in the City of San Jacinto, California. The site consists of two parcels that are formally identified by the County of Riverside as APN 436-280-006 & 436-280-007. The parcels occupy a combined area of approximately 42.18 acres. At the time of our investigation, the property was undeveloped and covered in scattered vegetation, refuse piles and foundation elements. It is our understanding that the southern portion of the property was previously utilized for agricultural purposes and the northern portion of the site was used for equestrian purposes (Hideaway Farms horse ranch). The site is bounded by San Jacinto Reservoir to the north, a residential development to the south, Lyon Avenue to the east and a stormwater conveyance channel to the immediate west.

Based on our review of the San Jacinto 7.5-Minute Quadrangle Map (USGS, 2015) and Google Earth (2022), the site is situated at an approximate elevation of 1,500 feet above mean sea level (MSL).

No natural ponding of water or surface seeps were observed at or near the site during our field investigation conducted on June 13, 2022. Site drainage appears to be controlled via sheet flow and surface infiltration.

GEOLOGIC SETTING

The project site is located in the Peninsular Ranges Physiographic Province of California. The Peninsular Ranges are mountainous areas that extend from the western edge of the continental borderland to the Salton Trough and from the Transverse Ranges Physiographic Province in the north to the tip of Baja California in the south. The Peninsular Ranges Physiographic Province is characterized by northwest-trending topographic and structural features that locally include the San Jacinto Structural Block. The San Jacinto Structural Block is a northwest-southeast trending elongated structural block bounded on the southwest by the San Jacinto Fault and by the San Andreas Fault Zone to the northeast. The province is characterized by elongated, northwest-southeast trending mountain ranges and valleys and is truncated at its northern margin by the east-west grain of the Transverse Ranges. Mountainous areas of the Peninsular Ranges Physiographic Province generally consist of Igneous, metasedimentary and metavolcanic rocks. However, plutonic rocks of the Southern California Batholith are the dominant basement rock exposed.

The site has been mapped by Dibblee (2003) to be immediately underlain by Quaternary-age alluvium (Qa). The geologic setting for the site and site vicinity is illustrated on the Regional Geologic Map (Figure 2).

SUBSURFACE CONDITIONS

The subsurface conditions at the site were investigated by four (4) exploratory boreholes to depths ranging from approximately 21 and 51 feet bgs. The approximate locations of the boreholes are illustrated on the Exploration Location Photograph (Figure 3). The boreholes were advanced using a truck-mounted Mobile B-61 drill-rig equipped with 8-inch outside diameter hollow stem augers. A representative of Sladden was on-site to log the materials encountered and retrieve samples for laboratory testing and engineering analysis.

During our field investigation, a thin mantle of artificial fill/disturbed soil was encountered to a depth of approximately two (2) to three (3) feet below the existing ground surface. Underlying the fill soil and extending to the maximum depths explored, native alluvium was encountered. The site soil consists primarily of sand (SW/SP), silty sand (SM) near the surface and sandy clay (CL) and sandy silt (ML) at depth. Generally, the native granular materials appeared grayish brown to olive brown, dry to moist, loose to very dense and fine-to-coarse grained. Cohesive layers appeared grayish brown to olive brown, slightly moist to moist, medium stiff to hard and exhibited characteristics indicative of low plasticity soil.

The final logs represent our interpretation of the contents of the field logs, and the results of the laboratory observations and tests of the field samples. The final logs are included in Appendix A of this report. The stratification lines represent the approximate boundaries between soil types although the transitions may be gradual and variable across the site.

Groundwater was not encountered within our exploratory bore or test holes that extended to a maximum explored depth of approximately 51 feet bgs. Information regarding the approximate depth to groundwater provided by the California Department of Water Resources (CDWR, 2022) online database suggests that the depth to groundwater should be in excess of 50 feet below the existing ground surface in the vicinity of the site. The following table provides a summary of the recorded groundwater depths in the project vicinity.

TABLE 1
GROUNDWATER DEPTHS

STATE WELL (SITE CODE)	LAT/LONG	DISTANCE (KM)	DATE	DEPTH (FT)
04S01W28G001S	33.7975/-116.9898	0.55	02/21/1992	80.4
04S01W28N003S	33.7878/-116.987	0.70	12/24/1991	169.9
04S01W32H004S	33.7828/-116.9993	1.30	03/07/1991	184.9
(338002N1170122W001)	33.8002/-117.0121	2.10	04/01/2014	161.9
(337963N1170066W001)	33.7963/-117.0066	1.45	03/24/2014	162.1
(338048N1170093W001)	33.8047/-117.0092	2.10	12/10/2012	291.6
(338082N1169983W001)	33.8081/-116.9983	1.80	04/21/2021	178.3
(338056N1169869W001)	33.8055/-116.9869	1.50	03/28/2017	236.39

SEISMICITY AND FAULTING

The southwestern United States is a tectonically active and structurally complex region, dominated by northwest trending dextral faults. The faults of the region are often part of complex fault systems, composed of numerous subparallel faults which splay or step from main fault traces. Strong seismic shaking could be produced by any of these faults during the design life of the proposed project.

We consider the most significant geologic hazard to the project to be the potential for moderate to strong seismic shaking that is likely to occur during the design life of the project. The proposed project is located in the highly seismic Southern California region within the influence of several fault systems that are considered to be active or potentially active. An active fault is defined by the State of California as a "sufficiently active and well defined fault" that has exhibited surface displacement within the Holocene epoch (about the last 11,000 years). A potentially active fault is defined by the State as a fault with a history of movement within Pleistocene time (between 11,000 and 1.6 million years ago).

The subject site is located within a State of California Delineated fault zone (Figure 4). Table 2 lists the closest known active faults that was generated in part using the EQFAULT computer program (Blake, 2000), as modified using the fault parameters from The Revised 2002 California Probabilistic Seismic Hazard Maps (Cao et al, 2003), Southern Earthquake Data Center (SCEDC, 2022), Riverside County (RCMMC, 2022), and the Quaternary Fault and Fold Database of the United States (USGS, 2022). This table does not identify the probability of reactivation or the on-site effects from earthquakes occurring on any of the other faults in the region.

TABLE 2
CLOSEST KNOWN ACTIVE FAULTS

Fault Name	Distance (Km)	Maximum Event
San Jacinto – San Jacinto Valley (Casa Loma Fault)	0.0	7.38
San Jacinto – Anza	9.0	7.2
San Andreas – Southern	26.6	7.2
San Andreas – San Bernardino	26.6	7.5
Elsinore – Temecula	34.8	6.8

BACKGROUND INFORMATION RELATIVE TO THE ALQUIST-PRIOLO ACT

The objective of the Alquist-Priolo Act (Act) is to regulate development near active faults so as to mitigate the hazard of surface fault rupture (CGS, 2018). Current law prohibits construction of habitable structures across active fault traces. Therefore, the evaluation of the potential ground rupture hazard to establish building setbacks is required by reviewing agencies. In addition, the Act mandates that structures intended for human occupancy of over 2,000 person hours per year not be built over known active faults. An active fault is defined by the California Geological Survey as a sufficiently active and well-defined fault that exhibits surface displacement within the Holocene Epoch (approximately the last 11,000 years). In areas of known or suspected active or potentially active faults, and prior to site development, the actual location of an active fault(s) needs to be ascertained, such that appropriate setbacks from the fault(s) can be determined and Restricted Use Zones (RUZs) or no building areas established. Not only is it important to identify the fault location, it is equally important to verify areas where no faults exist.

In order to evaluate on-site fault hazards, subsurface exploration by excavation of trenches is performed to expose the soil and rock profiles and to allow for the direct observation of existing shallow/near-surface faults. Trenches are oriented generally perpendicular to the regional fault trends and are logged in detail by Geologists experienced in fault rupture hazard studies. Trench depths are controlled by the age of the surficial sediments or rocks exposed within the trench. In general, it is desirable to have exposed soil profiles spanning at least the last 11,000 years, or Holocene Epoch. Soil profiles with Holocene and older profiles can then allow for the determination of the relative age of the encountered fault. If the fault disrupts Holocene sediments, then the fault is determined active and building setbacks are established accordingly.

Conversely, if the fault is buried by pre-Holocene sediments or rock, then the fault can be deemed inactive or potentially active, with construction of non-critical structures allowed over or immediately adjacent to the fault. In many cases, the sediments exposed may only cover a portion of the Holocene, such that judgment and risk assessments are professed relative to the age of the faults and suitability of the site for development. The success of the risk assessments is dependent upon the quality of the data collected, local agency requirements, and the experience of the Professional Geologists performing the work.

Building setback distances from the fault, generally mandated by the Act to be approximately 50 feet, are dependent upon the confidence or degree of accuracy of the fault location across the site: the higher the degree of confidence, the lesser the setback requirements. The size of the property, number of faults, number of exploration trenches defining the fault location(s), survey quality, and local regulatory agency requirements, affect the setback distance requirements.

The Alquist-Priolo Site Investigation Reports (AP 3352) for subject property were acquired for our review from the California Geological Survey (CGS) and the County of Riverside and are included within Appendix E of this report. Based on our review AP 3352, a 575-foot-long exploratory fault trench was previously excavated on the subject property by Geocon (2005) to a depth of up to 22 feet below existing grade. The fault investigation identified three fault ruptures and established a fault zone between field stations 325 to 395. The main rupture within the fault zone was identified as field station 344. The main fault rupture was surveyed and structural setbacks zones were established. The setbacks in Geocon (2005) were defined as:

"... the surveyed location of the main fault at station 344 should be used as a point of reference to establish the exact location of the structural setbacks. Measuring from that point one set back is located 70 feet to the southwest (20 feet for the fault zone and 50 feet for the structural setback) and, the other setback is 95 feet to the northeast (45 feet for the fault zone and 50 feet for the structural setback)."

SITE SPECIFIC GROUND MOTION PARAMETERS

Sladden has reviewed the 2019 California Building Code (CBC) and ASCE7-16 and developed site specific ground motion parameters for the subject site. The project Seismic Design Maps and site-specific ground motion parameters are summarized in the following table and included within Appendix C. The project Structural Engineer should verify that all design parameters provided are applicable for the subject project.

TABLE 2
GROUND MOTION PARAMETERS

Latitude / Longitude	33.7923/-116.9914
Risk Category	II
Site Class	D
Code Reference Documents	ASCE 7-16; Chapter 11 & 21

Description	Type	Map Based	Site-Specific
MCE$_R$ Ground Motion (0.2 second period)	S_S	2.192	---
MCE$_R$ Ground Motion (1.0 second period)	S_1	0.891	---
Site-Modified Spectral Acceleration Value	S_{MS}	2.192	**2.432**
Site-Modified Spectral Acceleration Value	S_{M1}	null	**2.577**
Numeric Seismic Design Value at 0.2 second SA	S_{DS}	1.461	**1.621**
Numeric Seismic Design Value at 1.0 second SA	S_{D1}	null	**1.718**
Site Amplification Factor at 0.2 second	F_a	1	**1**
Site Amplification Factor at 1.0 second	F_v	null	**2.5**
Site Peak Ground Acceleration	PGA$_M$	1.094	**0.961**

GEOLOGIC HAZARDS

The subject site is located in an active seismic zone and will likely experience strong seismic shaking during the design life of the proposed project. In general, the intensity of ground shaking will depend on several factors including: the distance to the earthquake focus, the earthquake magnitude, the response characteristics of the underlying materials, and the quality and type of construction. Geologic hazards and their relationship to the site are discussed below.

I. Surface Rupture. Surface rupture is expected to occur along preexisting, known active fault traces. However, surface rupture could potentially splay or step from known active faults or rupture along unidentified traces. Based on our research, the site is transected by the San Jacinto – San Jacinto Valley (Casa Loma Fault). Previous investigations identified the fault and established structural setback zones. In accordance with current guidelines, structures intended for habitable use should not be constructed within the established structural setback zone.

II. Ground Shaking. The site has been subjected to past ground shaking by faults that traverse the region. Strong seismic shaking from nearby active faults is expected to produce strong seismic shaking during the design life of the proposed project. Based on site-specific ground motion parameters developed for the property (Appendix C), the site modified peak ground acceleration (PGAm) is estimated to be 0.961g.

III. Liquefaction/Seismic Settlement. Liquefaction is the process in which loose, saturated granular soil loses strength as a result of cyclic loading. The strength loss is a result of a decrease in granular sand volume and a positive increase in pore pressures. Generally, liquefaction can occur if all of the following conditions apply; liquefaction-susceptible soil, groundwater within a depth of 50 feet or less, and strong seismic shaking. The site is located within a "moderate" liquefaction potential zone (RCMMC, 2022). Based on the depth to groundwater within the site vicinity the risks associated with liquefaction are considered "low".

We have performed seismic settlement calculations (dry sand) utilizing a magnitude of 7.38 (BSSC, 2014)) and peak ground acceleration of 0.961g. Aanticipated high groundwater depths were determined to be greater than 50 feet bgs (CDWR, 2022). The seismic settlement calculations are included within Appendix D. Calculations indicate potential total seismic settlements of up to 2.52 inches. Based on the similarity between bores, we expect that differential settlement should be less than 1.25 inches over a horizontal distance of approximately 200 feet.

IV. Tsunamis and Seiches. The San Jacinto Reservoir is located to the immediate north of the project site. Generally, the reservoir is utilized for stormwater control following periods of heavy rainfall. Based on the proximity to the site, risks associated seiches should evaluated by the design Civil Engineer.

V. Slope Failure, Landsliding, Rock Falls. The site is located on relatively flat ground and not immediately adjacent to any slopes or hillsides. Therefore, it is our professional opinion that risks associated with slope instability should be considered "negligible".

VI. Expansive Soil. Generally, the near surface soil consists of silty sand (SM) and sand (SP/SW). Based on the results of our laboratory testing (EI = 0), the materials underlying the site are considered to have a "very low" expansion potential. The expansion potential of the surface soil should be reevaluated after grading.

VII. Static Settlement. Static settlement resulting from the anticipated foundation loads should be tolerable provided that the recommendations included in this report are considered in foundation design and construction. The ultimate static settlement is expected to be less than 1 inch when using the recommended allowable bearing pressures. As a practical matter, differential static settlement between footings can be assumed as one-half of the total settlement.

VIII. Subsidence. Land subsidence can occur in valleys where aquifer systems have been subjected to extensive groundwater pumping, such that groundwater pumping exceeds groundwater recharge. Generally, pore water reduction can result in a rearrangement of skeletal grains and could result in elastic (recoverable) or inelastic (unrecoverable) deformation of an aquifer system.

Documented land subsidence of the San Jacinto basin has been attributed to aquifer-system compaction related to groundwater withdrawal. The subsidence has been estimated to be on the order of 2.5 – 3 cm/yr. Earth fissuring presumable related to groundwater withdrawal has been evident since the early 1950's. (Morton, 1994). According, risks associated with subsidence and earth fissuring should be considered "high".

IX. Debris Flows. Debris flows are viscous flows consisting of poorly sorted mixtures of sediment and water and are generally initiated on slopes steeper than approximately six horizontal to one vertical (6H:1V)(Boggs, 2001). Based on the flat nature of the site and the composition of the surface soil, we judge that risks associated with debris flows should be considered remote.

X. Flooding and Erosion. No signs of flooding or erosion were observed during our field investigation. However, risks associated with flooding and erosion should be evaluated and mitigated by the project design Civil Engineer.

CONCLUSIONS

Based on the results of our investigation, it is our professional opinion that the project should be feasible from a geotechnical perspective provided that the recommendations included in this report are incorporated into design and carried out through construction. The main geotechnical concerns are the presence of the San Jacinto – San Jacinto Valley (Casa Loma Fault) transecting the site, undocumented fill in previously backfilled exploratory trenches and the potential for seismic settlements impacting the site.

As previously stated, the site is located within a State of California delineated fault zone. Structural setbacks were established and approved by the County of Riverside based on the Geocon (2005) investigation. **Project planners should ensure that structures intended for habitable use are not constructed with the approved structural setback zone.**

Based on our review of the AP 3352 documents, it is our understanding that the trench excavated as part of the Geocon (2005) investigation was not backfilled as compacted engineered fill. In accordance with the County of Riverside Conditions of Approval, the trench should be re-excavated during grading and replaced as engineered fill.

Seismic settlement calculations indicate potential total seismic settlements of up to 2.52 inches. Based on the similarity between bores, we expect that differential settlement should be less than 1.25 inches over a horizontal distance of approximately 200 feet.

We recommend remedial grading work within the proposed new building areas including over-excavation and re-compaction of the artificial fill soil and the primary foundation bearing soil. Specific recommendations for foundation area preparation are presented in the Earthwork and Grading section of this report.

Caving did occur to varying degrees within each of our exploratory bores and the surface soil may be susceptible to caving within deeper excavations. All excavations should be constructed in accordance with the normal CalOSHA excavation criteria. Based on our observations of the materials encountered, we anticipate that the subsoil will conform to that described by CalOSHA as Type C. Soil conditions should be verified in the field by a "Competent person" employed by the Contractor.

The following recommendations present more detailed design criteria that have been developed based on our field and laboratory investigation.

EARTHWORK AND GRADING

All earthwork including excavation, backfill and preparation of the primary foundation and/or slab bearing soil should be performed in accordance with the geotechnical recommendations presented in this report and portions of the local regulatory requirements, as applicable. All earthwork should be performed under the observation and testing of a qualified geotechnical consultant. The following geotechnical engineering recommendations for the proposed project are based on observations from the field investigation program, laboratory testing and geotechnical engineering analyses.

a. Site Clearing. Areas to be graded should be cleared of any existing vegetation and associated root systems, manure and/or organic matter, foundation elements, utilities, and debris. All areas scheduled to receive fill should be cleared of old fills and any irreducible matter. The unsuitable material should be removed off site. Voids left by obstructions should be properly backfilled in accordance with the compaction recommendations of this report.

b. Preparation of Building Areas: In order to provide firm and uniform foundation bearing conditions and mitigate differential seismic settlement, we recommend over-excavation and re-compaction throughout the proposed new building areas. All low density near surface soil should be removed to a depth of at least 8 feet below existing grade or 7 feet below the bottom of the footings, whichever is deeper. Remedial grading should extend laterally a minimum of five feet beyond the building perimeters. The native soil exposed by over-excavation should be scarified, moisture conditioned to near optimum moisture content and compacted to at least 90 percent relative compaction prior to fill placement. The previously removed soil may then be replaced as engineered fill as recommended below.

c. Compaction: Soil to be used as engineered fill should be free of organic material, debris, and other deleterious substances, and should not contain irreducible matter greater than three inches in maximum dimension. All fill materials should be placed in thin lifts, not exceeding six inches in a loose condition. If import fill is required, the material should be of a non-expansive nature and should meet the following criteria:

Plastic Index	Less than 12
Liquid Limit	Less than 35
Percent Soil Passing #200 Sieve	Between 15% and 35%
Maximum Aggregate Size	3 inches

The subgrade and all fill soil should be compacted with acceptable compaction equipment, to at least 90 percent relative compaction. The bottom of the exposed subgrade should be observed by a representative of Sladden Engineering prior to fill placement. Compaction testing should be performed on all lifts in order to ensure proper placement of the fill materials. Table 3 provides a summary of the excavation and compaction recommendations.

TABLE 3
SUMMARY OF RECOMMENDATIONS

*Remedial Grading	Over-excavation and re-compaction within the building envelopes and extending laterally 5 feet beyond the building limits and to a minimum depth of 8 feet below existing grade or 3 feet below the bottom of the footings, whichever is deeper.
Native / Import Engineered Fill	Place in thin lifts not exceeding 6 inches in a loose condition, at near optimum moisture content and compact to a minimum of 90 percent relative compaction.
Asphalt Concrete Sections	Compact the top 12 inches to at least 95 percent compaction at near optimum moisture content.

*Actual depth may vary and should be determined by a representative of Sladden Engineering in the field during construction.

d. Shrinkage and Subsidence: Volumetric shrinkage of the material that is excavated and replaced as controlled compacted fill should be anticipated. We estimate that this shrinkage should be between 10 and 15 percent. Subsidence of the surfaces that are scarified and compacted should be between 1 tenth and 2 tenths of a foot. This will vary depending upon the type of equipment used, the moisture content of the soil at the time of grading and the actual degree of compaction attained.

CONVENTIONAL SHALLOW SPREAD FOOTINGS

Conventional shallow spread footings may be utilized if the estimated differential seismic settlements of 1.25 inches over a horizontal distance of 200 feet can be adequately addressed in design. All footings should be founded upon properly compacted engineered fill soil and should have a minimum embedment depth of 12 inches measured from the lowest adjacent finished grade. Continuous and isolated footings should have minimum widths of 12 inches and 24 inches, respectively. Continuous and isolated footings supported upon properly compacted engineered fill soil may be designed using allowable (net) bearing pressures of 1800 and 2000 pounds per square foot (psf), respectively. Allowable increases of 200 psf for each additional 1 foot of width and 250 psf for each additional 6 inches of depth may be used if desired. The maximum allowable bearing pressure should be 2500 psf. The allowable bearing pressures apply to combined dead and sustained live loads. The allowable bearing pressures may be increased by one-third when considering transient live loads, including seismic and wind forces.

Based on the recommended allowable bearing pressures, the total static settlement of the shallow spread footings is anticipated to be less than one-inch provided foundation area preparation conforms to the recommendations included in this report. Static differential settlement is anticipated to be approximately one-half of the total static settlement for similarly loaded footings spaced up to approximately 40 feet apart.

Lateral load resistance for the shallow spread footings will be developed by passive pressure against the sides of the footings below grade and by friction acting at the base of the footings. An allowable passive pressure of 250 psf per foot of depth may be used for design purposes. An allowable coefficient of friction 0.40 may be used for dead and sustained live loads to compute the frictional resistance of the footing placed directly on compacted fill. Under seismic and wind loading conditions, the passive pressure and frictional resistance may be increased by one-third.

All footing excavations should be observed by a representative of the project geotechnical consultant to verify adequate embedment depths prior to placement of forms, steel reinforcement or concrete. The excavations should be trimmed neat, level and square. All loose, disturbed, sloughed or moisture-softened soils and/or any construction debris should be removed prior to concrete placement. Excavated soil generated from footing and/or utility trenches should not be stockpiled within the building envelope or in areas of exterior concrete flatwork. All footings should be reinforced in accordance with the project Structural Engineer's recommendations.

POST-TENSIONED SLABS

Post-tensioned slabs may be used for the proposed structures in order to mitigate potential seismic related differential settlements. We have evaluated the on-site soil for construction of post-tensioned foundation systems in general accordance with design specifications of the Post Tensioning Institute. Post-tensioned slabs should be designed to be rigid and capable of spanning areas of non-uniform support and meet the following criteria:

1. Bearing Capacity = 1500 psf
2. Potential Liquefaction Induced Differential Settlement = 1.25 inches (over a horizontal distance of 100 feet)
3. Coefficient of Friction = 0.40

SLABS-ON-GRADE

In order to provide uniform and adequate support, concrete slabs-on-grade must be placed on properly compacted engineered fill soil as outlined in the previous sections of this report. The slab subgrade should remain near optimum moisture content and should not be permitted to dry prior to concrete placement. Slab subgrade should be firm and unyielding. Disturbed soil should be removed and replaced with engineered fill soil compacted to a minimum of 90 percent relative compaction.

Slab thickness and reinforcement should be determined by the Structural Engineer. We recommend a minimum slab thickness of 4.0 inches and minimum reinforcement of #3 bars at 18 inches on center in both directions. All slab reinforcement should be supported on concrete chairs to ensure that reinforcement is placed at slab mid-height. Final floor slab design and reinforcement should be determined by the Structural Engineer based upon post-grading expansion index test results.

Slabs with moisture sensitive surfaces should be underlain with a moisture vapor retarder consisting of a polyvinyl chloride membrane such as 10-mil visqueen, or equivalent. All laps within the membrane should be sealed and at least 2 inches of clean sand should be placed over the membrane to promote uniform curing of the concrete. To reduce the potential for punctures, the membrane should be placed on a pad surface that has been graded smooth without any sharp protrusions. If a smooth surface can not be achieved by grading, consideration should be given to placing a 1-inch thick leveling course of sand across the pad surface prior to placement of the membrane.

RETAINING WALLS

Minor retaining walls may be required to accomplish the proposed construction. Cantilever retaining walls may be designed using "active" pressures. Active pressures may be estimated using an equivalent fluid weight of 35 pcf for level native backfill soil acting in a triangular pressure distribution with drained backfill conditions. "At Rest" pressures should be utilized for restrained walls. "At rest" pressures may be estimated using an equivalent fluid weight of 55 pcf for native backfill soil with level drained backfill conditions.

CORROSION SERIES

The soluble sulfate concentrations of the surface soil were determined to be 20 parts per million (ppm) The soil is considered to have a "negligible" corrosion potential with respect to concrete. The use of Type V cement and special sulfate resistant concrete mixes should not be necessary. The soluble sulfate content of the surface soil should be reevaluated after grading and appropriate concrete mix designs should be established based upon post-grading test results.

The pH levels of the surface soil was 9.2. Based on soluble chloride concentration testing (50 ppm) the soil is considered to have a "negligible" corrosion potential with respect to normal grade steel. The minimum resistivity of the surface soil was found to be 9,000 ohm-cm, that suggests the site soil is considered to have a "low" corrosion potential with respect to ferrous metal installations.

UTILITY TRENCH BACKFILL

All utility trench backfill should be compacted to a minimum of 90 percent relative compaction. Trench backfill materials should be placed in lifts no greater than six inches in a loose condition, moisture conditioned (or air-dried) as necessary to achieve near optimum moisture content, and mechanically compacted to a minimum of 90 percent relative compaction. A representative of the project soil engineer should test the backfill to verify adequate compaction.

EXTERIOR CONCRETE FLATWORK

In order to provide uniform support and minimize settlement related cracking of concrete flatwork, the subgrade soil within concrete flatwork areas should be compacted to a minimum of 90 percent relative compaction. A representative of the project geotechnical consultant should observe and verify the density and moisture content of the soil prior to concrete placement.

DRAINAGE

All final grades should be provided with positive gradients away from foundations to provide rapid removal of surface water runoff to an adequate discharge point. No water should be allowed to be pond on or immediately adjacent to foundation elements. In order to reduce water infiltration into the subgrade soil, surface water should be directed away from building foundations to an adequate discharge point. Subgrade drainage should be evaluated upon completion of the precise grading plans and in the field during grading.

LIMITATIONS

The findings and recommendations presented in this report are based upon an interpolation of the soil conditions between the exploratory bore locations and extrapolation of these conditions throughout the proposed building areas. Should conditions encountered during grading appear different than those indicated in this report, this office should be notified.

The use of this report by other parties or for other projects is not authorized. The recommendations of this report are contingent upon monitoring of the grading operation by a representative of Sladden Engineering. All recommendations are considered to be tentative pending our review of the grading operation and additional testing, if indicated. If others are employed to perform any soil testing, this office should be notified prior to such testing in order to coordinate any required site visits by our representative and to assure indemnification of Sladden Engineering.

We recommend that a pre-job conference be held on the site prior to the initiation of site grading. The purpose of this meeting will be to ensure a complete understanding of the recommendations presented in this report as they apply to the actual grading performed.

ADDITIONAL SERVICES

Once completed, final project plans and specifications should be reviewed by use prior to construction to confirm that the full intent of the recommendations presented herein have been applied to design and construction. Following review of plans and specifications, observation should be performed by the Soil Engineer during construction to document that foundation elements are founded on/or extend into the properly compacted soil, and that suitable backfill soil is placed upon competent materials and properly compacted at the recommended moisture content.

Tests and observations should be performed during grading by the Soil Engineer or his representative in order to verify that the grading is being performed in accordance with the project specifications. Field density testing shall be performed in accordance with acceptable ASTM test methods. The minimum acceptable degree of compaction should be 90 percent for engineered fill soil and 95 percent for Class II aggregate base as obtained by ASTM Test Method D1557. Where testing indicates insufficient density, additional compactive effort shall be applied until retesting indicates satisfactory compaction.

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FIGURES

SITE LOCATION MAP
REGIONAL GEOLOGIC MAP
EXPLORATION LOCATION PLAN
FAULT ZONE MAP

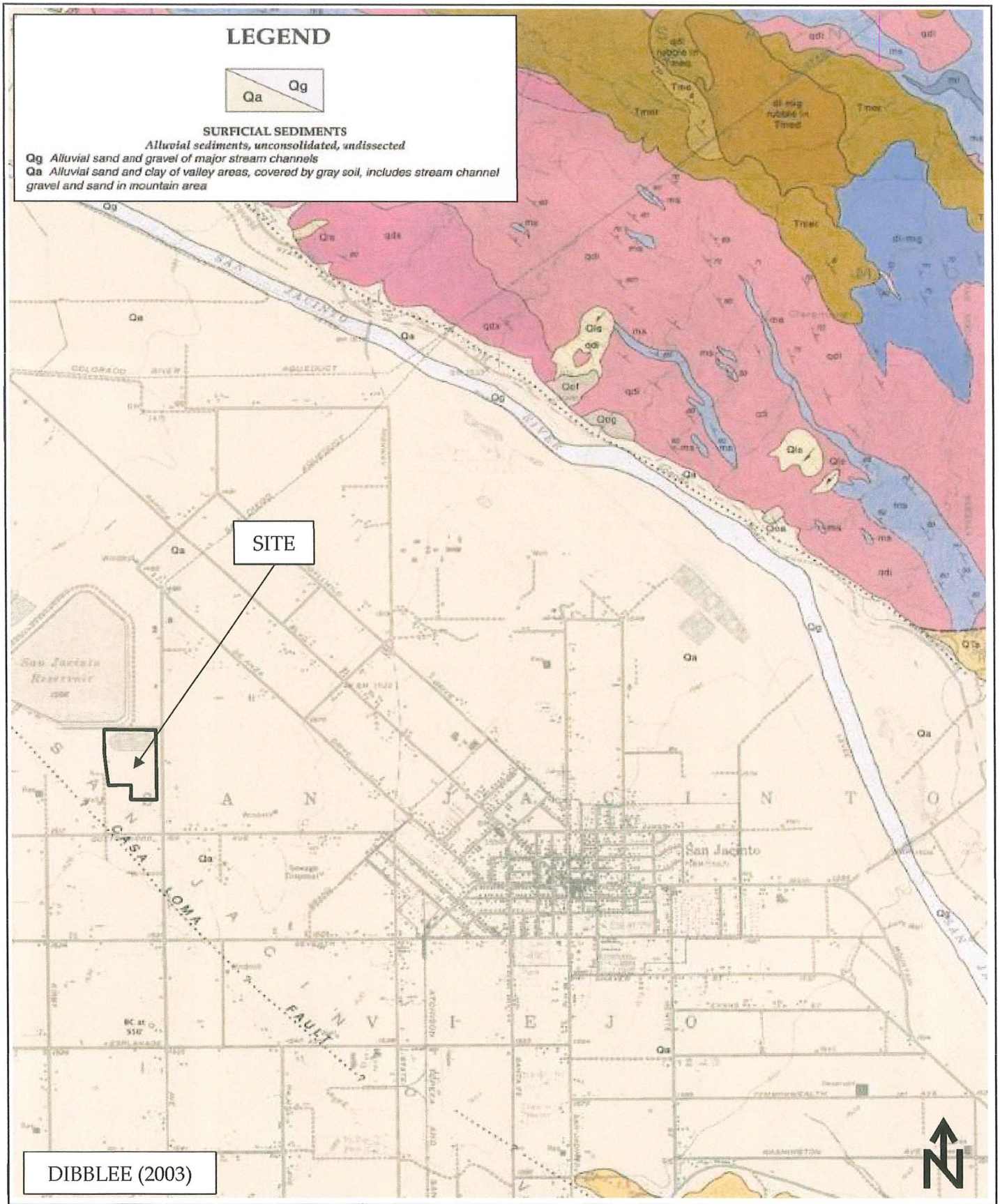


SITE LOCATION MAP

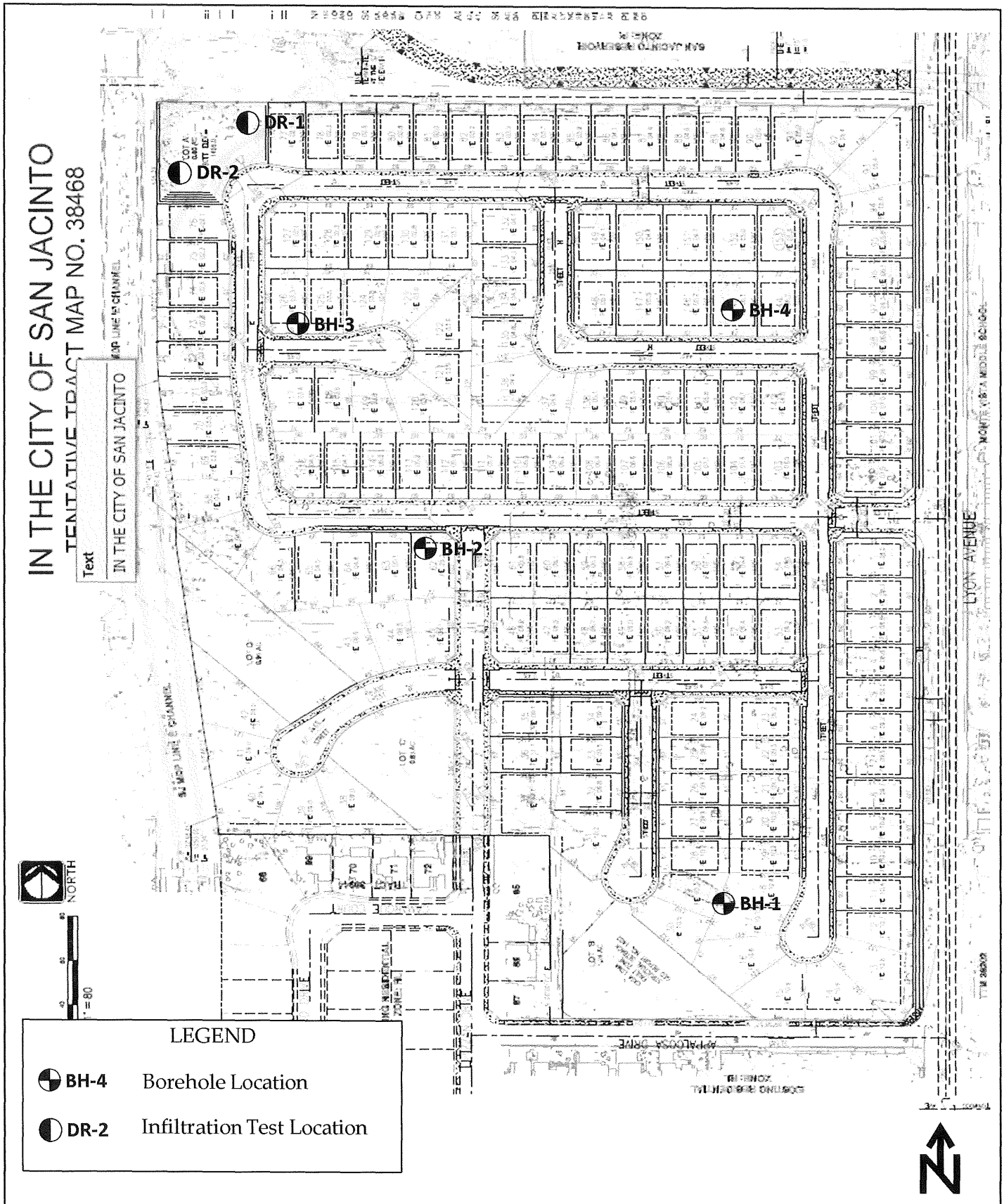
FIGURE 1

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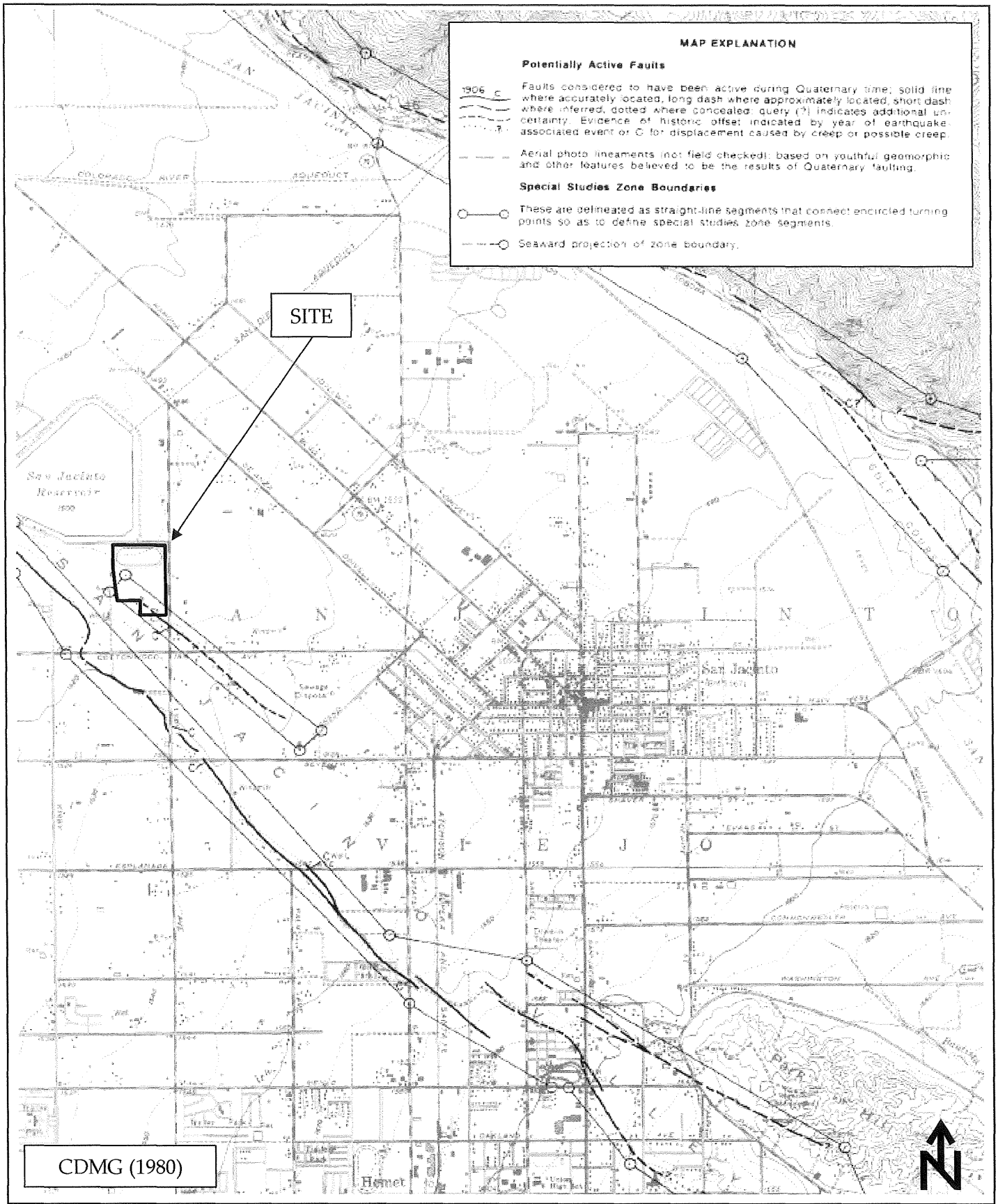
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Sladden Engineering	REGIONAL GEOLOGIC MAP	FIGURE 2
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	Date: August 22, 2022	



Sladden Engineering	EXPLORATION LOCATION PLAN	FIGURE 3
	Project Number: 644-22032	
	Report Number: 22-08-114	
	Date: August 22, 2022	



Sladden Engineering	FAULT ZONE MAP	FIGURE 4
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	Date:	August 22, 2022

APPENDIX A

FIELD EXPLORATION

APPENDIX A

FIELD EXPLORATION

For our field investigation four (4) exploratory boreholes were excavated June 13, 2022 utilizing a truck mounted hollow stem auger rig (Mobile B-61). Continuous logs of the materials encountered were made by a representative of Sladden Engineering. Materials encountered in the boreholes were classified in accordance with the Unified Soil Classification System which is presented in this appendix.

Representative undisturbed samples were obtained within our borings by driving a thin-walled steel penetration sampler (California split spoon sampler) or a Standard Penetration Test (SPT) sampler with a 140 pound automatic-trip hammer dropping approximately 30 inches (ASTM D1586). The number of blows required to drive the samplers 18 inches was recorded in 6-inch increments and blowcounts are indicated on the boring logs.

The California samplers are 3.0 inches in diameter, carrying brass sample rings having inner diameters of 2.5 inches. The standard penetration samplers are 2.0 inches in diameter with an inner diameter of 1.5 inches. Undisturbed samples were removed from the sampler and placed in moisture sealed containers in order to preserve the natural soil moisture content. Bulk samples were obtained from the excavation spoils and samples were then transported to our laboratory for further observations and testing.

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BORE LOG

Equipment:	MOBILE B-61	Date Drilled:	6/13/2022
Elevation:	1,500 FT MSL	Boring No:	BH-1

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							2		Silty Sand (SM); grayish brown, dry, fine- to coarse-grained (Disturbed/Fill).
	5 7 10			3.3	0.4		6		Gravelly Sand (SP); grayish brown, dry, medium dense, fine- to coarse-grained (Qa).
	5 16 16			1.8	1.8		10		Sand (SP); grayish brown, dry, dense, fine- to coarse-grained (Qa).
	6 10 11			25.5	12.6	115.9	16		Silty Sand (SM); dark grayish brown, moist, medium dense, fine- to coarse-grained (Qa).
	6 8 9			13.7	7.6		20		Silty Sand (SM); grayish brown, moist, medium dense, fine-grained (Qa).
							22		Terminated at ~21.5 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.

Completion Notes:

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Sladden Engineering

BORE LOG

Equipment:	MOBILE B-61	Date Drilled:	6/13/2022
Elevation:	1,500 FT MSL	Boring No:	BH-2

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							2		Silty Sand (SM); grayish brown, dry, fine- to coarse-grained (Disturbed/Fill).
	3 7 10			3.7	1.1	107.9	4		Sand (SP); grayish brown, dry, medium dense, fine- to coarse-grained (Qa).
	3 4 9			2.0	0.8	105.1	6		Sand (SP); grayish brown, dry, loose, fine- to coarse-grained (Qa).
	5 6 5			2.2	1.4		10		Sand (SP); grayish brown, dry, medium dense, fine- to coarse-grained (Qa).
	9 8 21			14.4	8.7	118.9	16		Silty Sand (SM); grayish brown, dry to slightly moist, medium dense, fine- to coarse-grained (Qa).
	8 16 24			3.1	1.7		20		Sand (SP); grayish brown, dry, dense, fine- to coarse-grained (Qa).
	14 36 50			7.0	2.8	101.2	26		Sand (SP); grayish brown, dry, very dense, fine- to coarse-grained (Qa).
	4 3 4			72.3	28.9		30		Sandy Clay (CL); olive brown, moist, medium stiff, low plasticity with gravel (Qa).
	8 26 50			64.8	20.1	105.8	36		Sandy Silt (ML); olive brown, moist, hard, low plasticity, micaceous (Qa).
	2 3 5			73.2	27.3		40		Sandy Clay (CL); olive brown, moist, medium stiff, low plasticity (Qa).
	10 22 50			61.9	23.0	102.3	46		Sandy Silt (ML); dark grayish brown, moist , hard, low plastictiy, micaceous (Qa).
	5 6 9			81.2	30.8		50		Sandy Silt (ML); dark grayish brown, moist , stiff, low plastictiy, micaceous (Qa).

Completion Notes:
Terminated at ~51.5 Feet bgs.
No Bedrock Encountered.
No Grondwater or Seepage Encountered.

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BORE LOG

Equipment:	MOBILE B-61	Date Drilled:	6/13/2022
Elevation:	1,500 FT MSL	Boring No:	BH-3

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							0		Silty Sand (SM); grayish brown, dry, fine- to coarse-grained (Disturbed/Fill).
							2		
							4		
	4 8 9			64.3	11.1		6		Sandy Silt (ML); grayish brown, slighlty moist, very stiff, low plasticity, micaceous (Qa).
							8		
	8 17 27			29.3	3.8	118.6	10		Silty Sand (SM); grayish brown, dry, medium dense, fine-grained (Qa).
							12		
							14		
	2 7 7			29.2	7.6		16		Silty Sand (SM); grayish brown, dry, medium dense, fine- to coarse-grained (Qa).
							18		
	12 14 30			11.9	1.8	103.7	20		Sand (SP); grayish brown, dry, medium dense, fine- to coarse-grained with gravel (Qa).
							22		
							24		Terminated at ~21.5 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

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BORE LOG

Equipment:	MOBILE B-61	Date Drilled:	6/13/2022
Elevation:	1,500 FT MSL	Boring No:	BH-4

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							0		Silty Sand (SM); grayish brown, dry, fine- to coarse-grained (Disturbed/Fill).
							2		
							4		
■	8 11 16			5.4	1.4	107.3	6		Gravelly Sand (SP); grayish brown, dry, medium dense, fine- to coarse-grained (Qa).
							8		
■	4 6 5			43.7	8.5		10		Silty Sand (SM); grayish brown, dry to slightly moist, medium dense, fine- to coarse-grained (Qa).
							12		
							14		
■	11 17 16			41.5	4.7	104.3	16		Silty Sand (SM); grayish brown, dry, medium dense, fine-grained with gravel (Qa).
							18		
■	5 7 12			36.3	5.5		20		Silty Sand (SM); grayish brown, dry to slightly moist, medium dense, fine-grained (Qa).
							22		
							24		Terminated at ~21.5 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

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TEST PIT LOG

Equipment:	MOBILE B-61	Date Drilled:	6/13/2022
Elevation:	1,500 FT MSL	Boring No:	TP-1 (DR-1)

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							2		Silty Sand (SM); grayish brown, dry, fine- to coarse-grained (Disturbed/Fill).
							4		Gravelly Sand (SP); grayish brown, dry, fine- to coarse-grained (Qa).
							6		Terminated at ~5.0 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							8		
							10		
							12		
							14		
							16		
							18		
							20		
							22		
							24		
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED RESIDENTIAL DEVELOPMENT
NWC LYON AVENUE AND APPALOOSA DRIVE, SAN JACINTO

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Sladden Engineering

TEST PIT LOG

Equipment:	MOBILE B-61	Date Drilled:	6/13/2022
Elevation:	1,500 FT MSL	Boring No:	TP-2 (DR-2)

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							2		Silty Sand (SM); grayish brown, dry, fine- to coarse-grained (Disturbed/Fill).
							4		Gravelly Sand (SP); grayish brown, dry, fine- to coarse-grained (Qa).
							6		Terminated at ~5.0 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							8		
							10		
							12		
							14		
							16		
							18		
							20		
							22		
							24		
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED RESIDENTIAL DEVELOPMENT
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APPENDIX B

LABORATORY TESTING

APPENDIX B

LABORATORY TESTING

Representative bulk and relatively undisturbed soil samples were obtained in the field and returned to our laboratory for additional observations and testing. Laboratory testing was generally performed in two phases. The first phase consisted of testing in order to determine the compaction of the existing natural soil and the general engineering classifications of the soils underlying the site. This testing was performed in order to estimate the engineering characteristics of the soil and to serve as a basis for selecting samples for the second phase of testing. The second phase consisted of soil mechanics testing. This testing including consolidation, shear strength and expansion testing was performed in order to provide a means of developing specific design recommendations based on the mechanical properties of the soil.

CLASSIFICATION AND COMPACTION TESTING

Unit Weight and Moisture Content Determinations: Each undisturbed sample was weighed and measured in order to determine its unit weight. A small portion of each sample was then subjected to testing in order to determine its moisture content. This was used in order to determine the dry density of the soil in its natural condition. The results of this testing are shown on the Boring Logs.

Maximum Density-Optimum Moisture Determinations: Representative soil types were selected for maximum density determinations. This testing was performed in accordance with the ASTM Standard D1557-91, Test Method A. Graphic representations of the results of this testing are presented in this appendix. The maximum densities are compared to the field densities of the soil in order to determine the existing relative compaction to the soil.

Classification Testing: Soil samples were selected for classification testing. This testing consists of mechanical grain size analyses. This provides information for developing classifications for the soil in accordance with the Unified Soil Classification System which is presented in the preceding appendix. This classification system categorizes the soil into groups having similar engineering characteristics. The results of this testing is very useful in detecting variations in the soil and in selecting samples for further testing.

SOIL MECHANIC'S TESTING

Expansion Testing: One (1) bulk sample was selected for Expansion testing. Expansion testing was performed in accordance with the UBC Standard 18-2. This testing consists of remolding 4-inch diameter by 1-inch thick test specimens to a moisture content and dry density corresponding to approximately 50 percent saturation. The samples are subjected to a surcharge of 144 pounds per square foot and allowed to reach equilibrium. At that point the specimens are inundated with distilled water. The linear expansion is then measured until complete.

Direct Shear Testing: One (1) bulk sample was selected for Direct Shear testing. This test measures the shear strength of the soil under various normal pressures and is used to develop parameters for foundation design and lateral design. Tests were performed using a recompacted test specimen that was saturated prior to tests. Tests were performed using a strain controlled test apparatus with normal pressures ranging from 800 to 2300 pounds per square foot.

Consolidation/Hydro-Collapse Testing: One (1) relatively undisturbed samples was selected for consolidation testing. For this test, a one-inch thick test specimen was subjected to vertical loads varying from 575 psf to 11520 psf applied progressively. The consolidation at each load increment was recorded prior to placement of each subsequent load.

Corrosion Series Testing: The soluble sulfate concentrations of the surface soil were determined in accordance with California Test Method Number (CA) 417. The pH and Minimum Resistivity were determined in accordance with CA 643. The soluble chloride concentrations were determined in accordance with CA 422.

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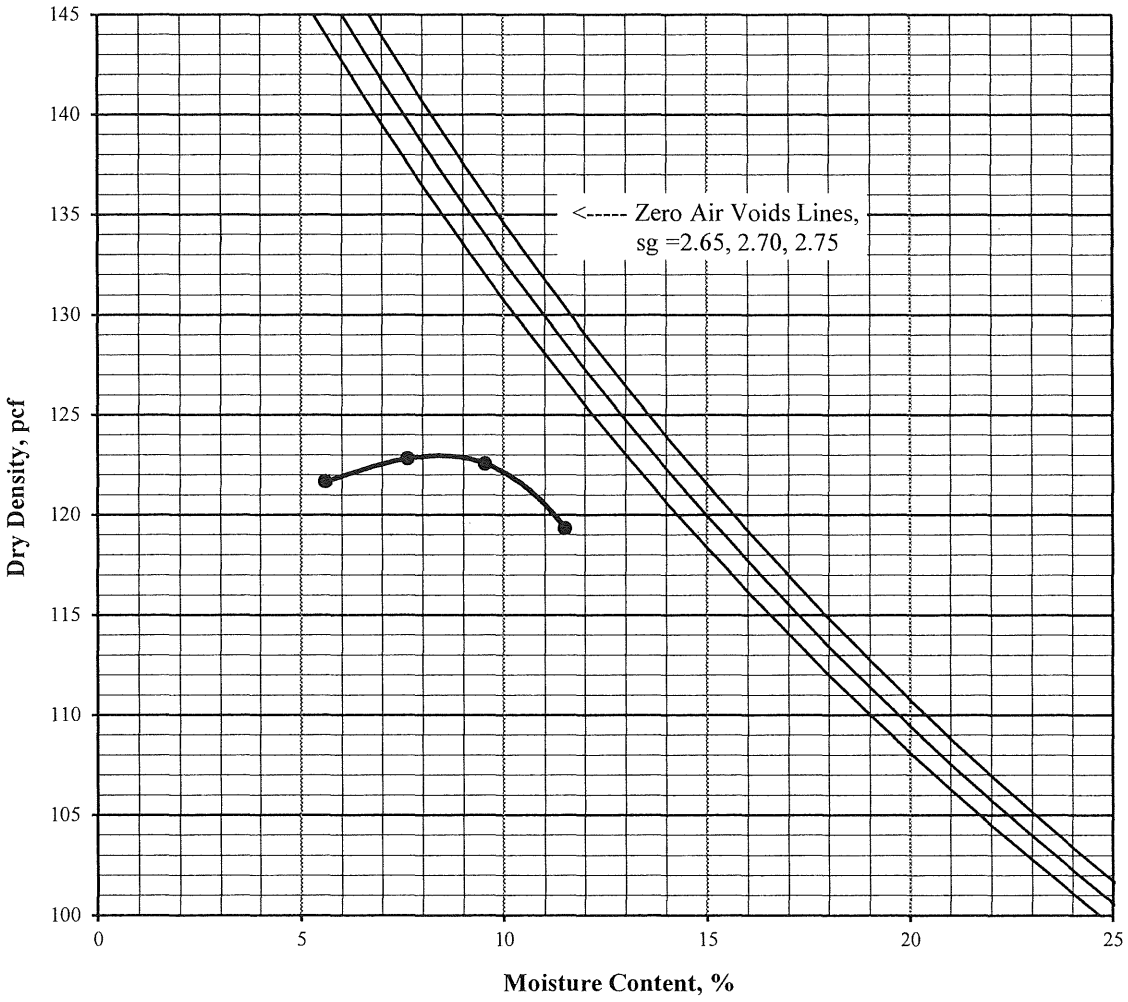
Maximum Density/Optimum Moisture

ASTM D698/D1557

Project Number:	644-22032	July 27, 2022
Project Name:	Lyon Avenue & Appaloosa Drive	
Lab ID Number:	LN6-22327	ASTM D-1557 A
Sample Location:	BH-2 Bulk 1 @ 0-5'	Rammer Type: Machine
Description:	Dark Brown Sand w/Silt (SW-SM)	

Maximum Density: **123 pcf**
Optimum Moisture: **8.5%**

Sieve Size	% Retained
3/4"	
3/8"	
#4	0.8



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Expansion Index

ASTM D 4829

Job Number: 644-22032

July 27, 2022

Job Name: Lyon Avenue & Appaloosa Drive

Lab ID Number: LN6-22327

Sample ID: BH-2 Bulk 1 @ 0-5'

Soil Description: Dark Brown Sand w/Silt (SW-SM)

Wt of Soil + Ring:	590.0
Weight of Ring:	188.6
Wt of Wet Soil:	401.4
Percent Moisture:	7.8%
Sample Height, in	0.95
Wet Density, pcf:	128.4
Dry Denstiy, pcf:	119.2

% Saturation:	50.9

Expansion **Rack # 2**

Date/Time	7/25/2022	3:15 PM
Initial Reading	0.0000	
Final Reading	0.0000	

Expansion Index **0**

(Final - Initial) x 1000

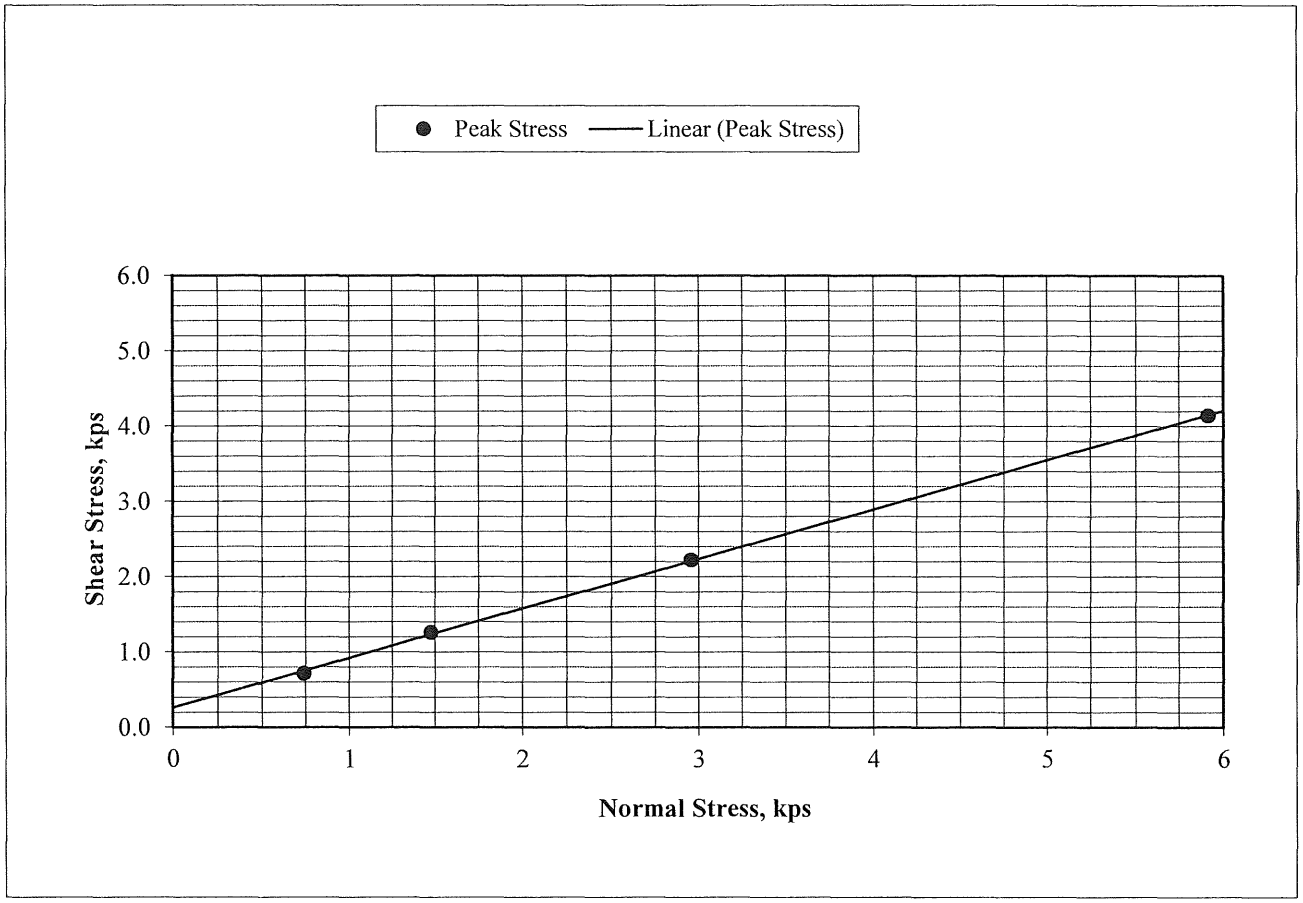
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Direct Shear ASTM D 3080-04
(modified for unconsolidated condition)

Job Number:	644-22032		July 27, 2022
Job Name	Lyon Avenue & Appaloosa Drive	Initial Dry Density:	110.7 pcf
Lab ID No.	LN6-22327	Initial Mosture Content:	8.6 %
Sample ID	BH-2 Bulk 1 @ 0-5'	Peak Friction Angle (Ø):	33°
Classification	Dark Brown Sand w/Silt (SW-SM)	Cohesion (c):	270 psf
Sample Type	Remolded @ 90% of Maximum Density		

Test Results	1	2	3	4	Average
Moisture Content, %	14.6	14.6	14.6	14.6	14.6
Saturation, %	75.6	75.6	75.6	75.6	75.6
Normal Stress, kps	0.739	1.479	2.958	5.916	
Peak Stress, kps	0.719	1.264	2.224	4.142	



Job Number: 644-22032
Job Name: Lyon Avenue & Appaloosa Drive
Date: 7/27/2022

Moisture Adjustment		Remolded Shear Weight	
Wt of Soil:	1,000	Max Dry Density:	123.0
Moist As Is:	1.6	Optimum Moisture:	8.5
Moist Wanted:	8.5		
ml of Water to Add:	67.9	Wt Soil per Ring, g:	144.4

UBC

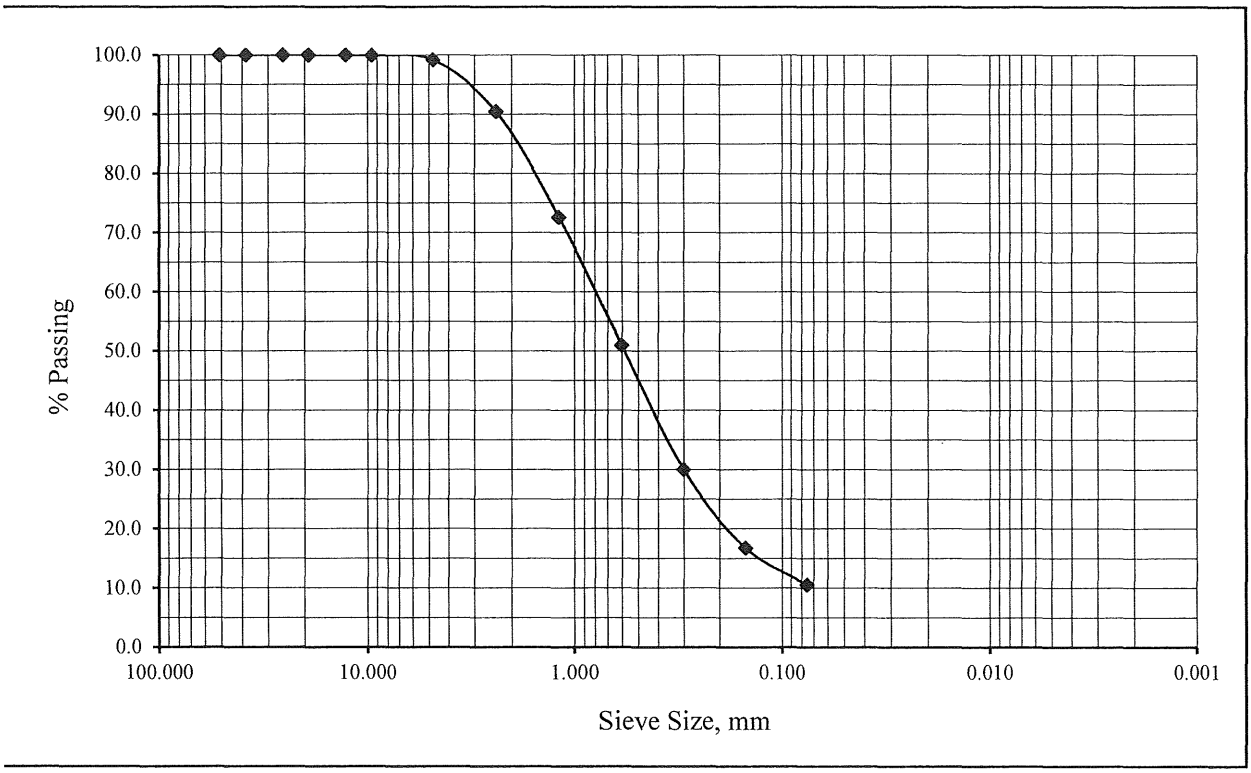
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Gradation

ASTM C117 & C136

Project Number: 644-22032 July 27, 2022
Project Name: Lyon Avenue & Appaloosa Drive
Lab ID Number: LN6-22327
Sample ID: BH-2 Bulk 1 @ 0-5' Soil Classification: SW-SM

Sieve Size, in	Sieve Size, mm	Percent Passing
2"	50.8	100.0
1 1/2"	38.1	100.0
1"	25.4	100.0
3/4"	19.1	100.0
1/2"	12.7	100.0
3/8"	9.53	100.0
#4	4.75	99.2
#8	2.36	90.5
#16	1.18	72.6
#30	0.60	51.0
#50	0.30	30.0
#100	0.15	16.8
#200	0.075	10.6



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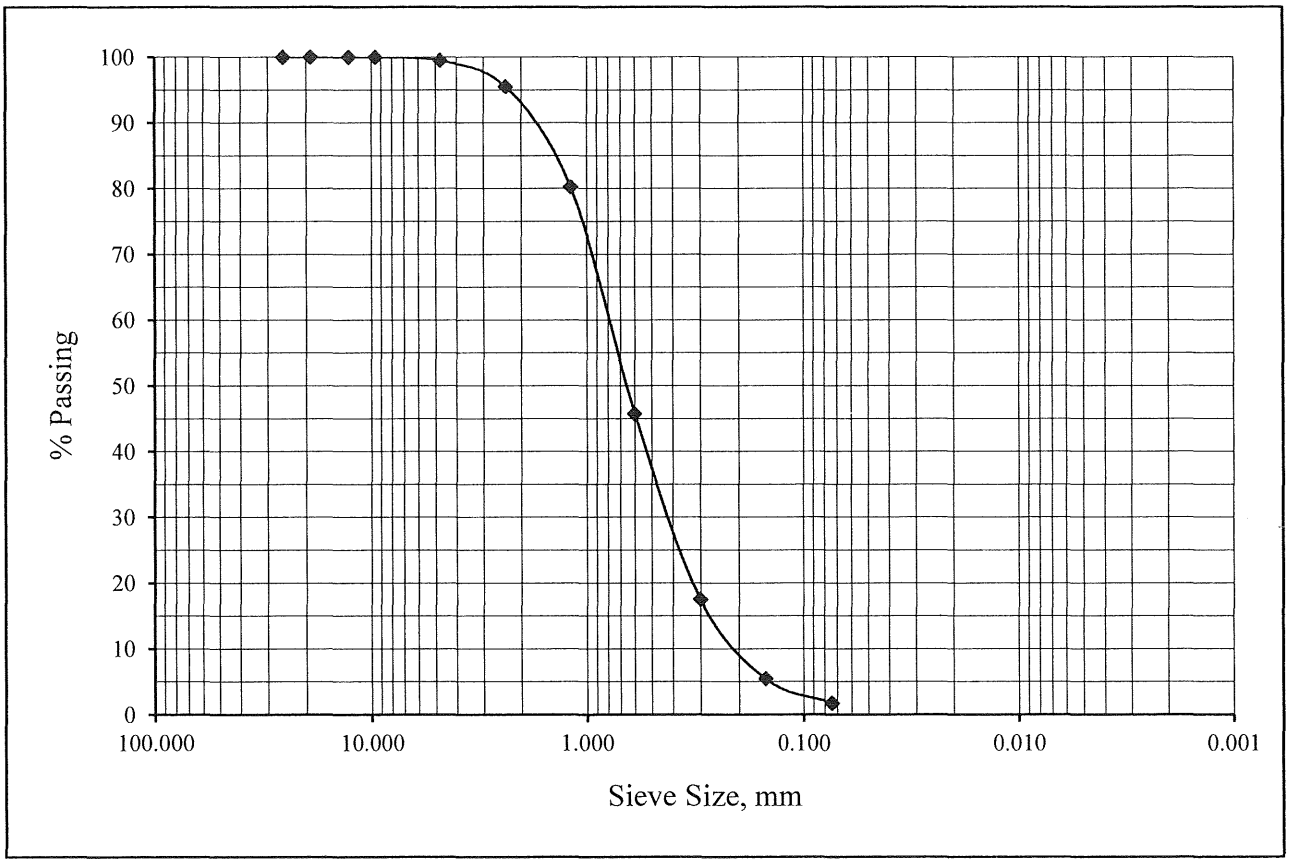
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Gradation

ASTM C117 & C136

Project Number: 644-22032 July 27, 2022
Project Name: Lyon Avenue & Appaloosa Drive
Lab ID Number: LN6-22327
Sample ID: BH-1 S-2 @ 10' Soil Classification: SP

Sieve Size, in	Sieve Size, mm	Percent Passing
1"	25.4	100.0
3/4"	19.1	100.0
1/2"	12.7	100.0
3/8"	9.53	100.0
#4	4.75	99.5
#8	2.36	95.5
#16	1.18	80.3
#30	0.60	45.8
#50	0.30	17.5
#100	0.15	5.4
#200	0.074	1.8



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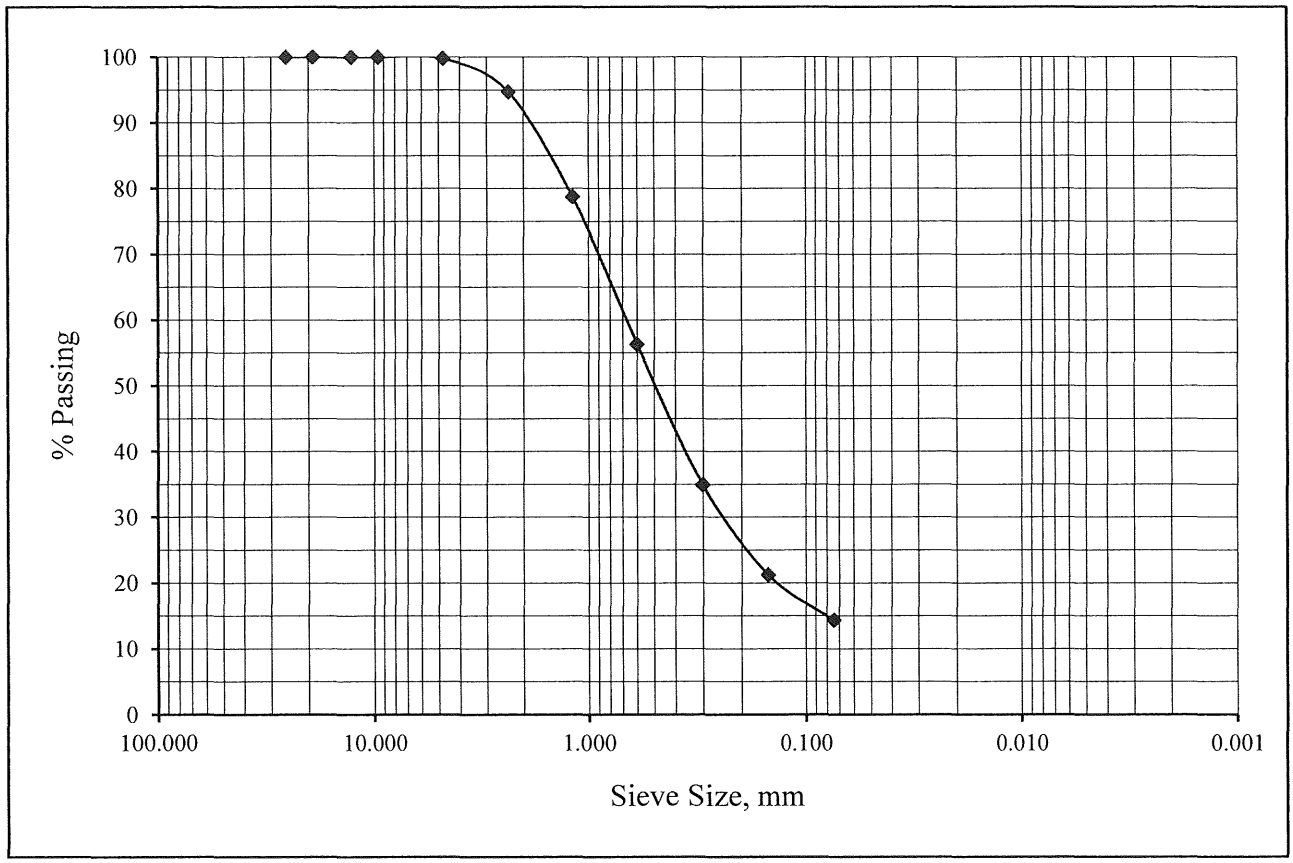
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Gradation

ASTM C117 & C136

Project Number: 644-22032 July 27, 2022
Project Name: Lyon Avenue & Appaloosa Drive
Lab ID Number: LN6-22327
Sample ID: BH-2 R-4 @ 15' Soil Classification: SM

Sieve Size, in	Sieve Size, mm	Percent Passing
1"	25.4	100.0
3/4"	19.1	100.0
1/2"	12.7	100.0
3/8"	9.53	100.0
#4	4.75	99.8
#8	2.36	94.7
#16	1.18	78.8
#30	0.60	56.3
#50	0.30	34.9
#100	0.15	21.2
#200	0.074	14.4



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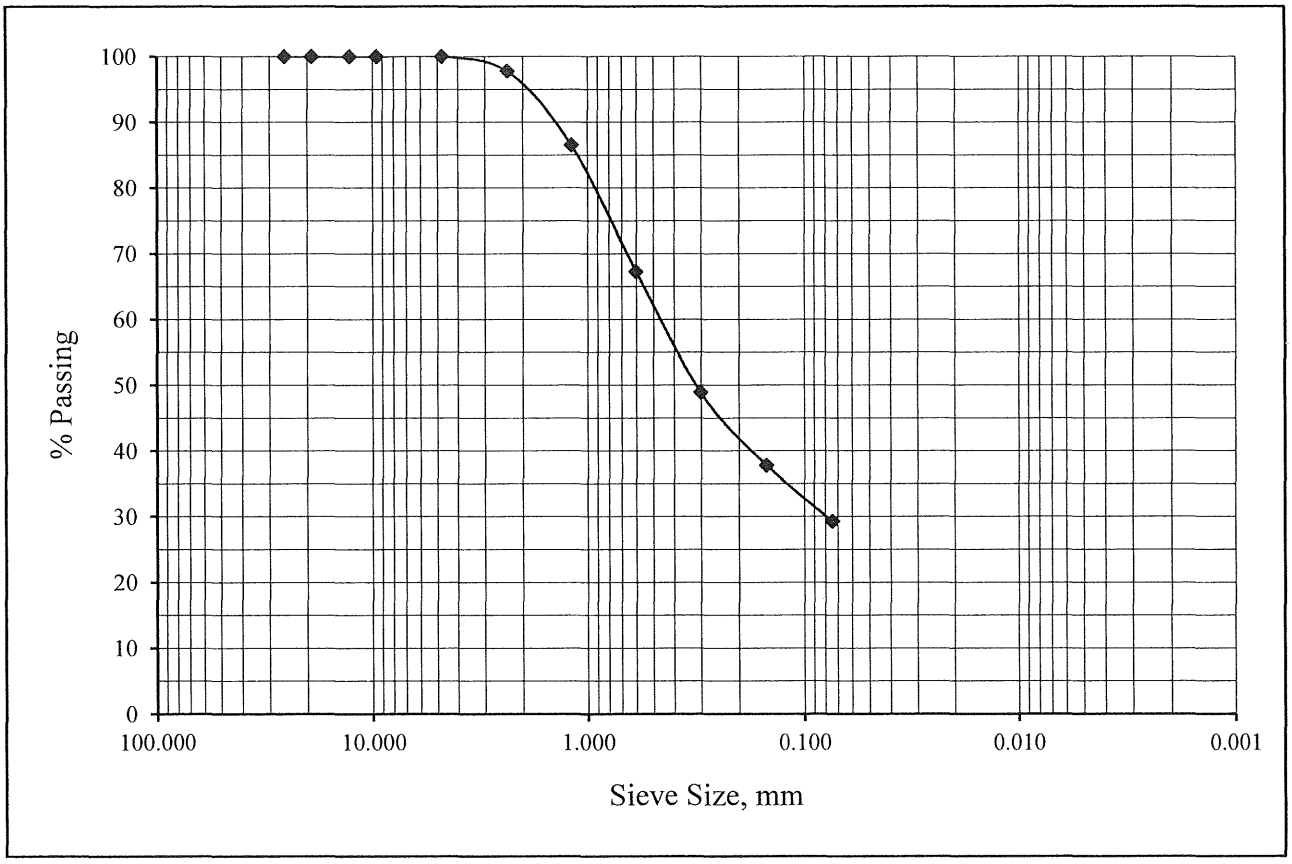
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Gradation

ASTM C117 & C136

Project Number: 644-22032 July 27, 2022
Project Name: Lyon Avenue & Appaloosa Drive
Lab ID Number: LN6-22327
Sample ID: BH-3 R-2 @ 10' Soil Classification: SM

Sieve Size, in	Sieve Size, mm	Percent Passing
1"	25.4	100.0
3/4"	19.1	100.0
1/2"	12.7	100.0
3/8"	9.53	100.0
#4	4.75	100.0
#8	2.36	97.8
#16	1.18	86.6
#30	0.60	67.3
#50	0.30	48.9
#100	0.15	37.8
#200	0.074	29.3



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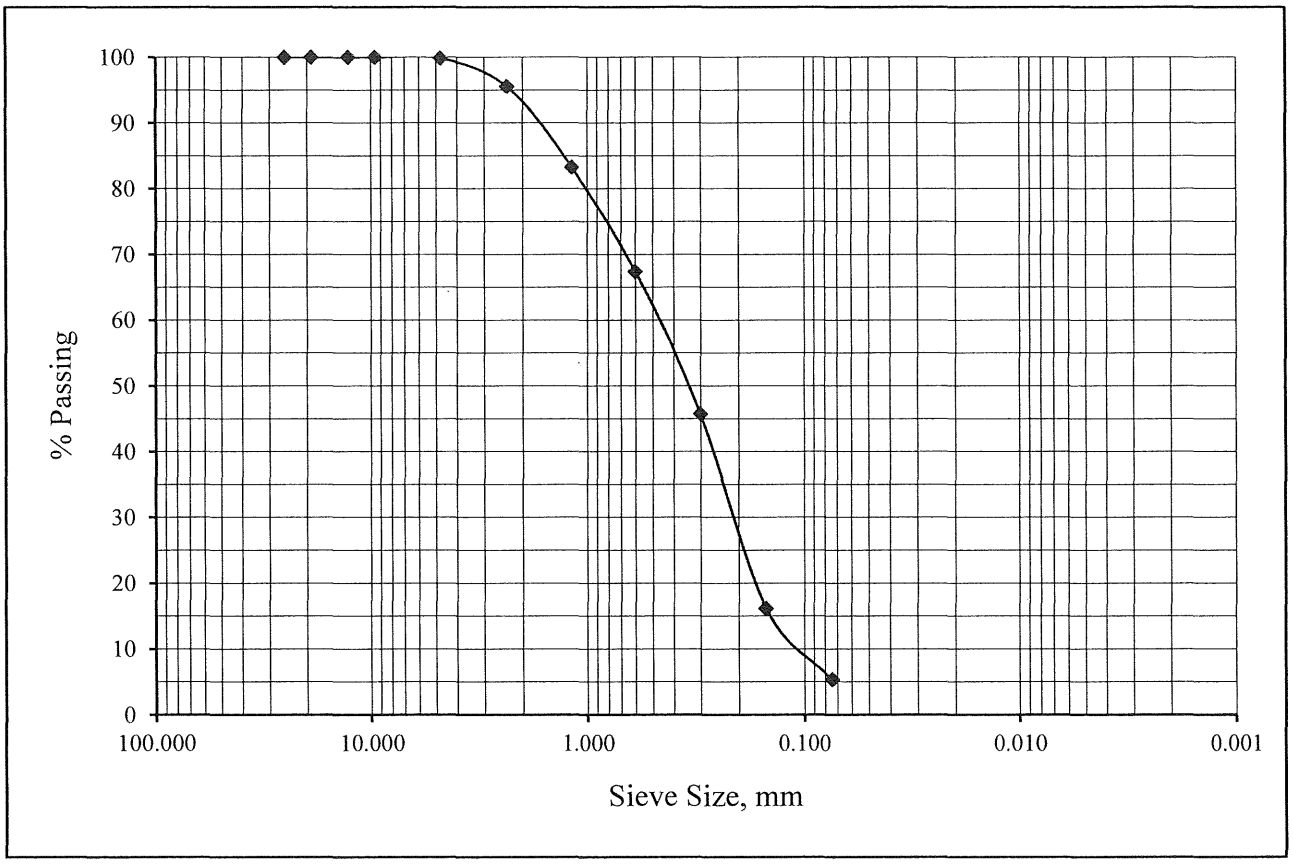
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Gradation

ASTM C117 & C136

Project Number: 644-22032 July 27, 2022
Project Name: Lyon Avenue & Appaloosa Drive
Lab ID Number: LN6-22327
Sample ID: BH-4 R-1 @ 5' Soil Classification: SP-SM

Sieve Size, in	Sieve Size, mm	Percent Passing
1"	25.4	100.0
3/4"	19.1	100.0
1/2"	12.7	100.0
3/8"	9.53	100.0
#4	4.75	99.9
#8	2.36	95.6
#16	1.18	83.3
#30	0.60	67.4
#50	0.30	45.8
#100	0.15	16.2
#200	0.074	5.4



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One Dimensional Consolidation

ASTM D2435 & D5333

Job Number: 644-22032
Job Name: Lyon Avenue & Appaloosa Drive

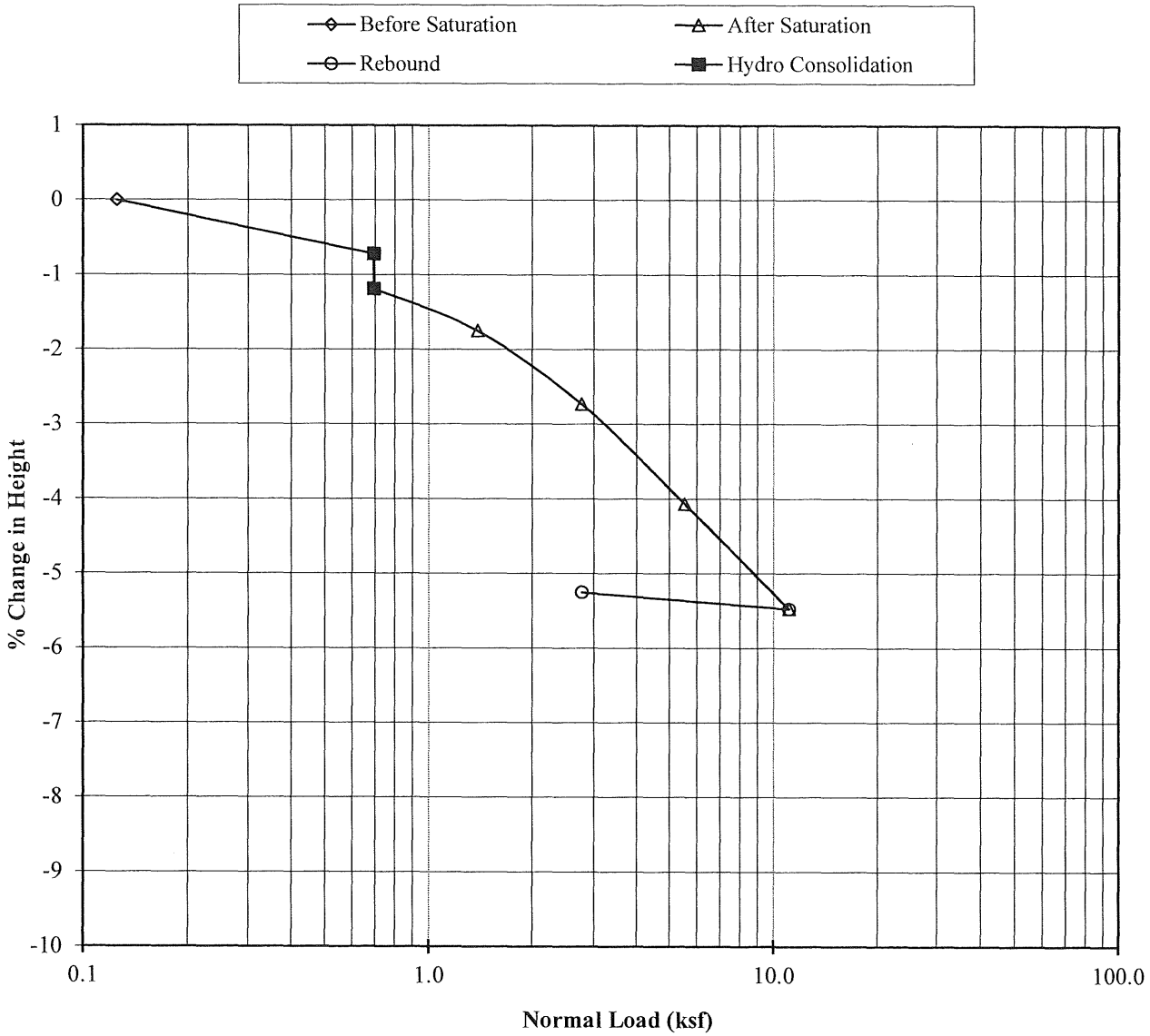
July 27, 2022

Lab ID Number: LN6-22327
Sample ID: BH-3 R-2 @ 10'
Soil Description: Gray Brown Silty Sand (SM)

Initial Dry Density, pcf:	114.8
Initial Moisture, %:	3.8
Initial Void Ratio:	0.452
Specific Gravity:	2.67

Hydrocollapse: 0.5% @ 0.694 ksf

% Change in Height vs Normal Presssure Diagram



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45090 Golf Center Pkwy, Suite F, Indio CA 92201 (760) 863-0713 Fax (760) 863-0847
450 Egan Avenue, Beaumont, CA 92223 (951) 845-7743 Fax (951) 845-8863

Date: July 27, 2022

Account No.: 644-22032

Customer: Mr. Jordan Bursch

Location: APNs 436-280-006 & 007, NWC Lyon Avenue & Appaloosa Drive,
San Jacinto Area

Analytical Report

Corrosion Series

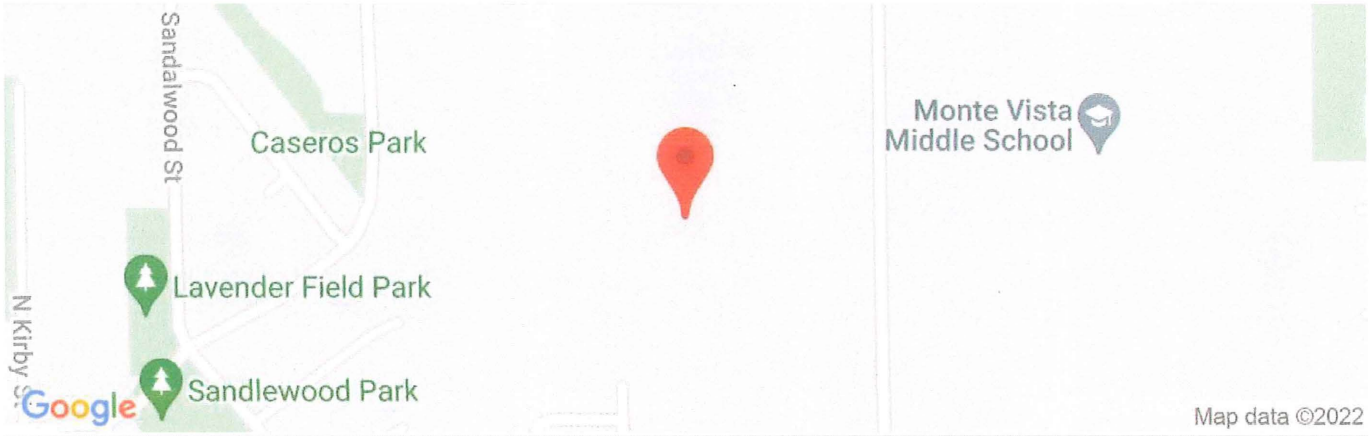
	pH per CA 643	Soluble Sulfates per CA 417 ppm	Soluble Chloride per CA 422 ppm	Min. Resistivity per CA 643 ohm-cm
BH-2 @ 0-5'	9.2	20	50	9000

APPENDIX C

SEISMIC DESIGN MAP AND REPORT
SITE-SPECIFIC SEISMIC DESIGN PARAMETERS

APN 436-280-006 & 007

Latitude, Longitude: 33.7923, -116.9914



Date	8/22/2022, 11:23:33 AM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	2.192	MCE_R ground motion. (for 0.2 second period)
S_1	0.891	MCE_R ground motion. (for 1.0s period)
S_{MS}	2.192	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.461	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.994	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	1.094	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	2.192	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.465	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.367	Factored deterministic acceleration value. (0.2 second)
S1RT	0.891	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	1.017	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.948	Factored deterministic acceleration value. (1.0 second)
PGAd	0.997	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	0.994	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration

Type	Value	Description
C_{RS}	0.889	Mapped value of the risk coefficient at short periods
C_{R1}	0.877	Mapped value of the risk coefficient at a period of 1 s
C_V	1.5	Vertical coefficient

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Project: APN 436-280-006 & 007
Project Number: 644-22032
Client: Corman Leigh Companies
Site Lat/Long: 33.7923/-116.9914
Controlling Seismic Source: San Jacinto

REFERENCE	NOTATION	VALUE
Site Class	C, D, D default, or E	D measured
Site Class D - Table 11.4-1	F_a	1.0
Site Class D - 21.3(ii)	F_v	2.5
$0.2*(S_{D1}/S_{DS})$	T_0	0.138
S_{D1}/S_{DS}	T_S	0.691
Fundamental Period (12.8.2)	T	Period
Seismic Design Maps or Fig 22-14	T_L	8
Equation 11.4-4 - $2/3*S_{M1}$	S_{D1}	1.0098*
Equation 11.4-2 - F_V*S_1	S_{M1}	1.5147*

REFERENCE	NOTATION	VALUE
Fv (Table 11.4-2)[Used for General Spectrum]	F_v	1.7
Design Maps	S_s	2.192
Design Maps	S_1	0.891
Equation 11.4-1 - F_A*S_S	S_{MS}	2.192*
Equation 11.4-3 - $2/3*S_{MS}$	S_{DS}	1.461*
Design Maps	PGA	0.994
Table 11.8-1	F_{PGA}	1.1
Equation 11.8-1 - $F_{PGA}*PGA$	PGA_M	1.093*
Section 21.5.3	80% of PGA_M	0.875
Design Maps	C_{RS}	0.889
Design Maps	C_{R1}	0.877

RISK COEFFICIENT

Cr - At Perods <=0.2, Cr=C_{RS}	C_{RS}	0.889
Cr - At Periods >=1.0, Cr=C_{R1}	C_{R1}	0.877

Cr - At Periods between 0.2 and 1.0 use trendline formula to complete

Period	Cr
0.200	0.889
0.300	0.888
0.400	0.886
0.500	0.885
0.600	0.883
0.680	0.882
1.000	0.877

* **Code based design value.** See accompanying data for Site Specific Design values.

Mapped values from https://seismicmaps.org/

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PROBABILISTIC SPECTRA[1]
2% in 50 year Exceedence

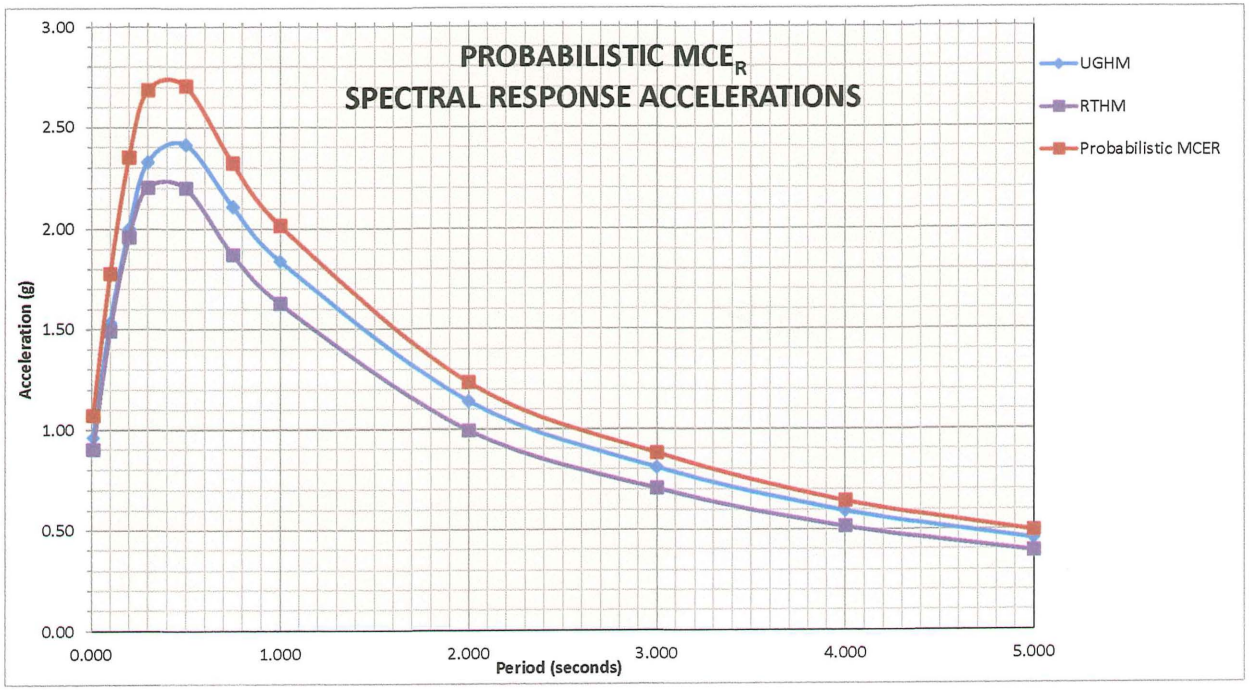
Project No: 644-22032

Period	UGHM	RTHM	Max Directional Scale Factor[2]	Probabilistic MCE
0.010	0.961	0.900	1.19	1.071
0.100	1.533	1.492	1.19	1.775
0.200	2.002	1.959	1.20	2.351
0.300	2.328	2.200	1.22	2.684
0.500	2.412	2.197	1.23	2.702
0.750	2.107	1.871	1.24	2.320
1.000	1.839	1.626	1.24	2.016
2.000	1.139	0.993	1.24	1.231
3.000	0.808	0.703	1.25	0.879
4.000	0.592	0.513	1.25	0.641
5.000	0.452	0.391	1.26	0.493

Probabilistic PGA: 0.961
Is Probabilistic $Sa_{(max)}$<1.2F_a? NO

[1] Data Sources:
https://earthquake.usgs.gov/hazards/interactive/
https://earthquake.usgs.gov/designmaps/rtgm/

[2] Shahi-Baker RotD100/RotD50 Factors (2014)



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DETERMINISTIC SPECTRUM

Largest Amplitudes of Ground Motions Considering All Sources Calculated using Weighted Mean of Attenuation Equations[1]

Controlling Source: San Jacinto

Is Probabilistic $Sa_{(max)}$<1.2Fa? NO

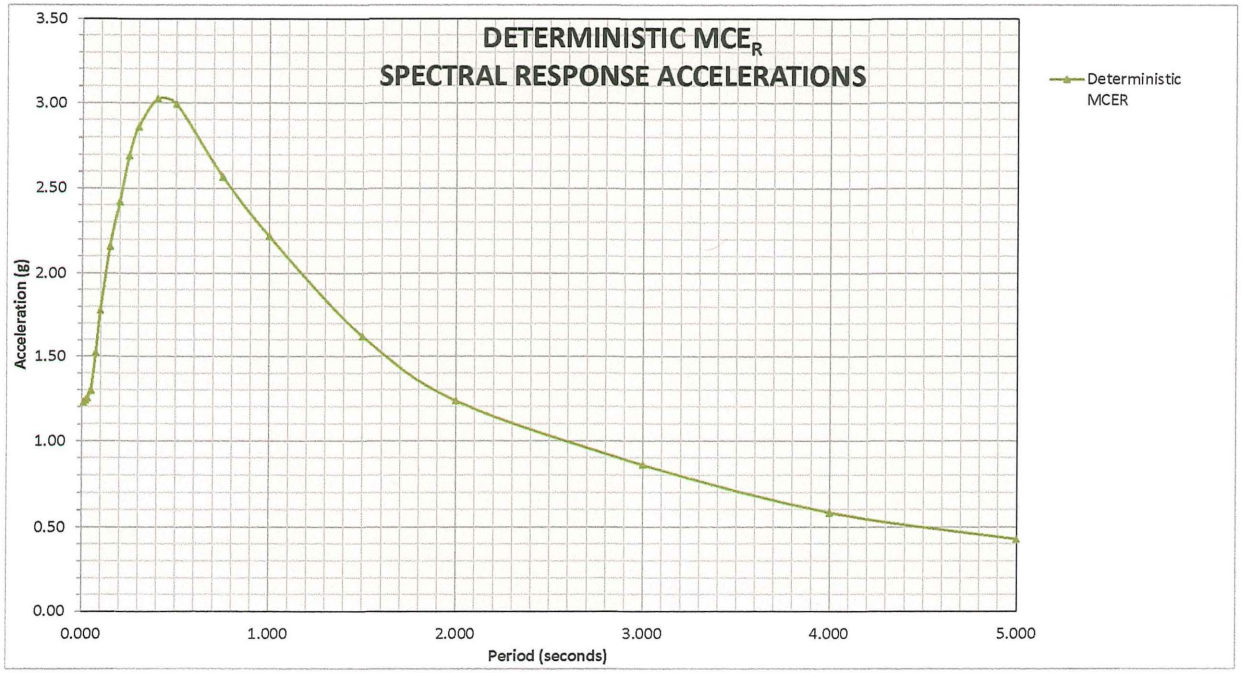
Period	Deterministic PSa Median + 1.σ for 5% Damping	Max Directional Scale Factor[2]	Deterministic MCE	Section 21.2.2 Scaling Factor Applied
0.010	1.034	1.19	1.230	1.230
0.020	1.042	1.19	1.240	1.240
0.030	1.053	1.19	1.253	1.253
0.050	1.091	1.19	1.299	1.299
0.075	1.279	1.19	1.522	1.522
0.100	1.496	1.19	1.780	1.780
0.150	1.799	1.20	2.158	2.158
0.200	2.017	1.20	2.421	2.421
0.250	2.226	1.21	2.693	2.693
0.300	2.345	1.22	2.861	2.861
0.400	2.457	1.23	3.023	3.023
0.500	2.433	1.23	2.992	2.992
0.750	2.071	1.24	2.568	2.568
1.000	1.789	1.24	2.219	2.219
1.500	1.307	1.24	1.620	1.620
2.000	0.996	1.24	1.236	1.236
3.000	0.687	1.25	0.859	0.859
4.000	0.467	1.25	0.583	0.583
5.000	0.340	1.26	0.428	0.428

Project No: 644-22032

Is Determinstic $Sa_{(max)}$<1.5*Fa?	NO
Section 21.2.2 Scaling Factor:	N/A
Deterministic PGA:	1.034
Is Deterministic PGA >=F_{PGA}*0.5?	YES

[1] NGAWest 2 GMPE worksheet and Uniform California Earthquake Rupture Forecast, Version 3 (UCERF3) - Time Dependent Model

[2] Shahi-Baker RotD100/RotD50 Factors (2014)



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SITE SPECIFIC SPECTRA

Period	Probabilistic MCE	Deterministic MCE	Site-Specific MCE	Design Response Spectrum (Sa)
0.010	1.071	1.230	1.071	0.714
0.100	1.775	1.780	1.775	1.184
0.200	2.351	2.421	2.351	1.567
0.300	2.684	2.861	2.684	1.789
0.500	2.702	2.992	2.702	1.802
0.750	2.320	2.568	2.320	1.547
1.000	2.016	2.219	2.016	1.344
2.000	1.231	1.236	1.231	0.821
3.000	0.879	0.859	0.859	0.573
4.000	0.641	0.583	0.583	0.389
5.000	0.493	0.428	0.428	0.285

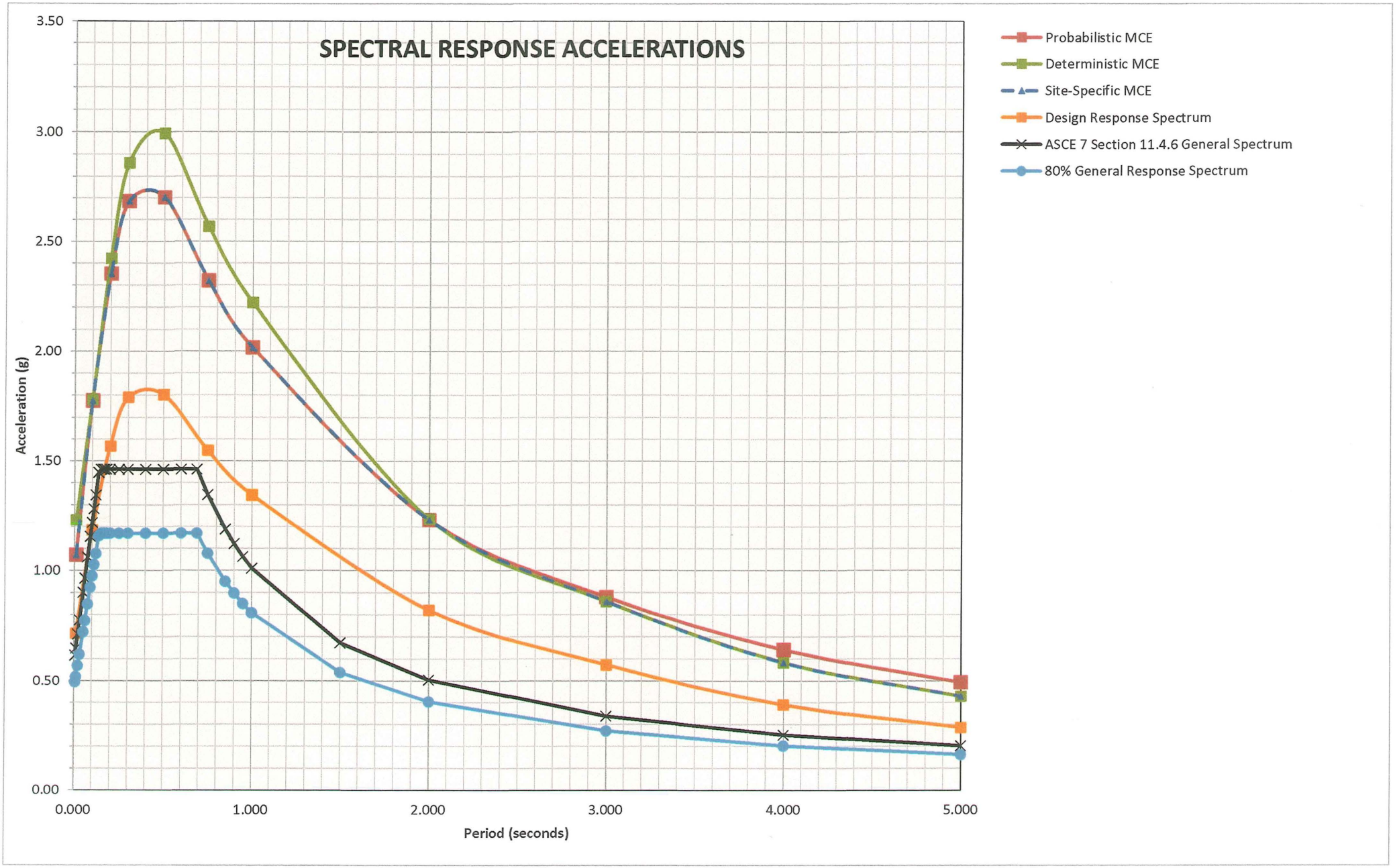
ASCE 7-16: Section 21.4
Site Specific

	Calculated Value	Design Value
SDS:	1.621	1.621
SD1:	1.718	1.718
SMS:	2.432	2.432
SM1:	2.577	2.577
Site Specific PGAm:	0.961	0.961
Site Class:	D measured	

Seismic Design Category - Short* E
Seismic Design Category - 1s* E
* Risk Categories I, II, or III

Period	ASCE 7 SECTION 11.4.6 General Spectrum	80% General Response Spectrum
0.005	0.616	0.493
0.010	0.648	0.518
0.020	0.711	0.569
0.030	0.775	0.620
0.050	0.902	0.721
0.060	0.965	0.772
0.075	1.060	0.848
0.090	1.156	0.924
0.100	1.219	0.975
0.110	1.282	1.026
0.120	1.346	1.077
0.136	1.447	1.158
0.150	1.461	1.169
0.160	1.461	1.169
0.170	1.461	1.169
0.180	1.461	1.169
0.200	1.461	1.169
0.250	1.461	1.169
0.300	1.461	1.169
0.400	1.461	1.169
0.500	1.461	1.169
0.600	1.461	1.169
0.690	1.461	1.169
0.750	1.346	1.077
0.850	1.188	0.950
0.900	1.122	0.898
0.950	1.063	0.850
1.000	1.010	0.808
1.500	0.673	0.539
2.000	0.505	0.404
3.000	0.337	0.269
4.000	0.252	0.202
5.000	0.202	0.162

Project No: 644-22032


SPECTRAL RESPONSE ACCELERATIONS
Acceleration (g)
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.000
1.000
2.000
3.000
4.000
5.000
Period (seconds)
Probabilistic MCE
Deterministic MCE
Site-Specific MCE
Design Response Spectrum
ASCE 7 Section 11.4.6 General Spectrum
80% General Response Spectrum

APPENDIX D

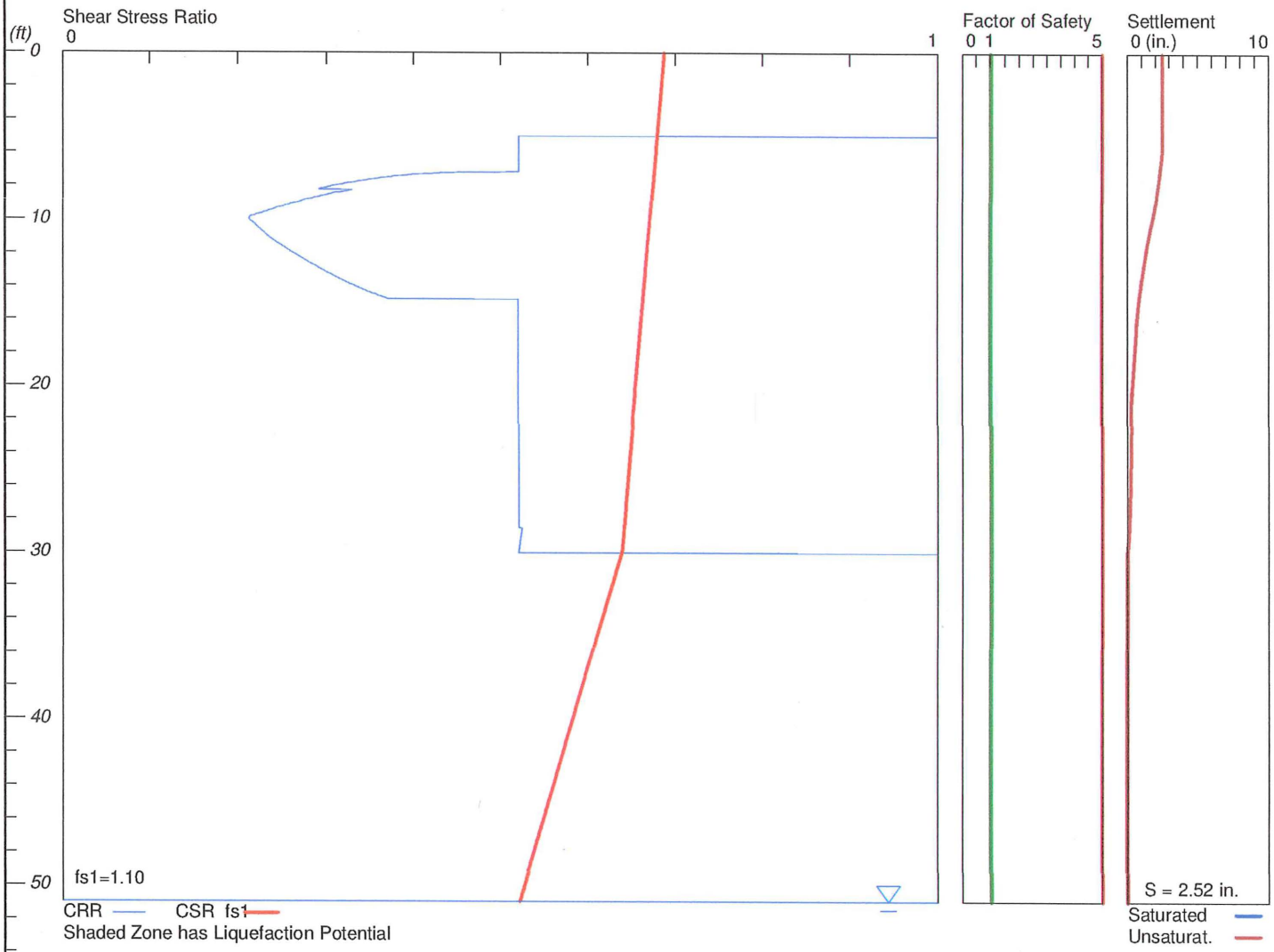
DYNAMIC SETTLEMENT ANALYSIS

SEISMIC SETTLEMENT ANALYSIS

NWC Lyon Avenue & Appaloosa Drive

Hole No.=BH-2 Water Depth=51 ft Surface Elev.=1,500

Magnitude=7.38
Acceleration=0.961g



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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: D:\Liquefy5\644-22032.liq
Title: NWC Lyon Avenue & Appaloosa Drive
Subtitle:

Surface Elev.=1,500
Hole No.=BH-2
Depth of Hole= 51.00 ft
Water Table during Earthquake= 51.00 ft
Water Table during In-Situ Testing= 51.00 ft
Max. Acceleration= 0.96 g
Earthquake Magnitude= 7.38

Input Data:
Surface Elev.=1,500
Hole No.=BH-2
Depth of Hole=51.00 ft
Water Table during Earthquake= 51.00 ft
Water Table during In-Situ Testing= 51.00 ft
Max. Acceleration=0.96 g
Earthquake Magnitude=7.38
No-Liquefiable Soils: Based on Analysis

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1.1
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:
Depth SPT gamma Fines

ft		pcf	%
0.00	11.30	109.10	NoLiq
2.00	11.30	109.10	NoLiq
5.00	8.60	105.90	NoLiq
10.00	11.00	105.90	2.20
15.00	19.30	129.20	14.40
20.00	40.00	129.20	3.10
25.00	57.30	104.00	7.00
30.00	7.00	104.00	NoLiq
35.00	50.60	127.10	NoLiq
40.00	8.00	127.10	NoLiq
45.00	48.00	125.80	NoLiq
50.00	15.00	125.80	NoLiq

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=2.52 in.
Total Settlement of Saturated and Unsaturated Sands=2.52 in.
Differential Settlement=1.258 to 1.661 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.69	5.00	0.00	2.52	2.52
0.05	2.00	0.69	5.00	0.00	2.52	2.52
0.10	2.00	0.69	5.00	0.00	2.52	2.52
0.15	2.00	0.69	5.00	0.00	2.52	2.52
0.20	2.00	0.69	5.00	0.00	2.52	2.52
0.25	2.00	0.69	5.00	0.00	2.52	2.52
0.30	2.00	0.69	5.00	0.00	2.52	2.52
0.35	2.00	0.69	5.00	0.00	2.52	2.52
0.40	2.00	0.69	5.00	0.00	2.52	2.52
0.45	2.00	0.69	5.00	0.00	2.52	2.52
0.50	2.00	0.69	5.00	0.00	2.52	2.52
0.55	2.00	0.69	5.00	0.00	2.52	2.52
0.60	2.00	0.69	5.00	0.00	2.52	2.52
0.65	2.00	0.69	5.00	0.00	2.52	2.52
0.70	2.00	0.69	5.00	0.00	2.52	2.52
0.75	2.00	0.69	5.00	0.00	2.52	2.52
0.80	2.00	0.69	5.00	0.00	2.52	2.52
0.85	2.00	0.69	5.00	0.00	2.52	2.52
0.90	2.00	0.69	5.00	0.00	2.52	2.52
0.95	2.00	0.69	5.00	0.00	2.52	2.52
1.00	2.00	0.69	5.00	0.00	2.52	2.52
1.05	2.00	0.69	5.00	0.00	2.52	2.52
1.10	2.00	0.69	5.00	0.00	2.52	2.52
1.15	2.00	0.69	5.00	0.00	2.52	2.52
1.20	2.00	0.69	5.00	0.00	2.52	2.52

1.25	2.00	0.69	5.00	0.00	2.52	2.52
1.30	2.00	0.69	5.00	0.00	2.52	2.52
1.35	2.00	0.68	5.00	0.00	2.52	2.52
1.40	2.00	0.68	5.00	0.00	2.52	2.52
1.45	2.00	0.68	5.00	0.00	2.52	2.52
1.50	2.00	0.68	5.00	0.00	2.52	2.52
1.55	2.00	0.68	5.00	0.00	2.52	2.52
1.60	2.00	0.68	5.00	0.00	2.52	2.52
1.65	2.00	0.68	5.00	0.00	2.52	2.52
1.70	2.00	0.68	5.00	0.00	2.52	2.52
1.75	2.00	0.68	5.00	0.00	2.52	2.52
1.80	2.00	0.68	5.00	0.00	2.52	2.52
1.85	2.00	0.68	5.00	0.00	2.52	2.52
1.90	2.00	0.68	5.00	0.00	2.52	2.52
1.95	2.00	0.68	5.00	0.00	2.52	2.52
2.00	2.00	0.68	5.00	0.00	2.52	2.52
2.05	2.00	0.68	5.00	0.00	2.52	2.52
2.10	2.00	0.68	5.00	0.00	2.52	2.52
2.15	2.00	0.68	5.00	0.00	2.52	2.52
2.20	2.00	0.68	5.00	0.00	2.52	2.52
2.25	2.00	0.68	5.00	0.00	2.52	2.52
2.30	2.00	0.68	5.00	0.00	2.52	2.52
2.35	2.00	0.68	5.00	0.00	2.52	2.52
2.40	2.00	0.68	5.00	0.00	2.52	2.52
2.45	2.00	0.68	5.00	0.00	2.52	2.52
2.50	2.00	0.68	5.00	0.00	2.52	2.52
2.55	2.00	0.68	5.00	0.00	2.52	2.52
2.60	2.00	0.68	5.00	0.00	2.52	2.52
2.65	2.00	0.68	5.00	0.00	2.52	2.52
2.70	2.00	0.68	5.00	0.00	2.52	2.52
2.75	2.00	0.68	5.00	0.00	2.52	2.52
2.80	2.00	0.68	5.00	0.00	2.52	2.52
2.85	2.00	0.68	5.00	0.00	2.52	2.52
2.90	2.00	0.68	5.00	0.00	2.52	2.52
2.95	2.00	0.68	5.00	0.00	2.52	2.52
3.00	2.00	0.68	5.00	0.00	2.52	2.52
3.05	2.00	0.68	5.00	0.00	2.52	2.52
3.10	2.00	0.68	5.00	0.00	2.52	2.52
3.15	2.00	0.68	5.00	0.00	2.52	2.52
3.20	2.00	0.68	5.00	0.00	2.52	2.52
3.25	2.00	0.68	5.00	0.00	2.52	2.52
3.30	2.00	0.68	5.00	0.00	2.52	2.52
3.35	2.00	0.68	5.00	0.00	2.52	2.52
3.40	2.00	0.68	5.00	0.00	2.52	2.52
3.45	2.00	0.68	5.00	0.00	2.52	2.52
3.50	2.00	0.68	5.00	0.00	2.52	2.52
3.55	2.00	0.68	5.00	0.00	2.52	2.52
3.60	2.00	0.68	5.00	0.00	2.52	2.52
3.65	2.00	0.68	5.00	0.00	2.52	2.52
3.70	2.00	0.68	5.00	0.00	2.52	2.52

3.75	2.00	0.68	5.00	0.00	2.52	2.52
3.80	2.00	0.68	5.00	0.00	2.52	2.52
3.85	2.00	0.68	5.00	0.00	2.52	2.52
3.90	2.00	0.68	5.00	0.00	2.52	2.52
3.95	2.00	0.68	5.00	0.00	2.52	2.52
4.00	2.00	0.68	5.00	0.00	2.52	2.52
4.05	2.00	0.68	5.00	0.00	2.52	2.52
4.10	2.00	0.68	5.00	0.00	2.52	2.52
4.15	2.00	0.68	5.00	0.00	2.52	2.52
4.20	2.00	0.68	5.00	0.00	2.52	2.52
4.25	2.00	0.68	5.00	0.00	2.52	2.52
4.30	2.00	0.68	5.00	0.00	2.52	2.52
4.35	2.00	0.68	5.00	0.00	2.52	2.52
4.40	2.00	0.68	5.00	0.00	2.52	2.52
4.45	2.00	0.68	5.00	0.00	2.52	2.52
4.50	2.00	0.68	5.00	0.00	2.52	2.52
4.55	2.00	0.68	5.00	0.00	2.52	2.52
4.60	2.00	0.68	5.00	0.00	2.52	2.52
4.65	2.00	0.68	5.00	0.00	2.52	2.52
4.70	2.00	0.68	5.00	0.00	2.52	2.52
4.75	2.00	0.68	5.00	0.00	2.52	2.52
4.80	2.00	0.68	5.00	0.00	2.52	2.52
4.85	2.00	0.68	5.00	0.00	2.52	2.52
4.90	2.00	0.68	5.00	0.00	2.52	2.52
4.95	2.00	0.68	5.00	0.00	2.52	2.52
5.00	0.52	0.68	5.00	0.00	2.52	2.52
5.05	0.52	0.68	5.00	0.00	2.52	2.52
5.10	0.52	0.68	5.00	0.00	2.52	2.52
5.15	0.52	0.68	5.00	0.00	2.52	2.52
5.20	0.52	0.68	5.00	0.00	2.51	2.51
5.25	0.52	0.68	5.00	0.00	2.51	2.51
5.30	0.52	0.68	5.00	0.00	2.51	2.51
5.35	0.52	0.68	5.00	0.00	2.51	2.51
5.40	0.52	0.68	5.00	0.00	2.51	2.51
5.45	0.52	0.68	5.00	0.00	2.51	2.51
5.50	0.52	0.68	5.00	0.00	2.51	2.51
5.55	0.52	0.68	5.00	0.00	2.51	2.51
5.60	0.52	0.68	5.00	0.00	2.50	2.50
5.65	0.52	0.68	5.00	0.00	2.50	2.50
5.70	0.52	0.68	5.00	0.00	2.50	2.50
5.75	0.52	0.68	5.00	0.00	2.50	2.50
5.80	0.52	0.68	5.00	0.00	2.49	2.49
5.85	0.52	0.68	5.00	0.00	2.49	2.49
5.90	0.52	0.68	5.00	0.00	2.49	2.49
5.95	0.52	0.68	5.00	0.00	2.48	2.48
6.00	0.52	0.68	5.00	0.00	2.48	2.48
6.05	0.52	0.68	5.00	0.00	2.48	2.48
6.10	0.52	0.68	5.00	0.00	2.47	2.47
6.15	0.52	0.68	5.00	0.00	2.47	2.47
6.20	0.52	0.68	5.00	0.00	2.46	2.46

6.25	0.52	0.68	5.00	0.00	2.45	2.45
6.30	0.52	0.68	5.00	0.00	2.45	2.45
6.35	0.52	0.68	5.00	0.00	2.44	2.44
6.40	0.52	0.68	5.00	0.00	2.44	2.44
6.45	0.52	0.68	5.00	0.00	2.43	2.43
6.50	0.52	0.68	5.00	0.00	2.43	2.43
6.55	0.52	0.68	5.00	0.00	2.42	2.42
6.60	0.52	0.68	5.00	0.00	2.41	2.41
6.65	0.52	0.68	5.00	0.00	2.41	2.41
6.70	0.52	0.68	5.00	0.00	2.40	2.40
6.75	0.52	0.68	5.00	0.00	2.39	2.39
6.80	0.52	0.68	5.00	0.00	2.39	2.39
6.85	0.52	0.68	5.00	0.00	2.38	2.38
6.90	0.52	0.68	5.00	0.00	2.38	2.38
6.95	0.52	0.68	5.00	0.00	2.37	2.37
7.00	0.52	0.68	5.00	0.00	2.36	2.36
7.05	0.52	0.68	5.00	0.00	2.36	2.36
7.10	0.52	0.68	5.00	0.00	2.35	2.35
7.15	0.50	0.68	5.00	0.00	2.34	2.34
7.20	0.45	0.68	5.00	0.00	2.34	2.34
7.25	0.42	0.68	5.00	0.00	2.33	2.33
7.30	0.41	0.68	5.00	0.00	2.32	2.32
7.35	0.39	0.68	5.00	0.00	2.31	2.31
7.40	0.38	0.68	5.00	0.00	2.31	2.31
7.45	0.37	0.68	5.00	0.00	2.30	2.30
7.50	0.37	0.68	5.00	0.00	2.29	2.29
7.55	0.36	0.68	5.00	0.00	2.28	2.28
7.60	0.35	0.67	5.00	0.00	2.28	2.28
7.65	0.35	0.67	5.00	0.00	2.27	2.27
7.70	0.34	0.67	5.00	0.00	2.26	2.26
7.75	0.33	0.67	5.00	0.00	2.25	2.25
7.80	0.33	0.67	5.00	0.00	2.24	2.24
7.85	0.32	0.67	5.00	0.00	2.24	2.24
7.90	0.32	0.67	5.00	0.00	2.23	2.23
7.95	0.31	0.67	5.00	0.00	2.22	2.22
8.00	0.31	0.67	5.00	0.00	2.21	2.21
8.05	0.30	0.67	5.00	0.00	2.20	2.20
8.10	0.30	0.67	5.00	0.00	2.19	2.19
8.15	0.30	0.67	5.00	0.00	2.18	2.18
8.20	0.29	0.67	5.00	0.00	2.17	2.17
8.25	0.33	0.67	5.00	0.00	2.17	2.17
8.30	0.32	0.67	5.00	0.00	2.16	2.16
8.35	0.32	0.67	5.00	0.00	2.15	2.15
8.40	0.31	0.67	5.00	0.00	2.14	2.14
8.45	0.31	0.67	5.00	0.00	2.13	2.13
8.50	0.30	0.67	5.00	0.00	2.12	2.12
8.55	0.30	0.67	5.00	0.00	2.11	2.11
8.60	0.30	0.67	5.00	0.00	2.11	2.11
8.65	0.29	0.67	5.00	0.00	2.10	2.10
8.70	0.29	0.67	5.00	0.00	2.09	2.09

8.75	0.28	0.67	5.00	0.00	2.08	2.08
8.80	0.28	0.67	5.00	0.00	2.07	2.07
8.85	0.28	0.67	5.00	0.00	2.06	2.06
8.90	0.27	0.67	5.00	0.00	2.05	2.05
8.95	0.27	0.67	5.00	0.00	2.04	2.04
9.00	0.27	0.67	5.00	0.00	2.03	2.03
9.05	0.26	0.67	5.00	0.00	2.02	2.02
9.10	0.26	0.67	5.00	0.00	2.01	2.01
9.15	0.26	0.67	5.00	0.00	2.00	2.00
9.20	0.25	0.67	5.00	0.00	1.99	1.99
9.25	0.25	0.67	5.00	0.00	1.98	1.98
9.30	0.25	0.67	5.00	0.00	1.97	1.97
9.35	0.24	0.67	5.00	0.00	1.96	1.96
9.40	0.24	0.67	5.00	0.00	1.94	1.94
9.45	0.24	0.67	5.00	0.00	1.93	1.93
9.50	0.23	0.67	5.00	0.00	1.92	1.92
9.55	0.23	0.67	5.00	0.00	1.91	1.91
9.60	0.23	0.67	5.00	0.00	1.90	1.90
9.65	0.22	0.67	5.00	0.00	1.89	1.89
9.70	0.22	0.67	5.00	0.00	1.87	1.87
9.75	0.22	0.67	5.00	0.00	1.86	1.86
9.80	0.22	0.67	5.00	0.00	1.85	1.85
9.85	0.21	0.67	5.00	0.00	1.84	1.84
9.90	0.21	0.67	5.00	0.00	1.82	1.82
9.95	0.21	0.67	5.00	0.00	1.81	1.81
10.00	0.21	0.67	5.00	0.00	1.80	1.80
10.05	0.21	0.67	5.00	0.00	1.78	1.78
10.10	0.21	0.67	5.00	0.00	1.77	1.77
10.15	0.22	0.67	5.00	0.00	1.76	1.76
10.20	0.22	0.67	5.00	0.00	1.75	1.75
10.25	0.22	0.67	5.00	0.00	1.73	1.73
10.30	0.22	0.67	5.00	0.00	1.72	1.72
10.35	0.22	0.67	5.00	0.00	1.71	1.71
10.40	0.22	0.67	5.00	0.00	1.70	1.70
10.45	0.22	0.67	5.00	0.00	1.68	1.68
10.50	0.22	0.67	5.00	0.00	1.67	1.67
10.55	0.22	0.67	5.00	0.00	1.66	1.66
10.60	0.23	0.67	5.00	0.00	1.65	1.65
10.65	0.23	0.67	5.00	0.00	1.63	1.63
10.70	0.23	0.67	5.00	0.00	1.62	1.62
10.75	0.23	0.67	5.00	0.00	1.61	1.61
10.80	0.23	0.67	5.00	0.00	1.60	1.60
10.85	0.23	0.67	5.00	0.00	1.59	1.59
10.90	0.23	0.67	5.00	0.00	1.57	1.57
10.95	0.23	0.67	5.00	0.00	1.56	1.56
11.00	0.23	0.67	5.00	0.00	1.55	1.55
11.05	0.24	0.67	5.00	0.00	1.54	1.54
11.10	0.24	0.67	5.00	0.00	1.53	1.53
11.15	0.24	0.67	5.00	0.00	1.52	1.52
11.20	0.24	0.67	5.00	0.00	1.50	1.50

11.25	0.24	0.67	5.00	0.00	1.49	1.49
11.30	0.24	0.67	5.00	0.00	1.48	1.48
11.35	0.24	0.67	5.00	0.00	1.47	1.47
11.40	0.24	0.67	5.00	0.00	1.46	1.46
11.45	0.25	0.67	5.00	0.00	1.45	1.45
11.50	0.25	0.67	5.00	0.00	1.44	1.44
11.55	0.25	0.67	5.00	0.00	1.43	1.43
11.60	0.25	0.67	5.00	0.00	1.42	1.42
11.65	0.25	0.67	5.00	0.00	1.41	1.41
11.70	0.25	0.67	5.00	0.00	1.40	1.40
11.75	0.25	0.67	5.00	0.00	1.38	1.38
11.80	0.26	0.67	5.00	0.00	1.37	1.37
11.85	0.26	0.67	5.00	0.00	1.36	1.36
11.90	0.26	0.67	5.00	0.00	1.35	1.35
11.95	0.26	0.67	5.00	0.00	1.34	1.34
12.00	0.26	0.67	5.00	0.00	1.33	1.33
12.05	0.26	0.67	5.00	0.00	1.32	1.32
12.10	0.27	0.67	5.00	0.00	1.31	1.31
12.15	0.27	0.67	5.00	0.00	1.30	1.30
12.20	0.27	0.67	5.00	0.00	1.29	1.29
12.25	0.27	0.67	5.00	0.00	1.28	1.28
12.30	0.27	0.67	5.00	0.00	1.27	1.27
12.35	0.27	0.67	5.00	0.00	1.26	1.26
12.40	0.27	0.67	5.00	0.00	1.25	1.25
12.45	0.28	0.67	5.00	0.00	1.24	1.24
12.50	0.28	0.67	5.00	0.00	1.23	1.23
12.55	0.28	0.67	5.00	0.00	1.22	1.22
12.60	0.28	0.67	5.00	0.00	1.21	1.21
12.65	0.28	0.67	5.00	0.00	1.20	1.20
12.70	0.28	0.67	5.00	0.00	1.20	1.20
12.75	0.29	0.67	5.00	0.00	1.19	1.19
12.80	0.29	0.67	5.00	0.00	1.18	1.18
12.85	0.29	0.67	5.00	0.00	1.17	1.17
12.90	0.29	0.67	5.00	0.00	1.16	1.16
12.95	0.29	0.67	5.00	0.00	1.15	1.15
13.00	0.29	0.67	5.00	0.00	1.14	1.14
13.05	0.30	0.67	5.00	0.00	1.13	1.13
13.10	0.30	0.67	5.00	0.00	1.12	1.12
13.15	0.30	0.67	5.00	0.00	1.11	1.11
13.20	0.30	0.67	5.00	0.00	1.10	1.10
13.25	0.30	0.67	5.00	0.00	1.10	1.10
13.30	0.31	0.67	5.00	0.00	1.09	1.09
13.35	0.31	0.67	5.00	0.00	1.08	1.08
13.40	0.31	0.67	5.00	0.00	1.07	1.07
13.45	0.31	0.67	5.00	0.00	1.06	1.06
13.50	0.31	0.67	5.00	0.00	1.05	1.05
13.55	0.31	0.67	5.00	0.00	1.04	1.04
13.60	0.32	0.67	5.00	0.00	1.03	1.03
13.65	0.32	0.67	5.00	0.00	1.03	1.03
13.70	0.32	0.67	5.00	0.00	1.02	1.02

13.75	0.32	0.67	5.00	0.00	1.01	1.01
13.80	0.32	0.67	5.00	0.00	1.00	1.00
13.85	0.33	0.66	5.00	0.00	0.99	0.99
13.90	0.33	0.66	5.00	0.00	0.98	0.98
13.95	0.33	0.66	5.00	0.00	0.98	0.98
14.00	0.33	0.66	5.00	0.00	0.97	0.97
14.05	0.34	0.66	5.00	0.00	0.96	0.96
14.10	0.34	0.66	5.00	0.00	0.95	0.95
14.15	0.34	0.66	5.00	0.00	0.94	0.94
14.20	0.34	0.66	5.00	0.00	0.94	0.94
14.25	0.34	0.66	5.00	0.00	0.93	0.93
14.30	0.35	0.66	5.00	0.00	0.92	0.92
14.35	0.35	0.66	5.00	0.00	0.91	0.91
14.40	0.35	0.66	5.00	0.00	0.90	0.90
14.45	0.35	0.66	5.00	0.00	0.90	0.90
14.50	0.36	0.66	5.00	0.00	0.89	0.89
14.55	0.36	0.66	5.00	0.00	0.88	0.88
14.60	0.36	0.66	5.00	0.00	0.87	0.87
14.65	0.36	0.66	5.00	0.00	0.86	0.86
14.70	0.37	0.66	5.00	0.00	0.86	0.86
14.75	0.37	0.66	5.00	0.00	0.85	0.85
14.80	0.52	0.66	5.00	0.00	0.84	0.84
14.85	0.52	0.66	5.00	0.00	0.83	0.83
14.90	0.52	0.66	5.00	0.00	0.83	0.83
14.95	0.52	0.66	5.00	0.00	0.82	0.82
15.00	0.52	0.66	5.00	0.00	0.82	0.82
15.05	0.52	0.66	5.00	0.00	0.81	0.81
15.10	0.52	0.66	5.00	0.00	0.80	0.80
15.15	0.52	0.66	5.00	0.00	0.80	0.80
15.20	0.52	0.66	5.00	0.00	0.79	0.79
15.25	0.52	0.66	5.00	0.00	0.78	0.78
15.30	0.52	0.66	5.00	0.00	0.78	0.78
15.35	0.52	0.66	5.00	0.00	0.77	0.77
15.40	0.52	0.66	5.00	0.00	0.77	0.77
15.45	0.52	0.66	5.00	0.00	0.76	0.76
15.50	0.52	0.66	5.00	0.00	0.76	0.76
15.55	0.52	0.66	5.00	0.00	0.75	0.75
15.60	0.52	0.66	5.00	0.00	0.74	0.74
15.65	0.52	0.66	5.00	0.00	0.74	0.74
15.70	0.52	0.66	5.00	0.00	0.73	0.73
15.75	0.52	0.66	5.00	0.00	0.73	0.73
15.80	0.52	0.66	5.00	0.00	0.72	0.72
15.85	0.52	0.66	5.00	0.00	0.72	0.72
15.90	0.52	0.66	5.00	0.00	0.71	0.71
15.95	0.52	0.66	5.00	0.00	0.71	0.71
16.00	0.52	0.66	5.00	0.00	0.70	0.70
16.05	0.52	0.66	5.00	0.00	0.70	0.70
16.10	0.52	0.66	5.00	0.00	0.69	0.69
16.15	0.52	0.66	5.00	0.00	0.69	0.69
16.20	0.52	0.66	5.00	0.00	0.68	0.68

16.25	0.52	0.66	5.00	0.00	0.68	0.68
16.30	0.52	0.66	5.00	0.00	0.67	0.67
16.35	0.52	0.66	5.00	0.00	0.67	0.67
16.40	0.52	0.66	5.00	0.00	0.67	0.67
16.45	0.52	0.66	5.00	0.00	0.66	0.66
16.50	0.52	0.66	5.00	0.00	0.66	0.66
16.55	0.52	0.66	5.00	0.00	0.65	0.65
16.60	0.52	0.66	5.00	0.00	0.65	0.65
16.65	0.52	0.66	5.00	0.00	0.64	0.64
16.70	0.52	0.66	5.00	0.00	0.64	0.64
16.75	0.52	0.66	5.00	0.00	0.64	0.64
16.80	0.52	0.66	5.00	0.00	0.63	0.63
16.85	0.52	0.66	5.00	0.00	0.63	0.63
16.90	0.52	0.66	5.00	0.00	0.62	0.62
16.95	0.52	0.66	5.00	0.00	0.62	0.62
17.00	0.52	0.66	5.00	0.00	0.62	0.62
17.05	0.52	0.66	5.00	0.00	0.61	0.61
17.10	0.52	0.66	5.00	0.00	0.61	0.61
17.15	0.52	0.66	5.00	0.00	0.61	0.61
17.20	0.52	0.66	5.00	0.00	0.60	0.60
17.25	0.52	0.66	5.00	0.00	0.60	0.60
17.30	0.52	0.66	5.00	0.00	0.59	0.59
17.35	0.52	0.66	5.00	0.00	0.59	0.59
17.40	0.52	0.66	5.00	0.00	0.59	0.59
17.45	0.52	0.66	5.00	0.00	0.58	0.58
17.50	0.52	0.66	5.00	0.00	0.58	0.58
17.55	0.52	0.66	5.00	0.00	0.57	0.57
17.60	0.52	0.66	5.00	0.00	0.57	0.57
17.65	0.52	0.66	5.00	0.00	0.57	0.57
17.70	0.52	0.66	5.00	0.00	0.56	0.56
17.75	0.52	0.66	5.00	0.00	0.56	0.56
17.80	0.52	0.66	5.00	0.00	0.55	0.55
17.85	0.52	0.66	5.00	0.00	0.55	0.55
17.90	0.52	0.66	5.00	0.00	0.55	0.55
17.95	0.52	0.66	5.00	0.00	0.54	0.54
18.00	0.52	0.66	5.00	0.00	0.54	0.54
18.05	0.52	0.66	5.00	0.00	0.53	0.53
18.10	0.52	0.66	5.00	0.00	0.53	0.53
18.15	0.52	0.66	5.00	0.00	0.53	0.53
18.20	0.52	0.66	5.00	0.00	0.52	0.52
18.25	0.52	0.66	5.00	0.00	0.52	0.52
18.30	0.52	0.66	5.00	0.00	0.52	0.52
18.35	0.52	0.66	5.00	0.00	0.51	0.51
18.40	0.52	0.66	5.00	0.00	0.51	0.51
18.45	0.52	0.66	5.00	0.00	0.50	0.50
18.50	0.52	0.66	5.00	0.00	0.50	0.50
18.55	0.52	0.66	5.00	0.00	0.50	0.50
18.60	0.52	0.66	5.00	0.00	0.49	0.49
18.65	0.52	0.66	5.00	0.00	0.49	0.49
18.70	0.52	0.66	5.00	0.00	0.48	0.48

18.75	0.52	0.66	5.00	0.00	0.48	0.48
18.80	0.52	0.66	5.00	0.00	0.48	0.48
18.85	0.52	0.66	5.00	0.00	0.47	0.47
18.90	0.52	0.66	5.00	0.00	0.47	0.47
18.95	0.52	0.66	5.00	0.00	0.46	0.46
19.00	0.52	0.66	5.00	0.00	0.46	0.46
19.05	0.52	0.66	5.00	0.00	0.46	0.46
19.10	0.52	0.66	5.00	0.00	0.45	0.45
19.15	0.52	0.66	5.00	0.00	0.45	0.45
19.20	0.52	0.66	5.00	0.00	0.45	0.45
19.25	0.52	0.66	5.00	0.00	0.44	0.44
19.30	0.52	0.66	5.00	0.00	0.44	0.44
19.35	0.52	0.66	5.00	0.00	0.43	0.43
19.40	0.52	0.66	5.00	0.00	0.43	0.43
19.45	0.52	0.66	5.00	0.00	0.43	0.43
19.50	0.52	0.66	5.00	0.00	0.42	0.42
19.55	0.52	0.66	5.00	0.00	0.42	0.42
19.60	0.52	0.66	5.00	0.00	0.41	0.41
19.65	0.52	0.66	5.00	0.00	0.41	0.41
19.70	0.52	0.66	5.00	0.00	0.41	0.41
19.75	0.52	0.66	5.00	0.00	0.40	0.40
19.80	0.52	0.66	5.00	0.00	0.40	0.40
19.85	0.52	0.66	5.00	0.00	0.39	0.39
19.90	0.52	0.66	5.00	0.00	0.39	0.39
19.95	0.52	0.66	5.00	0.00	0.39	0.39
20.00	0.52	0.66	5.00	0.00	0.38	0.38
20.05	0.52	0.65	5.00	0.00	0.38	0.38
20.10	0.52	0.65	5.00	0.00	0.37	0.37
20.15	0.52	0.65	5.00	0.00	0.37	0.37
20.20	0.52	0.65	5.00	0.00	0.37	0.37
20.25	0.52	0.65	5.00	0.00	0.36	0.36
20.30	0.52	0.65	5.00	0.00	0.36	0.36
20.35	0.52	0.65	5.00	0.00	0.36	0.36
20.40	0.52	0.65	5.00	0.00	0.35	0.35
20.45	0.52	0.65	5.00	0.00	0.35	0.35
20.50	0.52	0.65	5.00	0.00	0.34	0.34
20.55	0.52	0.65	5.00	0.00	0.34	0.34
20.60	0.52	0.65	5.00	0.00	0.34	0.34
20.65	0.52	0.65	5.00	0.00	0.33	0.33
20.70	0.52	0.65	5.00	0.00	0.33	0.33
20.75	0.52	0.65	5.00	0.00	0.32	0.32
20.80	0.52	0.65	5.00	0.00	0.32	0.32
20.85	0.52	0.65	5.00	0.00	0.32	0.32
20.90	0.52	0.65	5.00	0.00	0.31	0.31
20.95	0.52	0.65	5.00	0.00	0.31	0.31
21.00	0.52	0.65	5.00	0.00	0.30	0.30
21.05	0.52	0.65	5.00	0.00	0.30	0.30
21.10	0.52	0.65	5.00	0.00	0.30	0.30
21.15	0.52	0.65	5.00	0.00	0.30	0.30
21.20	0.52	0.65	5.00	0.00	0.30	0.30

21.25	0.52	0.65	5.00	0.00	0.29	0.29
21.30	0.52	0.65	5.00	0.00	0.29	0.29
21.35	0.52	0.65	5.00	0.00	0.29	0.29
21.40	0.52	0.65	5.00	0.00	0.29	0.29
21.45	0.52	0.65	5.00	0.00	0.29	0.29
21.50	0.52	0.65	5.00	0.00	0.29	0.29
21.55	0.52	0.65	5.00	0.00	0.29	0.29
21.60	0.52	0.65	5.00	0.00	0.29	0.29
21.65	0.52	0.65	5.00	0.00	0.29	0.29
21.70	0.52	0.65	5.00	0.00	0.29	0.29
21.75	0.52	0.65	5.00	0.00	0.28	0.28
21.80	0.52	0.65	5.00	0.00	0.28	0.28
21.85	0.52	0.65	5.00	0.00	0.28	0.28
21.90	0.52	0.65	5.00	0.00	0.28	0.28
21.95	0.52	0.65	5.00	0.00	0.28	0.28
22.00	0.52	0.65	5.00	0.00	0.28	0.28
22.05	0.52	0.65	5.00	0.00	0.28	0.28
22.10	0.52	0.65	5.00	0.00	0.28	0.28
22.15	0.52	0.65	5.00	0.00	0.28	0.28
22.20	0.52	0.65	5.00	0.00	0.28	0.28
22.25	0.52	0.65	5.00	0.00	0.28	0.28
22.30	0.52	0.65	5.00	0.00	0.27	0.27
22.35	0.52	0.65	5.00	0.00	0.27	0.27
22.40	0.52	0.65	5.00	0.00	0.27	0.27
22.45	0.52	0.65	5.00	0.00	0.27	0.27
22.50	0.52	0.65	5.00	0.00	0.27	0.27
22.55	0.52	0.65	5.00	0.00	0.27	0.27
22.60	0.52	0.65	5.00	0.00	0.27	0.27
22.65	0.52	0.65	5.00	0.00	0.27	0.27
22.70	0.52	0.65	5.00	0.00	0.27	0.27
22.75	0.52	0.65	5.00	0.00	0.27	0.27
22.80	0.52	0.65	5.00	0.00	0.27	0.27
22.85	0.52	0.65	5.00	0.00	0.26	0.26
22.90	0.52	0.65	5.00	0.00	0.26	0.26
22.95	0.52	0.65	5.00	0.00	0.26	0.26
23.00	0.52	0.65	5.00	0.00	0.26	0.26
23.05	0.52	0.65	5.00	0.00	0.26	0.26
23.10	0.52	0.65	5.00	0.00	0.26	0.26
23.15	0.52	0.65	5.00	0.00	0.26	0.26
23.20	0.52	0.65	5.00	0.00	0.26	0.26
23.25	0.52	0.65	5.00	0.00	0.26	0.26
23.30	0.52	0.65	5.00	0.00	0.26	0.26
23.35	0.52	0.65	5.00	0.00	0.25	0.25
23.40	0.52	0.65	5.00	0.00	0.25	0.25
23.45	0.52	0.65	5.00	0.00	0.25	0.25
23.50	0.52	0.65	5.00	0.00	0.25	0.25
23.55	0.52	0.65	5.00	0.00	0.25	0.25
23.60	0.52	0.65	5.00	0.00	0.25	0.25
23.65	0.52	0.65	5.00	0.00	0.25	0.25
23.70	0.52	0.65	5.00	0.00	0.25	0.25

23.75	0.52	0.65	5.00	0.00	0.25	0.25
23.80	0.52	0.65	5.00	0.00	0.25	0.25
23.85	0.52	0.65	5.00	0.00	0.25	0.25
23.90	0.52	0.65	5.00	0.00	0.24	0.24
23.95	0.52	0.65	5.00	0.00	0.24	0.24
24.00	0.52	0.65	5.00	0.00	0.24	0.24
24.05	0.52	0.65	5.00	0.00	0.24	0.24
24.10	0.52	0.65	5.00	0.00	0.24	0.24
24.15	0.52	0.65	5.00	0.00	0.24	0.24
24.20	0.52	0.65	5.00	0.00	0.24	0.24
24.25	0.52	0.65	5.00	0.00	0.24	0.24
24.30	0.52	0.65	5.00	0.00	0.24	0.24
24.35	0.52	0.65	5.00	0.00	0.24	0.24
24.40	0.52	0.65	5.00	0.00	0.23	0.23
24.45	0.52	0.65	5.00	0.00	0.23	0.23
24.50	0.52	0.65	5.00	0.00	0.23	0.23
24.55	0.52	0.65	5.00	0.00	0.23	0.23
24.60	0.52	0.65	5.00	0.00	0.23	0.23
24.65	0.52	0.65	5.00	0.00	0.23	0.23
24.70	0.52	0.65	5.00	0.00	0.23	0.23
24.75	0.52	0.65	5.00	0.00	0.23	0.23
24.80	0.52	0.65	5.00	0.00	0.23	0.23
24.85	0.52	0.65	5.00	0.00	0.23	0.23
24.90	0.52	0.65	5.00	0.00	0.23	0.23
24.95	0.52	0.65	5.00	0.00	0.22	0.22
25.00	0.52	0.65	5.00	0.00	0.22	0.22
25.05	0.52	0.65	5.00	0.00	0.22	0.22
25.10	0.52	0.65	5.00	0.00	0.22	0.22
25.15	0.52	0.65	5.00	0.00	0.22	0.22
25.20	0.52	0.65	5.00	0.00	0.22	0.22
25.25	0.52	0.65	5.00	0.00	0.22	0.22
25.30	0.52	0.65	5.00	0.00	0.22	0.22
25.35	0.52	0.65	5.00	0.00	0.22	0.22
25.40	0.52	0.65	5.00	0.00	0.22	0.22
25.45	0.52	0.65	5.00	0.00	0.21	0.21
25.50	0.52	0.65	5.00	0.00	0.21	0.21
25.55	0.52	0.65	5.00	0.00	0.21	0.21
25.60	0.52	0.65	5.00	0.00	0.21	0.21
25.65	0.52	0.65	5.00	0.00	0.21	0.21
25.70	0.52	0.65	5.00	0.00	0.21	0.21
25.75	0.52	0.65	5.00	0.00	0.21	0.21
25.80	0.52	0.65	5.00	0.00	0.21	0.21
25.85	0.52	0.65	5.00	0.00	0.21	0.21
25.90	0.52	0.65	5.00	0.00	0.20	0.20
25.95	0.52	0.65	5.00	0.00	0.20	0.20
26.00	0.52	0.65	5.00	0.00	0.20	0.20
26.05	0.52	0.65	5.00	0.00	0.20	0.20
26.10	0.52	0.65	5.00	0.00	0.20	0.20
26.15	0.52	0.65	5.00	0.00	0.20	0.20
26.20	0.52	0.65	5.00	0.00	0.20	0.20

26.25	0.52	0.65	5.00	0.00	0.20	0.20
26.30	0.52	0.64	5.00	0.00	0.19	0.19
26.35	0.52	0.64	5.00	0.00	0.19	0.19
26.40	0.52	0.64	5.00	0.00	0.19	0.19
26.45	0.52	0.64	5.00	0.00	0.19	0.19
26.50	0.52	0.64	5.00	0.00	0.19	0.19
26.55	0.52	0.64	5.00	0.00	0.19	0.19
26.60	0.52	0.64	5.00	0.00	0.19	0.19
26.65	0.52	0.64	5.00	0.00	0.19	0.19
26.70	0.52	0.64	5.00	0.00	0.18	0.18
26.75	0.52	0.64	5.00	0.00	0.18	0.18
26.80	0.52	0.64	5.00	0.00	0.18	0.18
26.85	0.52	0.64	5.00	0.00	0.18	0.18
26.90	0.52	0.64	5.00	0.00	0.18	0.18
26.95	0.52	0.64	5.00	0.00	0.18	0.18
27.00	0.52	0.64	5.00	0.00	0.18	0.18
27.05	0.52	0.64	5.00	0.00	0.17	0.17
27.10	0.52	0.64	5.00	0.00	0.17	0.17
27.15	0.52	0.64	5.00	0.00	0.17	0.17
27.20	0.52	0.64	5.00	0.00	0.17	0.17
27.25	0.52	0.64	5.00	0.00	0.17	0.17
27.30	0.52	0.64	5.00	0.00	0.17	0.17
27.35	0.52	0.64	5.00	0.00	0.16	0.16
27.40	0.52	0.64	5.00	0.00	0.16	0.16
27.45	0.52	0.64	5.00	0.00	0.16	0.16
27.50	0.52	0.64	5.00	0.00	0.16	0.16
27.55	0.52	0.64	5.00	0.00	0.16	0.16
27.60	0.52	0.64	5.00	0.00	0.16	0.16
27.65	0.52	0.64	5.00	0.00	0.15	0.15
27.70	0.52	0.64	5.00	0.00	0.15	0.15
27.75	0.52	0.64	5.00	0.00	0.15	0.15
27.80	0.52	0.64	5.00	0.00	0.15	0.15
27.85	0.52	0.64	5.00	0.00	0.15	0.15
27.90	0.52	0.64	5.00	0.00	0.14	0.14
27.95	0.52	0.64	5.00	0.00	0.14	0.14
28.00	0.52	0.64	5.00	0.00	0.14	0.14
28.05	0.52	0.64	5.00	0.00	0.14	0.14
28.10	0.52	0.64	5.00	0.00	0.14	0.14
28.15	0.52	0.64	5.00	0.00	0.13	0.13
28.20	0.52	0.64	5.00	0.00	0.13	0.13
28.25	0.52	0.64	5.00	0.00	0.13	0.13
28.30	0.52	0.64	5.00	0.00	0.13	0.13
28.35	0.52	0.64	5.00	0.00	0.13	0.13
28.40	0.52	0.64	5.00	0.00	0.12	0.12
28.45	0.52	0.64	5.00	0.00	0.12	0.12
28.50	0.52	0.64	5.00	0.00	0.12	0.12
28.55	0.52	0.64	5.00	0.00	0.12	0.12
28.60	0.52	0.64	5.00	0.00	0.11	0.11
28.65	0.52	0.64	5.00	0.00	0.11	0.11
28.70	0.52	0.64	5.00	0.00	0.11	0.11

28.75	0.52	0.64	5.00	0.00	0.11	0.11
28.80	0.52	0.64	5.00	0.00	0.10	0.10
28.85	0.52	0.64	5.00	0.00	0.10	0.10
28.90	0.52	0.64	5.00	0.00	0.10	0.10
28.95	0.52	0.64	5.00	0.00	0.10	0.10
29.00	0.52	0.64	5.00	0.00	0.09	0.09
29.05	0.52	0.64	5.00	0.00	0.09	0.09
29.10	0.52	0.64	5.00	0.00	0.09	0.09
29.15	0.52	0.64	5.00	0.00	0.08	0.08
29.20	0.52	0.64	5.00	0.00	0.08	0.08
29.25	0.52	0.64	5.00	0.00	0.08	0.08
29.30	0.52	0.64	5.00	0.00	0.07	0.07
29.35	0.52	0.64	5.00	0.00	0.07	0.07
29.40	0.52	0.64	5.00	0.00	0.06	0.06
29.45	0.52	0.64	5.00	0.00	0.06	0.06
29.50	0.52	0.64	5.00	0.00	0.05	0.05
29.55	0.52	0.64	5.00	0.00	0.05	0.05
29.60	0.52	0.64	5.00	0.00	0.04	0.04
29.65	0.52	0.64	5.00	0.00	0.04	0.04
29.70	0.52	0.64	5.00	0.00	0.03	0.03
29.75	0.52	0.64	5.00	0.00	0.03	0.03
29.80	0.52	0.64	5.00	0.00	0.02	0.02
29.85	0.52	0.64	5.00	0.00	0.01	0.01
29.90	0.52	0.64	5.00	0.00	0.01	0.01
29.95	0.52	0.64	5.00	0.00	0.00	0.00
30.00	0.52	0.64	5.00	0.00	0.00	0.00
30.05	2.00	0.64	5.00	0.00	0.00	0.00
30.10	2.00	0.64	5.00	0.00	0.00	0.00
30.15	2.00	0.64	5.00	0.00	0.00	0.00
30.20	2.00	0.64	5.00	0.00	0.00	0.00
30.25	2.00	0.64	5.00	0.00	0.00	0.00
30.30	2.00	0.64	5.00	0.00	0.00	0.00
30.35	2.00	0.64	5.00	0.00	0.00	0.00
30.40	2.00	0.64	5.00	0.00	0.00	0.00
30.45	2.00	0.64	5.00	0.00	0.00	0.00
30.50	2.00	0.64	5.00	0.00	0.00	0.00
30.55	2.00	0.64	5.00	0.00	0.00	0.00
30.60	2.00	0.64	5.00	0.00	0.00	0.00
30.65	2.00	0.64	5.00	0.00	0.00	0.00
30.70	2.00	0.64	5.00	0.00	0.00	0.00
30.75	2.00	0.63	5.00	0.00	0.00	0.00
30.80	2.00	0.63	5.00	0.00	0.00	0.00
30.85	2.00	0.63	5.00	0.00	0.00	0.00
30.90	2.00	0.63	5.00	0.00	0.00	0.00
30.95	2.00	0.63	5.00	0.00	0.00	0.00
31.00	2.00	0.63	5.00	0.00	0.00	0.00
31.05	2.00	0.63	5.00	0.00	0.00	0.00
31.10	2.00	0.63	5.00	0.00	0.00	0.00
31.15	2.00	0.63	5.00	0.00	0.00	0.00
31.20	2.00	0.63	5.00	0.00	0.00	0.00

31.25	2.00	0.63	5.00	0.00	0.00	0.00
31.30	2.00	0.63	5.00	0.00	0.00	0.00
31.35	2.00	0.63	5.00	0.00	0.00	0.00
31.40	2.00	0.63	5.00	0.00	0.00	0.00
31.45	2.00	0.63	5.00	0.00	0.00	0.00
31.50	2.00	0.63	5.00	0.00	0.00	0.00
31.55	2.00	0.63	5.00	0.00	0.00	0.00
31.60	2.00	0.63	5.00	0.00	0.00	0.00
31.65	2.00	0.63	5.00	0.00	0.00	0.00
31.70	2.00	0.63	5.00	0.00	0.00	0.00
31.75	2.00	0.63	5.00	0.00	0.00	0.00
31.80	2.00	0.63	5.00	0.00	0.00	0.00
31.85	2.00	0.63	5.00	0.00	0.00	0.00
31.90	2.00	0.63	5.00	0.00	0.00	0.00
31.95	2.00	0.63	5.00	0.00	0.00	0.00
32.00	2.00	0.63	5.00	0.00	0.00	0.00
32.05	2.00	0.63	5.00	0.00	0.00	0.00
32.10	2.00	0.63	5.00	0.00	0.00	0.00
32.15	2.00	0.63	5.00	0.00	0.00	0.00
32.20	2.00	0.63	5.00	0.00	0.00	0.00
32.25	2.00	0.63	5.00	0.00	0.00	0.00
32.30	2.00	0.63	5.00	0.00	0.00	0.00
32.35	2.00	0.63	5.00	0.00	0.00	0.00
32.40	2.00	0.63	5.00	0.00	0.00	0.00
32.45	2.00	0.63	5.00	0.00	0.00	0.00
32.50	2.00	0.62	5.00	0.00	0.00	0.00
32.55	2.00	0.62	5.00	0.00	0.00	0.00
32.60	2.00	0.62	5.00	0.00	0.00	0.00
32.65	2.00	0.62	5.00	0.00	0.00	0.00
32.70	2.00	0.62	5.00	0.00	0.00	0.00
32.75	2.00	0.62	5.00	0.00	0.00	0.00
32.80	2.00	0.62	5.00	0.00	0.00	0.00
32.85	2.00	0.62	5.00	0.00	0.00	0.00
32.90	2.00	0.62	5.00	0.00	0.00	0.00
32.95	2.00	0.62	5.00	0.00	0.00	0.00
33.00	2.00	0.62	5.00	0.00	0.00	0.00
33.05	2.00	0.62	5.00	0.00	0.00	0.00
33.10	2.00	0.62	5.00	0.00	0.00	0.00
33.15	2.00	0.62	5.00	0.00	0.00	0.00
33.20	2.00	0.62	5.00	0.00	0.00	0.00
33.25	2.00	0.62	5.00	0.00	0.00	0.00
33.30	2.00	0.62	5.00	0.00	0.00	0.00
33.35	2.00	0.62	5.00	0.00	0.00	0.00
33.40	2.00	0.62	5.00	0.00	0.00	0.00
33.45	2.00	0.62	5.00	0.00	0.00	0.00
33.50	2.00	0.62	5.00	0.00	0.00	0.00
33.55	2.00	0.62	5.00	0.00	0.00	0.00
33.60	2.00	0.62	5.00	0.00	0.00	0.00
33.65	2.00	0.62	5.00	0.00	0.00	0.00
33.70	2.00	0.62	5.00	0.00	0.00	0.00

33.75	2.00	0.62	5.00	0.00	0.00	0.00
33.80	2.00	0.62	5.00	0.00	0.00	0.00
33.85	2.00	0.62	5.00	0.00	0.00	0.00
33.90	2.00	0.62	5.00	0.00	0.00	0.00
33.95	2.00	0.62	5.00	0.00	0.00	0.00
34.00	2.00	0.62	5.00	0.00	0.00	0.00
34.05	2.00	0.62	5.00	0.00	0.00	0.00
34.10	2.00	0.62	5.00	0.00	0.00	0.00
34.15	2.00	0.62	5.00	0.00	0.00	0.00
34.20	2.00	0.62	5.00	0.00	0.00	0.00
34.25	2.00	0.62	5.00	0.00	0.00	0.00
34.30	2.00	0.61	5.00	0.00	0.00	0.00
34.35	2.00	0.61	5.00	0.00	0.00	0.00
34.40	2.00	0.61	5.00	0.00	0.00	0.00
34.45	2.00	0.61	5.00	0.00	0.00	0.00
34.50	2.00	0.61	5.00	0.00	0.00	0.00
34.55	2.00	0.61	5.00	0.00	0.00	0.00
34.60	2.00	0.61	5.00	0.00	0.00	0.00
34.65	2.00	0.61	5.00	0.00	0.00	0.00
34.70	2.00	0.61	5.00	0.00	0.00	0.00
34.75	2.00	0.61	5.00	0.00	0.00	0.00
34.80	2.00	0.61	5.00	0.00	0.00	0.00
34.85	2.00	0.61	5.00	0.00	0.00	0.00
34.90	2.00	0.61	5.00	0.00	0.00	0.00
34.95	2.00	0.61	5.00	0.00	0.00	0.00
35.00	2.00	0.61	5.00	0.00	0.00	0.00
35.05	2.00	0.61	5.00	0.00	0.00	0.00
35.10	2.00	0.61	5.00	0.00	0.00	0.00
35.15	2.00	0.61	5.00	0.00	0.00	0.00
35.20	2.00	0.61	5.00	0.00	0.00	0.00
35.25	2.00	0.61	5.00	0.00	0.00	0.00
35.30	2.00	0.61	5.00	0.00	0.00	0.00
35.35	2.00	0.61	5.00	0.00	0.00	0.00
35.40	2.00	0.61	5.00	0.00	0.00	0.00
35.45	2.00	0.61	5.00	0.00	0.00	0.00
35.50	2.00	0.61	5.00	0.00	0.00	0.00
35.55	2.00	0.61	5.00	0.00	0.00	0.00
35.60	2.00	0.61	5.00	0.00	0.00	0.00
35.65	2.00	0.61	5.00	0.00	0.00	0.00
35.70	2.00	0.61	5.00	0.00	0.00	0.00
35.75	2.00	0.61	5.00	0.00	0.00	0.00
35.80	2.00	0.61	5.00	0.00	0.00	0.00
35.85	2.00	0.61	5.00	0.00	0.00	0.00
35.90	2.00	0.61	5.00	0.00	0.00	0.00
35.95	2.00	0.61	5.00	0.00	0.00	0.00
36.00	2.00	0.61	5.00	0.00	0.00	0.00
36.05	2.00	0.61	5.00	0.00	0.00	0.00
36.10	2.00	0.60	5.00	0.00	0.00	0.00
36.15	2.00	0.60	5.00	0.00	0.00	0.00
36.20	2.00	0.60	5.00	0.00	0.00	0.00

36.25	2.00	0.60	5.00	0.00	0.00	0.00
36.30	2.00	0.60	5.00	0.00	0.00	0.00
36.35	2.00	0.60	5.00	0.00	0.00	0.00
36.40	2.00	0.60	5.00	0.00	0.00	0.00
36.45	2.00	0.60	5.00	0.00	0.00	0.00
36.50	2.00	0.60	5.00	0.00	0.00	0.00
36.55	2.00	0.60	5.00	0.00	0.00	0.00
36.60	2.00	0.60	5.00	0.00	0.00	0.00
36.65	2.00	0.60	5.00	0.00	0.00	0.00
36.70	2.00	0.60	5.00	0.00	0.00	0.00
36.75	2.00	0.60	5.00	0.00	0.00	0.00
36.80	2.00	0.60	5.00	0.00	0.00	0.00
36.85	2.00	0.60	5.00	0.00	0.00	0.00
36.90	2.00	0.60	5.00	0.00	0.00	0.00
36.95	2.00	0.60	5.00	0.00	0.00	0.00
37.00	2.00	0.60	5.00	0.00	0.00	0.00
37.05	2.00	0.60	5.00	0.00	0.00	0.00
37.10	2.00	0.60	5.00	0.00	0.00	0.00
37.15	2.00	0.60	5.00	0.00	0.00	0.00
37.20	2.00	0.60	5.00	0.00	0.00	0.00
37.25	2.00	0.60	5.00	0.00	0.00	0.00
37.30	2.00	0.60	5.00	0.00	0.00	0.00
37.35	2.00	0.60	5.00	0.00	0.00	0.00
37.40	2.00	0.60	5.00	0.00	0.00	0.00
37.45	2.00	0.60	5.00	0.00	0.00	0.00
37.50	2.00	0.60	5.00	0.00	0.00	0.00
37.55	2.00	0.60	5.00	0.00	0.00	0.00
37.60	2.00	0.60	5.00	0.00	0.00	0.00
37.65	2.00	0.60	5.00	0.00	0.00	0.00
37.70	2.00	0.60	5.00	0.00	0.00	0.00
37.75	2.00	0.60	5.00	0.00	0.00	0.00
37.80	2.00	0.60	5.00	0.00	0.00	0.00
37.85	2.00	0.60	5.00	0.00	0.00	0.00
37.90	2.00	0.59	5.00	0.00	0.00	0.00
37.95	2.00	0.59	5.00	0.00	0.00	0.00
38.00	2.00	0.59	5.00	0.00	0.00	0.00
38.05	2.00	0.59	5.00	0.00	0.00	0.00
38.10	2.00	0.59	5.00	0.00	0.00	0.00
38.15	2.00	0.59	5.00	0.00	0.00	0.00
38.20	2.00	0.59	5.00	0.00	0.00	0.00
38.25	2.00	0.59	5.00	0.00	0.00	0.00
38.30	2.00	0.59	5.00	0.00	0.00	0.00
38.35	2.00	0.59	5.00	0.00	0.00	0.00
38.40	2.00	0.59	5.00	0.00	0.00	0.00
38.45	2.00	0.59	5.00	0.00	0.00	0.00
38.50	2.00	0.59	5.00	0.00	0.00	0.00
38.55	2.00	0.59	5.00	0.00	0.00	0.00
38.60	2.00	0.59	5.00	0.00	0.00	0.00
38.65	2.00	0.59	5.00	0.00	0.00	0.00
38.70	2.00	0.59	5.00	0.00	0.00	0.00

38.75	2.00	0.59	5.00	0.00	0.00	0.00
38.80	2.00	0.59	5.00	0.00	0.00	0.00
38.85	2.00	0.59	5.00	0.00	0.00	0.00
38.90	2.00	0.59	5.00	0.00	0.00	0.00
38.95	2.00	0.59	5.00	0.00	0.00	0.00
39.00	2.00	0.59	5.00	0.00	0.00	0.00
39.05	2.00	0.59	5.00	0.00	0.00	0.00
39.10	2.00	0.59	5.00	0.00	0.00	0.00
39.15	2.00	0.59	5.00	0.00	0.00	0.00
39.20	2.00	0.59	5.00	0.00	0.00	0.00
39.25	2.00	0.59	5.00	0.00	0.00	0.00
39.30	2.00	0.59	5.00	0.00	0.00	0.00
39.35	2.00	0.59	5.00	0.00	0.00	0.00
39.40	2.00	0.59	5.00	0.00	0.00	0.00
39.45	2.00	0.59	5.00	0.00	0.00	0.00
39.50	2.00	0.59	5.00	0.00	0.00	0.00
39.55	2.00	0.59	5.00	0.00	0.00	0.00
39.60	2.00	0.59	5.00	0.00	0.00	0.00
39.65	2.00	0.58	5.00	0.00	0.00	0.00
39.70	2.00	0.58	5.00	0.00	0.00	0.00
39.75	2.00	0.58	5.00	0.00	0.00	0.00
39.80	2.00	0.58	5.00	0.00	0.00	0.00
39.85	2.00	0.58	5.00	0.00	0.00	0.00
39.90	2.00	0.58	5.00	0.00	0.00	0.00
39.95	2.00	0.58	5.00	0.00	0.00	0.00
40.00	2.00	0.58	5.00	0.00	0.00	0.00
40.05	2.00	0.58	5.00	0.00	0.00	0.00
40.10	2.00	0.58	5.00	0.00	0.00	0.00
40.15	2.00	0.58	5.00	0.00	0.00	0.00
40.20	2.00	0.58	5.00	0.00	0.00	0.00
40.25	2.00	0.58	5.00	0.00	0.00	0.00
40.30	2.00	0.58	5.00	0.00	0.00	0.00
40.35	2.00	0.58	5.00	0.00	0.00	0.00
40.40	2.00	0.58	5.00	0.00	0.00	0.00
40.45	2.00	0.58	5.00	0.00	0.00	0.00
40.50	2.00	0.58	5.00	0.00	0.00	0.00
40.55	2.00	0.58	5.00	0.00	0.00	0.00
40.60	2.00	0.58	5.00	0.00	0.00	0.00
40.65	2.00	0.58	5.00	0.00	0.00	0.00
40.70	2.00	0.58	5.00	0.00	0.00	0.00
40.75	2.00	0.58	5.00	0.00	0.00	0.00
40.80	2.00	0.58	5.00	0.00	0.00	0.00
40.85	2.00	0.58	5.00	0.00	0.00	0.00
40.90	2.00	0.58	5.00	0.00	0.00	0.00
40.95	2.00	0.58	5.00	0.00	0.00	0.00
41.00	2.00	0.58	5.00	0.00	0.00	0.00
41.05	2.00	0.58	5.00	0.00	0.00	0.00
41.10	2.00	0.58	5.00	0.00	0.00	0.00
41.15	2.00	0.58	5.00	0.00	0.00	0.00
41.20	2.00	0.58	5.00	0.00	0.00	0.00

41.25	2.00	0.58	5.00	0.00	0.00	0.00
41.30	2.00	0.58	5.00	0.00	0.00	0.00
41.35	2.00	0.58	5.00	0.00	0.00	0.00
41.40	2.00	0.58	5.00	0.00	0.00	0.00
41.45	2.00	0.57	5.00	0.00	0.00	0.00
41.50	2.00	0.57	5.00	0.00	0.00	0.00
41.55	2.00	0.57	5.00	0.00	0.00	0.00
41.60	2.00	0.57	5.00	0.00	0.00	0.00
41.65	2.00	0.57	5.00	0.00	0.00	0.00
41.70	2.00	0.57	5.00	0.00	0.00	0.00
41.75	2.00	0.57	5.00	0.00	0.00	0.00
41.80	2.00	0.57	5.00	0.00	0.00	0.00
41.85	2.00	0.57	5.00	0.00	0.00	0.00
41.90	2.00	0.57	5.00	0.00	0.00	0.00
41.95	2.00	0.57	5.00	0.00	0.00	0.00
42.00	2.00	0.57	5.00	0.00	0.00	0.00
42.05	2.00	0.57	5.00	0.00	0.00	0.00
42.10	2.00	0.57	5.00	0.00	0.00	0.00
42.15	2.00	0.57	5.00	0.00	0.00	0.00
42.20	2.00	0.57	5.00	0.00	0.00	0.00
42.25	2.00	0.57	5.00	0.00	0.00	0.00
42.30	2.00	0.57	5.00	0.00	0.00	0.00
42.35	2.00	0.57	5.00	0.00	0.00	0.00
42.40	2.00	0.57	5.00	0.00	0.00	0.00
42.45	2.00	0.57	5.00	0.00	0.00	0.00
42.50	2.00	0.57	5.00	0.00	0.00	0.00
42.55	2.00	0.57	5.00	0.00	0.00	0.00
42.60	2.00	0.57	5.00	0.00	0.00	0.00
42.65	2.00	0.57	5.00	0.00	0.00	0.00
42.70	2.00	0.57	5.00	0.00	0.00	0.00
42.75	2.00	0.57	5.00	0.00	0.00	0.00
42.80	2.00	0.57	5.00	0.00	0.00	0.00
42.85	2.00	0.57	5.00	0.00	0.00	0.00
42.90	2.00	0.57	5.00	0.00	0.00	0.00
42.95	2.00	0.57	5.00	0.00	0.00	0.00
43.00	2.00	0.57	5.00	0.00	0.00	0.00
43.05	2.00	0.57	5.00	0.00	0.00	0.00
43.10	2.00	0.57	5.00	0.00	0.00	0.00
43.15	2.00	0.57	5.00	0.00	0.00	0.00
43.20	2.00	0.57	5.00	0.00	0.00	0.00
43.25	2.00	0.56	5.00	0.00	0.00	0.00
43.30	2.00	0.56	5.00	0.00	0.00	0.00
43.35	2.00	0.56	5.00	0.00	0.00	0.00
43.40	2.00	0.56	5.00	0.00	0.00	0.00
43.45	2.00	0.56	5.00	0.00	0.00	0.00
43.50	2.00	0.56	5.00	0.00	0.00	0.00
43.55	2.00	0.56	5.00	0.00	0.00	0.00
43.60	2.00	0.56	5.00	0.00	0.00	0.00
43.65	2.00	0.56	5.00	0.00	0.00	0.00
43.70	2.00	0.56	5.00	0.00	0.00	0.00

43.75	2.00	0.56	5.00	0.00	0.00	0.00
43.80	2.00	0.56	5.00	0.00	0.00	0.00
43.85	2.00	0.56	5.00	0.00	0.00	0.00
43.90	2.00	0.56	5.00	0.00	0.00	0.00
43.95	2.00	0.56	5.00	0.00	0.00	0.00
44.00	2.00	0.56	5.00	0.00	0.00	0.00
44.05	2.00	0.56	5.00	0.00	0.00	0.00
44.10	2.00	0.56	5.00	0.00	0.00	0.00
44.15	2.00	0.56	5.00	0.00	0.00	0.00
44.20	2.00	0.56	5.00	0.00	0.00	0.00
44.25	2.00	0.56	5.00	0.00	0.00	0.00
44.30	2.00	0.56	5.00	0.00	0.00	0.00
44.35	2.00	0.56	5.00	0.00	0.00	0.00
44.40	2.00	0.56	5.00	0.00	0.00	0.00
44.45	2.00	0.56	5.00	0.00	0.00	0.00
44.50	2.00	0.56	5.00	0.00	0.00	0.00
44.55	2.00	0.56	5.00	0.00	0.00	0.00
44.60	2.00	0.56	5.00	0.00	0.00	0.00
44.65	2.00	0.56	5.00	0.00	0.00	0.00
44.70	2.00	0.56	5.00	0.00	0.00	0.00
44.75	2.00	0.56	5.00	0.00	0.00	0.00
44.80	2.00	0.56	5.00	0.00	0.00	0.00
44.85	2.00	0.56	5.00	0.00	0.00	0.00
44.90	2.00	0.56	5.00	0.00	0.00	0.00
44.95	2.00	0.56	5.00	0.00	0.00	0.00
45.00	2.00	0.56	5.00	0.00	0.00	0.00
45.05	2.00	0.55	5.00	0.00	0.00	0.00
45.10	2.00	0.55	5.00	0.00	0.00	0.00
45.15	2.00	0.55	5.00	0.00	0.00	0.00
45.20	2.00	0.55	5.00	0.00	0.00	0.00
45.25	2.00	0.55	5.00	0.00	0.00	0.00
45.30	2.00	0.55	5.00	0.00	0.00	0.00
45.35	2.00	0.55	5.00	0.00	0.00	0.00
45.40	2.00	0.55	5.00	0.00	0.00	0.00
45.45	2.00	0.55	5.00	0.00	0.00	0.00
45.50	2.00	0.55	5.00	0.00	0.00	0.00
45.55	2.00	0.55	5.00	0.00	0.00	0.00
45.60	2.00	0.55	5.00	0.00	0.00	0.00
45.65	2.00	0.55	5.00	0.00	0.00	0.00
45.70	2.00	0.55	5.00	0.00	0.00	0.00
45.75	2.00	0.55	5.00	0.00	0.00	0.00
45.80	2.00	0.55	5.00	0.00	0.00	0.00
45.85	2.00	0.55	5.00	0.00	0.00	0.00
45.90	2.00	0.55	5.00	0.00	0.00	0.00
45.95	2.00	0.55	5.00	0.00	0.00	0.00
46.00	2.00	0.55	5.00	0.00	0.00	0.00
46.05	2.00	0.55	5.00	0.00	0.00	0.00
46.10	2.00	0.55	5.00	0.00	0.00	0.00
46.15	2.00	0.55	5.00	0.00	0.00	0.00
46.20	2.00	0.55	5.00	0.00	0.00	0.00

46.25	2.00	0.55	5.00	0.00	0.00	0.00
46.30	2.00	0.55	5.00	0.00	0.00	0.00
46.35	2.00	0.55	5.00	0.00	0.00	0.00
46.40	2.00	0.55	5.00	0.00	0.00	0.00
46.45	2.00	0.55	5.00	0.00	0.00	0.00
46.50	2.00	0.55	5.00	0.00	0.00	0.00
46.55	2.00	0.55	5.00	0.00	0.00	0.00
46.60	2.00	0.55	5.00	0.00	0.00	0.00
46.65	2.00	0.55	5.00	0.00	0.00	0.00
46.70	2.00	0.55	5.00	0.00	0.00	0.00
46.75	2.00	0.55	5.00	0.00	0.00	0.00
46.80	2.00	0.54	5.00	0.00	0.00	0.00
46.85	2.00	0.54	5.00	0.00	0.00	0.00
46.90	2.00	0.54	5.00	0.00	0.00	0.00
46.95	2.00	0.54	5.00	0.00	0.00	0.00
47.00	2.00	0.54	5.00	0.00	0.00	0.00
47.05	2.00	0.54	5.00	0.00	0.00	0.00
47.10	2.00	0.54	5.00	0.00	0.00	0.00
47.15	2.00	0.54	5.00	0.00	0.00	0.00
47.20	2.00	0.54	5.00	0.00	0.00	0.00
47.25	2.00	0.54	5.00	0.00	0.00	0.00
47.30	2.00	0.54	5.00	0.00	0.00	0.00
47.35	2.00	0.54	5.00	0.00	0.00	0.00
47.40	2.00	0.54	5.00	0.00	0.00	0.00
47.45	2.00	0.54	5.00	0.00	0.00	0.00
47.50	2.00	0.54	5.00	0.00	0.00	0.00
47.55	2.00	0.54	5.00	0.00	0.00	0.00
47.60	2.00	0.54	5.00	0.00	0.00	0.00
47.65	2.00	0.54	5.00	0.00	0.00	0.00
47.70	2.00	0.54	5.00	0.00	0.00	0.00
47.75	2.00	0.54	5.00	0.00	0.00	0.00
47.80	2.00	0.54	5.00	0.00	0.00	0.00
47.85	2.00	0.54	5.00	0.00	0.00	0.00
47.90	2.00	0.54	5.00	0.00	0.00	0.00
47.95	2.00	0.54	5.00	0.00	0.00	0.00
48.00	2.00	0.54	5.00	0.00	0.00	0.00
48.05	2.00	0.54	5.00	0.00	0.00	0.00
48.10	2.00	0.54	5.00	0.00	0.00	0.00
48.15	2.00	0.54	5.00	0.00	0.00	0.00
48.20	2.00	0.54	5.00	0.00	0.00	0.00
48.25	2.00	0.54	5.00	0.00	0.00	0.00
48.30	2.00	0.54	5.00	0.00	0.00	0.00
48.35	2.00	0.54	5.00	0.00	0.00	0.00
48.40	2.00	0.54	5.00	0.00	0.00	0.00
48.45	2.00	0.54	5.00	0.00	0.00	0.00
48.50	2.00	0.54	5.00	0.00	0.00	0.00
48.55	2.00	0.54	5.00	0.00	0.00	0.00
48.60	2.00	0.53	5.00	0.00	0.00	0.00
48.65	2.00	0.53	5.00	0.00	0.00	0.00
48.70	2.00	0.53	5.00	0.00	0.00	0.00

48.75	2.00	0.53	5.00	0.00	0.00	0.00
48.80	2.00	0.53	5.00	0.00	0.00	0.00
48.85	2.00	0.53	5.00	0.00	0.00	0.00
48.90	2.00	0.53	5.00	0.00	0.00	0.00
48.95	2.00	0.53	5.00	0.00	0.00	0.00
49.00	2.00	0.53	5.00	0.00	0.00	0.00
49.05	2.00	0.53	5.00	0.00	0.00	0.00
49.10	2.00	0.53	5.00	0.00	0.00	0.00
49.15	2.00	0.53	5.00	0.00	0.00	0.00
49.20	2.00	0.53	5.00	0.00	0.00	0.00
49.25	2.00	0.53	5.00	0.00	0.00	0.00
49.30	2.00	0.53	5.00	0.00	0.00	0.00
49.35	2.00	0.53	5.00	0.00	0.00	0.00
49.40	2.00	0.53	5.00	0.00	0.00	0.00
49.45	2.00	0.53	5.00	0.00	0.00	0.00
49.50	2.00	0.53	5.00	0.00	0.00	0.00
49.55	2.00	0.53	5.00	0.00	0.00	0.00
49.60	2.00	0.53	5.00	0.00	0.00	0.00
49.65	2.00	0.53	5.00	0.00	0.00	0.00
49.70	2.00	0.53	5.00	0.00	0.00	0.00
49.75	2.00	0.53	5.00	0.00	0.00	0.00
49.80	2.00	0.53	5.00	0.00	0.00	0.00
49.85	2.00	0.53	5.00	0.00	0.00	0.00
49.90	2.00	0.53	5.00	0.00	0.00	0.00
49.95	2.00	0.53	5.00	0.00	0.00	0.00
50.00	2.00	0.53	5.00	0.00	0.00	0.00
50.05	2.00	0.53	5.00	0.00	0.00	0.00
50.10	2.00	0.53	5.00	0.00	0.00	0.00
50.15	2.00	0.53	5.00	0.00	0.00	0.00
50.20	2.00	0.53	5.00	0.00	0.00	0.00
50.25	2.00	0.53	5.00	0.00	0.00	0.00
50.30	2.00	0.53	5.00	0.00	0.00	0.00
50.35	2.00	0.53	5.00	0.00	0.00	0.00
50.40	2.00	0.52	5.00	0.00	0.00	0.00
50.45	2.00	0.52	5.00	0.00	0.00	0.00
50.50	2.00	0.52	5.00	0.00	0.00	0.00
50.55	2.00	0.52	5.00	0.00	0.00	0.00
50.60	2.00	0.52	5.00	0.00	0.00	0.00
50.65	2.00	0.52	5.00	0.00	0.00	0.00
50.70	2.00	0.52	5.00	0.00	0.00	0.00
50.75	2.00	0.52	5.00	0.00	0.00	0.00
50.80	2.00	0.52	5.00	0.00	0.00	0.00
50.85	2.00	0.52	5.00	0.00	0.00	0.00
50.90	2.00	0.52	5.00	0.00	0.00	0.00
50.95	2.00	0.52	5.00	0.00	0.00	0.00
51.00	2.00	0.52	5.00	0.00	0.00	0.00

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* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

APPENDIX E

ALQUIST-PRIOLO SITE INVESTIGATION REPORTS

DEPARTMENT OF CONSERVATION

CALIFORNIA GEOLOGICAL SURVEY

801 K STREET • MS 12-30 • SACRAMENTO, CALIFORNIA 95814

PHONE 916 / 445-1825 • **FAX** 916 / 445-5718 • **TDD** 916 / 324-2555 • **WEB SITE** conservation.ca.gov

February 21, 2006

Mr. David L. Jones
Riverside County Building and Safety Department
4080 Lemon Street, 9th Floor
Riverside, CA 92502

Dear Mr. Jones:

We are placing on open file the following reports submitted by Riverside County in compliance with the Alquist-Priolo Earthquake Fault Zoning Act:

Fault investigation report, 79 acre Doumas property north of Cottonwood Avenue, by Converse Consultants, dated September 29, 2004, with supplemental reports dated December 14, 2005 and February 3, 2006.

AP-3352 Fault investigation, Y.H. Lyon LLC Property, APN 431-090-035 and –044, by Geocon, dated May 6, 2005, with supplemental reports dated July 8, 2005 and August 4, 2005.

Alquist-Priolo Earthquake Fault Zone investigation, JBJ Ranch, Bosley Lane, by Pacific Soils Engineering, with supplemental reports dated November 3, 2004 and October 6, 2005.

Preliminary geotechnical and fault investigation report, 29-acre site north of Cottonwood Avenue, by Converse Consultants, dated July 27, 2004, with supplemental reports dated April 25, 2005, July 29, 2005, and November 4, 2005.

Subsurface engineering geology investigation, tentative parcel map 29845, by Rasmussen and Assoc., dated December 4, 2002 with supplemental report dated February 7, 2003.

Sincerely,

William A. Bryant

William A. Bryant, CEG 1554
Alquist-Priolo Program Manager

cc: A-P file

AP-3352

COUNTY OF RIVERSIDE

TRANSPORTATION AND LAND MANAGEMENT AGENCY

Building and Safety Department

James J. Miller
Director

August 16, 2005 Pages 2 (including this cover)

San Jacinto Community Development Department
FAX: (951) 781-6014
Attention: Michelle Rambo, Contract Planner
(Hogle-Ireland, Inc.)

RE: Conditions of Approval
GEO No. 1402
CITY OF SAN JACINTO CASE NO. TR33072

County Geologic Report (GEO) No. 1402, submitted for this City of San Jacinto project (TR33072), was prepared by Geocon and is entitled: "Fault Investigation, Y.H. Lyon LLC Property, APN's 431-090-035 and –044, San Jacinto, California", dated May 6, 2005. In addition, Geocon submitted the following documents for this project:

1. "Response to County of Riverside Review Comments Dated July 8, 2005, Y.H. Lyon LLC Property (GEO No. 1402) APN's 431-090-035 and –044, San Jacinto, California", dated July 27, 2005.

2. "Response to County of Riverside Review Comments Dated August 4, 2005, Y.H. Lyon LLC Property, (GEO No. 1402), APN's 431-090-035 and –044, San Jacinto, California", dated August 11, 2005.

GEO No. 1402 concluded:

1. Soil and geologic conditions that would preclude the proposed residential development of the property were not encountered during the investigation. Development is considered feasible provided that the recommendations of GEO No. 1402 are followed.

2. The trench excavated for this investigation should be re-excavated during grading and replaced with compacted fill.

3. Three fault ruptures were observed within Holocene sediments within the Geocon fault trench. The fault zone is 70 feet wide extending from Station 324 through 395.

4. No faulting was noted in connection with the lineament along the northeastern AP Zone boundary.

GEO No. 1402 recommended:

1. A 50 foot structural setback zone on either side of the "fault zone" as noted on the Geologic Map, Figure 2, of GEO No. 1402.

2. The soil engineer and engineering geologist should review the grading plans prior to finalization to verify their compliance with the recommendations of this report and the geotechnical report (Geocon, 2004) and determine the necessity for additional analyses and/or recommendations. The soil engineer should also be provided the opportunity to review the structural foundation plans prior to finalizing to verify substantial conformance with the recommendations of this report.

GEO No. 1402 satisfies the requirement for a fault hazard study for Planning/CEQA purposes. Engineering and other Uniform Building Code parameters where not included as a part of this review or approval and this approval is not intended, and should not be misconstrued as approval for grading permit. Engineering and other building code parameters should be reviewed by the City of San Jacinto and additional comments and/or conditions may be imposed by the City's Building and Safety Department upon application for grading and/or building permits. In addition, an environmental constraints sheet (ECS) should be prepared for this project indicating that active faulting was located on this site as documented in GEO No. 1402 and the ECS should provide graphical depiction of the location of the fault zone and structural setback zone.

Thank you for the opportunity to review this case for the City of San Jacinto. Please call me at (951) 955-2006 or David L. Jones at 955-6863 if you have any questions.

Sincerely,

RIVERSIDE COUNTY BUILDING AND SAFETY DEPARTMENT
James J. Miller, Building and Safety Director

Brad Fagrell

Brad Fagrell, P.E.
Engineering Division Manager
Building and Safety Department

cc: Geotechnical Consultant: Geocon, Attn: Lisa Battiato (951) 304-2392
Applicant: Young Homes, Attn: Nikki Chumley (909) 291-7633
GEO01402

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GED 1402

AP-3352

FAULT INVESTIGATION

Y.H. LYON LLC PROPERTY
APN'S 431-090-035 AND -044
SAN JACINTO, CALIFORNIA

GEOCON
INLAND EMPIRE, INC.
GEOTECHNICAL
CONSULTANTS

PREPARED FOR

Y.H. LYON, LLC
RANCHO CUCAMONGA, CALIFORNIA

MAY 6, 2005

GEOCON
INLAND EMPIRE, INC.

GEOTECHNICAL CONSULTANTS

Project No. T2279-12-01
May 6, 2005

Y. H. Lyon, LLC
10370 Trademark Street
Rancho Cucamonga, California 91730

Attention: Mr. Rich Scott

Subject: Y.H. LYON, LLC PROPERTY
APN'S 431-090-035 AND -044
SAN JACINTO, CALIFORNIA
FAULT INVESTIGATION

Dear Mr. Scott:

In accordance with your authorization and our Proposal No. IE-156, dated November 11, 2004, we have performed a fault investigation for the subject property located west of Lyon Avenue, north of Cottonwood Avenue in the city of San Jacinto, Riverside County, California. The accompanying report presents the results of our fault study and includes our conclusions and recommendations pertaining to the geologic aspects of developing the property as presently proposed. It is our opinion that the site is suitable for development, provided the recommendations of this report are followed.

Should you have questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON INLAND EMPIRE, INC.

Lisa Battiato
CEG 2316

PROFESSIONAL GEOLOGIST
LISA A. BATTIATO
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CERTIFIED ENGINEERING GEOLOGIST
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LAB:DH:tg

(6) Addressee

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FAULT INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the findings of a subsurface fault investigation for the 43-acre proposed residential development. The site is located along the west side of Lyon Avenue approximately 1000 feet north of Cottonwood Avenue, see the enclosed Vicinity Map, Figure 1. The purpose of the investigation was to perform a lineament analysis and subsurface fault investigation within the property. Due to an Alquist-Priolo (AP) Fault Zone and an observed lineament located within the subject site

The scope of the investigation included a site reconnaissance, review of aerial photographs, previous fault studies in the vicinity of the property, and pertinent geologic literature (see *References*), and the excavation of the necessary fault trench. The scope of this investigation also included the graphical depiction of the southern trench wall, a meeting with the Riverside County Geologist to review the excavation, the carbon dating of samples obtained from the trench and the preparation of this report. The approximate location of this fault trench and other nearby trench and boring excavations are depicted on the *Geologic Map* (Figure 2).

2. SITE AND PROJECT DESCRIPTION

The subject site is an irregular-shaped parcel of land consisting of approximately 43 acres, located in the city of San Jacinto, Riverside County. The site is bounded on the east by Lyon Avenue; on the north by open land and the San Jacinto reservoir; on the south by rough-graded residential Tract 30944; and on the west by a recently improved channel and Tract 30944. The site topography slopes gently to the northeast.

At the time of the field exploration, the property was occupied by the Hideaway Farms horse ranch. Vegetation in the vicinity of the fault trench consisted of low grasses and weeds.

Underground utilities known to exist within the site are utilities associated with the residences, including on-site sewage disposal systems and irrigation lines. Two wells and associated water lines are also present within the property.

A 200-scale ortho-topo map obtained from Riverside County Flood and Water Conservation District was utilized as the base for our *Geologic Map*, Figure 2. The site will be graded for the future construction of a residential subdivision. Maximum proposed cut and fill thicknesses are estimated to be on the order of three to ten feet. Fill slopes are expected to be on the order of ten feet or less.

The site description and proposed development are based on a site reconnaissance, observations during the field investigation, and a review of the referenced geologic publications. If project details differ significantly from those described, Geocon should be contacted for review and possible revision to this report.

3. LITERATURE REVIEW

Geocon performed a literature review as part of our investigation. County Geologic Reports in the vicinity of the site were reviewed as was information provided by the client.

Sladden Engineering (Sladden) performed geotechnical and geologic hazards investigations on Tentative Tract 31293, located immediately southeast of the subject property (see *References*). Sladden excavated fault trenches across the AP zone and did not identify the fault but recommended a structural setback from "interesting features" observed within their trenches. When responding to a Riverside County review sheet Sladden describes lineaments outside of the AP zone as erosional features based on the reoccurrence interval of 200 to 300 years on the local faults. It is our understanding that Riverside County still has outstanding faulting issues on Tentative Tract 31293.

Leighton and Associates, Inc. (L&A), performed a preliminary fault investigation on Tract 30944, located immediately south and west of the subject property. Their initial investigation included two fault trenches excavated to depths of 15 to 17 feet. They observed channel-like features within the trenches, which were interpreted as deformation due to faulting at depth. Based on the occurrence of 6 major (6.2 to 7.2 M_w) events since the 18th century, Leighton did not believe this faulting was recently active but recommended a 50-foot structural setback as a conservative measure. In a response to a Riverside County review sheet they discussed that the deformation observed within the trenches plus the observed photo-lineament are results of faulting at depth. L&A also discussed the possibility of the origin of the deformation being due to sympathetic movement resulting from groundwater withdrawal and the possible location of a ground subsidence margin along the mapped fault. In response to a second Riverside County review sheet L&A discussed that the AP zone was zoned based on tonal lineaments identified by another consultant, which were due to large lateral spread associated with liquefaction at depth. L&A believed that the potential for ground rupture was "nil" and the recommended setback was a conservative measure to mitigate the potential for differential settlement. L&A's trench locations and their recommended setback zones are noted on the Geologic Map, Figure 2. L&A's logs are not presented herein but are included in GEO 1182, on file with the County of Riverside.

GeoSoils, Inc. performed a geotechnical investigation on the subject property in 2004. In the report of that study, GeoSoils discussed a previous fault investigation that they performed on the property in 1990 where they encountered active faulting and recommended a structural setback zone. This report

was not available for our review. However, we did receive a 200-scale map indicating their fault trench locations with a recommended structural setback zone. They recommended additional fault trenching in their 2004 report. The GeoSoils trench locations (T-2 and T-4) are noted on the *Geologic Map*, Figure 2.

4. REGIONAL GEOLOGIC SETTING

The site is located along the western portion of the San Jacinto basin. The San Jacinto basin is a northwest-trending alluvial basin resulting from movement along the branches of the San Jacinto fault system. The basin is bounded on the east by the Claremont fault and the San Jacinto Mountains and the west by the Casa Loma fault, the Lakeview Mountains and isolated granitic hills of the Peninsular Ranges Batholith. The Casa Loma and Claremont branches of the San Jacinto fault system are located approximately 1000 feet and 2¼ miles northeast of the property, respectively. A splay of the Casa Loma fault is located on the property.

Morton (1994) has characterized the San Jacinto valley as a 3 to 4 km wide pull-apart basin in which as much as 3000 m of sediment has accumulated. The Casa Loma fault has been characterized as an east-dipping normal fault with a significant right-slip component. The Claremont fault is an east dipping reverse fault also with a right lateral component. As the movement on these faults indicates, compression is occurring on the eastern edge of the basin and extension is occurring along the western margin. In addition to the faulting, ground fissures have been documented within the valley. The ground fissures are attributed to groundwater withdrawal, and consequently aquifer compaction. Furthermore, tectonic subsidence on the order of 3 to 5 mm/yr is occurring within the San Jacinto valley as determined from wood samples obtained in drill holes. Total subsidence within the valley is estimated at 2½ to 3 cm/yr.

5. SOIL AND GEOLOGIC CONDITIONS

The materials encountered during this investigation include alluvial soils consisting of horizontal to nearly horizontal laminated to thickly bedded clays, silts and sands. The soils were generally loose in the upper three to six feet and medium dense/very firm below. Formational deposits were not encountered within the site to the depth of 51½ feet (Geocon, 2004). The soil units exposed in the exploratory trench were designated with letters: Units A through K are generally designated from the surface downward; Units L through O were labeled, as they were encountered within and northeast of the fault zone. Carbon dating on some of the units was performed and the dates are noted with the descriptions. The age of the units and a discussion on carbon dating is provided in Section 6.4.

A – Topsoil, the upper soil layer which consists of very dark gray brown (2.5Y 3/2) silty coarse sand. The unit was generally massive with some open borrows and root casts.

B – Alluvium which consists of loose, dry to damp light grey (2.5Y 7/1) fine and coarse sand with occasional silt rip-up clasts and basal interbeds. The sand is subtly cross-bedded to massive and is present in thick sequences and as thin interbeds within Unit C.

C – Alluvium which consists of soft to firm, moist, olive gray (5Y 4/2) silt which is laminated to thickly bedded. The silt contains variable amounts of clay and carbonate. Carbon sample obtained from this unit was dated at 890±40 Years Before Present (YBP).

D – Alluvium which consists of firm to very firm, moist, olive brown (2.5Y 4/3) silt. This unit grades into Unit E at station 80, and is present again after station 190.

E – Alluvium which consists of medium dense, moist, olive (5Y 5/4 to 5Y 4/3) fine sand with mottled texture. Contains occasional gray silt interbeds. Unit D grades into E at station 80.

F – Alluvium consisting of firm, moist, olive brown (5Y 5/3) clay with some carbonate nodules and iron oxide staining. Carbon sample obtained from this unit was dated at 8590±60 YBP.

F_2 – Firm, moist, olive brown (5Y 5/3) silty clay (CL) with iron oxidation staining present east of fault.

G – Alluvium consisting of medium dense, moist, pale olive (5Y 6/3) fine sand. Carbon sample obtained from this unit was dated at 3770±50 YBP.

H – Alluvium consisting of firm, very moist, olive (5Y 4/3) clay with some carbonate nodules and iron oxide staining. Carbon sample obtained from this unit was dated at 5750±50 YBP.

I_1 – Alluvium consisting of medium dense, moist, light gray (5Y 7/1) medium to coarse sand, horizontally laminated to thinly cross-bedded.

I_2 – Alluvium consisting of medium dense, moist, light gray (5Y 7/1) coarse sand. Generally horizontally bedded with some areas of cross bedding. Bedding dips predominantly to the northeast beyond station 450.

I_3 – Med dense, moist, light gray (5Y 7/1) med to coarse sand (SP) bedding generally dips to northeast with localized areas of crossbedding present east of fault.

J – Alluvium consisting of medium dense, moist, olive (5Y 5/3), fine to medium sand with silt, localized areas of darker beds with carbon. Carbon sample obtained from this unit was dated at 3700±40 YBP.

K – Alluvium consisting of medium dense, moist, pale yellow (5Y 7/4) coarse sand.

L – Alluvium consisting of firm, moist, dark green gray (10Y 4/1) silt with sand. A localized soil unit is included in L. The soil is present above the main fault at station 343 and extends a few feet northeast of the rupture where it grades into unit L. Carbon sample obtained from the soil unit was dated at 900±40 YBP.

M - Alluvium consisting of medium dense, moist, yellow brown (10YR 5/4) sand. Present within fault zone.

N – Alluvium consisting of loose, damp, light gray (5Y 7/1) coarse sand. Bedding dips predominantly to the southwest with localized areas of cross-bedded sands. Carbon sample obtained from this unit was dated at 1970±40 YBP.

O – Alluvium consisting of very firm, moist, olive gray (5Y 4/2) fine sandy silt, micaceous, with some root casts.

6. FAULTING

6.1 Regional Faulting

Southern California is a seismically active region near the active boundary between the North American and Pacific tectonic plates. The principal source of seismic activity is movement along the northwest-trending regional faults such as the San Andreas, San Jacinto and Elsinore fault zones. Total movement between the plates is estimated at 55 millimeters of slip per year.

By definition of the State Mining and Geology Board, an active fault is one, which has had surface displacement within the Holocene Epoch (roughly the last 11,000 years). This definition is used in delineating Earthquake Fault Zones as mandated by the Alquist-Priolo Geologic Hazards Zones Act of 1972 and as revised in 1994 and 1997 to the Alquist-Priolo Earthquake Fault Zoning Act and Earthquake Fault Hazard Zones (AP Zone). The intent of the act is to require fault investigations on sites located within Earthquake Fault Hazard Zones to preclude new construction of certain habitable structures across the traces of active faults. An AP zone along a splay of the Casa Loma Fault is present within the property. Additionally, a lineament was observed along the northeastern AP boundary during our lineament analysis.

Based on our review of geologic literature: a splay of the Casa Loma fault exists within the site; the closest published active faults to the site are the Casa Loma branch of the San Jacinto fault zone located approximately 1000 feet to the northeast; the Claremont branch of the San Jacinto fault zone located approximately 2¼ miles to the northeast; the San Andreas approximately 16½ miles to the northeast; and the Elsinore fault located approximately 21¾ miles to the southwest.

The earthquake history within a 50 mile radius of the site has been generated by the program *EQSEARCH* (Blake, 2000) and is presented in Appendix B.

6.2 Lineament Analysis

In order to identify possible unmapped faults and to evaluate topographic expressions of published fault traces, we performed a lineament analysis of the site. Black and white vertical, stereographic photographs of the site from flights taken in 1948, 1962, 1974, 1984, 1990, 1995, and 2000 at scales ranging from 1 inch equals 1,600 feet to 1 inch equals 2,000 feet were utilized in our lineament analysis.

Lineaments were classified according to their development as strong, moderate or weak. A strong lineament is a well-defined feature, which can be continuously traced several hundred feet to a few thousand feet. A moderate lineament is less well defined, somewhat discontinuous and can be traced

for only a few hundred feet. A weak lineament is discontinuous, poorly defined, and can be traced for a few hundred feet or less.

Strong northwest trending lineaments were observed along the mapped trace of the fault and along the northeastern AP boundary in the 1948, 1962, 1974, 1980, 1984, 1990, and 2000, photos. The lineament along the mapped trace of the fault was expressed as a slight topographic high, or bulge, within the site. The lineament along the AP boundary was noted as a tonal contrast within the site and as a drainage northwest of the property.

6.3 On-Site Fault Investigation

The Geocon fault investigation was performed from November 29 through December 3, 2004. One 575-foot long trench was excavated in a N35E direction from the southwestern property corner, through the AP zone and extending approximately 25 feet northeast of the AP zone to cover the lineament along the AP boundary. The trench was 20 to 22 feet deep. The sides of the excavation were benched at an effective slope ratio of 1½:1 (horizontal:vertical) to provide safe working conditions. The trench was geologically logged by a Certified Engineering Geologist from our firm at a scale of 1 inch equals 5 feet. The main rupture at station 344 was surveyed.

The trench excavation exposed layered alluvial sands, silts and clays. The units were generally horizontal in the western portion of the trench from station 0 to station 324. At station 324, an offset bed was observed near the base of the trench. The units above the offset appear to be relatively undisturbed. A main fault rupture was observed at station 344 where clay beds appear to be vertically offset 14½ inches down on the east. The rupture did not appear to propagate through overlying clay/sand bed sequences, however, these overlying beds were warped and appear to have been post-depositionally deformed. Movement on a third rupture zone at station 390 also appears to have resulted in down-dropping on the eastern side. Fine sand and clay beds above this zone appear undeformed. From station 390 to station 575 continuous laminated to cross-bedded sands, and clays are generally horizontal and continuous. Based on age-dating of the soils, it is estimated that the event at station 324 occurred about 3700 YBP, the event at station 344 occurred after 900 YBP, and the event at station 390 occurred shortly after the station 344 event. The apparent movement is down to the east. However, the localized appearance of Unit M within the fault zone indicates that lateral movement was also likely to have occurred. The main fault within our trench aligned with the fault found in the L&A and GeoSoils trenches. Therefore, those trenches have been noted on the *Geologic Map* and were utilized to align the fault zone through the property.

Mr. David Jones, Riverside County Geologist, observed the trench on December 7, 2004. Three rupture areas were discussed, as was a recommended set back zone. Mr. Jones stated that, a 50 foot

setback on either side of the "fault zone" would be appropriate given the evidence of recent rupture. Typically the County of Riverside requires that offset trenches be excavated when faulting is discovered, however, Mr. Jones agreed that it would be appropriate to use the L&A trenches on Tract 30944 as offset trenches to align the setback zone. The lineament along the northeastern AP boundary was not observed within the trench. A continuous 2 to 3 inch thick clay layer at a depth of 13 feet was observed from station 540 to the end of the trench at station 575.

The trenches were backfilled will some compactive effort in order to achieve a relative compaction similar to the surrounding, native soils. Native soils were density tested prior to backfilling to establish a baseline for backfilling operations. During backfilling, the soils were periodically tested by a Geocon Soils Technician to verify the appropriate level of compaction was achieved. Results of the compaction procedures are provided in Appendix C. Although some compactive effort was employed during backfilling, the backfilled soils are not considered engineered fill. Therefore, the trenches should be re-excavated during grading and backfilled in accordance with recommendations provided in our referenced investigation (Geocon, 2004).

6.4 Age Dating

It has been a standard of practice within the San Jacinto Valley to extend fault trenches to a depth of 18 feet where a fairly continuous silt layer has reportedly been dated at 15,000 to 18,000 years. Initially, it was believed that L&A had performed this age dating, however, personal communications with Mr. Matt Clark of L&A, indicated that GeoSoils had determined that age. In an attempt to review the report, which discussed the work, it was discovered that neither L&A nor Riverside County possessed the report, which has been relied upon within the San Jacinto Valley for several years. Therefore, Geocon will not rely on the 15,000 to 18,000 year date for this investigation.

Carbon samples were obtained from several units throughout the trench. Eight samples were selected and forwarded to Beta Analytical for Acceleration Mass Spectrometer (AMS) age dating. Documents received from Beta Analytical are provided in Appendix D. The samples were selected based on their presence within stratigraphic layers and on the quantity of charcoal present. Results indicated that the charcoal samples within the trench ranged in age from 8590±60 YBP to 890±40 YBP. Three samples of organic sediment resulted in anomalously older, out of sequence dates than the other five samples and are believed to be older carbon, which was deposited in the sediment during mass wasting events. Five of the samples consisted of charred material, which, if sequenced from the top of the trench to the bottom of the excavation, indicate that the sediments range in age from 3770±40 YBP to 890±40 YBP. Given the age of the sediments, it is estimated that the sedimentation rate west of the fault is approximately 0.06 inches per year. The units located within and east of the fault zone appear to be much younger on the order of 2000 to 1500 YBP resulting in a sedimentation rate approximately double that of the area east of the fault.

Based on age dating of sediments above the main fault trace and in sediments above the fault, it appears that the fault at station 344 ruptured approximately 900±40 YBP. Due to the fact that slightly younger sediments above the main rupture were deformed, it is likely that the event occurred on the younger side of the date (about 900 to 860 YBP). Moreover, an offset sand observed at station 324 could have been a result of a previous event, which based on dates of the sediments occurred about 3700 ± 40 YBP. A third event was noted at station 390 and appears to be a similar age slightly younger than the main rupture at station 344. Table 6.4 Provides a summary of the age dating and the documents received from Beta Analytical are provided in Appendix D.

Table 6.4
Age Dating Results

Unit	Sample Number	Depth	Sample Material	Date
N	C13	3'	Organic Sediment	1970 ± 40 YBP
C	C14	5'	Charred Material	890 ± 40 YBP
Soil above Main Fault	C16	14'	Charred Material	900 ± 40 YBP
E	C10	10'	Charred Material	1060 ± 40 YBP
F	C7	17'	Organic Sediment	8590 ± 60 YBP
G	C3	18'	Charred Material	3770 ± 40 YBP
H	C1	19'	Organic Sediment	5750 ± 50 YBP
J	C6	20'	Charred Material	3700 ± 40 YBP

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 General

7.1.1 Soil or geologic conditions that would preclude the proposed residential development of the property were not encountered during our investigation. Therefore, development of the property is considered feasible provided that the recommendations of this report are followed.

7.1.2 The trench excavated for this investigation should be re-excavated during grading and replaced with compacted fill.

7.2 Fault Evaluation

7.2.1 Three fault ruptures were observed within Holocene sediments within the Geocon fault trench, this "fault zone" is located from station 325 to station 395. Therefore, a 50 foot structural setback zone on either side of the "fault zone" is recommended as noted on the *Geologic Map*, Figure 2. During the preparation of the grading plans the surveyed location of the main fault at station 344 should be used as a point of reference to establish the exact location of the structural setbacks. Measuring from that point one set back is located 70 feet to the southwest (20 feet for the fault zone and 50 feet for the structural setback) and, the other setback is 95 feet to the northeast (45 feet for the fault zone and 50 feet for the structural setback).

7.2.2 No faulting was noted in connection with the lineament along the northeastern AP Zone boundary, therefore, no structural setback zones are recommended along the lineament.

7.3 Plan Review

The soil engineer and engineering geologist should review the grading plans prior to finalization to verify their compliance with the recommendations of this report and the geotechnical report (Geocon, 2004) and determine the necessity for additional analyses and/or recommendations. The soils engineer should also be provided the opportunity to review the structural foundation plans prior to finalizing to verify substantial conformance with the recommendations of this report.

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Riverside County Flood Control and Water Conservation District
Aerial Photographs

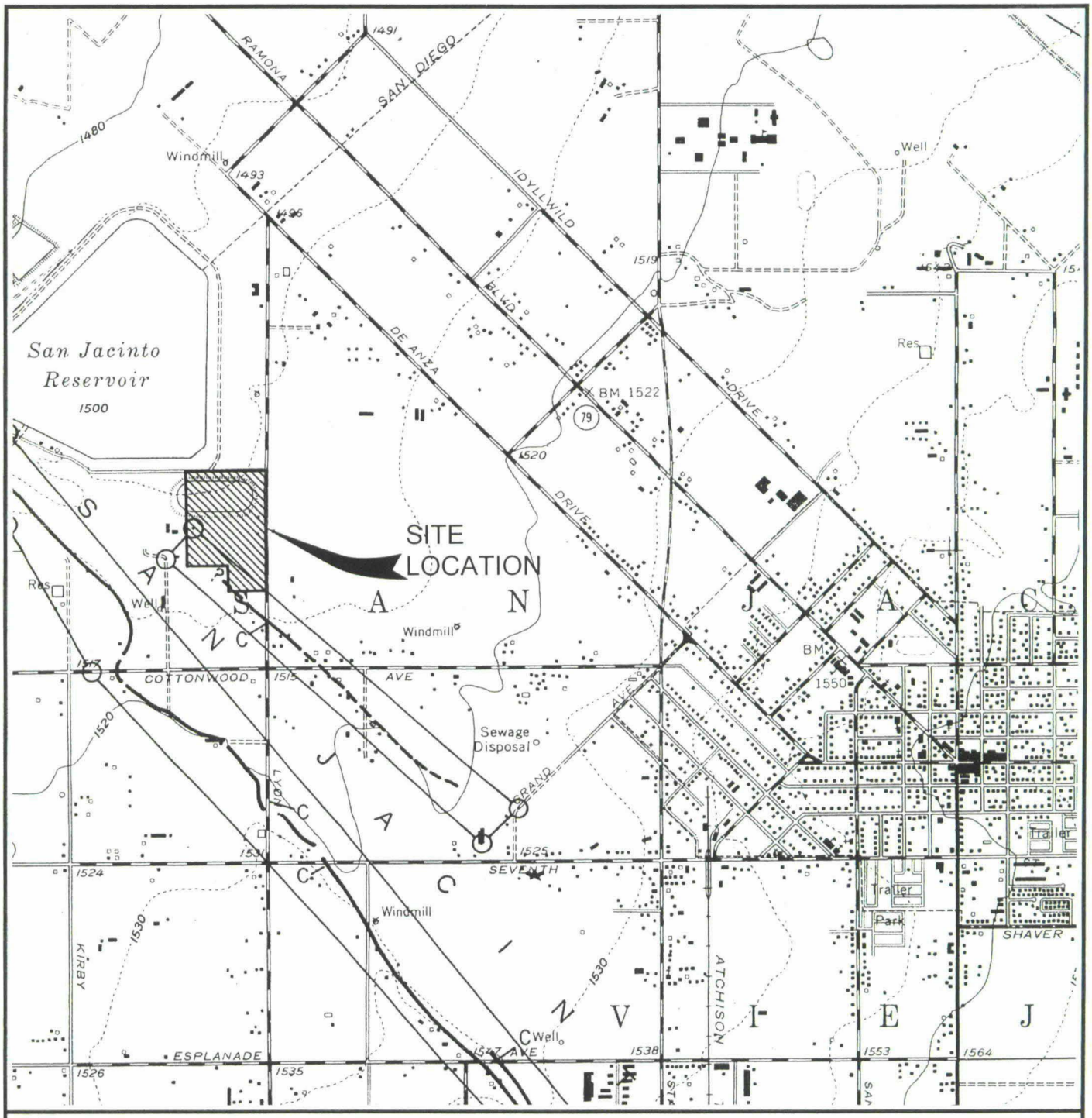
Date	Photograph Numbers	Scale
1948	191, 192	1 inch = 2000 feet ±
5/25/49	AXM-11F-164	1 inch = 2000 feet
1/29/62	2-210, 2-211	1 inch = 2000 feet
5/24/74	458, 459	1 inch = 2000 feet
4/10/80	485, 486	1 inch = 2000 feet
1/25/84	1087, 1088	1 inch = 1600 feet
1/9/90	9-40, 9-41	1 inch = 1600 feet
1/30/95	9-35, 9-36	1 inch = 1600 feet
3/18/00	9-37, 9-38	1 inch = 1600 feet

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon.

2. This report is issued with the understanding that it is the responsibility of the owner, or of his representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

3. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.



SOURCE: SPECIAL STUDIES ZONES MAP, 7.5 MINUTE SERIES, SAN JACINTO QUADRANGLE, DATED 1-1-80.

N

SCALE

0 2,000 Feet

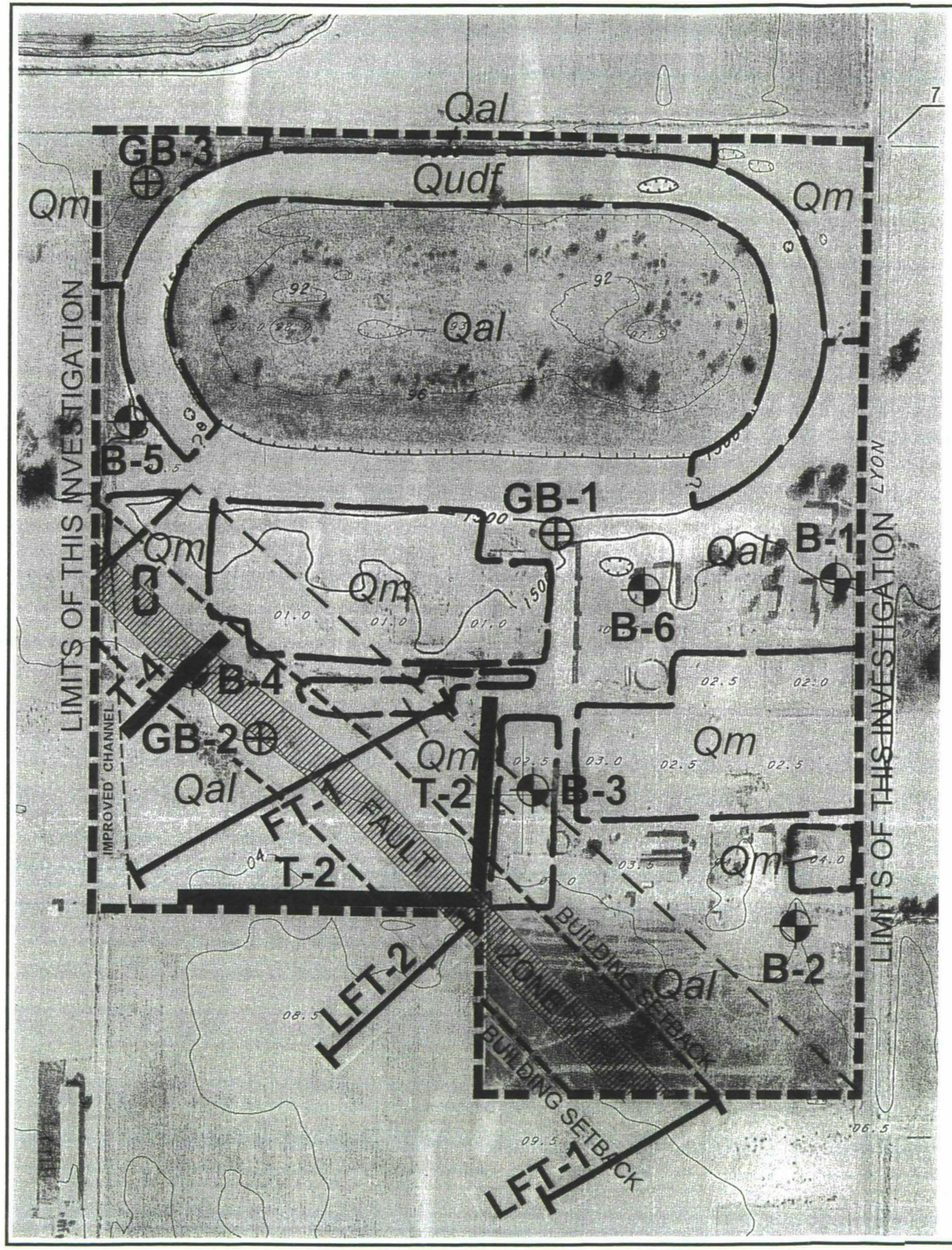
GEOCON
INLAND EMPIRE, INC.

GEOTECHNICAL CONSULTANTS
41571 CORNING PLACE, SUITE 101 - MURRIETA, CA. 92562-7065
PHONE 951 304-2300 - FAX 951 304-2392

VICINITY MAP

Y.H. LYON LLC PROPERTY
APN'S 431-090-035 AND -044
SAN JACINTO, CALIFORNIA

DATE: 5-6-2005	PROJECT NO.: T2279-12-01	FIG. 1



GEOCON LEGEND
(LOCATIONS ARE APPROXIMATE)

Qm	MANURE/ORGANIC IMPACTED SOIL
Qudf	UNDOCUMENTED FILL
Qal	ALLUVIUM
?	GEOLOGIC CONTACT (Queried Where Uncertain)
B-6	GEOCON BORING WITH RECOMMENDED REMOVAL DEPTH IN FEET
GB-3	GEOSOILS BORING, 2004
FT-1	FAULT TRENCH LOCATION
	AP ZONE BOUNDARY
T-4	GEOSOILS FAULT TRENCHES (T-2 & T-4), 1990?
LFT-2	LEIGHTON FAULT TRENCHES, 2002

SOURCE: RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT MAP, SECTION 28. T.4S., R.IW.,SBB & M, DATE OF PHOTOGRAPHY 5-30-89.

N

GEOLOGIC MAP
Y.H. LYON LLC PROPERTY
APN'S 431-090-035 AND -044
SAN JACINTO, CALIFORNIA

GEOCON
INLAND EMPIRE, INC.
GEOTECHNICAL CONSULTANTS
41571 CORNING PLACE, SUITE 101 - MURRIETA, CA 92562-7065
PHONE 951 304-2300 - FAX 951 304-2392

SCALE 1" = 200'	DATE 5-6-2005	
PROJECT NO. T2279-12-01		FIGURE 2
SHEET 1 OF 1		

APPENDIX A

APPENDIX A
FIELD INVESTIGATION

The field investigation was performed from November 29 through December 3, 2004, and consisted of a site reconnaissance, and excavation of a 575-foot long fault trench to depths of 20 to 22 feet.

The soil conditions encountered in the trench excavation were visually observed, classified and logged in general accordance with American Society for Testing and Materials (ASTM) practice for Description and Identification of Soils (Visual-Manual Procedure D2488). The soil color was classified in accordance with the 2000 *Munsel Soil Color Chart*. Logs of the trenches are presented on Figures A-1 and A-2. The location of the fault trench is shown, on the *Geologic Map*, Figure 2. The fault trench was geologically logged at a scale of 1 inch equals 5 feet by a Certified Engineering Geologist from our firm.

APPENDIX B

APPENDIX B

HISTORICAL EARTHQUAKE DATA

FOR

Y.H. LYON LLC PROPERTY
APN'S 431-090-035 AND -044
SAN JACINTO, CALIFORNIA

PROJECT NO. T2279-12-01

```
**************************
*                        *
*    E Q S E A R C H     *
*                        *
*     Version 3.00       *
*                        *
**************************
```

ESTIMATION OF
PEAK ACCELERATION FROM
CALIFORNIA EARTHQUAKE CATALOGS

JOB NUMBER: T2279-12-01

DATE: 11-16-2004

JOB NAME: Lyon LLC

EARTHQUAKE-CATALOG-FILE NAME: ALLQUAKE.DAT

SITE COORDINATES:
SITE LATITUDE: 33.7924
SITE LONGITUDE: 116.9918

SEARCH DATES:
START DATE: 1800
END DATE: 1999

SEARCH RADIUS:
50.0 mi
80.5 km

ATTENUATION RELATION: 10) Bozorgnia Campbell Niazi (1999) Hor.-Holocene Soil-Cor.
UNCERTAINTY (M=Median, S=Sigma): M Number of Sigmas: 0.0
ASSUMED SOURCE TYPE: DS [SS=Strike-slip, DS=Reverse-slip, BT=Blind-thrust]
SCOND: 0 Depth Source: A
Basement Depth: 5.00 km Campbell SSR: 0 Campbell SHR: 0
COMPUTE PEAK HORIZONTAL ACCELERATION

MINIMUM DEPTH VALUE (km): 3.0

EARTHQUAKE SEARCH RESULTS

Page 1

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE [km]	
DMG	33.8000	117.0000	12/25/1899	1225 0.0	0.0	6.40	0.654	X	0.7	(1.1)
DMG	33.7500	117.0000	06/06/1918	2232 0.0	0.0	5.00	0.214	VIII	3.0	(4.8)
DMG	33.7500	117.0000	04/21/1918	223225.0	0.0	6.80	0.602	X	3.0	(4.8)
MGI	33.8000	116.9000	04/23/1918	1415 0.0	0.0	4.00	0.101	VII	5.3	(8.5)
MGI	33.8000	116.9000	06/14/1918	1024 0.0	0.0	4.00	0.101	VII	5.3	(8.5)
MGI	33.8000	116.9000	04/29/1918	2 0 0.0	0.0	4.00	0.101	VII	5.3	(8.5)
MGI	33.8000	116.9000	12/18/1920	1726 0.0	0.0	4.00	0.101	VII	5.3	(8.5)
DMG	33.7100	116.9250	09/23/1963	144152.6	16.5	5.00	0.142	VIII	6.9	(11.0)
DMG	33.7000	117.1000	06/11/1902	245 0.0	0.0	4.50	0.089	VII	8.9	(14.3)
PAS	33.7010	116.8370	08/22/1979	2 136.3	5.0	4.10	0.061	VI	10.9	(17.5)
DMG	33.7380	117.1870	04/27/1962	91232.1	5.7	4.10	0.057	VI	11.8	(19.0)
DMG	33.9500	116.8500	09/28/1946	719 9.0	0.0	5.00	0.080	VII	13.6	(21.9)
DMG	33.9680	116.8820	06/27/1959	162211.1	13.8	4.00	0.047	VI	13.7	(22.0)
DMG	33.9000	117.2000	12/19/1880	0 0 0.0	0.0	6.00	0.144	VIII	14.1	(22.6)
DMG	34.0000	117.0000	06/30/1923	022 0.0	0.0	4.50	0.058	VI	14.3	(23.1)
DMG	34.0170	117.0500	02/19/1940	12 655.7	0.0	4.60	0.056	VI	15.9	(25.5)
DMG	33.9670	116.8000	09/07/1945	153424.0	0.0	4.30	0.046	VI	16.3	(26.2)
DMG	33.9170	116.7500	01/25/1933	1444 0.0	0.0	4.00	0.040	V	16.3	(26.3)
DMG	33.8000	116.7000	08/11/1911	1820 0.0	0.0	4.00	0.039	V	16.7	

(26.9)
DMG |33.8000|116.7000|08/11/1911|2340 0.0| 0.0| 4.50| 0.050 | VI | 16.7
(26.9)
DMG |33.9330|116.7500|08/06/1938| 228 0.0| 0.0| 4.00| 0.038 | V | 16.9
(27.2)
DMG |33.9330|116.7500|10/28/1944|183016.0| 0.0| 4.40| 0.047 | VI | 16.9
(27.2)
DMG |33.6500|116.7500|09/05/1950|191956.0| 0.0| 4.80| 0.058 | VI | 17.0
(27.4)
GSP |33.6500|116.7400|12/02/1989|231647.8| 14.0| 4.20| 0.041 | V | 17.5
(28.1)
DMG |33.9760|116.7750|10/17/1965| 94519.0| 17.0| 4.90| 0.058 | VI | 17.7
(28.6)
DMG |33.9730|116.7690|06/10/1944|111531.9| 10.0| 4.00| 0.037 | V | 17.8
(28.7)
DMG |33.9500|116.7330|04/26/1942|151023.0| 0.0| 4.00| 0.035 | V | 18.4
(29.6)
DMG |33.9170|116.7000|11/17/1943|112841.0| 0.0| 4.50| 0.045 | VI | 18.8
(30.3)
PDP |33.6320|116.7190|07/19/1999|220927.5| 14.0| 4.20| 0.037 | V | 19.2
(30.9)
DMG |34.0140|116.7710|06/10/1944|111150.5| 10.0| 4.50| 0.042 | VI | 19.8
(31.9)
DMG |33.9760|116.7210|06/12/1944|104534.7| 10.0| 5.10| 0.058 | VI | 20.0
(32.2)
DMG |34.0290|116.7870|04/30/1954| 03623.9| 11.1| 4.20| 0.036 | V | 20.1
(32.4)
DMG |33.5000|117.0000|08/08/1925|1013 0.0| 0.0| 4.50| 0.042 | V | 20.2
(32.5)
GSP |34.0850|116.9890|06/30/1992|214900.3| 3.0| 4.40| 0.039 | V | 20.2
(32.5)
PAS |33.9760|116.7130|08/06/1984| 81436.6| 14.2| 4.30| 0.037 | V | 20.4
(32.8)
DMG |34.0000|117.2500|07/23/1923| 73026.0| 0.0| 6.25| 0.114 | VII| 20.6
(33.1)
DMG |34.0000|117.2500|11/01/1932| 445 0.0| 0.0| 4.00| 0.032 | V | 20.6
(33.1)
DMG |33.5000|116.9170|11/04/1935| 355 0.0| 0.0| 4.50| 0.041 | V | 20.6
(33.2)
T-A |33.5000|117.0700|12/29/1880| 7 0 0.0| 0.0| 4.30| 0.037 | V | 20.7
(33.3)
GSP |34.0240|117.2300|03/11/1998|121851.8| 14.0| 4.50| 0.040 | V | 21.0
(33.8)
GSP |34.0970|116.9960|12/05/1997|170438.9| 4.0| 4.10| 0.033 | V | 21.0
(33.8)
DMG |33.9810|116.7020|06/12/1944|222119.5| 10.0| 4.20| 0.034 | V | 21.1
(34.0)
DMG |33.9940|116.7120|06/12/1944|111636.0| 10.0| 5.30| 0.062 | VI | 21.2
(34.2)
DMG |33.9960|117.2700|02/17/1952|123658.3| 16.0| 4.50| 0.039 | V | 21.3
(34.2)
PAS |34.0230|117.2450|10/02/1985|234412.4| 15.2| 4.80| 0.046 | VI | 21.5
(34.7)
DMG |34.0430|117.2280|04/03/1939| 25044.7| 10.0| 4.00| 0.030 | V | 22.0
(35.3)
PAS |33.9790|116.6810|12/16/1988| 553 5.0| 8.1| 4.80| 0.045 | VI | 22.0
(35.4)
DMG |34.0000|117.2830|11/07/1939|1852 8.4| 0.0| 4.70| 0.042 | VI | 22.0
(35.4)
DMG |34.0000|116.7000|08/25/1944| 73025.0| 0.0| 4.20| 0.033 | V | 22.0
(35.4)

DMG |34.1000|116.8830|10/24/1935|1527 0.0| 0.0| 4.00| 0.029 | V | 22.1
(35.6)
DMG |34.1000|116.8830|10/24/1935|1452 0.0| 0.0| 4.50| 0.038 | V | 22.1
(35.6)
DMG |34.1000|116.8830|10/24/1935|1451 0.0| 0.0| 4.50| 0.038 | V | 22.1
(35.6)
GSP |34.1120|116.9200|10/01/1998|181816.0| 4.0| 4.70| 0.041 | V | 22.4
(36.1)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	33.8000	116.6000	09/10/1931	436 0.0	0.0	4.00	0.029	V	22.5 (36.2)
GSP	34.1200	116.9980	06/29/1992	144126.0	4.0	4.40	0.035	V	22.6 (36.4)
DMG	33.9590	116.6510	09/23/1949	214440.1	12.2	4.00	0.029	V	22.7 (36.5)
GSP	34.1210	116.9280	08/16/1998	133440.2	6.0	4.70	0.040	V	23.0 (37.0)
MGI	33.5000	116.8000	06/02/1917	435 0.0	0.0	4.00	0.028	V	23.0 (37.0)
MGI	33.5000	116.8000	03/30/1918	16 5 0.0	0.0	4.60	0.038	V	23.0 (37.0)
MGI	33.5000	116.8000	05/31/1917	435 0.0	0.0	4.00	0.028	V	23.0 (37.0)
MGI	33.5000	116.8000	11/26/1916	17 5 0.0	0.0	4.00	0.028	V	23.0 (37.0)
DMG	33.8330	117.4000	06/05/1940	82727.0	0.0	4.00	0.028	V	23.6 (37.9)
DMG	33.9330	117.3670	10/24/1943	02921.0	0.0	4.00	0.028	V	23.6 (38.0)
DMG	34.1330	116.9500	06/10/1938	1440 0.0	0.0	4.00	0.027	V	23.6 (38.0)
DMG	33.4560	116.8960	06/16/1938	55916.9	10.0	4.00	0.027	V	23.9 (38.4)
PAS	33.9890	116.6490	07/17/1986	203515.0	6.2	4.00	0.027	V	23.9 (38.4)
DMG	34.1000	116.8000	10/24/1935	1448 7.6	0.0	5.10	0.049	VI	23.9 (38.5)
PAS	33.9910	116.6490	07/17/1986	215445.2	7.4	4.40	0.033	V	24.0 (38.5)
DMG	33.4540	116.8980	07/29/1936	142252.8	10.0	4.00	0.027	V	24.0 (38.6)
DMG	33.7000	117.4000	05/13/1910	620 0.0	0.0	5.00	0.045	VI	24.3 (39.1)

DMG |33.7000|117.4000|05/15/1910|1547 0.0| 0.0| 6.00| 0.082 | VII| 24.3
(39.1)
DMG |33.7000|117.4000|04/11/1910| 757 0.0| 0.0| 5.00| 0.045 | VI | 24.3
(39.1)
MGI |34.1000|117.2000|04/23/1923|2113 0.0| 0.0| 4.00| 0.027 | V | 24.4
(39.2)
DMG |33.4880|116.7770|06/12/1959|11 313.0| 5.7| 4.00| 0.027 | V | 24.4
(39.2)
PAS |33.9670|116.6170|07/08/1986|102240.6| 6.0| 4.40| 0.032 | V | 24.6
(39.6)
PAS |33.9670|116.6170|07/08/1986|155526.2| 6.0| 4.00| 0.026 | V | 24.6
(39.6)
PAS |33.5580|116.6670|06/15/1982|234921.3| 12.2| 4.80| 0.040 | V | 24.7
(39.7)
T-A |34.0800|117.2500|10/07/1869| 0 0 0.0| 0.0| 4.30| 0.030 | V | 24.8
(39.8)
PAS |34.1510|116.9720|11/20/1978| 655 9.5| 6.1| 4.30| 0.030 | V | 24.8
(39.9)
DMG |34.0330|117.3170|09/03/1935| 647 0.0| 0.0| 4.50| 0.033 | V | 25.0
(40.2)
GSP |34.1410|116.8570|09/19/1997|223714.5| 10.0| 4.10| 0.027 | V | 25.3
(40.7)
PAS |34.0310|116.6570|07/08/1986| 92412.8| 6.0| 4.40| 0.031 | V | 25.3
(40.7)
DMG |33.8980|116.5690|11/17/1964|145228.2| 10.3| 4.00| 0.026 | V | 25.3
(40.7)
DMG |34.1670|116.9830|10/16/1951|1241 5.0| 0.0| 4.00| 0.025 | V | 25.9
(41.6)
PAS |33.9980|116.6060|07/08/1986| 92044.5| 11.7| 5.60| 0.059 | VI | 26.3
(42.3)
DMG |34.1170|116.7500|08/22/1942|125913.0| 0.0| 4.00| 0.025 | V | 26.3
(42.4)
DMG |34.0330|117.3500|04/18/1940|184343.9| 0.0| 4.40| 0.030 | V | 26.4
(42.5)
PAS |33.9530|116.5720|10/15/1986| 22847.8| 8.7| 4.70| 0.035 | V | 26.5
(42.6)
GSP |34.1630|116.8550|06/28/1992|144321.0| 6.0| 5.30| 0.049 | VI | 26.8
(43.1)
GSP |34.1800|117.0200|12/04/1991|081703.5| 11.0| 4.00| 0.024 | V | 26.8
(43.1)
GSP |34.1780|116.9220|06/28/1992|170131.9| 13.0| 4.70| 0.034 | V | 26.9
(43.3)
DMG |34.1000|116.7000|02/07/1889| 520 0.0| 0.0| 5.30| 0.048 | VI | 27.0
(43.5)
DMG |34.1800|116.9200|01/16/1930| 034 3.6| 0.0| 5.10| 0.043 | VI | 27.1
(43.6)
DMG |34.1800|116.9200|01/16/1930| 02433.9| 0.0| 5.20| 0.045 | VI | 27.1
(43.6)
DMG |33.4830|116.7000|12/28/1948|125341.0| 0.0| 4.00| 0.024 | IV | 27.2
(43.7)
GSP |34.1630|116.8270|06/28/1992|150451.5| 12.0| 4.40| 0.029 | V | 27.3
(43.9)
DMG |33.5330|116.6330|09/21/1942| 7 754.0| 0.0| 4.00| 0.024 | IV | 27.3
(43.9)
MGI |34.0000|117.4000|05/22/1907| 652 0.0| 0.0| 4.60| 0.032 | V | 27.4
(44.1)
DMG |33.7330|117.4670|10/26/1954|162226.0| 0.0| 4.10| 0.025 | V | 27.6
(44.4)
GSP |34.1300|116.7340|06/30/1992|212254.4| 12.0| 4.80| 0.035 | V | 27.6
(44.4)
MGI |34.1000|117.3000|12/27/1901|11 0 0.0| 0.0| 4.60| 0.032 | V | 27.6

(44.4)
MGI |34.1000|117.3000|07/15/1905|2041 0.0| 0.0| 5.30| 0.047 | VI | 27.6
(44.4)
DMG |34.1000|117.3000|02/16/1931|1327 0.0| 0.0| 4.00| 0.023 | IV | 27.6
(44.4)
MGI |34.1000|117.3000|11/22/1911| 257 0.0| 0.0| 4.00| 0.023 | IV | 27.6
(44.4)
PAS |33.9870|116.5690|07/09/1986| 01232.1| 6.0| 4.40| 0.029 | V | 27.7
(44.6)
PAS |34.1980|116.9590|04/01/1978|105227.4| 8.0| 4.00| 0.023 | IV | 28.1
(45.2)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE [km]
DMG	33.7480	117.4790	06/22/1971	104119.0	8.0	4.20	0.025	V	28.1 (45.3)
GSP	34.1920	117.0950	04/06/1994	190104.1	7.0	4.80	0.035	V	28.2 (45.4)
T-A	34.0000	117.4200	09/10/1920	1415 0.0	0.0	4.30	0.026	V	28.4 (45.7)
T-A	34.0000	117.4200	04/12/1888	1315 0.0	0.0	4.30	0.026	V	28.4 (45.7)
DMG	33.5080	116.6310	08/11/1967	05711.4	10.7	4.10	0.024	IV	28.6 (46.0)
MGI	34.2000	116.9000	10/10/1915	5 6 0.0	0.0	4.00	0.023	IV	28.6 (46.1)
GSP	34.1950	116.8620	08/17/1992	204152.1	11.0	5.30	0.045	VI	28.8 (46.3)
DMG	34.2000	117.1000	09/20/1907	154 0.0	0.0	6.00	0.069	VI	28.8 (46.4)
GSP	34.1980	116.8620	08/18/1992	094640.7	12.0	4.20	0.025	V	29.0 (46.6)
GSP	34.1830	116.8020	06/28/1992	192637.6	1.0	4.00	0.022	IV	29.1 (46.8)
DMG	33.7250	117.4980	01/03/1956	02548.9	13.7	4.70	0.031	V	29.4 (47.3)
DMG	33.4500	116.6830	04/25/1955	25515.0	0.0	4.00	0.022	IV	29.6 (47.6)
GSP	34.1110	116.6460	06/28/1992	140928.8	7.0	4.10	0.023	IV	29.6 (47.6)
GSN	34.2030	116.8270	06/28/1992	150530.7	5.0	6.70	0.105	VII	29.9 (48.1)
DMG	33.7170	117.5070	08/06/1938	22 056.0	10.0	4.00	0.021	IV	30.0 (48.3)
DMG	34.1180	117.3410	09/22/1951	82239.1	11.9	4.30	0.025	V	30.1

(48.4)
DMG |34.1270|117.3380|02/23/1936|222042.7| 10.0| 4.50| 0.027 | V | 30.4
(49.0)
DMG |34.0650|116.5740|08/26/1959| 53250.2| 16.7| 4.30| 0.025 | V | 30.4
(49.0)
DMG |33.6990|117.5110|05/31/1938| 83455.4| 10.0| 5.50| 0.048 | VI | 30.5
(49.1)
DMG |33.4670|116.6330|02/20/1934|1035 0.0| 0.0| 4.00| 0.021 | IV | 30.5
(49.1)
DMG |33.5340|116.5610|09/23/1956|112441.9| 12.2| 4.30| 0.025 | V | 30.5
(49.1)
DMG |33.7170|117.5170|06/19/1935|1117 0.0| 0.0| 4.00| 0.021 | IV | 30.6
(49.2)
DMG |33.5060|116.5850|05/21/1967|144234.4| 19.4| 4.70| 0.030 | V | 30.6
(49.3)
PAS |33.4200|116.6980|06/05/1978|16 3 3.9| 11.9| 4.40| 0.026 | V | 30.8
(49.5)
GSP |34.2250|116.8440|07/09/1992|023435.0| 0.0| 4.10| 0.022 | IV | 31.0
(50.0)
DMG |34.1400|117.3390|02/26/1936| 93327.6| 10.0| 4.00| 0.021 | IV | 31.2
(50.1)
PAS |33.5200|116.5580|08/02/1975| 014 7.7| 13.4| 4.70| 0.030 | V | 31.2
(50.2)
GSP |34.2320|116.8460|07/10/1992|012940.0| 0.0| 4.20| 0.023 | IV | 31.5
(50.6)
PAS |34.2430|116.8960|06/30/1979| 03411.6| 5.8| 4.90| 0.033 | V | 31.6
(50.8)
GSP |34.2070|116.7570|06/28/1992|161719.2| 3.0| 4.20| 0.022 | IV | 31.6
(50.9)
PAS |34.2460|116.9010|06/29/1979| 55320.5| 5.7| 4.60| 0.028 | V | 31.7
(51.1)
GSP |34.2110|116.7600|06/28/1992|152429.3| 6.0| 4.50| 0.026 | V | 31.8
(51.2)
PAS |34.2490|116.9000|06/30/1979| 7 353.0| 5.6| 4.50| 0.026 | V | 32.0
(51.4)
GSP |34.2190|116.7710|07/21/1992|211029.0| 1.0| 4.10| 0.021 | IV | 32.0
(51.6)
GSP |34.2390|116.8370|07/09/1992|014357.6| 0.0| 5.30| 0.040 | V | 32.1
(51.6)
T-A |34.1700|117.3200|12/02/1859|2210 0.0| 0.0| 4.30| 0.023 | IV | 32.1
(51.7)
DMG |34.0170|116.5000|07/25/1947| 15647.0| 0.0| 4.60| 0.027 | V | 32.2
(51.8)
DMG |34.0170|116.5000|07/24/1947|225426.0| 0.0| 4.90| 0.032 | V | 32.2
(51.8)
DMG |34.0170|116.5000|08/01/1947|17 137.0| 0.0| 4.10| 0.021 | IV | 32.2
(51.8)
DMG |34.0170|116.5000|07/24/1947|221046.0| 0.0| 5.50| 0.045 | VI | 32.2
(51.8)
DMG |34.0170|116.5000|07/26/1947|23 425.0| 0.0| 4.50| 0.026 | V | 32.2
(51.8)
DMG |34.0170|116.5000|07/26/1947| 24941.0| 0.0| 5.10| 0.036 | V | 32.2
(51.8)
DMG |34.0170|116.5000|07/26/1947| 12415.0| 0.0| 4.20| 0.022 | IV | 32.2
(51.8)
DMG |34.0170|116.5000|07/25/1947| 75730.0| 0.0| 4.20| 0.022 | IV | 32.2
(51.8)
DMG |34.0170|116.5000|07/25/1947| 51752.0| 0.0| 4.30| 0.023 | IV | 32.2
(51.8)
DMG |34.0170|116.5000|07/29/1947|163615.0| 0.0| 4.20| 0.022 | IV | 32.2
(51.8)

DMG |34.0170|116.5000|07/30/1947| 52217.0| 0.0| 4.20| 0.022 | IV | 32.2
(51.8)
DMG |34.0170|116.5000|07/25/1947| 04631.0| 0.0| 5.00| 0.034 | V | 32.2
(51.8)
DMG |34.0170|116.5000|07/26/1947|231351.0| 0.0| 4.10| 0.021 | IV | 32.2
(51.8)
DMG |34.0170|116.5000|08/08/1947| 64745.0| 0.0| 4.00| 0.020 | IV | 32.2
(51.8)
DMG |34.0170|116.5000|07/24/1947|225341.0| 0.0| 4.30| 0.023 | IV | 32.2
(51.8)
DMG |34.0170|116.5000|07/25/1947|161453.0| 0.0| 4.50| 0.026 | V | 32.2
(51.8)
DMG |34.0170|116.5000|07/25/1947| 61949.0| 0.0| 5.20| 0.038 | V | 32.2
(51.8)

EARTHQUAKE SEARCH RESULTS

FILE CODE	APPROX. LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	DISTANCE [km]
DMG	34.2290	116.7950	05/11/1956	163050.5	13.3	4.70	0.029	V	32.2 (51.8)
GSP	34.2560	116.9120	06/28/1992	170557.5	8.0	4.60	0.027	V	32.3 (52.0)
DMG	33.8800	116.4370	04/17/1959	1619 0.2	22.2	4.20	0.022	IV	32.4 (52.1)
GSP	34.2370	116.8110	06/28/1992	125730.8	10.0	4.00	0.020	IV	32.4 (52.1)
DMG	34.0000	117.5000	07/03/1908	1255 0.0	0.0	4.00	0.020	IV	32.5 (52.2)
MGI	34.0000	117.5000	12/16/1858	10 0 0.0	0.0	7.00	0.118	VII	32.5 (52.2)
DMG	33.4670	116.5830	03/27/1937	528 0.0	0.0	4.00	0.020	IV	32.5 (52.3)
DMG	33.4670	116.5830	01/04/1938	029 0.0	0.0	4.50	0.025	V	32.5 (52.3)
DMG	33.4670	116.5830	03/27/1937	742 0.0	0.0	4.50	0.025	V	32.5 (52.3)
DMG	33.4670	116.5830	03/26/1937	2124 0.0	0.0	4.00	0.020	IV	32.5 (52.3)
GSP	34.1680	117.3370	06/28/1997	214525.1	9.0	4.20	0.022	IV	32.6 (52.5)
DMG	34.2670	116.9670	08/29/1943	51630.0	0.0	4.00	0.020	IV	32.8 (52.8)
DMG	34.2670	116.9670	08/29/1943	34513.0	0.0	5.50	0.044	VI	32.8 (52.8)
DMG	34.2670	116.9670	08/29/1943	35754.0	0.0	4.00	0.020	IV	32.8 (52.8)

USG	34.1390	117.3860	02/21/1987	231530.1	2.6	4.07	0.020	IV	32.9 (52.9)
DMG	33.6820	117.5530	07/05/1938	18 655.7	10.0	4.50	0.025	V	33.1 (53.3)
MGI	34.2000	117.3000	04/13/1913	1045 0.0	0.0	4.00	0.019	IV	33.2 (53.4)
DMG	34.1120	117.4260	03/19/1937	12338.4	10.0	4.00	0.019	IV	33.2 (53.5)
DMG	33.9670	116.4500	12/11/1948	161220.0	0.0	4.50	0.025	V	33.3 (53.6)
DMG	34.0000	116.4670	12/06/1948	246 8.0	0.0	4.30	0.022	IV	33.3 (53.6)
DMG	34.0000	116.4670	12/05/1948	05057.0	0.0	4.40	0.024	IV	33.3 (53.6)
DMG	34.2500	116.7700	03/16/1956	203344.3	0.8	4.00	0.019	IV	34.0 (54.8)
PAS	33.5010	116.5130	02/25/1980	104738.5	13.6	5.50	0.043	VI	34.1 (54.9)
DMG	34.1320	117.4260	04/15/1965	20 833.3	5.5	4.50	0.024	V	34.2 (55.0)
DMG	33.9670	116.4330	12/05/1948	04235.0	0.0	4.60	0.025	V	34.2 (55.1)
DMG	33.9630	116.4250	01/13/1950	5 719.4	5.9	4.10	0.020	IV	34.6 (55.6)
DMG	33.5000	116.5000	09/30/1916	211 0.0	0.0	5.00	0.031	V	34.7 (55.9)
PAS	33.4840	116.5130	08/11/1976	152455.5	15.4	4.30	0.021	IV	34.8 (56.0)
DMG	33.8000	117.6000	09/16/1903	1210 0.0	0.0	4.00	0.018	IV	34.9 (56.2)
MGI	33.8000	117.6000	04/22/1918	2115 0.0	0.0	5.00	0.031	V	34.9 (56.2)
GSP	34.2500	116.7190	06/29/1992	164141.9	1.0	4.90	0.029	V	35.2 (56.7)
PAS	34.1350	117.4480	01/08/1983	71930.4	4.6	4.10	0.019	IV	35.2 (56.7)
DMG	34.2640	116.7550	03/16/1956	203613.6	3.3	4.00	0.018	IV	35.3 (56.7)
DMG	33.9330	116.4000	12/10/1948	204257.0	0.0	4.40	0.022	IV	35.3 (56.8)
DMG	33.4830	116.5000	02/15/1951	104957.0	0.0	4.80	0.027	V	35.4 (57.0)
DMG	33.4830	116.5000	02/15/1951	104759.0	0.0	4.80	0.027	V	35.4 (57.0)
MGI	34.3000	116.9000	12/01/1915	14 5 0.0	0.0	4.00	0.018	IV	35.4 (57.0)
GSP	34.2730	116.7740	08/24/1992	135146.0	1.0	4.30	0.021	IV	35.4 (57.0)
DMG	33.5000	116.4830	02/23/1941	183614.0	0.0	4.50	0.023	IV	35.5 (57.2)
DMG	34.1160	117.4750	06/28/1960	20 048.0	12.0	4.10	0.019	IV	35.6 (57.2)
GSP	33.9450	116.3990	07/05/1992	054938.2	3.0	4.00	0.018	IV	35.6 (57.3)
DMG	33.9500	117.5830	04/11/1941	12024.0	0.0	4.00	0.018	IV	35.6 (57.3)
DMG	33.4170	116.5670	12/22/1950	2 536.0	0.0	4.00	0.018	IV	35.6 (57.3)
GSP	34.1900	117.3900	12/28/1989	094108.1	15.0	4.50	0.023	IV	35.7 (57.4)
PAS	34.0220	116.4260	08/14/1975	8 849.8	10.9	4.00	0.018	IV	36.1

(58.1)
DMG |34.1240|117.4800|05/15/1955|17 326.0| 7.6| 4.00| 0.018 | IV | 36.1
(58.1)
DMG |34.0830|116.4670|03/01/1942|104631.0| 0.0| 4.00| 0.018 | IV | 36.1
(58.2)
DMG |34.0830|116.4670|01/26/1934|1844 0.0| 0.0| 4.00| 0.018 | IV | 36.1
(58.2)
DMG |33.9330|116.3830|12/04/1948|234317.0| 0.0| 6.50| 0.075 | VII| 36.2
(58.3)
DMG |33.2670|117.0170|06/07/1935|1633 0.0| 0.0| 4.00| 0.018 | IV | 36.3
(58.4)
PAS |33.9850|116.4020|02/15/1985|232626.6| 2.3| 4.00| 0.018 | IV | 36.3
(58.5)
DMG |34.3120|116.8790|01/31/1972| 155 4.2| 8.0| 4.00| 0.018 | IV | 36.4
(58.7)
DMG |33.4000|116.5670|02/04/1953| 43616.0| 0.0| 4.30| 0.020 | IV | 36.5
(58.7)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
GSP	34.2980	116.8040	07/05/1992	200303.1	3.0	4.00	0.018	IV	36.5 (58.8)
GSP	34.2750	116.7300	07/01/1992	204617.8	1.0	4.20	0.019	IV	36.5 (58.8)
DMG	34.2000	117.4000	07/22/1899	046 0.0	0.0	5.50	0.040	V	36.6 (58.9)
DMG	34.0500	116.4330	02/08/1938	739 0.0	0.0	4.00	0.017	IV	36.6 (58.9)
DMG	34.3200	116.9250	04/18/1968	174213.4	4.7	4.00	0.017	IV	36.6 (58.9)
DMG	34.3070	116.8350	08/28/1950	194526.4	11.7	4.20	0.019	IV	36.6 (59.0)
GSP	33.9460	116.3790	04/24/1992	123605.7	10.0	4.10	0.018	IV	36.7 (59.0)
GSP	33.5100	116.4500	02/18/1990	155259.9	9.0	4.10	0.018	IV	36.7 (59.1)
GSP	34.2810	116.7310	07/01/1992	205356.8	1.0	4.00	0.017	IV	36.9 (59.4)
DMG	34.2990	116.7840	03/18/1956	24217.3	6.3	4.40	0.021	IV	36.9 (59.4)
DMG	33.9330	116.3670	12/05/1948	0 721.0	0.0	4.90	0.028	V	37.1 (59.7)
DMG	34.3240	116.8850	12/01/1962	03548.8	9.6	4.30	0.020	IV	37.2 (59.9)
DMG	34.0670	116.4320	12/04/1957	25144.0	3.7	4.30	0.020	IV	37.3

(59.9)
GSP |34.3200|116.8500|10/27/1998|154017.1| 4.0| 4.10| 0.018 | IV | 37.3
(60.1)
DMG |34.3330|117.0000|02/27/1942| 1 853.0| 0.0| 4.00| 0.017 | IV | 37.3
(60.1)
DMG |34.3250|116.8750|12/02/1962| 04138.4| 6.7| 4.40| 0.021 | IV | 37.4
(60.1)
GSP |34.2740|116.6920|07/01/1992|170715.1| 4.0| 4.20| 0.019 | IV | 37.4
(60.2)
DMG |34.3250|116.8650|10/29/1962| 24253.9| 8.6| 4.80| 0.026 | V | 37.5
(60.3)
PDP |34.3220|116.8460|09/20/1999|070249.2| 2.0| 4.20| 0.019 | IV | 37.5
(60.3)
GSP |34.3230|116.8440|10/27/1998|010840.7| 5.0| 4.90| 0.027 | V | 37.6
(60.5)
DMG |34.0000|116.3830|05/05/1944|134715.0| 0.0| 4.00| 0.017 | IV | 37.7
(60.7)
DMG |34.3330|116.8830|10/14/1943|142844.0| 0.0| 4.50| 0.022 | IV | 37.8
(60.9)
DMG |34.3170|116.8000|08/12/1950| 21717.0| 0.0| 4.30| 0.020 | IV | 37.8
(60.9)
DMG |34.3060|116.7590|03/16/1956|202933.6| 1.3| 4.80| 0.026 | V | 37.9
(61.0)
DMG |34.3370|116.9090|11/30/1962|2351 5.5| 7.0| 4.30| 0.020 | IV | 37.9
(61.0)
PAS |34.3220|116.8150|08/29/1985| 759 8.7| 6.1| 4.10| 0.018 | IV | 37.9
(61.0)
DMG |33.9330|116.3500|12/05/1948| 04032.0| 0.0| 4.40| 0.021 | IV | 38.1
(61.2)
DMG |33.5010|116.4290|02/23/1971| 0 739.2| 8.0| 4.20| 0.019 | IV | 38.1
(61.3)
DMG |34.1270|117.5210|12/27/1938|10 928.6| 10.0| 4.00| 0.017 | IV | 38.1
(61.3)
GSP |34.3400|116.9000|11/27/1992|160057.5| 1.0| 5.30| 0.034 | V | 38.2
(61.4)
GSP |34.0890|116.4260|06/28/1992|143906.9| 0.0| 4.30| 0.019 | IV | 38.3
(61.7)
PAS |33.4830|116.4380|07/02/1988| 02658.2| 12.6| 4.00| 0.017 | IV | 38.3
(61.7)
DMG |34.1400|117.5150|01/01/1965| 8 418.0| 5.9| 4.40| 0.020 | IV | 38.4
(61.8)
GSP |34.0950|116.4270|06/28/1992|211316.5| 3.0| 4.60| 0.023 | IV | 38.5
(62.0)
DMG |33.4200|116.4900|03/29/1937|17 316.8| 10.0| 4.00| 0.017 | IV | 38.6
(62.2)
GSP |33.9400|116.3410|05/04/1992|011602.6| 6.0| 4.00| 0.017 | IV | 38.7
(62.2)
DMG |33.9580|116.3460|01/08/1952| 63427.4| 11.4| 4.40| 0.020 | IV | 38.7
(62.3)
GSP |34.0300|116.3790|06/28/1992|160115.2| 1.0| 4.10| 0.017 | IV | 38.8
(62.4)
GSP |34.1520|116.4680|06/28/1992|224822.9| 11.0| 4.10| 0.017 | IV | 38.9
(62.7)
GSP |34.0040|116.3610|06/30/1992|143811.6| 0.0| 4.80| 0.025 | V | 39.0
(62.7)
DMG |34.0170|116.3670|06/06/1940|235637.2| 0.0| 4.40| 0.020 | IV | 39.0
(62.8)
GSP |34.0920|116.4140|12/21/1992|114402.9| 3.0| 4.00| 0.016 | IV | 39.0
(62.8)
GSP |34.0960|116.4170|07/18/1992|000611.2| 2.0| 4.00| 0.016 | IV | 39.0
(62.8)

GSP |33.9510|116.3380|05/18/1992|154418.0| 7.0| 4.90| 0.026 | V | 39.0
(62.8)
DMG |34.3500|116.8670|10/15/1943|1650 1.0| 0.0| 4.50| 0.021 | IV | 39.2
(63.0)
DMG |33.4000|116.5000|10/11/1918| 4 0 0.0| 0.0| 4.00| 0.016 | IV | 39.2
(63.0)
DMG |33.4670|116.4330|05/12/1939|1925 2.2| 0.0| 4.50| 0.021 | IV | 39.2
(63.1)
GSP |33.9470|116.3300|09/09/1992|125045.1| 5.0| 4.30| 0.019 | IV | 39.4
(63.4)
GSP |34.0880|116.4020|08/15/1992|082414.7| 0.0| 4.80| 0.024 | V | 39.5
(63.5)
PAS |33.4580|116.4340|02/12/1979| 44842.3| 3.9| 4.20| 0.018 | IV | 39.5
(63.6)
GSP |34.3610|116.9130|12/04/1992|125942.1| 0.0| 4.20| 0.018 | IV | 39.5
(63.6)
GSP |34.3620|116.9230|12/07/1992|033331.5| 1.0| 4.00| 0.016 | IV | 39.5
(63.6)
GSG |33.9430|116.3250|04/23/1992|052316.2| 5.0| 4.00| 0.016 | IV | 39.6
(63.7)

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE [km]	
DMG	33.9850	116.3400	02/01/1957	75215.4	11.0	4.60	0.022	IV	39.7	(63.8)
GSP	34.1120	116.4150	07/28/1992	182703.9	0.0	4.60	0.022	IV	39.7	(63.9)
GSP	34.3640	116.9040	11/27/1992	183225.0	1.0	4.10	0.017	IV	39.8	(64.0)
GSP	34.0690	116.3820	07/07/1992	082103.1	3.0	4.00	0.016	IV	39.8	(64.1)
GSP	34.0340	116.3600	05/14/1999	105235.2	1.0	4.20	0.018	IV	39.9	(64.1)
GSP	34.1110	116.4100	06/28/1992	135045.7	0.0	4.90	0.026	V	39.9	(64.2)
GSP	34.0610	116.3740	08/11/1992	061117.3	0.0	4.30	0.019	IV	40.0	(64.3)
GSP	34.0570	116.3710	06/28/1992	160953.9	3.0	4.10	0.017	IV	40.0	(64.3)
DMG	34.2170	117.4670	03/25/1941	234341.0	0.0	4.00	0.016	IV	40.0	(64.3)
GSP	34.1390	116.4310	06/28/1992	123640.6	10.0	5.10	0.028	V	40.0	(64.4)
GSP	34.1080	116.4040	06/29/1992	141338.8	9.0	5.40	0.034	V	40.1	(64.5)

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GSP |34.1060|116.4020|06/29/1992|140837.7| 11.0| 4.90| 0.025 |  V | 40.1
( 64.6)
DMG |34.3360|116.7420|03/16/1956|233456.4|  1.7| 4.40| 0.019 | IV | 40.2
( 64.6)
GSP |33.9430|116.3150|05/06/1992|023843.3|  7.0| 4.50| 0.020 | IV | 40.2
( 64.6)
GSP |34.3690|116.8970|12/04/1992|020857.5|  3.0| 5.30| 0.032 |  V | 40.2
( 64.7)
GSP |33.9570|116.3170|04/23/1992|022529.9| 11.0| 4.60| 0.021 | IV | 40.3
( 64.9)
GSP |33.9610|116.3180|04/23/1992|045023.0| 12.0| 6.10| 0.052 | VI | 40.3
( 64.9)
DMG |34.1670|117.5330|03/01/1948| 81213.0|  0.0| 4.70| 0.023 | IV | 40.4
( 64.9)
GSP |34.3700|116.8800|11/29/1992|142120.5|  3.0| 4.00| 0.016 | IV | 40.4
( 65.0)
GSP |34.0620|116.3660|05/14/1999|075403.2|  1.0| 4.90| 0.025 |  V | 40.4
( 65.0)
GSP |33.9530|116.3140|11/27/1996|014243.8|  6.0| 4.10| 0.017 | IV | 40.4
( 65.0)
GSP |34.0820|116.3780|07/06/1992|194137.9|  3.0| 4.40| 0.019 | IV | 40.4
( 65.1)
DMG |34.2000|117.5000|06/14/1892|1325 0.0|  0.0| 4.90| 0.025 |  V | 40.5
( 65.1)
GSP |33.9510|116.3110|04/26/1992|062608.0|  0.0| 4.20| 0.017 | IV | 40.5
( 65.2)
PDP |33.9370|116.3060|07/25/1992|043160.0|  5.0| 4.90| 0.025 |  V | 40.6
( 65.3)
GSP |34.3770|116.9180|12/04/1992|052511.2|  2.0| 4.80| 0.024 | IV | 40.6
( 65.3)
DMG |33.7830|116.2830|03/04/1937|16 4 0.0|  0.0| 4.00| 0.016 | IV | 40.7
( 65.5)
GSP |34.0640|116.3610|09/15/1992|084711.3|  9.0| 5.20| 0.030 |  V | 40.7
( 65.5)
GSP |33.9330|116.3020|04/27/1992|031119.3|  0.0| 4.20| 0.017 | IV | 40.7
( 65.5)
GSP |33.9420|116.3040|05/04/1992|161949.7| 12.0| 4.80| 0.024 | IV | 40.8
( 65.6)
GSP |34.0970|116.3820|07/01/1992|070149.2|  0.0| 4.30| 0.018 | IV | 40.8
( 65.6)
GSP |34.0580|116.3550|06/28/1992|221312.0|  7.0| 4.00| 0.016 | IV | 40.8
( 65.7)
GSP |34.1020|116.3830|08/04/1992|190612.3|  0.0| 4.00| 0.016 | IV | 40.9
( 65.8)
MGI |33.2000|117.0000|07/20/1923| 7 0 0.0|  0.0| 4.00| 0.016 | IV | 40.9
( 65.8)
GSP |33.9050|116.2880|05/07/1995|110333.0| 10.0| 4.80| 0.023 | IV | 41.1
( 66.1)
GSG |34.0120|116.3250|04/23/1992|051009.4|  3.0| 4.60| 0.021 | IV | 41.1
( 66.2)
GSP |34.1270|116.3970|06/30/1992|000608.5|  2.0| 4.30| 0.018 | IV | 41.2
( 66.2)
GSP |34.0920|116.3690|07/06/1992|120059.2|  1.0| 4.50| 0.020 | IV | 41.2
( 66.4)
DMG |34.0000|116.3170|06/06/1940|222115.1|  0.0| 4.30| 0.018 | IV | 41.2
( 66.4)
GSP |33.9020|116.2840|07/24/1992|181436.2|  9.0| 5.00| 0.026 |  V | 41.3
( 66.4)
GSP |34.0120|116.3190|11/20/1994|043143.5|  6.0| 4.20| 0.017 | IV | 41.4
( 66.7)
DMG |33.4260|116.4210|03/25/1937|20 4 8.3| 10.0| 4.00| 0.015 | IV | 41.4
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(66.7)
GSP |34.0500|116.3350|04/26/1992|172138.0| 0.0| 4.30| 0.018 | IV | 41.6
(67.0)
DMG |34.1830|117.5480|09/01/1937|163533.5| 10.0| 4.50| 0.020 | IV | 41.7
(67.1)
GSP |34.0290|116.3210|08/21/1993|014638.4| 9.0| 5.00| 0.026 | V | 41.8
(67.2)
GSP |33.8760|116.2670|06/29/1992|160142.8| 1.0| 5.20| 0.029 | V | 42.0
(67.5)
DMG |33.4170|116.4170|01/02/1943|141118.0| 0.0| 4.50| 0.020 | IV | 42.0
(67.6)
DMG |34.0330|116.3170|06/11/1940|195118.1| 0.0| 4.40| 0.018 | IV | 42.1
(67.7)
DMG |34.4000|116.9170|01/25/1942|215133.0| 0.0| 4.00| 0.015 | IV | 42.2
(67.9)
DMG |34.4000|116.9170|02/01/1942|151828.0| 0.0| 4.50| 0.019 | IV | 42.2
(67.9)
DMG |34.4000|116.9170|02/01/1942|151555.0| 0.0| 4.00| 0.015 | IV | 42.2
(67.9)
DMG |34.4000|116.9170|02/01/1942|16 334.0| 0.0| 4.50| 0.019 | IV | 42.2
(67.9)
GSP |34.1620|116.4050|06/28/1992|132605.1| 6.0| 4.90| 0.024 | V | 42.2
(67.9)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE [km]
DMG	34.0670	116.3330	05/18/1940	72132.7	0.0	5.00	0.025	V	42.2 (68.0)
DMG	34.0670	116.3330	05/18/1940	55120.2	0.0	5.20	0.028	V	42.2 (68.0)
DMG	34.2110	117.5300	09/01/1937	1348 8.2	10.0	4.50	0.019	IV	42.2 (68.0)
PAS	34.2110	117.5300	10/19/1979	122237.8	4.9	4.10	0.016	IV	42.2 (68.0)
GSP	34.1990	116.4390	09/05/1995	202718.4	0.0	4.40	0.018	IV	42.3 (68.1)
GSP	34.1710	116.4090	06/30/1992	151905.0	0.0	4.00	0.015	IV	42.4 (68.2)
PAS	33.4600	116.3700	09/07/1984	175730.3	15.2	4.10	0.016	IV	42.5 (68.4)
GSN	34.2010	116.4360	06/28/1992	115734.1	1.0	7.60	0.136	VIII	42.5 (68.4)
GSP	33.9510	117.7090	01/05/1998	181406.5	11.0	4.30	0.017	IV	42.5 (68.5)
GSP	34.1980	116.4320	07/20/1992	040822.6	0.0	4.10	0.016	IV	42.6

(68.5)
GSP |33.9900|116.2870|05/02/1992|124641.4| 4.0| 4.10| 0.016 | IV | 42.6
(68.6)
MGI |33.7500|116.2500|11/19/1917|1730 0.0| 0.0| 4.00| 0.015 | IV | 42.7
(68.7)
DMG |34.0830|116.3330|06/02/1940| 61310.2| 0.0| 4.50| 0.019 | IV | 42.7
(68.8)
DMG |34.0830|116.3330|06/01/1940| 527 1.2| 0.0| 4.70| 0.021 | IV | 42.7
(68.8)
GSP |33.9910|116.2840|04/23/1992|185603.0| 3.0| 4.40| 0.018 | IV | 42.8
(68.9)
DMG |33.3680|116.4440|03/25/1937|232026.7| 10.0| 4.00| 0.015 | IV | 43.0
(69.2)
MGI |34.0000|117.7000|12/03/1929| 9 5 0.0| 0.0| 4.00| 0.015 | IV | 43.0
(69.3)
DMG |34.0670|116.3170|05/18/1940| 6 430.6| 0.0| 4.60| 0.020 | IV | 43.1
(69.3)
DMG |34.1830|117.5830|10/03/1948| 24628.0| 0.0| 4.00| 0.015 | IV | 43.3
(69.6)
DMG |34.1000|116.3330|06/01/1940| 65428.0| 0.0| 4.30| 0.017 | IV | 43.3
(69.7)
GSP |33.9920|116.2740|08/07/1994|151026.0| 7.0| 4.00| 0.015 | IV | 43.4
(69.8)
DMG |33.9170|116.2500|08/15/1946|19 1 8.0| 0.0| 4.00| 0.015 | IV | 43.4
(69.8)
GSG |34.1570|116.3730|06/29/1992|103657.8| 5.0| 4.00| 0.015 | IV | 43.5
(69.9)
DMG |33.2000|116.7200|05/12/1930|172548.5| 0.0| 4.20| 0.016 | IV | 43.8
(70.5)
DMG |33.8540|117.7520|10/04/1961| 22131.6| 4.3| 4.10| 0.015 | IV | 43.8
(70.5)
DMG |34.4170|116.8500|02/11/1932|231120.0| 0.0| 4.00| 0.014 | IV | 43.9
(70.6)
GSG |33.9820|116.2600|05/12/1992|023111.0| 6.0| 4.00| 0.014 | IV | 43.9
(70.7)
GSP |34.2390|116.4430|06/29/1992|030156.4| 7.0| 4.40| 0.018 | IV | 44.0
(70.8)
DMG |33.2000|116.7000|01/01/1920| 235 0.0| 0.0| 5.00| 0.024 | V | 44.2
(71.2)
DMG |34.4330|116.9830|04/18/1945| 458 2.0| 0.0| 4.30| 0.017 | IV | 44.2
(71.2)
DMG |34.0500|116.2830|08/04/1940|181520.0| 0.0| 4.00| 0.014 | IV | 44.3
(71.3)
DMG |34.0500|116.2830|06/14/1940|215850.0| 0.0| 4.00| 0.014 | IV | 44.3
(71.3)
DMG |34.0500|116.2830|05/22/1940|1410 5.0| 0.0| 4.00| 0.014 | IV | 44.3
(71.3)
DMG |34.0500|116.2830|06/01/1940| 55646.0| 0.0| 4.00| 0.014 | IV | 44.3
(71.3)
DMG |34.0500|116.2830|08/01/1940|193140.0| 0.0| 4.00| 0.014 | IV | 44.3
(71.3)
DMG |34.0500|116.2830|06/24/1940|163936.0| 0.0| 4.00| 0.014 | IV | 44.3
(71.3)
DMG |34.0500|116.2830|05/18/1940|134719.0| 0.0| 4.50| 0.018 | IV | 44.3
(71.3)
DMG |34.0500|116.2830|05/27/1940| 32727.0| 0.0| 4.00| 0.014 | IV | 44.3
(71.3)
DMG |34.0500|116.2830|05/19/1940| 226 2.0| 0.0| 4.50| 0.018 | IV | 44.3
(71.3)
DMG |34.0500|116.2830|05/19/1940| 22730.0| 0.0| 4.50| 0.018 | IV | 44.3
(71.3)

DMG |34.0500|116.2830|05/19/1940|193941.0| 0.0| 4.00| 0.014 | IV | 44.3
(71.3)
DMG |34.0500|116.2830|05/22/1940| 63137.0| 0.0| 4.00| 0.014 | IV | 44.3
(71.3)
DMG |34.0500|116.2830|06/08/1940|171032.0| 0.0| 4.00| 0.014 | IV | 44.3
(71.3)
DMG |34.0500|116.2830|05/19/1940| 35145.0| 0.0| 4.00| 0.014 | IV | 44.3
(71.3)
DMG |34.0500|116.2830|06/06/1940|234849.0| 0.0| 4.00| 0.014 | IV | 44.3
(71.3)
DMG |34.0830|116.3000|05/18/1940| 5 358.5| 0.0| 5.40| 0.030 | V | 44.4
(71.5)
DMG |34.2670|117.5180|09/12/1970|141011.2| 8.0| 4.10| 0.015 | IV | 44.5
(71.6)
GSP |34.2450|116.4290|07/08/1993|225744.9| 2.0| 4.00| 0.014 | IV | 44.9
(72.2)
DMG |34.1000|117.6830|01/18/1934| 214 0.0| 0.0| 4.00| 0.014 | IV | 44.9
(72.3)
DMG |34.1000|117.6830|01/09/1934|1410 0.0| 0.0| 4.50| 0.018 | IV | 44.9
(72.3)
PAS |34.3020|116.4990|03/31/1979| 016 8.6| 0.1| 4.20| 0.016 | IV | 45.1
(72.5)
DMG |33.3330|116.4330|02/12/1954| 94428.0| 0.0| 4.50| 0.018 | IV | 45.2
(72.7)
PAS |34.2570|116.4350|07/13/1979| 226 3.5| 5.0| 4.00| 0.014 | IV | 45.2
(72.8)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
GSP	34.1750	116.3500	06/11/1992	002419.2	0.0	4.30	0.016	IV	45.3 (72.8)
PAS	34.0060	117.7390	02/18/1989	717 4.8	3.3	4.30	0.016	IV	45.3 (72.9)
DMG	34.4360	116.8340	07/14/1973	8 020.1	8.0	4.80	0.021	IV	45.3 (73.0)
DMG	33.7830	116.2000	10/31/1943	131210.0	0.0	4.50	0.018	IV	45.4 (73.1)
DMG	34.2700	117.5400	09/12/1970	143053.0	8.0	5.40	0.030	V	45.5 (73.2)
DMG	34.3000	117.5000	07/22/1899	2032 0.0	0.0	6.50	0.059	VI	45.5 (73.3)
GSP	33.3990	116.3540	07/26/1997	031456.0	11.0	4.80	0.021	IV	45.6 (73.4)
MGI	33.7000	116.2000	08/12/1917	11 0 0.0	0.0	4.00	0.014	IV	45.9 (73.9)

PAS |34.3820|116.6130|06/11/1984|222110.4| 1.8| 4.00| 0.014 | III| 46.1
(74.2)
DMG |34.4050|116.6670|07/02/1955|162938.5| 10.0| 4.20| 0.015 | IV | 46.2
(74.3)
GSP |34.3410|116.5290|06/28/1992|124053.5| 6.0| 5.20| 0.026 | V | 46.2
(74.4)
GSP |34.2940|116.4530|06/28/1992|173121.5| 6.0| 4.10| 0.014 | IV | 46.4
(74.6)
MGI |33.8000|117.8000|11/10/1926|1723 0.0| 0.0| 4.60| 0.019 | IV | 46.4
(74.6)
MGI |33.8000|117.8000|05/19/1917| 719 0.0| 0.0| 4.00| 0.014 | III| 46.4
(74.6)
MGI |33.8000|117.8000|11/07/1926|1948 0.0| 0.0| 4.60| 0.019 | IV | 46.4
(74.6)
MGI |33.8000|117.8000|05/20/1917| 945 0.0| 0.0| 4.00| 0.014 | III| 46.4
(74.6)
MGI |33.8000|117.8000|11/09/1926|1535 0.0| 0.0| 4.60| 0.019 | IV | 46.4
(74.6)
MGI |33.8000|117.8000|05/19/1917| 635 0.0| 0.0| 4.00| 0.014 | III| 46.4
(74.6)
MGI |33.8000|117.8000|11/04/1926|2238 0.0| 0.0| 4.60| 0.019 | IV | 46.4
(74.6)
DMG |34.2810|117.5520|09/13/1970| 44748.6| 8.0| 4.40| 0.017 | IV | 46.5
(74.9)
PAS |34.4010|116.6410|02/10/1975|125117.6| 8.0| 4.40| 0.017 | IV | 46.6
(74.9)
GSP |34.1400|117.6900|03/02/1990|172625.4| 6.0| 4.60| 0.018 | IV | 46.6
(75.0)
MGI |33.2000|116.6000|10/12/1920|1748 0.0| 0.0| 5.30| 0.027 | V | 46.7
(75.2)
GSP |34.3010|116.4520|09/28/1997|155723.0| 7.0| 4.40| 0.017 | IV | 46.8
(75.2)
GSP |34.1300|117.7000|03/01/1990|003457.1| 4.0| 4.00| 0.014 | III| 46.8
(75.3)
DMG |34.4500|116.7830|05/22/1942|151829.0| 0.0| 4.00| 0.013 | III| 46.9
(75.5)
PAS |34.2300|116.3630|03/18/1979|2253 2.7| 3.4| 4.20| 0.015 | IV | 47.0
(75.6)
GSP |34.2680|116.4020|06/16/1994|162427.5| 3.0| 5.00| 0.023 | IV | 47.1
(75.8)
GSP |34.1100|117.7200|04/17/1990|223227.2| 4.0| 4.60| 0.018 | IV | 47.1
(75.8)
GSP |34.1400|117.7000|02/28/1990|234336.6| 5.0| 5.20| 0.025 | V | 47.1
(75.8)
GSP |34.2720|116.4030|12/11/1992|013834.2| 2.0| 4.10| 0.014 | IV | 47.2
(76.0)
DMG |33.7670|117.8170|08/22/1936| 521 0.0| 0.0| 4.00| 0.013 | III| 47.4
(76.3)
PAS |34.1360|117.7090|06/26/1988|15 458.5| 7.9| 4.60| 0.018 | IV | 47.4
(76.3)
PAS |34.3090|116.4400|03/15/1979|201749.9| 2.0| 4.90| 0.021 | IV | 47.6
(76.6)
GSP |34.3130|116.4440|07/02/1992|001622.4| 6.0| 4.00| 0.013 | III| 47.7
(76.7)
GSP |34.3320|116.4620|07/01/1992|074029.9| 9.0| 5.40| 0.028 | V | 48.0
(77.3)
DMG |34.3000|116.4170|08/07/1942| 11533.0| 0.0| 4.50| 0.017 | IV | 48.1
(77.3)
DMG |34.3000|116.4170|08/07/1942| 12358.0| 0.0| 4.00| 0.013 | III| 48.1
(77.3)
DMG |34.3000|116.4170|08/07/1942| 15314.0| 0.0| 4.00| 0.013 | III| 48.1

(77.3)
DMG |33.4000|116.3000|02/09/1890|12 6 0.0| 0.0| 6.30| 0.049 | VI | 48.1
(77.5)
GSP |33.8900|116.1600|10/12/1991|143932.0| 3.0| 4.00| 0.013 | III| 48.2
(77.5)
PAS |34.3270|116.4450|03/15/1979|21 716.5| 2.5| 5.20| 0.025 | V | 48.4
(77.9)
GSP |34.3420|116.4670|07/07/1992|220928.3| 2.0| 4.40| 0.016 | IV | 48.4
(77.9)
DMG |34.3040|117.5700|05/05/1969|16 2 9.6| 8.8| 4.40| 0.016 | IV | 48.4
(77.9)
DMG |33.3430|116.3460|04/28/1969|232042.9| 20.0| 5.80| 0.035 | V | 48.4
(77.9)
DMG |34.2330|116.3330|05/11/1947| 5 620.0| 0.0| 4.90| 0.021 | IV | 48.4
(78.0)
GSP |34.1500|117.7200|03/01/1990|032303.0| 11.0| 4.70| 0.019 | IV | 48.5
(78.0)
PAS |34.3300|116.4430|03/15/1979|23 758.2| 2.8| 4.80| 0.020 | IV | 48.6
(78.2)
MGI |33.1000|116.8000|06/22/1918| 557 0.0| 0.0| 4.00| 0.013 | III| 49.1
(79.0)
PAS |34.3480|116.4530|03/15/1979|213425.6| 1.5| 4.50| 0.017 | IV | 49.2
(79.2)
DMG |34.3000|117.6000|07/30/1894| 512 0.0| 0.0| 6.00| 0.039 | V | 49.4
(79.5)
DMG |34.1740|116.2570|02/15/1938| 74539.8| 10.0| 4.50| 0.016 | IV | 49.6
(79.9)
DMG |33.4080|116.2610|03/25/1937|1649 1.8| 10.0| 6.00| 0.039 | V | 49.7
(80.0)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE [km]
DMG	33.2670	116.4000	06/06/1940	2321 4.0	0.0	4.00	0.013	III	49.8 (80.1)
DMG	33.5450	117.8070	10/27/1969	1316 2.3	6.5	4.50	0.016	IV	49.9 (80.2)

****

-END OF SEARCH- 426 EARTHQUAKES FOUND WITHIN THE SPECIFIED SEARCH AREA.

TIME PERIOD OF SEARCH: 1800 TO 1999

LENGTH OF SEARCH TIME: 200 years

THE EARTHQUAKE CLOSEST TO THE SITE IS ABOUT 0.7 MILES (1.1 km) AWAY.

LARGEST EARTHQUAKE MAGNITUDE FOUND IN THE SEARCH RADIUS: 7.6

LARGEST EARTHQUAKE SITE ACCELERATION FROM THIS SEARCH: 0.654 g

COEFFICIENTS FOR GUTENBERG & RICHTER RECURRENCE RELATION:
a-value= 3.332
b-value= 0.760
beta-value= 1.750

TABLE OF MAGNITUDES AND EXCEEDANCES:

Earthquake Magnitude	Number of Times Exceeded	Cumulative No. / Year
4.0	426	2.14070
4.5	172	0.86432
5.0	61	0.30653
5.5	22	0.11055
6.0	15	0.07538
6.5	6	0.03015
7.0	2	0.01005
7.5	1	0.00503

APPENDIX C

APPENDIX C

COMPACTION DATA OF TRENCH BACKFILL

FOR

Y.H. LYON LLC PROPERTY
APN'S 431-090-035 AND -044
SAN JACINTO, CALIFORNIA

PROJECT NO. T2279-12-01

TABLE I
SUMMARY OF FIELD DENSITY TEST RESULTS

Test No.		Date	Location	Elev. or Depth (ft)	Curve No.	Plus 3/4" Rock (%)	Field Dry Dens. (pcf)	Field Moist. Cont. (%)	Field Rel. Comp. (%)	Req'd. Rel. Comp. (%)
OG	1	12/06/04	Near St. 100 N. of trench	0	T1 2	0	99.6	15.0	85	87
OG	2	12/06/04	Station	-7	T1 2	0	98.2	3.4	84	87
OG	3	12/06/04	Lot 300; Station	-7	T1 2	0	96.1	8.4	82	87
OG	4	12/06/04	Lot 150; Station	-13	B1 1	0	101.5	15.7	82	87
OG	5	12/06/04	Lot 50; Station	-13	B1 1	0	95.5	19.2	77	87
OG	6	12/06/04	Lot 200; Station	-13	B1 1	0	107.5	13.3	87	87
OG	7	12/06/04	Lot 400; Station	-7	T1 2	0	92.6	13.0	79	87
	8	12/06/04	Lot 425; Station	-7	T1 2	0	106.5	7.8	91	87
	9	12/06/04	Lot 315; Station	-7	B1 1	0	113.0	12.1	91	87
	10	12/06/04	Lot 250; Station	-7	T1 2	0	106.7	10.0	91	87
	11	12/06/04	Lot 160; Station	-7	B1 1	0	112.0	9.4	91	87
	12	12/13/04	Lot 410; Station	-4	B1 1	0	109.1	10.7	88	87
	13	12/13/04	Lot 300; Station	-4	B1 1	0	110.8	9.8	90	87
	14	12/13/04	Lot 215; Station	-4	B1 1	0	112.9	12.6	91	87
	15	12/13/04	Lot 155; Station	-4	B1 1	0	113.1	7.7	92	87
	16	12/14/04	Lot 390; Station	0	B1 1	0	110.1	11.2	89	87
	17	12/14/04	Lot 185; Station	0	B1 1	0	108.7	11.8	88	87

TABLE I
EXPLANATION OF CODED TERMS

- TEST SUFFIX

A, B, C, . . . : Retest of previous density test failure, following moisture conditioning and/or recompaction.

- ~~STRIKE-OUT~~

Fill in area of density test failure was removed and replaced with properly compacted fill soil.

- PREFIX CODE DESIGNATION FOR TEST NUMBERS

OG - Original Ground (Density undisturbed soil

- CURVE NO.

Corresponds to curve numbers listed in the summary of laboratory maximum dry density and optimum moisture content test results table for selected fill soil samples encountered during testing and observation.

- ROCK CORRECTION

For density tests with rock percentage greater than zero, laboratory maximum dry density and optimum moisture content were adjusted for rock content. For tests with rock content equal to zero, laboratory maximum dry density and optimum moisture content values are unadjusted.

- TYPE OF TEST

SC: Sand Cone Test (ASTM D1556)
NU: Nuclear Density Test (ASTM D2922)
OT: Other

- ELEVATION/DEPTH

Test elevations/depths have been rounded to the nearest whole foot.

APPENDIX D

APPENDIX D

AGE DATE REPORTS FROM BETA ANALYTICAL

FOR

Y.H. LYON LLC PROPERTY
APN'S 431-090-035 AND -044
SAN JACINTO, CALIFORNIA

PROJECT NO. T2279-12-01

BETA

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Delivered On Time.

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4985 SW 74 Court
Miami, Florida 33155 USA
Tel: 305 667 5167
Fax: 305 663 0964
beta@radiocarbon.com
www.radiocarbon.com

DEC 2 2004

MR. DARDEN HOOD
Director

Mr. Ronald Hatfield
Mr. Christopher Patrick
Deputy Directors

December 19, 2004

Dr. Lisa A. Battiato
Geocon Incorporated
41471 Corning Place
Suite 101
Murrieta, CA 92562
USA

RE: Radiocarbon Dating Results For Samples C1, C3, C6, C7, C10, C13, C14

Dear Dr. Battiato:

Enclosed are the radiocarbon dating results for seven samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses went normally. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable.

As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analyses. We analyzed them with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

Thank you for prepaying the analyses. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood

BETA

BETA ANALYTIC INC.

DR. M.A. TAMERS and MR. D.G. HOOD

UNIVERSITY BRANCH
4985 S.W. 74 COURT
MIAMI, FLORIDA, USA 33155
PH: 305/667-5167 FAX: 305/663-0964
E-MAIL: beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. Lisa A. Battiato

Report Date: 12/19/2004

Geocon Incorporated

Material Received: 12/2/2004

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 198673	5720 +/- 50 BP	-23.3 o/oo	5750 +/- 50 BP
SAMPLE : C1			
ANALYSIS : AMS-Advance delivery			
MATERIAL/PRETREATMENT : (organic sediment): acid washes			
2 SIGMA CALIBRATION : Cal BC 4710 to 4470 (Cal BP 6660 to 6420)			
Beta - 198674	3740 +/- 50 BP	-23.4 o/oo	3770 +/- 50 BP
SAMPLE : C3			
ANALYSIS : AMS-Advance delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 2330 to 2030 (Cal BP 4280 to 3980)			
Beta - 198675	3690 +/- 40 BP	-24.1 o/oo	3700 +/- 40 BP
SAMPLE : C6			
ANALYSIS : AMS-Advance delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 2200 to 1960 (Cal BP 4150 to 3910)			
Beta - 198676	8540 +/- 60 BP	-21.9 o/oo	8590 +/- 60 BP
SAMPLE : C7			
ANALYSIS : AMS-Advance delivery			
MATERIAL/PRETREATMENT : (organic sediment): acid washes			
2 SIGMA CALIBRATION : Cal BC 7730 to 7550 (Cal BP 9680 to 9500)			
Beta - 198677	1000 +/- 40 BP	-21.4 o/oo	1060 +/- 40 BP
SAMPLE : C10			
ANALYSIS : AMS-Advance delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal AD 900 to 1030 (Cal BP 1060 to 920)			

Dates are reported as RCYBP (radiocarbon years before present, "present" = 1950A.D.). By International convention, the modern reference standard was 95% of the C14 content of the National Bureau of Standards' Oxalic Acid & calculated using the Libby C14 half life (5568 years). Quoted errors represent 1 standard deviation statistics (68% probability) & are based on combined measurements of the sample, background, and modern reference standards.

Measured C13/C12 ratios were calculated relative to the PDB-1 international standard and the RCYBP ages were normalized to -25 per mil. If the ratio and age are accompanied by an (*), then the C13/C12 value was estimated, based on values typical of the material type. The quoted results are NOT calibrated to calendar years. Calibration to calendar years should be calculated using the Conventional C14 age.

BETA

BETA ANALYTIC INC.

DR. M.A. TAMERS and MR. D.G. HOOD

UNIVERSITY BRANCH
4985 S.W. 74 COURT
MIAMI, FLORIDA, USA 33155
PH: 305/667-5167 FAX: 305/663-0964
E-MAIL: beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. Lisa A. Battiato

Report Date: 12/19/2004

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 198678	1960 +/- 40 BP	-24.1 o/oo	1970 +/- 40 BP
SAMPLE : C13			
ANALYSIS : AMS-Advance delivery			
MATERIAL/PRETREATMENT : (organic sediment): acid washes			
2 SIGMA CALIBRATION : Cal BC 50 to Cal AD 110 (Cal BP 2000 to 1840)			
Beta - 198679	940 +/- 40 BP	-28.1 o/oo	890 +/- 40 BP
SAMPLE : C14			
ANALYSIS : AMS-Advance delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal AD 1030 to 1240 (Cal BP 920 to 710)			

Dates are reported as RCYBP (radiocarbon years before present, "present" = 1950A.D.). By International convention, the modern reference standard was 95% of the C14 content of the National Bureau of Standards' Oxalic Acid & calculated using the Libby C14 half life (5568 years). Quoted errors represent 1 standard deviation statistics (68% probability) & are based on combined measurements of the sample, background, and modern reference standards.

Measured C13/C12 ratios were calculated relative to the PDB-1 international standard and the RCYBP ages were normalized to -25 per mil. If the ratio and age are accompanied by an (*), then the C13/C12 value was estimated, based on values typical of the material type. The quoted results are NOT calibrated to calendar years. Calibration to calendar years should be calculated using the Conventional C14 age.

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23.3:lab. mult=1)

Laboratory number: **Beta-198673**

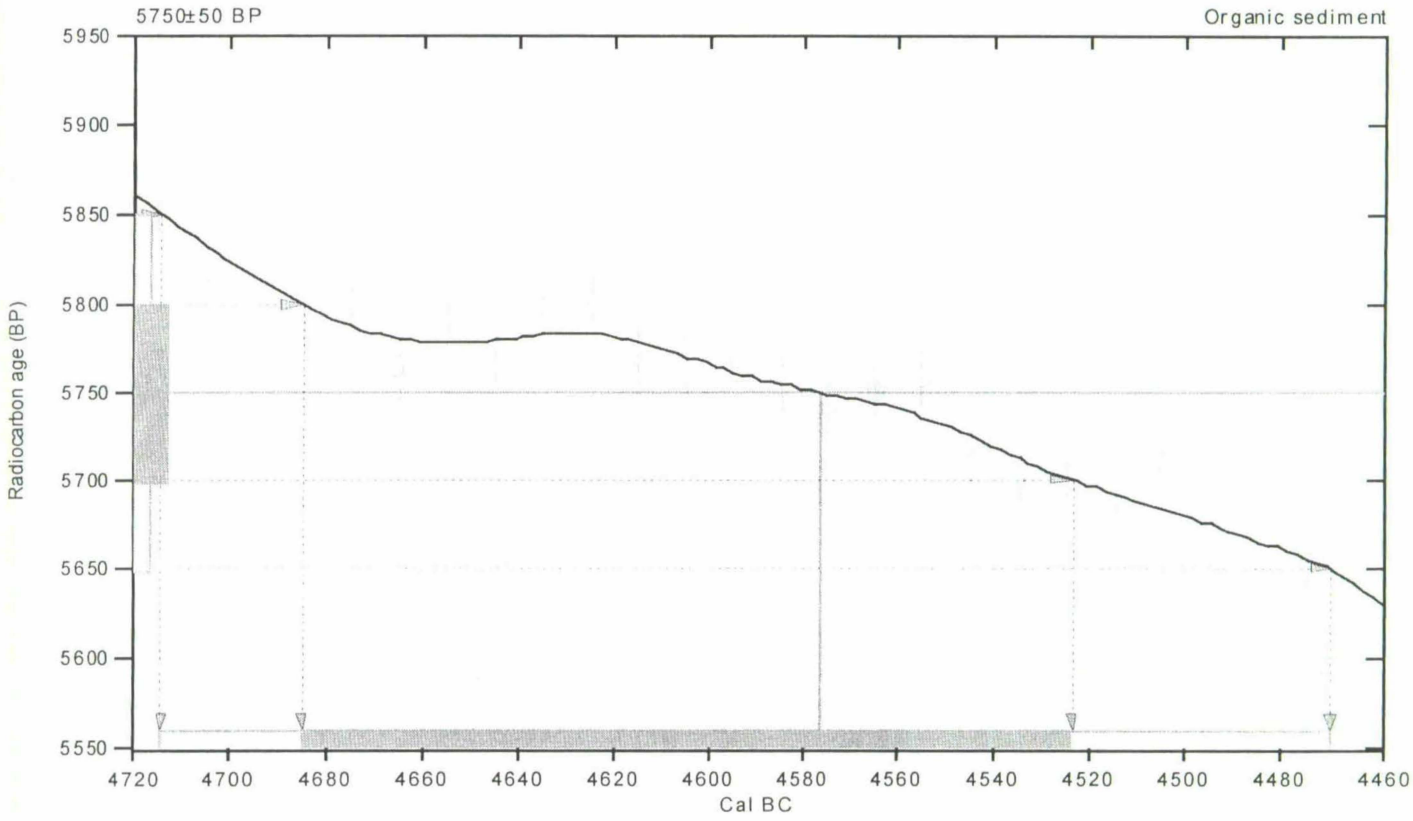
Conventional radiocarbon age: **5750±50 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 4710 to 4470 (Cal BP 6660 to 6420)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 4580 (Cal BP 6530)

1 Sigma calibrated result: (68% probability) Cal BC 4680 to 4520 (Cal BP 6640 to 6470)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23.4:lab. mult=1)

Laboratory number: **Beta-198674**

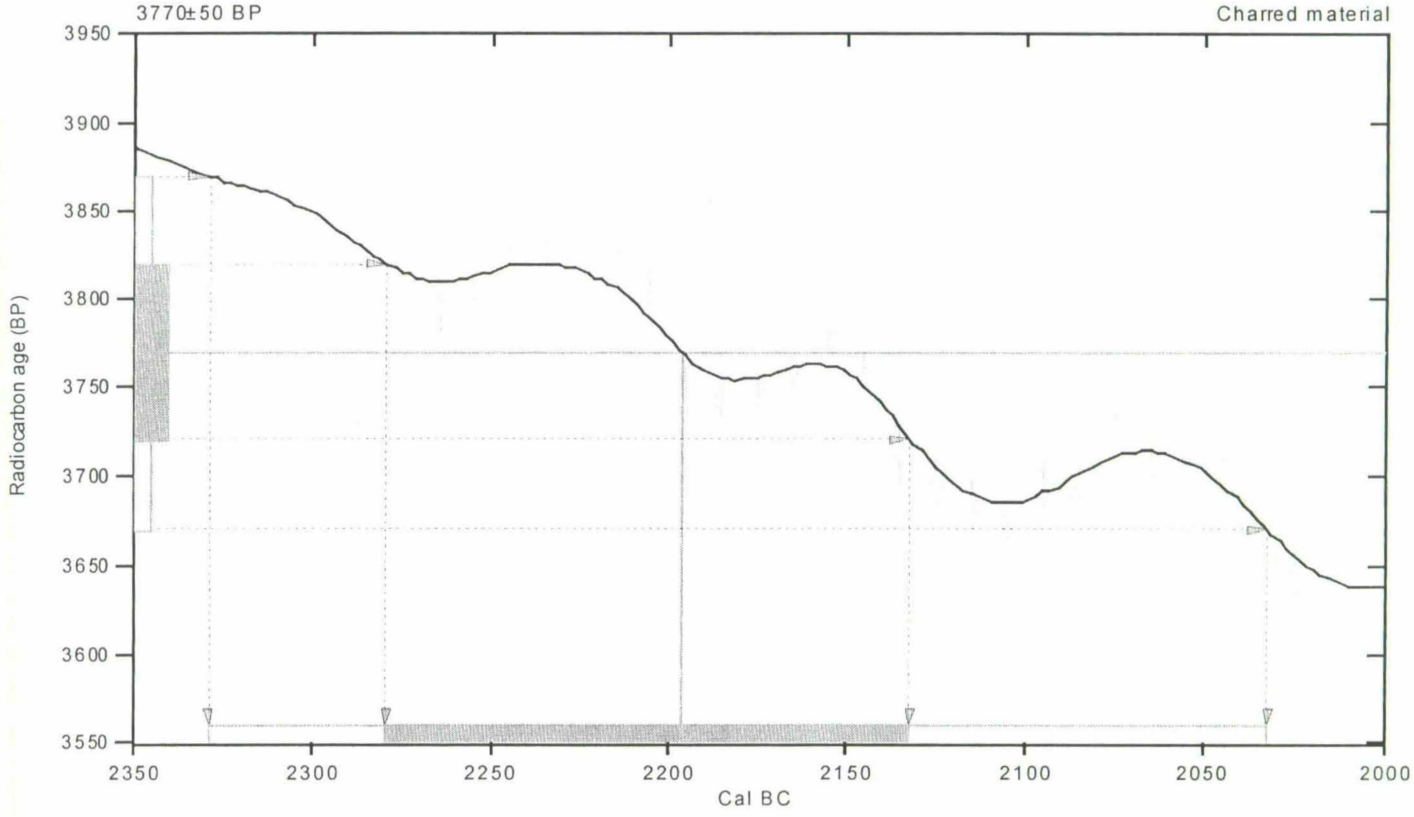
Conventional radiocarbon age: **3770±50 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 2330 to 2030 (Cal BP 4280 to 3980)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 2200 (Cal BP 4150)

1 Sigma calibrated result: (68% probability) Cal BC 2280 to 2130 (Cal BP 4230 to 4080)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-24.1:lab. mult=1)

Laboratory number: **Beta-198675**

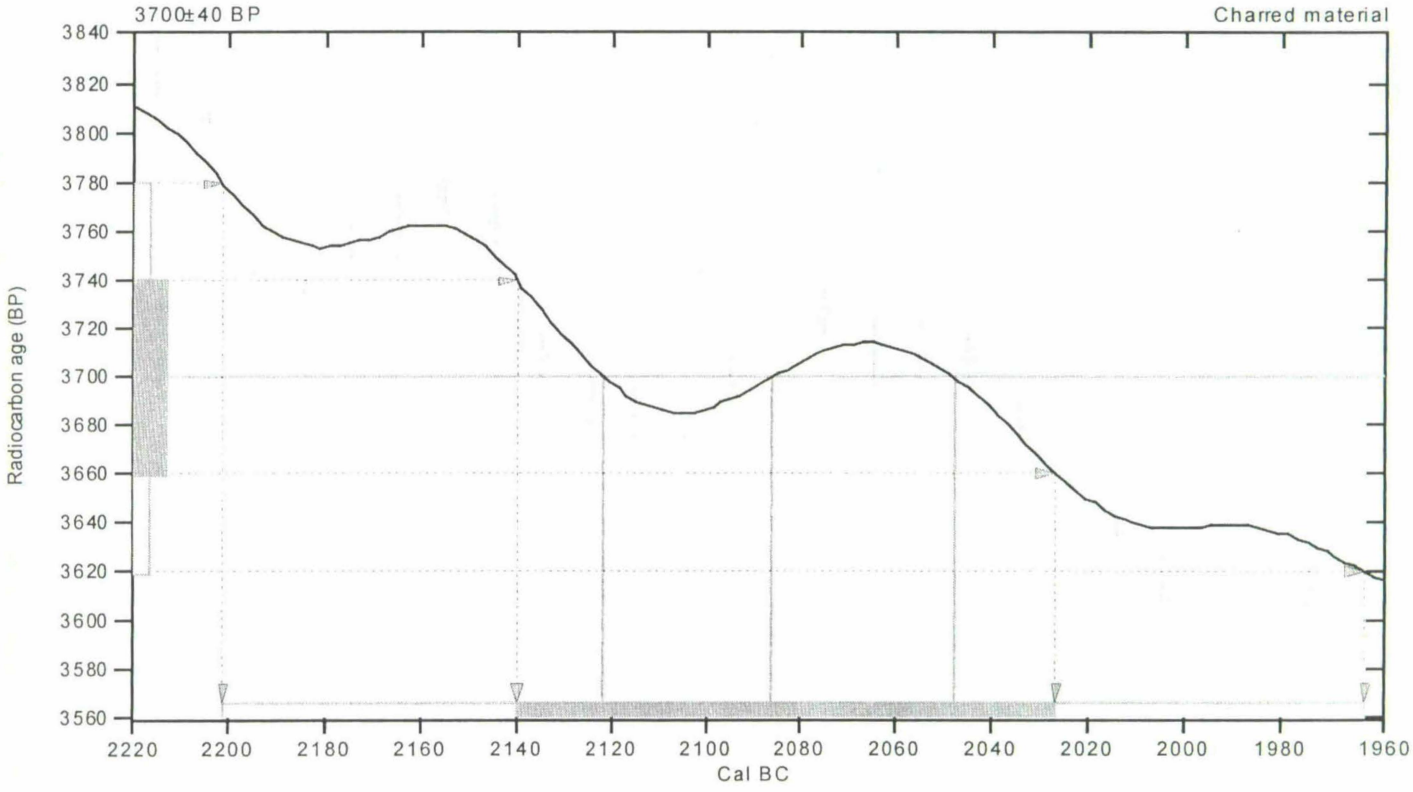
Conventional radiocarbon age: **3700±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 2200 to 1960 (Cal BP 4150 to 3910)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 2120 (Cal BP 4070) and Cal BC 2090 (Cal BP 4040) and Cal BC 2050 (Cal BP 4000)

1 Sigma calibrated result: (68% probability) Cal BC 2140 to 2030 (Cal BP 4090 to 3980)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-21.9:lab. mult=1)

Laboratory number: **Beta-198676**

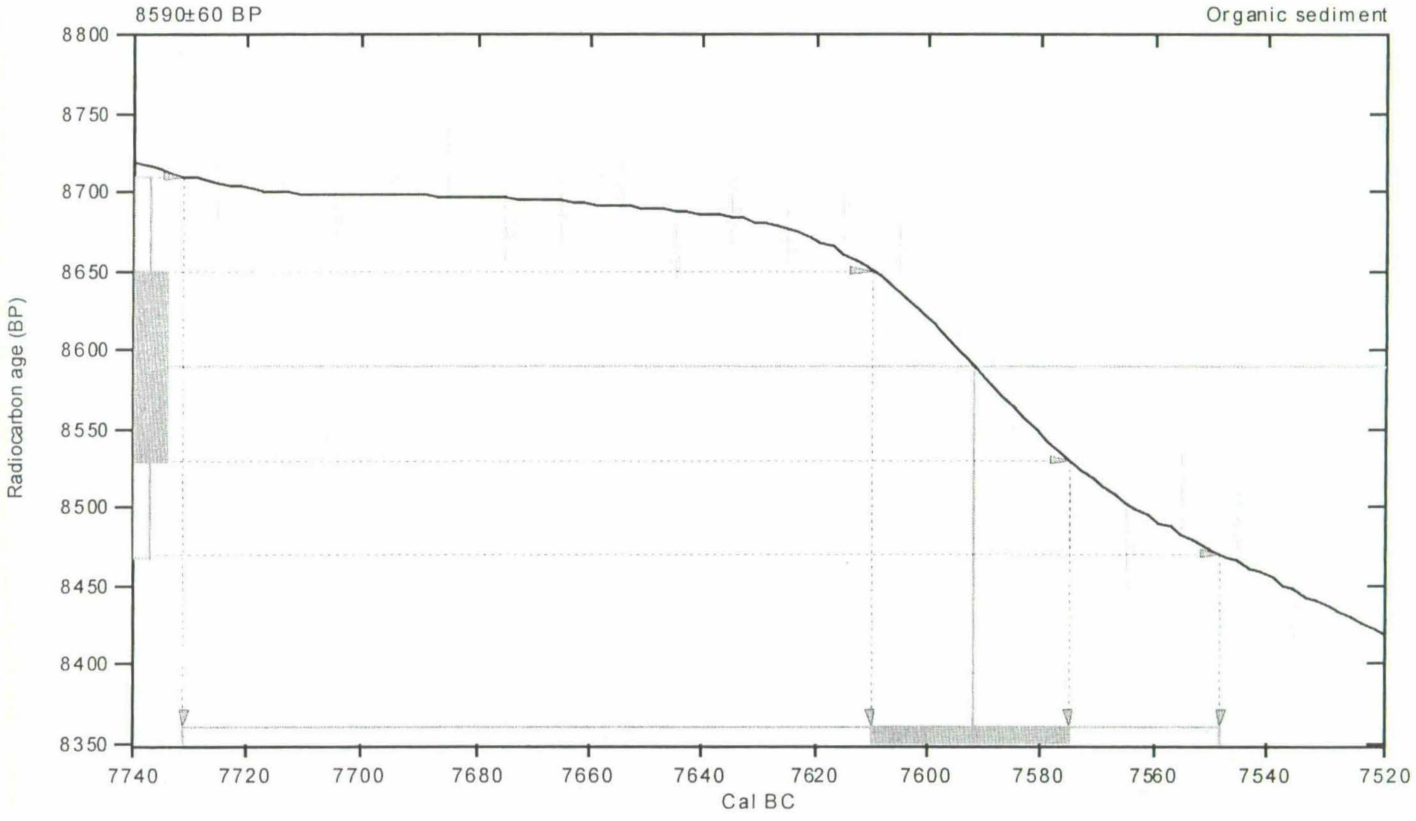
Conventional radiocarbon age: **8590±60 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 7730 to 7550 (Cal BP 9680 to 9500)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 7590 (Cal BP 9540)

1 Sigma calibrated result: (68% probability) Cal BC 7610 to 7580 (Cal BP 9560 to 9520)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-21.4:lab. mult=1)

Laboratory number: **Beta-198677**

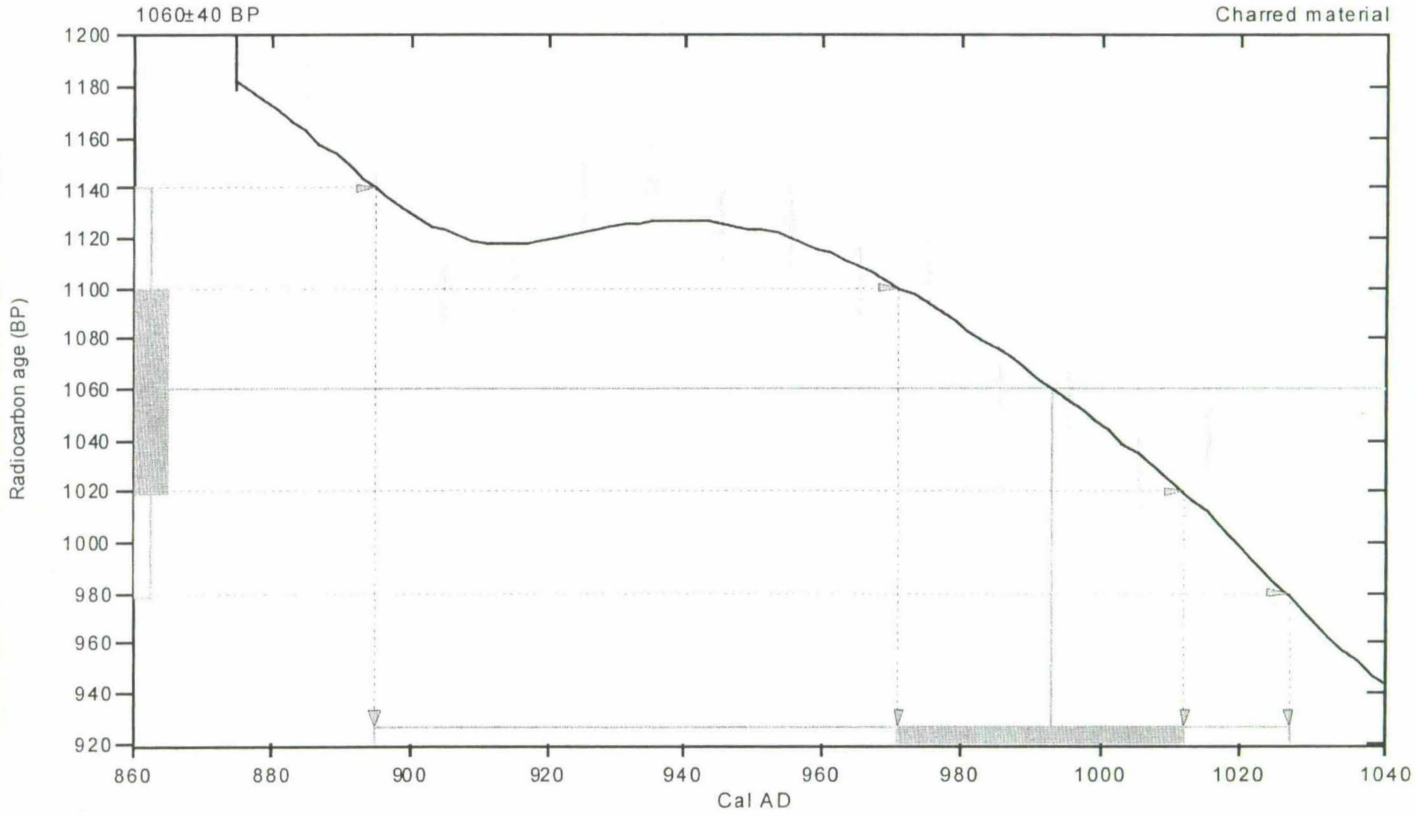
Conventional radiocarbon age: **1060±40 BP**

2 Sigma calibrated result: (95% probability) **Cal AD 900 to 1030 (Cal BP 1060 to 920)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 990 (Cal BP 960)

1 Sigma calibrated result: (68% probability) Cal AD 970 to 1010 (Cal BP 980 to 940)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-24.1:lab. mult=1)

Laboratory number: **Beta-198678**

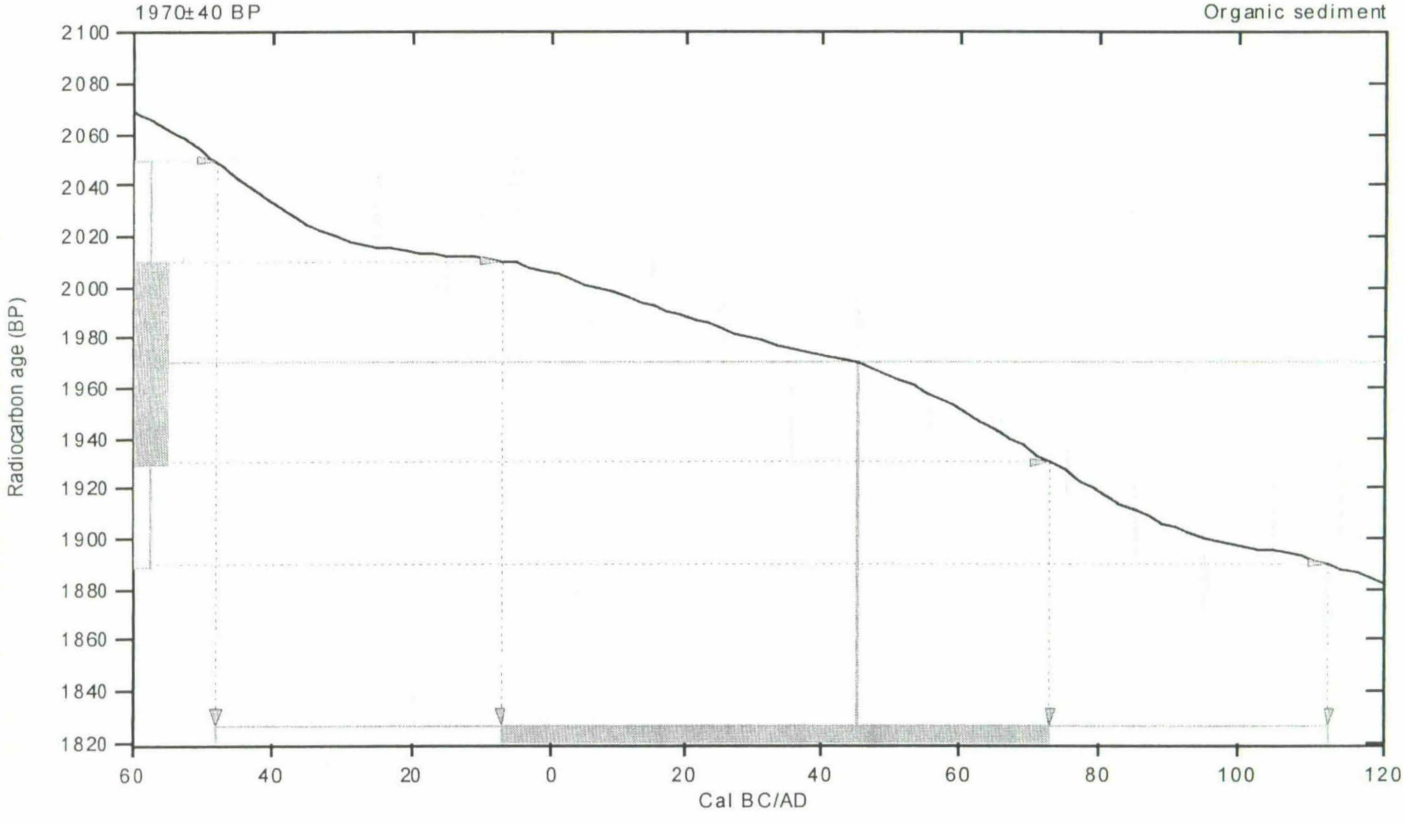
Conventional radiocarbon age: **1970±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 50 to Cal AD 110 (Cal BP 2000 to 1840)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 40 (Cal BP 1900)

1 Sigma calibrated result: (68% probability) Cal BC 10 to Cal AD 70 (Cal BP 1960 to 1880)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-28.1:lab. mult=1)

Laboratory number: **Beta-198679**

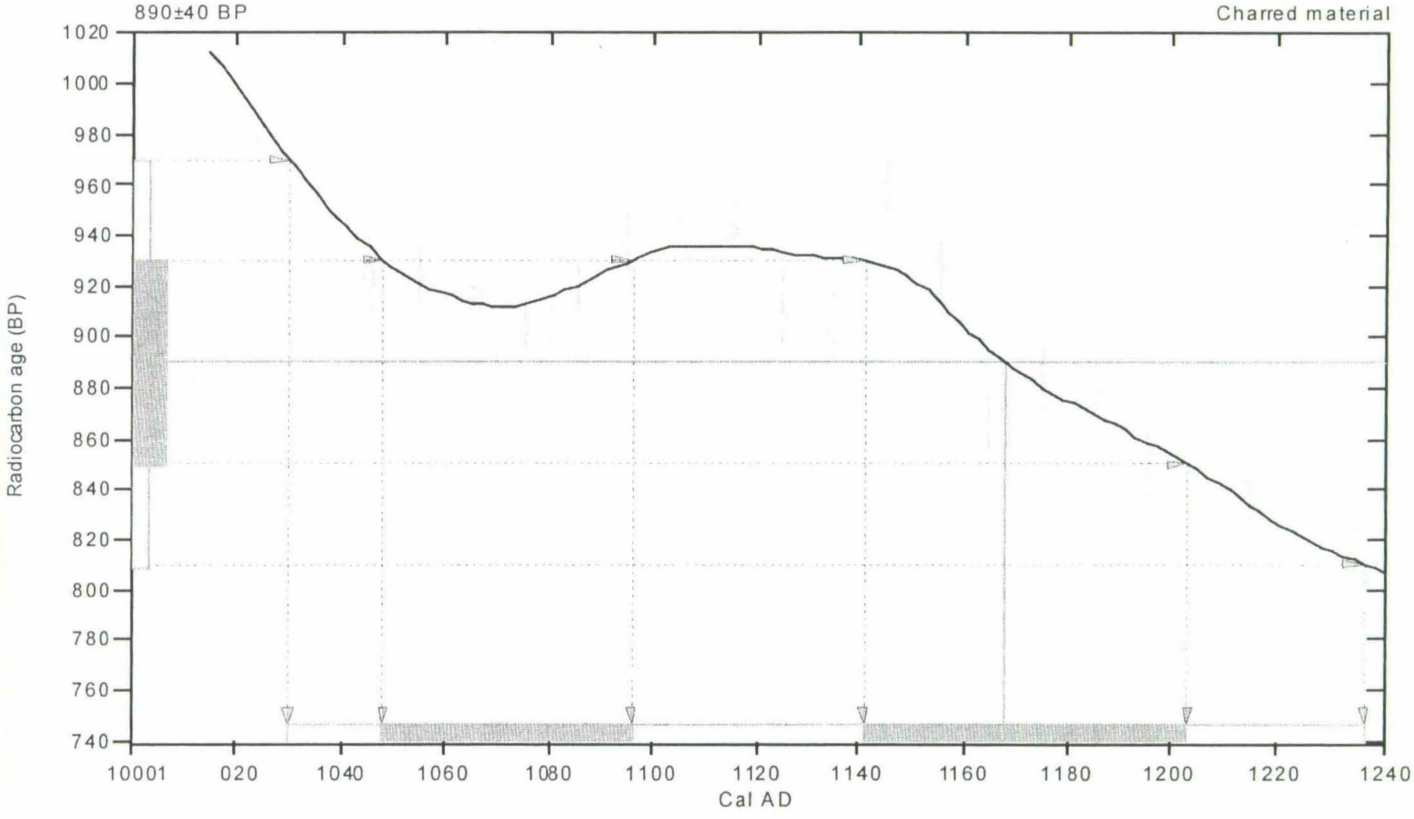
Conventional radiocarbon age: **890±40 BP**

2 Sigma calibrated result: (95% probability) **Cal AD 1030 to 1240 (Cal BP 920 to 710)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 1170 (Cal BP 780)

1 Sigma calibrated results: (68% probability) Cal AD 1050 to 1100 (Cal BP 900 to 850) and Cal AD 1140 to 1200 (Cal BP 810 to 750)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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www.radiocarbon.com

DEC 2 2004
BY: GEOCON

MR. DARDEN HOOD
Director

Mr. Ronald Hatfield
Mr. Christopher Patrick
Deputy Directors

December 20, 2004

Dr. Lisa A. Battiato
Geocon Incorporated
41471 Corning Place
Suite 101
Murrieta, CA 92562
USA

RE: Radiocarbon Dating Result For Sample C-16

Dear Dr. Battiato:

Enclosed is the radiocarbon dating result for one sample recently sent to us. It provided plenty of carbon for an accurate measurement and the analysis went normally. As usual, the method of analysis is listed on the report sheet and calibration data is provided where applicable.

As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analysis. It was analyzed with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

The cost of analysis was previously invoiced. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood

BETA

BETA ANALYTIC INC.

DR. M.A. TAMERS and MR. D.G. HOOD

UNIVERSITY BRANCH
4985 S.W. 74 COURT
MIAMI, FLORIDA, USA 33155
PH: 305/667-5167 FAX: 305/663-0964
E-MAIL: beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. Lisa A. Battiato

Report Date: 12/20/2004

Geocon Incorporated

Material Received: 12/9/2004

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 198962	950 +/- 40 BP	-27.9 o/oo	900 +/- 40 BP

SAMPLE : C-16
ANALYSIS : AMS-Advance delivery
MATERIAL/PRETREATMENT : (wood): acid/alkali/acid
2 SIGMA CALIBRATION : Cal AD 1030 to 1230 (Cal BP 920 to 720)

Dates are reported as RCYBP (radiocarbon years before present, "present" = 1950A.D.). By International convention, the modern reference standard was 95% of the C14 content of the National Bureau of Standards' Oxalic Acid & calculated using the Libby C14 half life (5568 years). Quoted errors represent 1 standard deviation statistics (68% probability) & are based on combined measurements of the sample, background, and modern reference standards.

Measured C13/C12 ratios were calculated relative to the PDB-1 international standard and the RCYBP ages were normalized to -25 per mil. If the ratio and age are accompanied by an (*), then the C13/C12 value was estimated, based on values typical of the material type. The quoted results are NOT calibrated to calendar years. Calibration to calendar years should be calculated using the Conventional C14 age.

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-27.9:lab. mult=1)

Laboratory number: **Beta-198962**

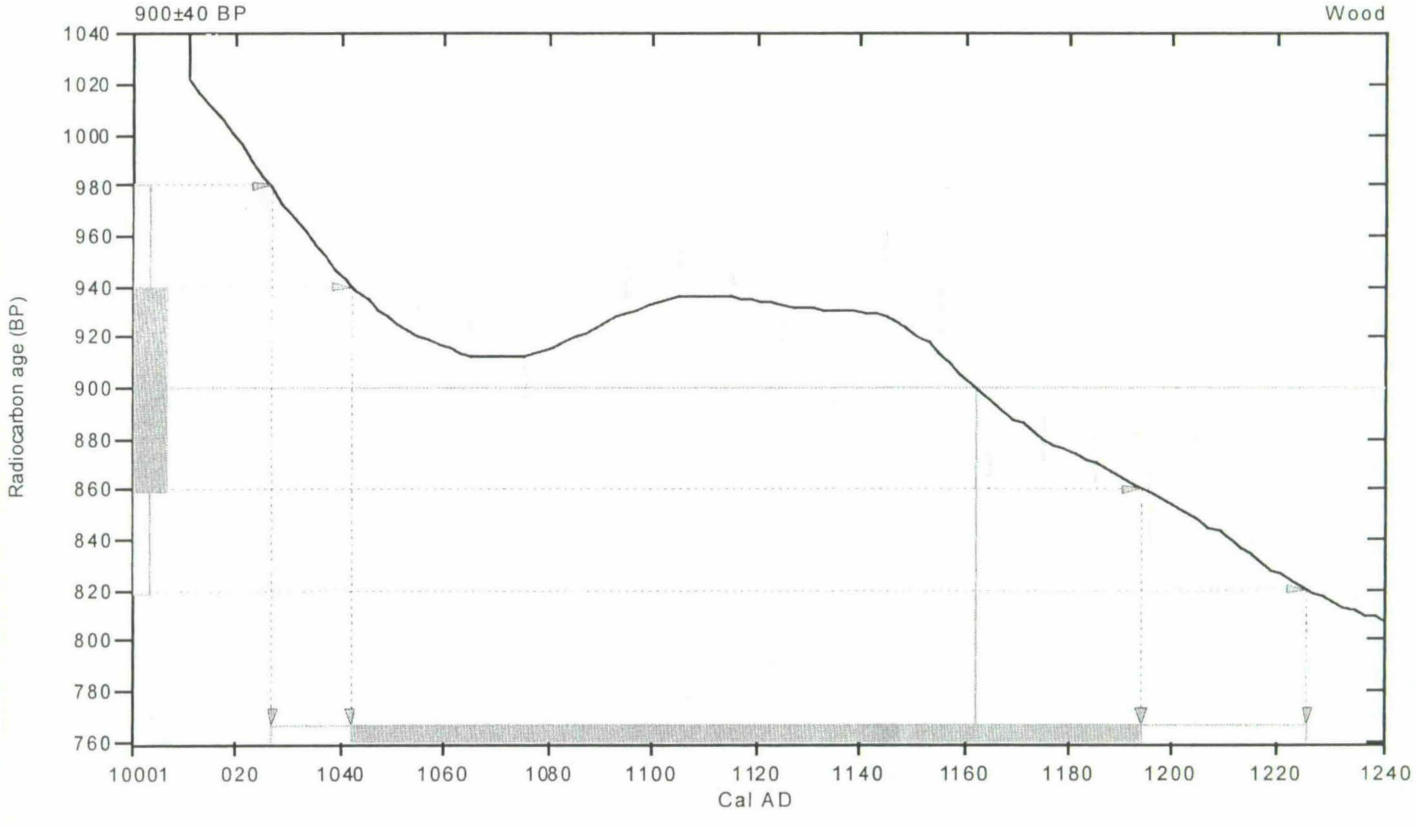
Conventional radiocarbon age: **900±40 BP**

2 Sigma calibrated result: (95% probability) **Cal AD 1030 to 1230 (Cal BP 920 to 720)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 1160 (Cal BP 790)

1 Sigma calibrated result: (68% probability) Cal AD 1040 to 1190 (Cal BP 910 to 760)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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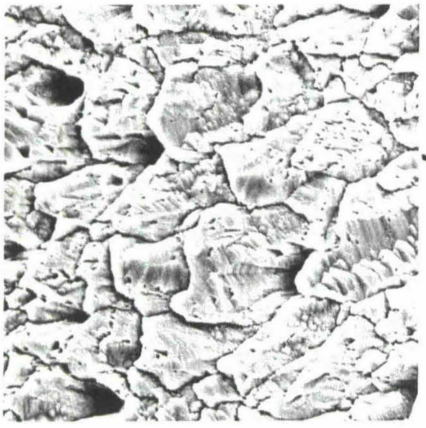
Beta Analytic Inc.
4985 SW 74 Court
Miami, Florida 33155 USA
Tel: 305 667 5167
Fax: 305 663 0/97
Beta@radiocarbon.com
Www.radiocarbon.com

Mr. Darden Hood
Director

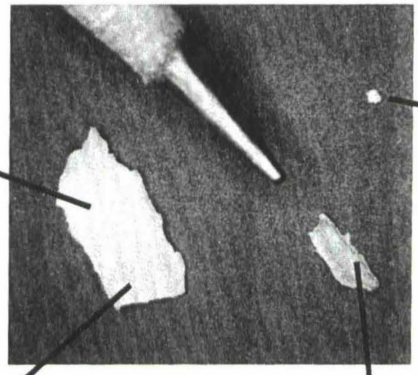
Mr. Ronald Hatfield
Mr. Christopher Patrick
Deputy Directors

SCANNING ELECTRON MICROSCOPY (SEM)
of materials submitted for radiocarbon dating

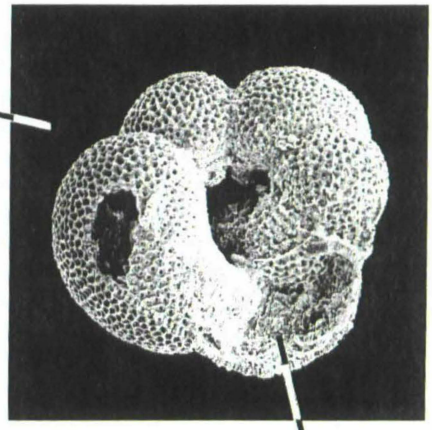
Scanning Electron Microscopy (SEM) can be used to magnify objects up to 50,000 times. SEM photographs showing microscopic details provide very useful information in the interpretation of radiocarbon dates. For instance, SEM can be used to distinguish primary vs. secondary shell structure and to identify very small wood, charcoal, and carbonate samples. SEM micrographs are also an excellent addition to reports and theses. We highly recommend this analysis through your own sources, or if not available, by our services.



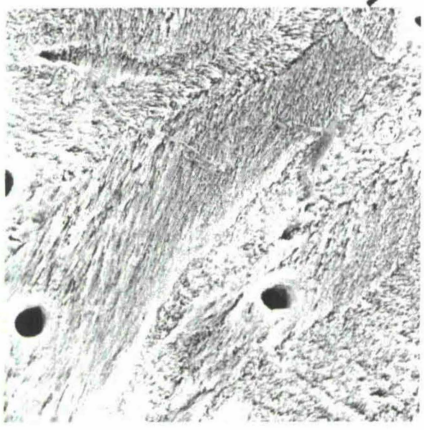
Primary $CaCO_3$, 690x, SEM



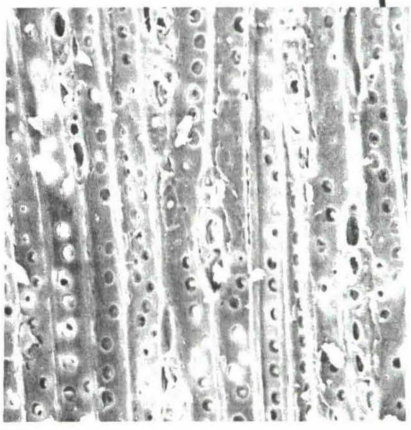
Samples and pencil point
6x, light photo



Planktonic foraminifera, 95x, SEM



Secondary $CaCO_3$, 690x, SEM



Cedar or cypress, 180x, SEM



$CaCO_3$ foram infilling, 1360x, SEM

APPROPRIATE MATERIALS: SEM is especially useful for AMS samples. It is recommended for: (1) very small carbonates which cannot be pretreated (forams, ostracods, coccoliths); (2) unidentified macrofossils concentrated from sediments; and (3) wood or charcoal for which some taxon identification is useful.

THE SERVICE & COST: Three (3) micrographs of various angles and/or magnifications are provided for each sample. Micrographs are obtained on a representative portion of the material submitted for radiocarbon dating, not on the dated material itself. The technician will usually be able to choose the angles and magnifications, which are most appropriate. The service does not include identification or characterization, but wherever possible, some will be provided.

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Mr. Darden Hood
Director

Mr. Ronald Hatfield
Mr. Christopher Patrick
Deputy Directors

Final Report

The final report package includes the final date report, a statement outlining our analytical procedures, a glossary of pretreatment terms, calendar calibration information, billing documents (containing balance/credit information and the number of samples submitted within the yearly discount period), and peripheral items to use with future submittals. The final report includes the individual analysis method, the delivery basis, the material type and the individual pretreatments applied. The final report has been sent by mail and e-mail (where available).

Pretreatment

Pretreatment methods are reported along with each result. All necessary chemical and mechanical pretreatments of the submitted material were applied at the laboratory to isolate the carbon which may best represent the time event of interest. When interpreting the results, it is important to consider the pretreatments. Some samples cannot be fully pretreated, making their ^{14}C ages more subjective than samples which can be fully pretreated. Some materials receive no pretreatments. Please look at the pretreatment indicated for each sample and read the pretreatment glossary to understand the implications.

Analysis

Materials measured by the radiometric technique were analyzed by synthesizing sample carbon to benzene (92% C), measuring for ^{14}C content in one of 53 scintillation spectrometers, and then calculating for radiocarbon age. If the Extended Counting Service was used, the ^{14}C content was measured for a greatly extended period of time. AMS results were derived from reduction of sample carbon to graphite (100% C), along with standards and backgrounds. The graphite was then detected for ^{14}C content in one of 9 accelerator-mass-spectrometers (AMS) .

The Radiocarbon Age and Calendar Calibration

The "Conventional ^{14}C Age (*)" is the result after applying $^{13}C/^{12}C$ corrections to the measured age and is the most appropriate radiocarbon age. If an "*" is attached to this date, it means the $^{13}C/^{12}C$ was estimated rather than measured (The ratio is an option for radiometric analysis, but included on all AMS analyses.) Ages are reported with the units "BP" (Before Present). "Present" is defined as AD 1950 for the purposes of radiocarbon dating.

Results for samples containing more ^{14}C than the modern reference standard are reported as "percent modern carbon" (pMC). These results indicate the material was respiring carbon after the advent of thermo-nuclear weapons testing (and is less than ~ 50 years old).

Applicable calendar calibrations are included for materials between about 100 and 19,000 BP. If calibrations are not included with a report, those results were either too young, too old, or inappropriate for calibration. Please read the enclosed page discussing calibration.

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PRETREATMENT GLOSSARY
Standard Pretreatment Protocols at Beta Analytic

Unless otherwise requested by a submitter or discussed in a final date report, the following procedures apply to pretreatment of samples submitted for analysis. This glossary defines the pretreatment methods applied to each result listed on the date report form (e.g. you will see the designation "acid/alkali/acid" listed along with the result for a charcoal sample receiving such pretreatment).

Pretreatment of submitted materials is required to eliminate secondary carbon components. These components, if not eliminated, could result in a radiocarbon date, which is too young or too old. Pretreatment does not ensure that the radiocarbon date will represent the time event of interest. This is determined by the sample integrity. Effects such as the old wood effect, burned intrusive roots, bioturbation, secondary deposition, secondary biogenic activity incorporating recent carbon (bacteria) and the analysis of multiple components of differing age are just some examples of potential problems. The pretreatment philosophy is to reduce the sample to a single component, where possible, to minimize the added subjectivity associated with these types of problems. If you suspect your sample requires special pretreatment considerations be sure to tell the laboratory prior to analysis.

"acid/alkali/acid"

The sample was first gently crushed/dispersed in deionized water. It was then given hot HCl acid washes to eliminate carbonates and alkali washes (NaOH) to remove secondary organic acids. The alkali washes were followed by a final acid rinse to neutralize the solution prior to drying. Chemical concentrations, temperatures, exposure times, and number of repetitions, were applied accordingly with the uniqueness of the sample. Each chemical solution was neutralized prior to application of the next. During these serial rinses, mechanical contaminants such as associated sediments and rootlets were eliminated. This type of pretreatment is considered a "full pretreatment". On occasion the report will list the pretreatment as "acid/alkali/acid - insolubles" to specify which fraction of the sample was analyzed. This is done on occasion with sediments (See "acid/alkali/acid - solubles"

Typically applied to: charcoal, wood, some peats, some sediments, and textiles "acid/alkali/acid - solubles"

On occasion the alkali soluble fraction will be analyzed. This is a special case where soil conditions imply
That the soluble fraction will provide a more accurate date. It is also used on some occasions to verify the present/absence or degree of contamination present from secondary organic acids. The sample was first pretreated with acid to remove any carbonates and to weaken organic bonds. After the alkali washes (as discussed above) are used, the solution containing the alkali soluble fraction is isolated/filtered and combined with acid. The soluble fraction, which precipitates, is rinsed and dried prior to combustion.

"acid/alkali/acid/cellulose extraction"

Following full acid/alkali/acid pretreatments, the sample is bathed in (sodium chlorite) $NaClO_2$ under very controlled conditions (Ph = 3, temperature = 70 degrees C). This eliminates all components except wood cellulose. It is useful for woods that are either very old or highly contaminated.

Applied to: wood

"acid washes"

Surface area was increased as much a possible. Solid chunks were crushed, fibrous materials were shredded, and sediments were dispersed. Acid (HCl) was applied repeatedly to ensure the absence of carbonates. Chemical concentrations, temperatures, exposure times, and number of repetitions, were applied accordingly with the uniqueness of each sample. The sample was not be subjected to alkali washes to ensure the absence of secondary organic acids for intentional reasons. The most common reason is that the primary carbon is soluble in the alkali. Dating results reflect the total organic content of the analyzed material. Their accuracy depends on the researcher's ability to subjectively eliminate potential contaminants based on contextual facts.

Typically applied to: organic sediments, some peats, small wood or charcoal, special cases

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PRETREATMENT GLOSSARY
Standard Pretreatment Protocols at Beta Analytic
(Continued)

"collagen extraction: with alkali" or "collagen extraction: without alkali"

The material was first tested for friability ("softness"). Very soft bone material is an indication of the potential absence of the collagen fraction (basal bone protein acting as a "reinforcing agent" within the crystalline apatite structure). It was then washed in de-ionized water, the surface scraped free of the outer most layers and then gently crushed. Dilute, cold HCI acid was repeatedly applied and replenished until the mineral fraction (bone apatite) was eliminated. The collagen was then dissected and inspected for rootlets. Any rootlets present were also removed when replenishing the acid solutions. "With alkali" refers to additional pretreatment with sodium hydroxide (NaOH) to ensure the absence of secondary organic acids. "Without alkali" refers to the NaOH step being skipped due to poor preservation conditions, which could result in removal of all available organics if performed.

Typically applied to: bones

"acid etch"

The calcareous material was first washed in de-ionized water, removing associated organic sediments and debris (where present). The material was then crushed/dispersed and repeatedly subjected to HCI etches to eliminate secondary carbonate components. In the case of thick shells, the surfaces were physically abraded prior to etching down to a hard, primary core remained. In the case of porous carbonate nodules and caliches, very long exposure times were applied to allow infiltration of the acid. Acid exposure times, concentrations, and number of repetitions, were applied accordingly with the uniqueness of the sample.

Typically applied to: shells, caliches, and calcareous nodules

"neutralized"

Carbonates precipitated from ground water are usually submitted in an alkaline condition (ammonium Hydroxide or sodium hydroxide solution). Typically this solution is neutralized in the original sample container, using deionized water. If larger volume dilution was required, the precipitate and solution were transferred to a sealed separatory flask and rinsed to neutrality. Exposure to atmosphere was minimal.

Typically applied to: Strontium carbonate, Barium carbonate
(i.e. precipitated ground water samples)

"carbonate precipitation"

Dissolved carbon dioxide and carbonate species are precipitated from submitted water by complexing them as ammonium carbonate. Strontium chloride is added to the ammonium carbonate solution and strontium carbonate is precipitated for the analysis. The result is representative of the dissolved inorganic carbon within the water. Results are reported as "water DIC".

Applied to: water

"solvent extraction"

The sample was subjected to a series of solvent baths typically consisting of benzene, toluene, hexane, pentane, and/or acetone. This is usually performed prior to acid/alkali/acid pretreatments.

Applied to: textiles, prevalent or suspected cases of pitch/tar contamination, conserved materials.

"none"

No laboratory pretreatments were applied. Special requests and pre-laboratory pretreatment usually accounts for this.

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Calendar Calibration at Beta Analytic

Calibrations of radiocarbon age determinations are applied to convert BP results to calendar years. The short-term difference between the two is caused by fluctuations in the heliomagnetic modulation of the galactic cosmic radiation and, recently, large scale burning of fossil fuels and nuclear devices testing. Geomagnetic variations are the probable cause of longer-term differences.

The parameters used for the corrections have been obtained through precise analyses of hundreds of samples taken from known-age tree rings of oak, sequoia, and fir up to about 10,000 BP. Calibration using tree-rings to about 12,000 BP is still being researched and provides somewhat less precise correlation. Beyond that, up to about 20,000 BP, correlation using a modeled curve determined from U/Th measurements on corals is used. This data is still highly subjective. Calibrations are provided up to about 19,000 years BP using the most recent calibration data available.

The Pretoria Calibration Procedure (Radiocarbon, Vol 35, No.1, 1993, pg 317) program has been chosen for these calendar calibrations. It uses splines through the tree-ring data as calibration curves, which eliminates a large part of the statistical scatter of the actual data points. The spline calibration allows adjustment of the average curve by a quantified closeness-of-fit parameter to the measured data points. A single spline is used for the precise correlation data available back to 9900 BP for terrestrial samples and about 6900 BP for marine samples. Beyond that, splines are taken on the error limits of the correlation curve to account for the lack of precision in the data points.

In describing our calibration curves, the solid bars represent one sigma statistics (68% probability) and the hollow bars represent two sigma statistics (95% probability). Marine carbonate samples that have been corrected for $^{13}C/^{12}C$, have also been corrected for both global and local geographic reservoir effects (as published in Radiocarbon, Volume 35, Number 1, 1993) prior to the calibration. Marine carbonates that have not been corrected for $^{13}C/^{12}C$ are adjusted by an assumed value of 0 %0 in addition to the reservoir corrections. Reservoir corrections for fresh water carbonates are usually unknown and are generally not accounted for in those calibrations. In the absence of measured $^{13}C/^{12}C$ ratios, a typical value of -5 %0 is assumed for freshwater carbonates.

(Caveat: the correlation curve for organic materials assume that the material dated was living for exactly ten years (e.g. a collection of 10 individual tree rings taken from the outer portion of a tree that was cut down to produce the sample in the feature dated). For other materials, the maximum and minimum calibrated age ranges given by the computer program are uncertain. The possibility of an "old wood effect" must also be considered, as well as the potential inclusion of younger or older material in matrix samples. Since these factors are indeterminant error in most cases, these calendar calibration results should be used only for illustrative purposes. In the case of carbonates, reservoir correction is theoretical and the local variations are real, highly variable and dependent on provenience. Since imprecision in the correlation data beyond 10,000 years is high, calibrations in this range are likely to change in the future with refinement in the correlation curve. The age ranges and especially the intercept ages generated by the program must be considered as approximations.)

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

Variables used in the calculation of age calibration → (Variables: est. C13/C12=-25:lab. mult=1)

Laboratory number: **Beta-123456**

The uncalibrated Conventional Radiocarbon Age (± 1 sigma)

Conventional radiocarbon age[1]: **2400±60 BP**

The calendar age range in both calendar years (AD or BC) and in Radiocarbon Years (BP)

2 Sigma calibrated result: **Cal BC 770 to 380 (Cal BP 2720 to 2330)**
(95% probability)

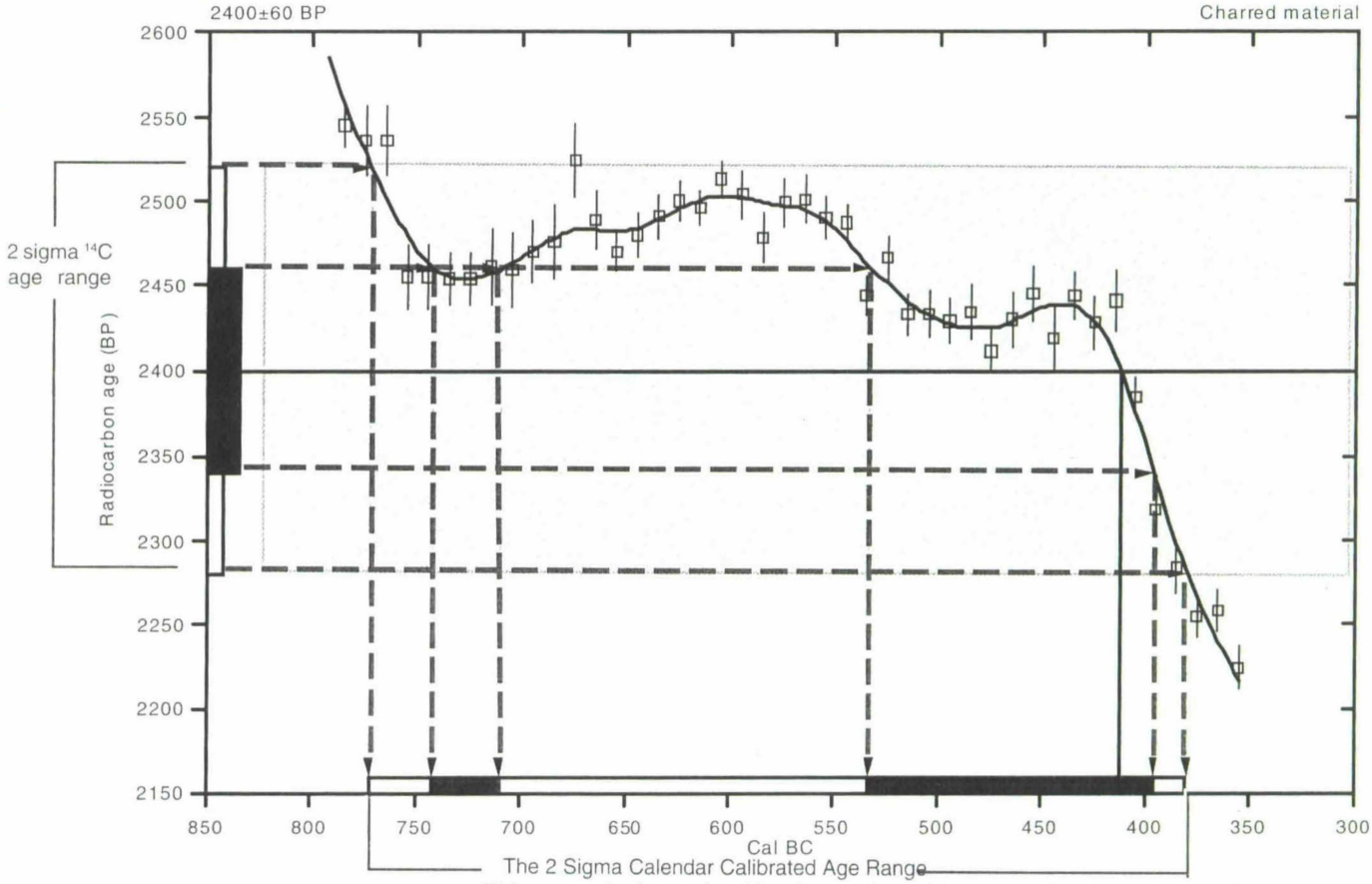
[1] C13/C12 ratio estimated

The intercept between the average radiocarbon age and the calibrated curve time scale. This value is illustrative and should not be used by itself.

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 410 (Cal BP 2360)

1 Sigma calibrated result: (68% probability) Cal BC 740 to 710 (Cal BP 2690 to 2660) and Cal BC 535 to 395 (Cal BP 2485 to 2345)



This range is determined by the portion of the curve that is in a "box" drawn from the 2 sigma limits on the radiocarbon age. If a section of the curve goes outside of the "box", multiple ranges will occur as shown by the two 1 sigma ranges which occur from sections going outside of a similar "box" which would be drawn at the 1 sigma limits.

References:

Database used
Intcal 98
Calibration Database
Editorial Comment
Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii
INTCAL98 Radiocarbon Age Calibration
Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083
Mathematics
A Simplified Approach to Calibrating C14 Dates
Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

References for the calibration data and the mathematics applied to the data. These references, as well as the Conventional Radiocarbon Age and the 13C/12C ratio used should be included in your papers.

Beta Analytic Radiocarbon Dating Laboratory

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GEO 1402

AP-3352

RESPONSE TO COUNTY OF RIVERSIDE REVIEW COMMENTS DATED JULY 8, 2005

Y.H. LYON LLC PROPERTY (GEO NO. 1402) APN'S 431-090-035 AND -044 SAN JACINTO, CALIFORNIA

GEOCON
INLAND EMPIRE, INC.
GEOTECHNICAL
CONSULTANTS

PREPARED FOR

Y.H. LYON, LLC
RANCHO CUCAMONGA, CALIFORNIA

JULY 27, 2005
PROJECT NO. T2279-12-01

GEOCON
INLAND EMPIRE, INC.

GEOTECHNICAL CONSULTANTS

Project No. T2279-12-01
July 27, 2005

Y.H. Lyon, LLC.
10370 Trademark Street
Rancho Cucamonga, California 91730

Attention: Ms. Nikki Chumley

Subject: Y.H. LYON LLC PROPERTY (GEO NO. 1402)
APN'S 431-090-035 AND -044
SAN JACINTO, CALIFORNIA
RESPONSE TO COUNTY OF RIVERSIDE REVIEW COMMENTS
DATED JULY 8, 2005

References:

1. *Geotechnical Investigation, Y.H. Lyon Property, APN's 431-090-035 and -044, San Jacinto, California*, prepared by Geocon Inland Empire, Inc., dated May 2, 2005 (Project No.T2279-12-01 and Geo No. 1402).

2. *Fault Investigation, Y.H. Lyon Property, APN's 431-090-035 and -044, San Jacinto, California*, prepared by Geocon Inland Empire, Inc., dated May 6, 2005 (Project No. T2279-12-01 and Geo No. 1402).

3. *Riverside County Building and Safety Department Review Comments, GEO No. 1402, City of San Jacinto Case No. TR 33072*, dated July 8, 2005

Dear Ms. Chumley:

We have prepared this response report to address the comments presented in the referenced County of Riverside review letter. This report will present each review comment in *italics* followed by our response.

1. *GEO No. 1402 references trench logs performed by Leighton and Associates and Geosoils. These logs should be provided as an appendix in the report. In addition, the consultant should provide discussion with regard to the geologic features (faults, lithology, etc.) documented in those logs and relate those features to ones observed in the Geocon trench. Furthermore, the location and trend of all faults encountered by Geocon and other consultants should be plotted on the geologic map for GEO No. 1402.*

Response: The Leighton and Associates (L&A) trench logs are included in Appendix B of this response. The Geosoils trench logs were produced in 1990 and referred to in their 2004 report, however, they were not depicted in the 2004 report and the 1990 report was not available for our review, as we stated in the last paragraph in Section 3 of the subject fault report. Geosoils 2004 report did discuss the faulting that was encountered within the trenches. Geosoils (and L&A) data correlated with our findings. Therefore, those trench locations were placed on our map to

provide additional supportive evidence of the fault location. The locations of the faults encountered by L&A and Geosoils were plotted on the Geologic Map and were utilized to trace the fault across the site. The L&A trenches were discussed in Section 3.0 of the subject report. Also discussed in Section 3.0 was the fact that we did not review the Geosoils trenches because they were not available. We reviewed a later Geosoils report which discussed their trenches and provided a fault trench location map. Therefore, we could not discuss the Geosoils trench logs.

2. *GEO No. 1402 refers to tectonic subsidence rates determined from wood samples obtained in drill holes. The consultant should provide the reference for this data (i.e. when and whom were the holes drilled).*

Response: The tectonic subsidence rates are discussed in an article entitled "Subsurface Deformation in Part of the San Jacinto Valley, Southern California" written by D.D. Morton and published in the *U.S.G.S. Journal of Research*, Vol. 5, No., 1 in 1977.

3. *GEO No. 1402 states a lineament was observed along the northeastern AP boundary during the lineament analysis. This lineament should be indicated on the geologic map. In addition, the consultant should indicate whether trenching intercepted the lineament and should provide an explanation of its existence.*

Response: The lineament has been added to the Geologic Map, Figure 1. The lineament is traversed by the Geocon fault trench at approximately Station 510 where undisturbed cross bedded sands were observed within the trench. Therefore, we do not believe that the lineament is due to faulting. This feature is most likely due to drainage as was observed to the northwest in our lineament analysis.

4. *GEO No. 1402 states at station 324, an offset bed was observed near the base of the trench. This offset is not indicated on the fault trench log. Please explain this apparent discrepancy and indicate if this is an active fault.*

Response: The offset was inadvertently mislocated at Station 330 during drafting. The log has been corrected to reflect the feature at Station 324. The feature is an abrupt vertical contact exposed at the bottom of the fault trench. A continuous sand bed was present above this feature and was not disturbed. The fault zone is considered to extend from this feature at Station 324 to Station 389.

5. *The fault trench log provided in GEO No. 1402 indicates offset bedding at station 335. However, this is not discussed in the text of the report. Please explain.*

Response: The offset located at Station 335 appears to have resulted in 6 inches of vertical movement, down to the southwest. However, this apparent vertical offset is likely the result of strike slip motion, due to the probability of strike slip (lateral) movement elsewhere within the trench (at Stations 345 and 394). The lateral movement is consistent with the character of the fault as exposed within the Geocon trench.

6. *GEO No. 1402 indicates a third rupture zone at station 390. The consultant should indicate the trend of this rupture zone.*

Response: The trend of the rupture at Station 390 is N44W with a dip of 56NE. The trench log has been amended to include this information.

7. *A vertical line is plotted on the trench log at station 330. The consultant should describe/define this feature.*

Response: This feature was not plotted correctly during drafting and should have been plotted at Station 324. The drafting error has been corrected as is reflected on the enclosed trench logs, Figures 2 and 3. See also Response to Comment No. 4, above.

8. *The GEO No. 1402 states the localized appearance of Unit M within the fault zone indicates that lateral movement is also likely to have occurred. Please explain.*

Response: Unit M was a very distinct unit which was not observed elsewhere within the trench. Due to the appearance of subsidence within the fault zone, and considering only vertical movement, if Unit M had merely been down-dropped within the fault zone, it should have appeared at a higher elevation southwest of the fault zone, as other units did. Furthermore, the units within the bottom approximately 8 feet of the fault trench can be correlated southwest of Station 394 and then change abruptly at the fault at Station 394 becoming consistent but totally different northeast of Station 394 within the bottom portion of the trench. Some minor vertical movement (drag) was observed along the rupture surface northeast of the fault at approximately Station 391. However, due to the lack of unit correlation across the fault, strike slip (lateral) movement seems to be the most plausible explanation.

9. *The consultant should provide an explanation for the sand filled fracture indicated at approximate station 425.*

Response: The sand filled fracture at approximate Station 425 is interpreted as a historic liquefaction feature. Further evidence for liquefaction in the vicinity of Station 425 are the soft sediment deformation and fluidized flame structures in silts immediately southwest of the fracture.

10. *The consultant should explain the line drawn on the trench log between approximate stations 182 and 187.*

Response: The line drawn between Station 182 and 187 at the depth of 13 to 16 feet depicts the subtle margin of a channel, which appeared to continue up from the channel contact below. The contact was gradational, poorly defined, and died out.

11. *The consultant should explain the brown silty sand indicated at approximate station 113.*

Response: The fracture filled with brown silty sand at Station 113 was not observed in the opposite trench wall, therefore, the possibility of a through-going fault like feature was eliminated. It was interpreted as a liquefaction feature similar to that observed at Station 425.

12. *GEO No. 1402 states a continuous 2 to 3 inch thick clay layer at a depth of 13 feet was observed from station 540 to the end of the trench at station 575. This is not indicated on the trench log. Please explain.*

Response: The clay layer is depicted on the trench log but is labeled as silt. This has been corrected on the trench log.

13. *The consultant should explain how they determined no additional active faults exists outside their zone of faulting (station 325-395), as trenching did not apparently extend below Holocene sediments.*

Response: Geocon determined that there was not evidence for active faults outside of the fault zone (Stations 324 through 389) based on the following:

a. The presence of down warped bedding observed only above the fault zone within the Geocon trench. Bedding outside of the fault zone was continuous and undeformed.

b. Although the trench did not extend through the Holocene sediments. There have been six historic events greater than magnitude 6.0 which have resulted in surface rupture in the San Jacinto Valley. The sedimentary profile observed within the Geocon trench represents approximately 3770±ybp southwest of the fault and approximately 1500 to 2000 ybp northeast of the fault. Therefore, if faulting were currently active outside of the designated fault zone evidence of that faulting should have been observed within the trench.

c. There was no geomorphic expression observed during the aerial photo review which would indicate faulting outside of the encountered fault zone or the lineament at Station 510 (which was determined to be a drainage feature).

d. In a discussion regarding the subject review comments, the County requested Geocon address the possibility of other exploration methods to get through the approximate 60+ feet of Holocene sediments within the site. Other exploration methods such as seismic data and Cone Penetrometer (CPT) drilling were considered for the project. Seismic data would not be effective due to the lack of distinctly different units beneath the site. The velocities of the various sedimentary layers would not be distinct enough to pick out areas of offset within the seismic profile. CPT correlations require very consistent wide spread units which can be correlated from boring to boring. The sediments encountered within the trench excavation were not continuous enough to develop a correlation from boring to boring to determine if they had been disturbed by faulting. Therefore, CPT data would also not be effective due to the variability of the different alluvial units in the meandering stream environment of the property.

14. *GEO No. 1402 states the Mr. Jones stated that, a 50 foot setback on either side of the "fault zone" would be appropriate given the evidence of recent rupture. The consultant should recall that the discussion with regard to fault setbacks was centered on the fact that the setback distance typically recommended by other consultants in the area 50 feet (SIC). Discussion was also had relative to the potential for narrower setbacks requiring additional trenching. Mr. Jones never stated that 50 feet was necessarily appropriate for the faulting encountered on this site. The consultant should provide their own recommendations with regard to what setback distance is appropriate and protective for this project.*

Response: Geocon believes that a 50 foot setback is appropriate for this project. Furthermore, due to the depth of Holocene sediments, Geocon does not believe a less conservative setback zone of less than 50 feet is appropriate.

15. *GEO No. 1402 states that Mr. Jones agreed that it would be appropriate to use the L&A trenches on Tract 30944 as offset trenches to align the setback zone. The consultant should recall that it was agreed that the consultant should review and consider the adjacent reports and the information contained in those report could aid Geocon in decision making and in the preparation of GEO NO. 1402. Hence, the consultant should review all of the pertinent information gained from their own research and that which is contained in the other reports in order to formulate their own conclusions and recommendations for this project.*

Response: Geocon did review the referenced reports by L&A and Geosoils and does believe that the information within the other consultant's reports is applicable to the subject project. Therefore, we have utilized the adjacent site information, as is a standard practice in Riverside County, to supplement our investigation and delineate the fault zone.

16. *GEO No. 1402 states it has been a standard of practice within the San Jacinto Valley to extend fault trenches to a depth of 18 feet where a fairly continuous silt layer (SIC). The consultant should explain; who's standard of practice is this and for what portion of the San Jacinto Valley has this been applied? Did Geocon encounter this silt layer? The consultant should note that in recent years, trenching along the Casa Loma Fault (SIC) in a portion of the Valley (East of Warren, North of Cottonwood, South of Ramona Expressway, West and East of Sanderson (SIC)) has indicated a need to extend fault trench excavations to depths deeper than 10 feet, which was a common practice in earlier years. A relatively continuous clayey silt layer has been found in some of the studies performed along the main mapped trace of the Casa Loma Fault (SIC) and it has been found to be very useful in the stratigraphic correlation by others. The ultimate depth of exploratory trenches should be evaluated by the consultant and should be based on site specific data.*

Response: The presence of the silt layer, its age, and depth have been discussed with several consultants who practice within the San Jacinto Valley and with the previous Riverside County Geologist, Mr. Wayne Harrison. Geocon did encounter two carbonate-rich lean clay layers (Units F and H) southwest of the fault. Either of these layers may have been the subject clay/silt layer but it is uncertain. It is acknowledged that a continuous layer exposed within a trench or series of trenches is useful for correlation. However, the age of this layer has not been determined. The presence of the clay/silt layer does not have any bearing on the subject project because actual carbon samples were obtained and age dated within Geocon's fault trench. Furthermore, the depth of the trenches was determined by Geocon and was based on site specific data.

17. *GEO No. 1402 provides age dates for 8 carbon samples. However, the report seems to indicate that a total of 16 samples may have been collected. Please explain.*

Response: As discussed within the second paragraph of Section 6.4, the eight samples were selected based on their location and the amount of carbon present. The eight samples which weren't submitted for age dating were either in the same stratigraphic unit as a larger carbon sample or were in a stratigraphic unit in which age dating information would not have provided enough additional information to offset the cost of dating the sample.

If you have any questions regarding this response report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON INLAND EMPIRE, INC.





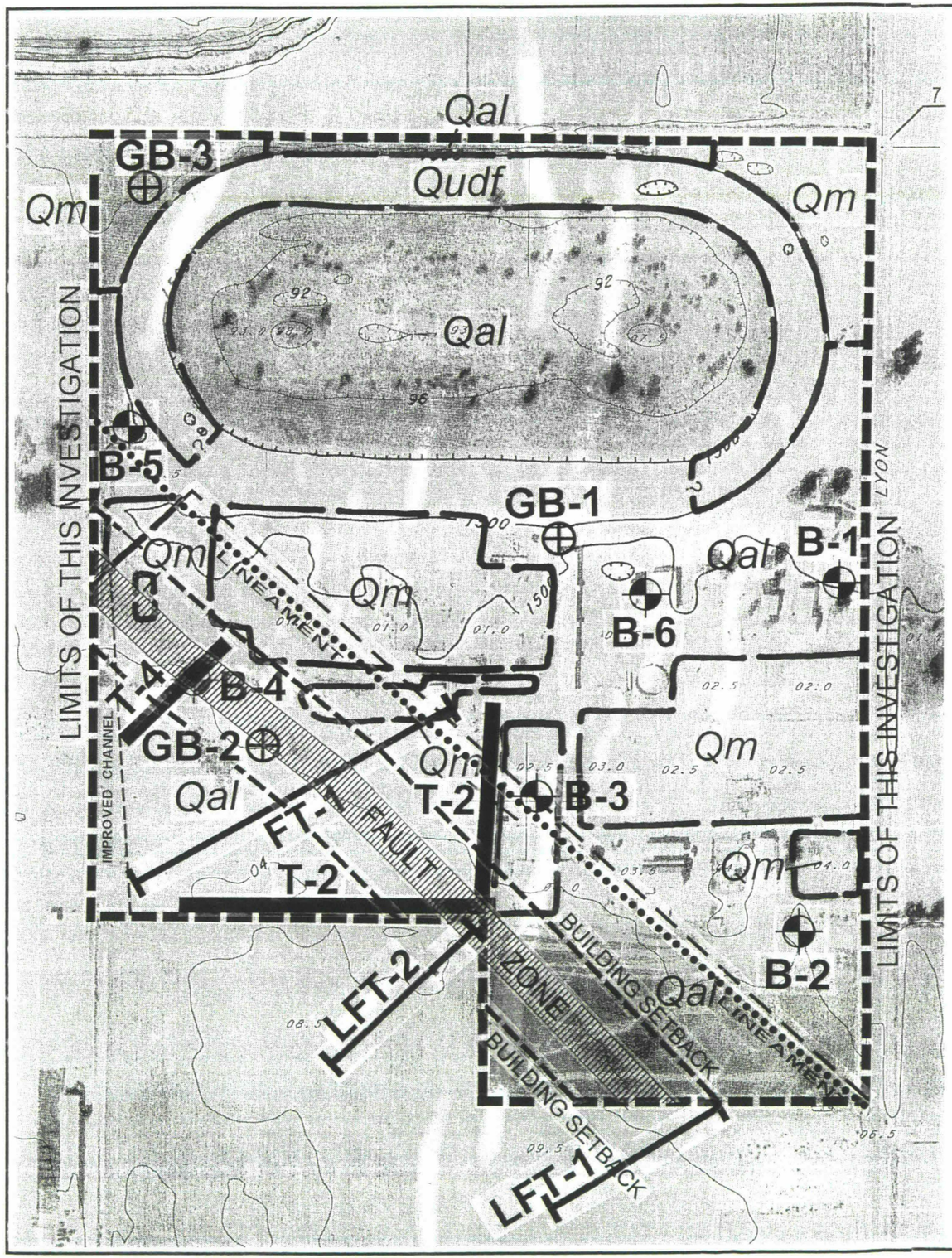
Robert R. Russell
GE 2042

Lisa A. Battiato
CEG 2316

LAB:RRR:tg

Enclosures: Figure 1 – Revised Geologic Map
Figures 2 and 3 – Revised Geocon Fault Trench Logs
Appendix A – Riverside County Review Sheet Dated July 8, 2005.
Appendix B – Leighton & Associates Fault Trench Logs, 2002

Distribution:
(6) Addressee
(3) County of Riverside Department of Building and Safety
Attention: Mr. David Jones



GEOCON LEGEND
(LOCATIONS ARE APPROXIMATE)

Qm	MANURE/ORGANIC IMPACTED SOIL
Qudf	UNDOCUMENTED FILL
Qal	ALLUVIUM
?	GEOLOGIC CONTACT (Queried Where Uncertain)
B-6	GEOCON BORING WITH RECOMMENDED REMOVAL DEPTH IN FEET
GB-3	GEOSOILS BORING, 2004
FT-1	FAULT TRENCH LOCATION
	AP ZONE BOUNDARY
T-4	GEOSOILS FAULT TRENCHES (T-2 & T-4), 1990?
LFT-2	LEIGHTON FAULT TRENCHES, 2002

SOURCE: RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT MAP, SECTION 28. T.4S., R.IW.,SBB & M, DATE OF PHOTOGRAPHY 5-30-89.

N

REVISED GEOLOGIC MAP
Y.H.LYON LLC PROPERTY
APN'S 431-090-035 AND -044
SAN JACINTO, CALIFORNIA

GEOCON
INLAND EMPIRE, INC.
GEOTECHNICAL CONSULTANTS
41571 CORNING PLACE, SUITE 101 - MURRIETA, CA 92562-7065
PHONE 951 304-2300 - FAX 951 304-2392

SCALE 1"=200'	DATE 7-28-2005	
PROJECT NO. T2279-12-01		FIGURE 1
SHEET 1 OF 1		

APPENDIX A

COUNTY OF RIVERSIDE

TRANSPORTATION AND LAND MANAGEMENT AGENCY

Building and Safety Department

James J. Miller
Director

July 8, 2005

Pages 3 (including this cover)

San Jacinto Community Development Department
FAX: (951) 781-6014
Attention: Michelle Rambo, Contract Planner
(Hogle-Ireland, Inc.)

RE: Review Comments
GEO No. 1402
CITY OF SAN JACINTO CASE NO. TR33072

County Geologic Report (GEO) No. 1402, submitted for this City of San Jacinto project (TR33072), was prepared by Geocon and is entitled: "Fault Investigation, Y.H. Lyon LLC Property, APN's 431-090-035 and –044, San Jacinto, California", dated May 6, 2005.

Prior to scheduling this project for public hearing, the following clarification and/or additional information shall be submitted to the County Geologist for review and approval:

1. GEO No. 1402 references trench logs performed by Leighton and Associates and Geosoils. These logs should be provided as an appendix to the report. In addition, the consultant should provide discussion with regard to the geologic features (faults, lithology, etc.) documented in those logs and relate those features to ones observed in the Geocon trench. Furthermore, the location and trend of all faults encountered by Geocon and the other consultants should be plotted on the geologic map for GEO No. 1402.

2. GEO No. 1402 refers to tectonic subsidence rates determined from wood samples obtained in drill holes. The consultant should provide the reference for this data (i.e. when and by whom were the holes drilled).

3. GEO No. 1402 states a lineament was observed along the northeastern AP boundary during the lineament analysis. This lineament should be indicated on the geologic map. In addition, the consultant should indicate whether trenching intercepted this lineament and should provide an explanation for its existence.

4. GEO No. 1402 states at station 324, an offset bed was observed near the base of the trench. This offset is not indicated on the fault trench log. Please explain this apparent discrepancy and indicate if this is an active fault.

5. The fault trench log provided in GEO No. 1402 indicates offset bedding at station 335. However, this is not discussed in the text of the report. Please explain.

6. GEO No. 1402 indicates a third rupture zone at station 390. The consultant should indicate the trend of this rupture zone.

7. A vertical line is plotted on the trench log at station 330. The consultant should describe/define this feature.

8. GEO No. 1402 states the localized appearance of Unit M within the fault zone indicates that lateral movement was also likely to have occurred. Please explain.

9. The consultant should provide an explanation for the sand filled fracture indicated at approximate station 425.

10. The consultant should explain the line drawn on the trench log between approximate stations 182 and 187.

11. The consultant should explain the brown silty sand indicated at approximate station 113.

12. GEO No. 1402 states a continuous 2 to 3 inch thick clay layer at a depth of 13 feet was observed from station 540 to the end of the trench at station 575. This is not indicated on the trench log. Please explain.

13. The consultant should explain how they determined no additional active faults exist outside their zone of faulting (station 325-395), as trenching did not apparently extend below Holocene sediments.

14. GEO No. 1402 states that Mr. Jones stated that, a 50 foot setback on either side of the "fault zone" would be appropriate given the evidence of recent rupture. The consultant should recall that the discussion with regard to fault setbacks was centered on the fact that the setback distance typically recommended by other consultants in the area 50 feet. Discussion was also had relative to the potential for narrower setbacks requiring additional trenching. Mr. Jones never stated that 50 feet was necessarily appropriate for the faulting encountered on this site. The consultant should provide their own evaluation of the surface rupture potential and provide their own recommendations with regard to what setback distance is appropriate and protective for this project.

15. GEO No. 1402 states that Mr. Jones agreed that it would be appropriate to use the L&A trenches on Tract 30944 as offset trenches to align the setback zone. The consultant should recall that it was agreed that the consultant should review and consider the adjacent reports and the information contained in those reports could aid Geocon in decision making and in the preparation of GEO No. 1402. Hence, the consultant should review all of the pertinent information gained from their own research and that which is contained in the other reports in order formulate their own conclusions and recommendations for this project.

16. GEO No. 1402 states it has been a standard of practice within the San Jacinto Valley to extend fault trenches to a depth of 18 feet where a fairly continuous silt layer. The consultant should explain; who's standard of practice is this and for what portion of the San Jacinto Valley has this been applied? Did Geocon encounter this silt layer? The consultant should note that in recent years, trenching along the Casa Loma Fault in a portion of the Valley (East of Warren, North of Cottonwood, South of Ramona Expressway, West and East of Sanderson) has indicated a need to extend fault trench excavations to depths deeper than 10 feet, which was a common practice in earlier years. A relatively continuous clayey silt layer has been found in some of the studies performed along the main mapped trace of the Casa Loma Fault and

it has been found to be very useful for stratigraphic correlation by others. The ultimate depth of exploratory trenches should be evaluated by the consultant and should be based on site-specific data.

17. GEO No. 1402 provides age dates for 8 carbon samples. However, the report seems to indicate that a total of 16 samples may have been collected. Please explain.

Thank you for the opportunity to review this case for the City of San Jacinto. Please call me at (951) 955-2006 or David L. Jones at 955-6863 if you have any questions.

Sincerely,

RIVERSIDE COUNTY BUILDING AND SAFETY DEPARTMENT
James J. Miller, Building and Safety Director

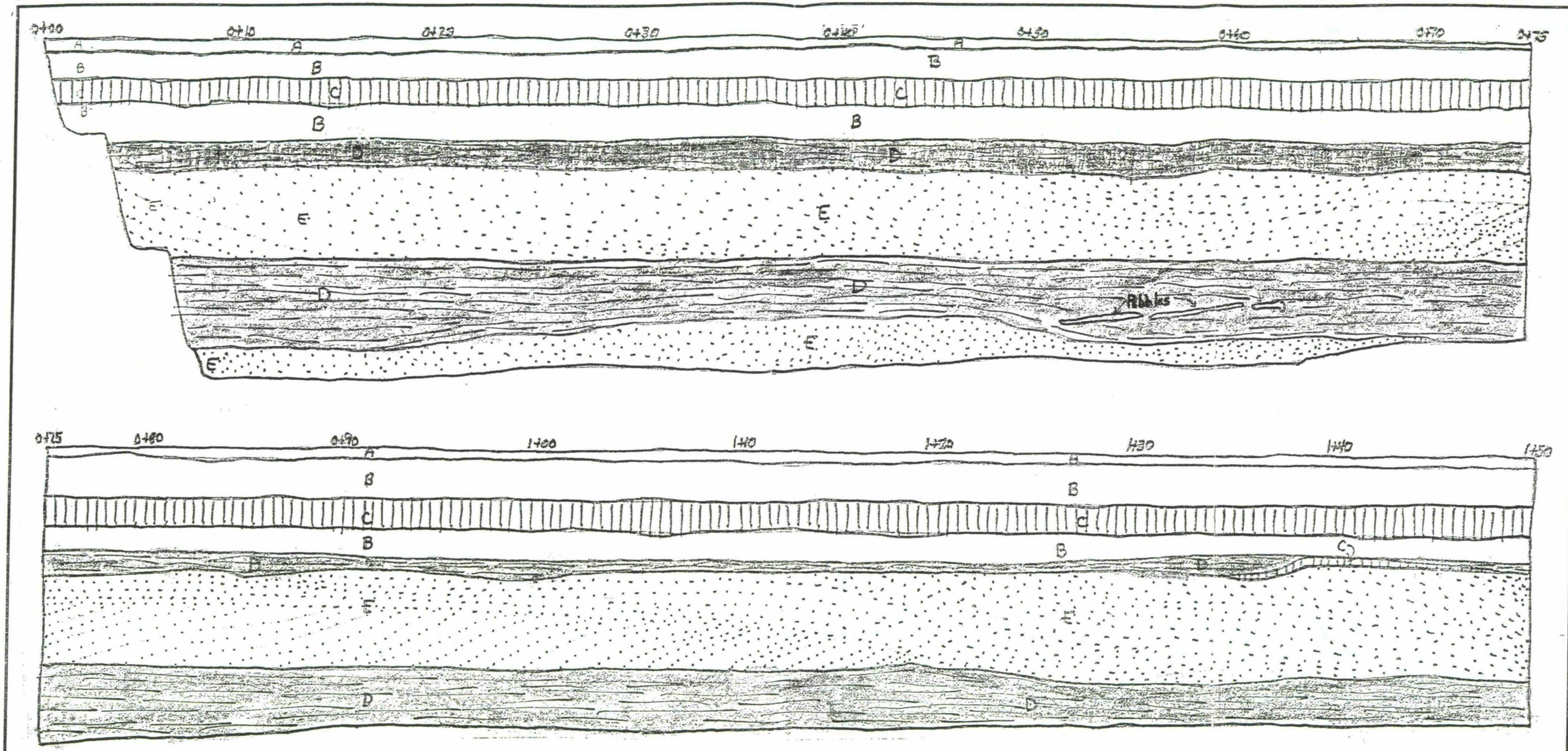
Brad Fagrell

Brad Fagrell, P.E.
Engineering Division Manager
Building and Safety Department

cc: Geotechnical Consultant: Geocon, Attn: Lisa Battiato (951) 304-2392
Applicant: Young Homes, Attn: Nikki Chumley (909) 291-7633
GEO01402

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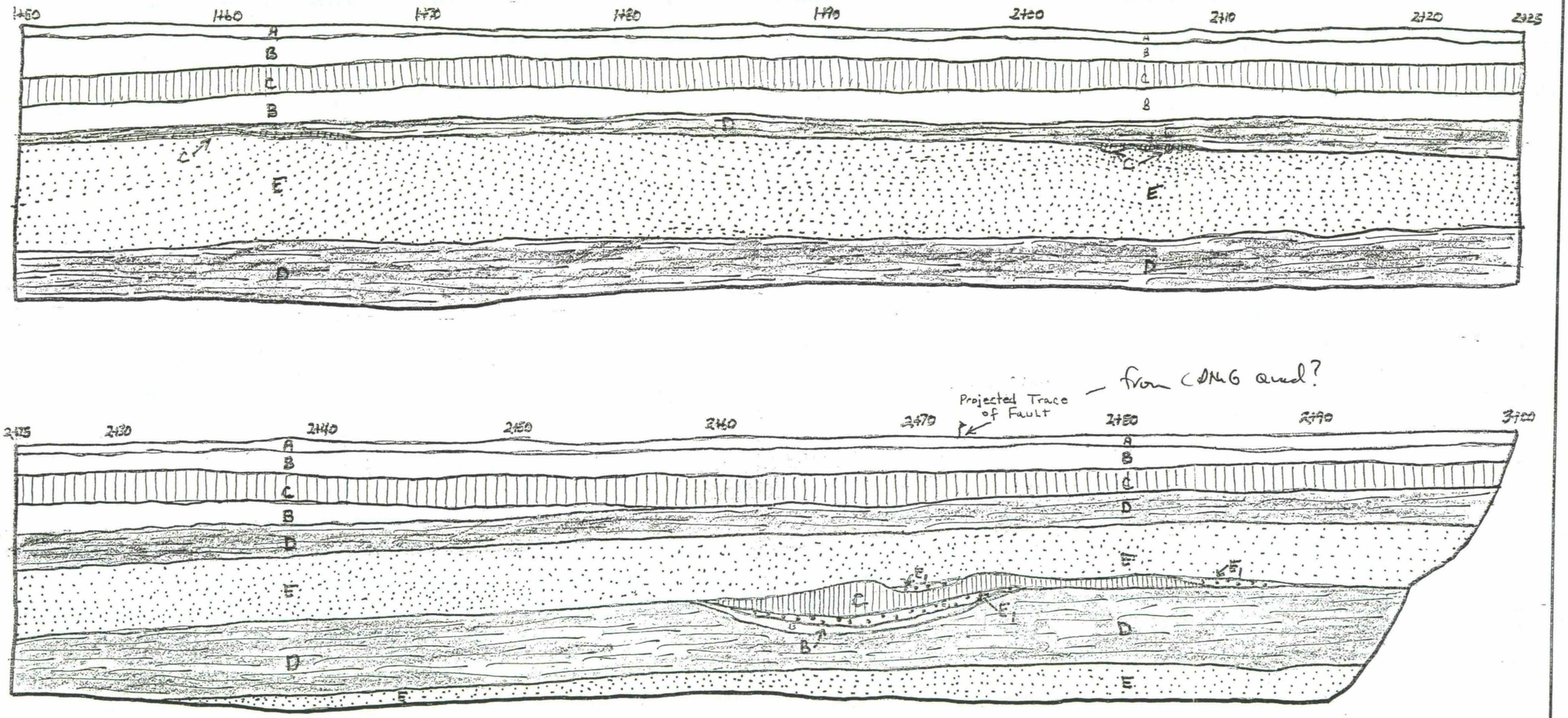
APPENDIX B



FAULT TRENCH LOG LT-1
Riverside Valley Land Company
San Jacinto, California

Project No.	110808-001
Scale	1"=5'
Engr./Geol.	ATG/KAB
Drafted By	DLM
Date	November 2002

Appendix B



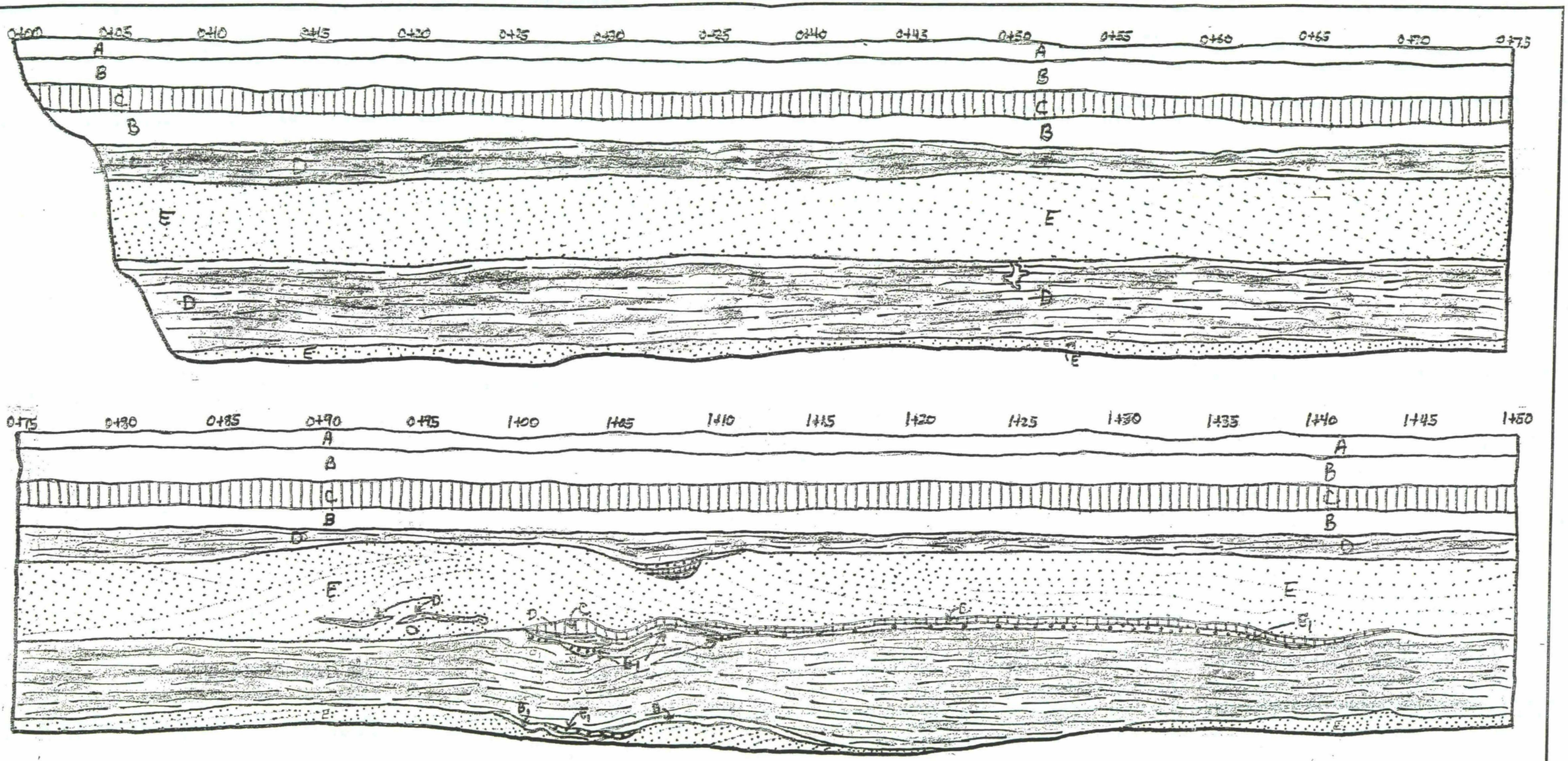
FAULT TRENCH LOG LT-1

Riverside Valley Land Company

San Jacinto, California

Project No.	110808-001
Scale	1"=5'
Engr./Geol.	ATG/KAB
Drafted By	DLM
Date	November 2002

Appendix B

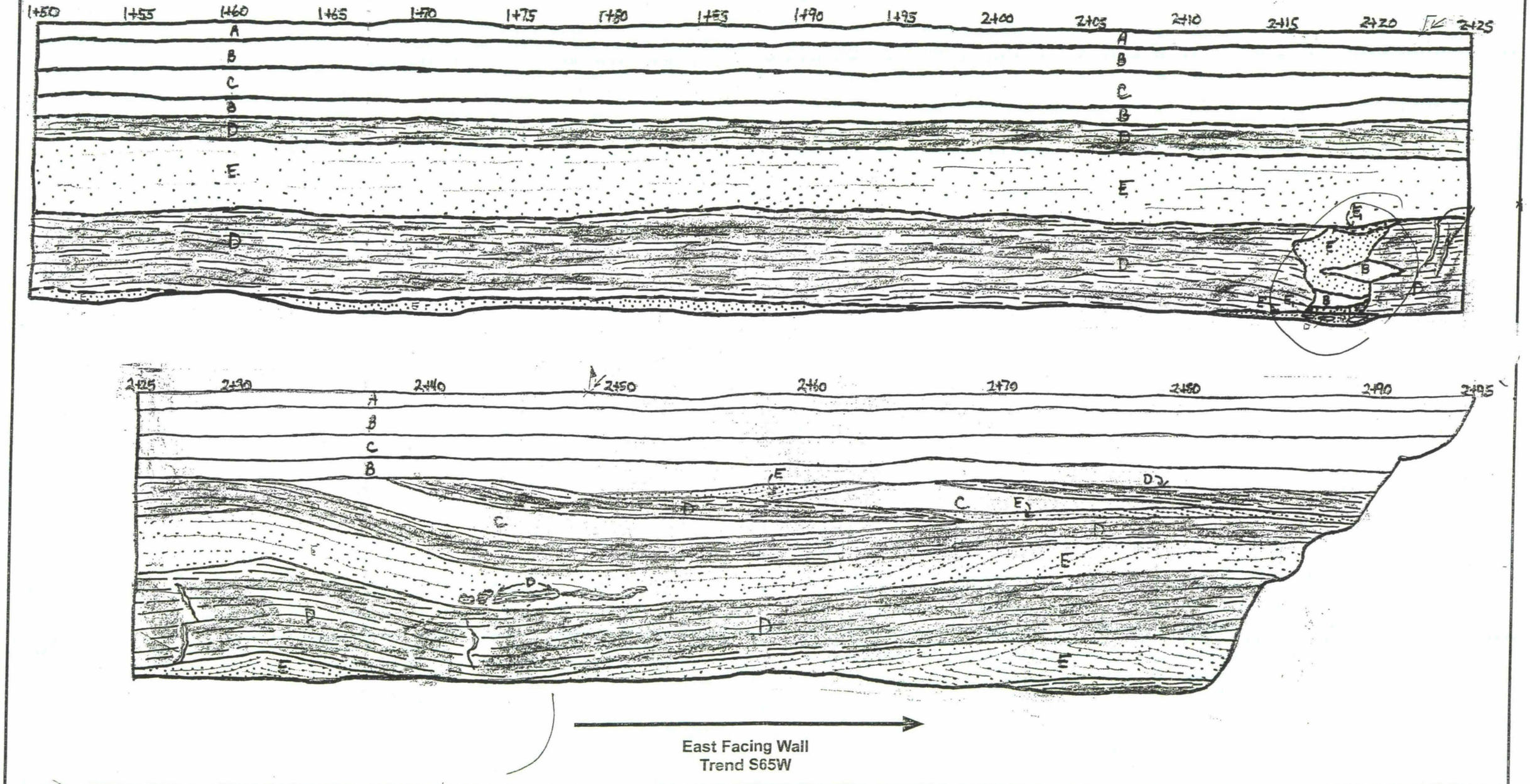


East Facing Wall
Trend S65W

FAULT TRENCH LOG LT-2
Riverside Valley Land Company
San Jacinto, California

Project No.	110808-001
Scale	1"=5'
Engr./Geol.	ATG/KAB
Drafted By	DLM
Date	November 2002

Appendix B



FAULT TRENCH LOG LT-2
Riverside Valley Land Company
San Jacinto, California

Project No.	110808-001
Scale	1"=5'
Engr./Geol.	ATG/KAB
Drafted By	DLM
Date	November 2002

Appendix B

GEO 1402
AP-3352 Rest. #2

RESPONSE TO COUNTY OF RIVERSIDE REVIEW COMMENTS DATED AUGUST 4, 2005

Y.H. LYON LLC PROPERTY
(GEO NO. 1402)
APN'S 431-090-035 AND -044
SAN JACINTO, CALIFORNIA

GEOCON
INLAND EMPIRE, INC.
GEOTECHNICAL
CONSULTANTS

PREPARED FOR

Y.H. LYON, LLC
RANCHO CUCAMONGA, CALIFORNIA

AUGUST 11, 2005

Project No. T2279-12-01
August 11, 2005

Y.H. Lyon, LLC.
10370 Trademark Street
Rancho Cucamonga, California 91730

Attention: Ms. Nikki Chumley

Subject: Y.H. LYON LLC PROPERTY (GEO NO. 1402)
APN'S 431-090-035 AND -044
SAN JACINTO, CALIFORNIA
RESPONSE TO COUNTY OF RIVERSIDE REVIEW COMMENTS
DATED AUGUST 4, 2005

References:

1. *Geotechnical Investigation, Y.H. Lyon Property, APN's 431-090-035 and -044, San Jacinto, California*, prepared by Geocon Inland Empire, Inc., dated May 2, 2005 (Project No.T2279-12-01 and Geo No. 1402).

2. *Fault Investigation, Y.H. Lyon Property, APN's 431-090-035 and -044, San Jacinto, California*, prepared by Geocon Inland Empire, Inc., dated May 6, 2005 (Project No. T2279-12-01 and Geo No. 1402).

3. *Response to County of Riverside Review Comments dated August 4, 2005, Y.H. Lyon LLC Property (GEO No. 1402), APN's 431-090-035 and -044, San Jacinto California,* prepared by Geocon Inland Empire, Inc. dated July 8, 2005 (Project No. T2279-12-01 and GEO No. 1402).

4. *Riverside County Building and Safety Department Review Comments, GEO No. 1402, City of San Jacinto Case No. TR 33072*, dated August 4, 2005

Dear Ms. Chumley:

We have prepared this response to address the comments presented in the referenced County of Riverside review letter. This response will present each review comment in *italics* followed by our response.

1. *As indicated in the County's July 8, 2005 comments letter GEO No. 1402 references trench logs performed by Leighton and Associates and Geosoils and these logs should be provided as an appendix to GEO No. 1402. Geocon's July 27, 2005 response to comments states, "the Geosoils trench logs were produced in 1990 and referred to in their 2004 report, however, they were not depicted in the 2004 report and the 1990 report was not available for our review". As these logs are critical to Geocon's interpretation of the location of the active fault on the site, the consultant should obtain*

the necessary geologic logs and provide copies of the Geosoils report, complete with logs, to the County Geologist for review. Alternatively, the consultant should conduct additional trenching on-site to accurately locate the active faults on this site.

Response: The 1990 and 2004 Geosoils reports are included in Appendix A. Leighton's logs were included in our County response dated July 27, 2005. The Leighton and Geosoils data has been plotted on the Revised Geologic Map, Figure 1. The combination of Geocon, Geosoils and Leighton trenches provide coverage across the AP Zone and cover the faults encountered within the trenches. Geocon's recommended building setback zone provides adequate building setback areas from the faulting encountered within the three consultant's trenches.

2. *Geocon's July 27, 2005 response to comments states: "Geosoils (and L&A) data correlated with our findings". However, no meaningful discussion or description of the findings and correlation is presented. The consultant should indicate specifically what data and how the data correlates with Geocon's (and L&A's) findings. The consultant should also indicate how they know the data correlates with their findings when they apparently do not have the necessary data to make such a correlation. It should be noted that no offset stratigraphy was observed in the L&A trenches and the County cannot find record of ever receiving the referenced Geosoils reports.*

Response: The L&A trenches were reviewed and were included in the initial response to County comments dated July 27, 2005. The correlation between the Leighton trenches and what Geocon observed onsite are the presence of channel-like features within both the Leighton trench (LFT-2) and the Geocon trench at depths of 10 to 15 feet. Faulting was observed below the channel-like features within the Geocon trench and Geocon believes that the channel-like features within the Leighton trench may also indicate that faulting occurred at depth at that location as well. The Geosoils trenches indicate steeply dipping to vertical faults which appear to have resulted in approximately 2 to 3 inches of vertical offset (down to the northeast. Although the offset is what would be expected along this fault (down to the northeast), the apparent offset in the Geosoils trenches could also be the result of strike-slip motion as is interpreted in the Geocon trench. Additionally, the trend of the faults project to the faulting encountered within the Geocon trench.

3. *As indicated in the County's July 8, 2005 comments letter GEO No. 1402, the location and the trend of all faults encountered by Geocon and other consultants should be plotted on the geologic map for Geo No. 1402. By plotting this data, the consultant and the reviewer can more readily evaluate whether the trenching performed, to date, provides adequate coverage for any reasonable projection of faulting across this site.*

Response: The trend of the faulting encountered within the Geocon trench has been plotted on the Revised Geologic Map, Figure 1. Leighton did not indicate the trend of the features that they encountered within their trenches. However, they correlated the features between their two trenches and projected the fault between the trenches. We have plotted Leighton's disturbed zones on the Revised Geologic Map. The fault attitudes from the Geosoils trenches are also plotted on the Revised Geologic Map, Figure 1.

4. *Geocon's July 27, 2005 response to comments provides clarification with regard to apparent mislabeled and/or mislocated geologic features within the original trench logs. However, the response creates additional confusion with regard to the actual limits of faulting at this site. Specifically, response to County comment #4 states: " the fault zone is considered to extend from this feature at Station 324 to Station 389". Response to County comment #5 states*

"...due to the probability of strike slip (lateral) movement elsewhere within the trench (at Station 345 and 394)". Response to County comment #6 states "the trend of rupture at Station 390...". The consultant should explain this apparent discrepancy, review their data and make a final determination with regard to the limits of the fault rupture potential at this site.

Response: The fault zone is 70 feet wide extending from Station 324 through 395. The two faults at stations 345 and 395 exhibit what appears to be strike slip motion. A strike-slip fault (referred to at Station 394) extends from Station 390 to 395 due to the dip of the feature.

To reiterate our interpretation of the fault zone and to further clarify any outstanding issues with respect to the fault zone it is further discussed herein: The fault zone extends from Station 324 through Station 395. A lateral discontinuity observed at the base of the trench at Station 324 was observed beneath a channel. Due to its appearance on the opposite trench wall it is interpreted as a through-going feature and considered to be the southwestern fault zone limit. A vertical fault at Station 335 appears to have offset sediments in the lower portion of the trench (6 inches down to the southwest. Because this movement is opposite of what would be expected along this fault, it is likely that this fault moved in a strike-slip fashion. A group of three somewhat sinuous vertical faults at Stations 342 to 345 appears to offset sediments a total of 12.5 inches down to the northeast. The far northeastern branch of the three faults at Station 345 separates typical sedimentary layers noted the length of the trench to the southwest (Units E, F, G, and H) from a thick silt layer (L) and relatively unique yellow brown sand (M) not noted outside of Stations 345 through 395. These unique units terminate at the northeastern end of the fault zone at Station 395. Due to the appearance of these unique units, this portion of the fault zone appears to exhibit strike-slip motion.

5. *Response to County comment #5 states: "the offset located at Station 335 appears to have resulted in 6 inches of vertical movement down on the southwest". Response to County comment #5 also states, "the lateral movement is consistent with the character of the fault as exposed within the Geocon trench". The consultant should explain how this is consistent that the apparent motion is reverse that indicated by other faults depicted in the Geocon trench log and seems to be reverse that of what would be expected in this area. The consultant should also provide the trend of this fault.*

Response: The fault located at station 335 is a vertical fault across which it appears as though a sand bed was displaced 6 inches down to the southwest. Because this movement is opposite of what we would expect along this fault, and due to its vertical inclination, it is likely a strike-slip fault. The strike slip movement is consistent with our interpretation of the faulting that occurred from Station 345 to 395. The trend of the fault at Station 335 is N51W dipping 84SW. The trend has been plotted on the trench log, Figure 3, and the Revised Geologic Map, Figure 1. See also the response to Comment #4, herein.

6. *Response to County comment #11 states: "the fracture...at Station 113..." was eliminated as a through going fault like feature. Response to County comment #11 also states "it was interpreted as a liquefaction feature similar to that observed at Station 425". The consultant should explain if the feature indicated at Station 425 was only observed on one side of the trench, as is the reasoning provided for eliminating the feature at Station 113 as fault related. It should be noted that the feature indicated at Station 425 appears to be confined to a much shallower depth than the feature at Station 113 and it also appears to be underlain by undisturbed strata. The feature indicated as Station 113 was apparently not unearthed to a deep enough depth to concluded*

undisturbed strata beneath it. Also, the trench log (Fig. 2) does not clearly indicate the material on either side of this feature is the same strata (UnitI1?). Hence, the consultant should provide additional consideration at to how it can be reasonably concluded that the feature indicated at Station 113 is not indicative of active faulting at depth.

Response: The feature at Station 425 was only observed on the southeast sidewall of the trench, it was not present within the northwest wall. Units H and F are continuous, undisturbed clay layers which overlie the Station 113 feature. No deformation of overlying layers was observed above the feature at Station 113. The material on either side of the feature is I_1 and the label has been added to the trench log, Figure 2. The features at stations 113 and 425 are at different depths. This could be due to liquefaction occurring at different times or simultaneous features which only propagated through certain layers. Therefore, it was determined that it was not necessary to deepen the trench at this location to observe the underlying strata. To reiterate: the feature located at Station 113 is not believed to be indicative of faulting at depth because: the units on either side of the feature are the same; the overlying units are continuous and undeformed; and it was not observed within the opposite trench wall and is therefore, not through-going.

If you have any questions regarding this response report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON INLAND EMPIRE, INC.

Lisa A. Battiato
CEG 2316

PROFESSIONAL GEOLOGIST
LISA A. BATTIATO
No. 2316
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

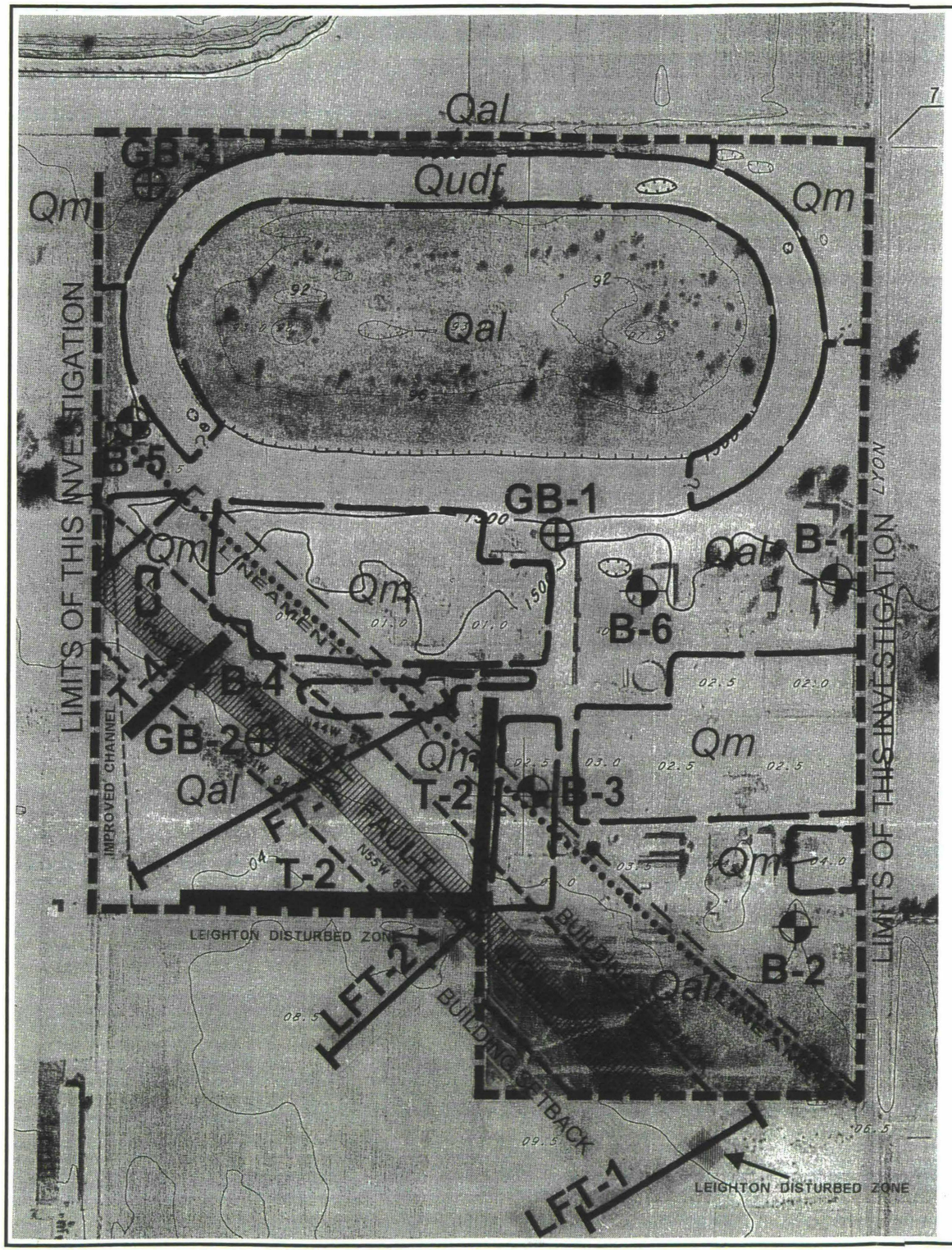
Robert R. Russell
GE 2042

REGISTERED PROFESSIONAL ENGINEER
ROBERT R. RUSSELL
No. 2042
EXP. 12/31/06
GEOTECHNICAL
STATE OF CALIFORNIA

LAB:RRR:tg

Enclosures: Appendix A –Geosoils Reports from 1990 and 2004
Figure 1 – Revised Geologic Map
Figures 2 and 3 – Revised Geocon Fault Trench Logs

(6) Addressee
(3) County of Riverside Department of Building and Safety
Attention: Mr. David Jones



GEOCON LEGEND
(LOCATIONS ARE APPROXIMATE)

Qm	MANURE/ORGANIC IMPACTED SOIL
Qudf	UNDOCUMENTED FILL
Qal	ALLUVIUM
?	GEOLOGIC CONTACT (Queried Where Uncertain)
B-6	GEOCON BORING WITH RECOMMENDED REMOVAL DEPTH IN FEET
GB-3	GEOSOILS BORING, 2004
FT-1	FAULT TRENCH LOCATION
N51W 84	FAULT ATTITUDE
	AP ZONE BOUNDARY
T-4	GEOSOILS FAULT TRENCHES (T-2 & T-4), 1990?
LFT-2	LEIGHTON FAULT TRENCHES, 2002

SOURCE: RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT MAP, SECTION 28. T.4S., R.IW.,SBB & M, DATE OF PHOTOGRAPHY 5-30-89.

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REVISED GEOLOGIC MAP
Y.H.LYON LLC PROPERTY
APN'S 431-090-035 AND -044
SAN JACINTO, CALIFORNIA

GEOCON
INLAND EMPIRE, INC.
GEOTECHNICAL CONSULTANTS
41571 CORNING PLACE, SUITE 101 - MURRIETA, CA 92562-7065
PHONE 951 304-2300 - FAX 951 304-2392

SCALE 1"=200'	DATE 08-11-2005	
PROJECT NO. T2279-12-01		FIGURE 1
SHEET 1 OF 1		

APPENDIX A

GeoSoils, Inc.

Geotechnical • Coastal • Geologic • Environmental

26590 Madison Avenue • Murrieta, California 92562 • (909) 677-9651 • FAX (909) 677-9301

March 23, 1990
W.O. 318-A-RC

Khaloghli & Associates
19600 Fairchild, Suite 240
Irvine, California 92715

Attention: Mr. Jeffrey Tartaglino

Subject: Preliminary Geologic and Soils Engineering Investigation, 100-Acre± Parcel Northeasterly of the Corner of Cottonwood Avenue and Kirby Street, San Jacinto Area, Riverside County, California

Gentlemen:

In accordance with your request and authorization, this report presents the results of our preliminary geologic and soils engineering investigation on the subject property. The primary purpose of this study was to evaluate the presence of previously mapped faults within the Alquist-Priolo Special Studies Zones and the presence of other faults outside of the Special Studies Zones. The secondary purpose of this study was to evaluate the onsite soils and geologic conditions and their effects on the proposed site development from a geotechnical viewpoint. The project site and field logs were reviewed by Dr. Roy J. Shlemon to provide a supplemental opinion on potential setback zones as well as recency of fault activity.

SCOPE OF SERVICES

The scope of our services has included the following:

1. Review of readily available geologic data for the area (Appendix A), including stereoscopic "false-color" infrared, and black and white aerial photographs and lineament analysis.

2. Geologic and geomorphic site reconnaissance.

3. Subsurface exploration consisting of the excavation by backhoe of 15 fault locating trenches and 6 borings at selected areas across the site.

4. Appropriate laboratory testing of representative soil samples collected during our subsurface exploration program.

5. Geologic and engineering analysis of the data collected.

6. Preparation of this report.

SITE DESCRIPTION

The site is an irregular-shaped parcel consisting of approximately 100 acres in the San Jacinto area of Riverside County, California (see the Site Location Map, Figure 1). The site is bounded to the south by Cottonwood Avenue and an adjoining agricultural parcel, to the west by the extension of Kirby Street and undeveloped property, to the north by the access road to the San Jacinto Reservoir, and to the east by Lyon Avenue and undeveloped and primarily agricultural property.

Residential and related agricultural structures currently occupy localized portions of the site. The southwest part of the property is currently being used for agricultural purposes. The northeast part of the site is being used for equestrian purposes. A large pile of dumped tree trimmings was observed in the west-central portion of the site. Overall the site is relatively flat and nearly level, sloping very gently to the north. A sinious slope about 4 to 6 feet in height occupies the southwesterly portion of the property. Topographic relief across the site ranges from a high of 1,516 feet MSL to a low of 1,498.7 feet MSL (17.3 feet).

PROPOSED DEVELOPMENT

It is our understanding that cut and fill grading techniques would be utilized to create design grades for the proposed residential development and associated interior roadways and utility improvements as well as "greenbelt" or park and/or flood control areas. It is also our understanding that the residential dwellings would consist of one- or two-story structures with slabs-on-grade and continuous footings, utilizing wood-frame construction. Building loads are assumed to be typical for this type of relatively light construction. The need for import soils is unknown.

FIELD STUDIES

Field studies conducted during our evaluation of the property consisted of the following:

1. Geologic reconnaissance and mapping.

2. Excavation of 15 exploratory backhoe trenches to evaluate the near surface soil and geologic conditions with respect to faulting, and the drilling of 6 small-diameter borings to evaluate the relatively deep soil and geologic conditions with respect to a geotechnical standpoint.

The trenches and borings were logged by geologists from our firm. The locations of the trenches and borings are presented on Plate 1. Logs of the trenches are presented on Plates 2 through 11. Logs of the borings are presented in Appendix B.

GEOLOGY

Regional Geologic Setting

The study area is located along the western edge of the San Jacinto Mountains, within the San Jacinto Valley (see Figure 2). The San Jacinto Valley represents a down-dropped, fault-bounded valley (graben) within the San Jacinto fault zone. The northwest trending valley is from 3200 to 4400 yards in width and is bounded on the west by the Casa Loma fault and on the east by the Claremont fault. The Hot Springs fault occurs east of the valley and joins the Claremont fault easterly of the study area. The Casa Loma fault and a splay of the Casa Loma fault cross the subject site.

Seismic and gravity surveys indicate that 6500 to 7900 feet of alluvial sediments overlie the basement bedrock in the valley (Lofgren and Rubin, 1975). In contrast, on either side of the valley, bedrock is exposed at the surface and rises to as high as 2000± feet above the valley. Studies suggest that the basement rock may be as shallow as 550 feet in depth on the westerly side of the Casa Loma fault (Bean and others, 1959).

The San Jacinto fault zone in recent years has demonstrated its active nature and potential for large magnitude earthquakes. Earthquakes attributed to this fault zone were reported in 1899 and in 1918, resulting in some destruction to the communities of San Jacinto and Hemet. Lately, lesser earthquakes have occured nearby and southerly of the site within the San Jacinto fault zone.

Recent studies have indicated that the San Jacinto Valley is also actively subsiding. Three factors acting collectively have probably been responsible for valley subsidence. These include: 1) down-faulting along the bordering fault zones (Lofgren and Rubin, 1975), 2) ground water withdrawal, and 3) hydrocompaction of low density alluvial deposits (Lofgren, 1976). The subsidence is primarily occurring along the western side of the valley.

Lineament Analysis

In order to identify possible unmapped faults and to evaluate topographic expressions of published fault traces, a lineament analysis was performed. As indicated previously, stereoscopic "false-color" infrared, and black and white aerial photographs (United States Department of Agriculture, 1980 and Riverside County Flood Control District, respectively) at a scale of approximately 1:40,000 and 1:12,000, respectively, were utilized in our lineament analysis.

Lineaments were classified according to their development as strong, moderate, or weak. A strong lineament is a well defined feature that can be continuously traced several hundred feet to a few thousand feet. A moderate lineament is less well defined, somewhat discontinuous, and can be traced for only a few hundred feet. A weak lineament is discontinuous, poorly defined, and can be traced for a few hundred feet or less. Each lineament was field checked during our reconnaissance mapping to determine possible origin. All of the lineaments observed on the site were classified as strong to moderate. The lineaments that transected the site within and without of the limits and of the Alquist-Priolo Special Studies Zones in a parallel to subparallel fashion. These lineaments trended northwest-southeast. The strong lineaments were intercepted by our trenches, as the likelihood of a moderate lineament being due to a fault could be evaluated by the presence or absence of a fault assoociated with a strong lineament.

Site Earth Materials

Earth materials within the project site consist of undocumented artificial fill, alluvium, and older alluvium. The earth materials are generally described below, and their limits are indicated on Plate 1. Supplemental descriptions are also included on Plate 2 for units encountered during our trenching operations.

Artificial Fill - Undocumented (Map Symbol - Afu)

Localized areas of undocumented fill materials were observed on the site. These materials generally consisted of dark olive brown, silty, fine-grained sand. The fill was damp and loose. These materials encountered ranged in thickness from 1 foot to 5 feet. These materials typically have a low to occasionally medium expansion potential, depending on the clay content. In addition, these materials are considered potentially compressible in their existing state and may settle appreciably under additional fill or foundation and improvement loadings, should they become saturated.

Quaternary Alluvium (Map Symbol - Qal)

Quaternary alluvium underlies the entire site. The alluvium was observed to be gray to olive gray to olive yellow, silty sands to fine- to coarse-grained sands with varying amounts of silt matrix. These materials were damp and loose to medium dense. Occasionally occurring olive gray, sandy silt beds were also encountered in the alluvium. The alluvium was thickly to massively bedded to cross bedded. This unit typically has a very low to low and occasionally medium expansion potential. The upper 3 feet (below original natural ground) is considered potentially compressible and may settle appreciably under additional fill or foundation loadings should they become saturated. Below about 3 feet, these materials were observed to be of a medium dense consistency and were poorly indurated. These sediments are estimated to be Holocene (less than 10,000± years old).

Quaternary Alluvium - Older (Map Symbol - Qalo)

Older Quaternary alluvium was encountered at depth in our trenches in the southwest portion of the site west of the sinious slope mentioned previously. These materials were light gray, fine- to coarse-grained sands with varying amounts of silt matrix. An olive gray, very fine-grained calcium carbonate layer was encountered in this unit. This older alluvial is massive to cross-bedded and grades. This unit typically has a very low to low to occasional medium expansion potential.

Geologic Structure

The geologic units on the subject property within the limits of our study were observed to be predominately thickly to massively bedded with some cross-bedded and lenticular areas. Bedding was typically faint and poorly to moderately well developed with occasional fining-upward sequences. Bedding was generally of a discontinuous nature and confined within lenses.

Jointing within the older alluvium and alluvium deposits was minimal and generally steeply inclined in a northeast direction. Faults within these units are described below. Continuous or consistent adverse bedding or joint systems were not noted during our field investigation. Based on the available data, there are no adverse geologic structures which are anticipated to adversely affect the proposed development. This should be further evaluated during site grading.

FAULTING AND REGIONAL SEISMICITY

As indicated previously, the site is situated in an area of active as well as potentially active faults. Major fault zones which could have a significant affect on the site should they experience activity would include the following:

Fault Zone	Distance from Site (Miles)
San Jacinto	0
San Andreas	13.5
Elsinore	18.5

The relationship of the site location to these major mapped faults is indicated on the Fault Map of Southern California (Figure 3). Other significant faults have been mapped in the San Jacinto-Hemet region. All of these are considered as part of the nearby San Jacinto fault zone which is characterized in this area as a relatively wide zone of faulting, consisting of a number of parallel or subparallel, en echelon fault strands or branches, which generally dip to the southwest. Faults in the San Jacinto fault zone include:

Fault	Approximate Distance from Site (Miles)
Casa Loma	0
San Jacinto	2.8±
Park Hill	3.0±
Hot Springs	3.5±
Claremont	3.7±

Since these faults are considered splays or branches of the San Jacinto fault zone, they are generally assigned equivalent potential for maximum earthquakes.

Our current study was performed in areas where faults were mapped or postulated to cross the site, where strong lineaments were observed, and within and without of the Alquist-Priolo Special Studies Zones.

In trench T-1, two steeply dipping (southwesterly) faults were encountered at approximate station number 380', trending northwesterly and vertically. About 1 1/2 to 2 1/2 inches of vertical displacement was noted at this location. These faults were located in an Alquist-Priolo Special Studies Zone and correlated with a previously mapped fault and strong lineament.

This strong lineament continues past the northwesterly limits of the Special Studies zone, and was intercepted by trenches T-4, T-8, and T-9. Steeply dipping (southwesterly) fault(s) were encountered in T-4, T-8, and T-9 at station numbers 70', 80' and 185', respectively. About 1 to 3 1/2 inches, 1 inch, and 1 inch of vertical displacement was noted in the faults in T-4, T-8, and T-9, respectively. Trench T-2 was excavated adjacent trench T-1 in order to further evaluate a suspected liquefaction feature. Trench T-2 confirmed that the feature observed in T-1 at station number 22' was due to liquefaction rather than faulting.

Trench T-3 was excavated to further evaluate the previously mapped trace of another series of faults along the western portion of the property, which lies in a separate Special Studies Zone. This trench was located near where these series of faults were projected/mapped to converge, south of a sinious break in slope (cross-section of the topography resembled a sine wave). Only one of the faults was encountered, however, at station number 275', and dipped steeply to the east. This fault was not associated with a lineament; however, the series of faults appeared to be associated with the sinious scarp. Trenches T-5 (which re-excavated, deepened, and extended the previous consultant's trench) and T-10 were located to intercept this trend. A possible fault in trench T-10 at station number 22', and continuing into T-5 at station number 18', appeared to correlate with the sinious scarp. The projection of the fault noted in T-3 was not encountered in trench T-5. Approximately 1/2 to 1 1/2 inches of vertical displacement was observed in the fault in T-3. Vertical displacement was not observed in the faults in T-5 and T-10, but bedding was dragged downward.

Trenches T-6 and T-7 were excavated in the westerly Special Studies zone to further evaluate the northerly trend of the previously mapped faults. These faults appear to diverge, however, and were only encountered in T-6, dipping steeply to the east. The western most faults appear to be associated with the sinious scarp mentioned previously, while the eastern-most fault appears to correlate with a strong northwesterly trending lineament that begins at this junction. T-12 was excavated to intercept the eastern-most fault within this zone. Evidence of faulting was not encountered in T-12.

Trench T-13 was excavated to further evaluate a previously mapped fault within the westerly Special Studies Zone, and down-strike from the fault encountered in trench T-1. A steeply dipping (easterly) fault was encountered, with about 2 to 3 inches of vertical displacement noted. This fault correlates with the faults mapped previously; however, it does not correlate with any strong lineaments.

It appears that the extensive agricultural ease of the land has obliterated any geomorphic expression of this fault in this particular area.

Trenches T-14 and T-15 were excavated along strong photolineaments outside of the Special Studies Zone, and evidence of faulting was not encountered. The lineaments are likely due to differential weathering along ancient flood channels where facies changes occur.

Discussion

As pointed out by Dr. Shlemon in the field, the liquefaction features noted in our trenches near the surface indicate that the water table was also near the surface in the recent past. As noted previously, the San Jacinto Valley is actively subsiding. It appears that the ground water withdrawal is probably responsible for the steep easterly dipping faults in trenches T-6 and T-11 and associated sinious scarp, which probably owes its configuration on the surface to a horizontal discontinuity at depth. The other faults not associated with the sinious scarp are likely due to tectonic movement and not ground water withdrawal. Although it is possible that the discontinuity and tectonic faults are related at depth, the sinious scarp appears to be the surface manifestation of this process.

Ground rupture within the site would most likely occur along these previously mentioned faults, either the tectonic or ground water withdrawal type. A setback (i.e., for habitable structures) of 50 feet is recommended for the area on each side of these faults. These setback zones are shown on Plate 1.

Seismic Parameters

Due to the proximity of the Casa Loma faults and because they are a branch of the San Jacinto fault zone, they are considered to be the "design faults" for the project area with a maximum credible earthquake of 7.5 M and a maximum probable earthquake of 7.2 M.

Peak horizontal ground acceleration from a maximum credible event could exceed 0.80 g and a maximum probable event could reach 0.70 g. More important for design criteria is the repeatable high acceleration (RHA) which is taken to be approximately 65 percent of the peak acceleration for sites less than 20+ miles from the epicenter (Ploessel and Slosson, 1974). The estimated horizontal design criteria for repeatable horizontal ground acceleration would therefore be about 0.51 g.

Numerous earthquakes have occurred in southern California. Many of these are historical in nature and lack adequate records.

Documentation is available, however, for various earthquakes which have occurred in southern California since 1912 having a magnitude of 6.0 on the Richter Scale. The possibility for ground acceleration at the site may be considered similar to the southern California region as a whole. Table I summarizes the results of a statistical analysis of southern California earthquakes data with respect to a 50-year life.

TABLE I
(after Housner)

Acceleration of Gravity	Probability of One Occurrence Per 100 Years
0.05	95%
0.10	88%
0.15	64%
0.20	40%
0.25	22%
0.35	4%

During a 50-year span, a structure on the site will likely be subjected to an earthquake of at least Richter magnitude of 6.0. Horizontal acceleration induced by an earthquake may affect earth structures and/or embankments.

Experience has shown that wood-frame structures designed in accordance with the Uniform Building Code (International Conference of Building Officials, 1988) tend to best resist earthquake effects. Earthquake effects may include lurching and/or localized ground cracking. This would be expected over other portions of southern California.

GROUND WATER AND CAVING

The regional ground water table was not encountered in the exploratory excavations. Typically, water levels within the San Jacinto Valley are on the order of several hundred feet deep. A resident on the site currently has a well that, according to the resident, has a ground water level of about 150 feet deep. Perched ground water was encountered in boring B-3 at a depth of 40 to 50 feet.

Minor caving occurred in some of our exploratory excavations at depths below three feet. Due to the non-cohesive materials that exist onsite, caving and sloughing should be anticipated in all subsurface excavations and trenching. Appropriate safety considerations for potential caving and sloughing, such as shoring or layback cuts, should be incorporated into the construction design details.

OTHER GEOLOGIC HAZARDS

Liquefaction is not anticipated to affect the site due to the absence of high ground water table. The potential for seiche (periodic oscillation of a body of water) should be considered due to the site's location with respect to the San Jacinto Reservoir and any future water storage in this facility. However, at the time of our study, water was not present in the reservoir. The effects of flooding should be evaluated by the project civil engineer.

Areas within the site were not identified as being susceptible to seismically induced landsliding or significant mass wasting. Adverse geologic structures (other than faulting) were not encountered during our subsurface investigation to the depths explored.

SUBSIDENCE

Areal subsidence in the setback zones is mitigated by the recommended setback zones for structures of human occupancy. Due to the sites location in an area of known subsidence, areal subsidence and its surface expression outside of the setback zones is considered highly unlikely, but, may not be totally precluded. At any rate, it should not be any greater at the site than for nearby and adjacent already developed properties.

However, ground subsidence is expected to occur over the site due to equipment working (vibrations) and the effect of loading of additional fill (weight). Again, both factors are variable and difficult to estimate.

Ground subsidence (consolidation) due to variations would depend upon the equipment being used, and dynamic effects of the equipment. Most of these factors cannot be determined at this time and may be beyond ordinary estimating possibilities.

Our evaluation indicates that ground subsidence, due to vibration/loading, may be on the order of 0.05-0.20 feet. In general, field subsidence should depend upon equipment, haul routes, duration of grading, and the effect of dynamic loading.

LABORATORY TESTING

Classification

Soils were classified visually according to the Unified Soils Classification System. The soil classifications are shown on the boring logs, Appendix B, and on the trench logs legend, Plate 2.

Moisture Density

The field moisture content and dry unit weight were determined for selected undisturbed samples of the soils encountered in the borings. Thee dry unit weight was determined in pounds per cubic foot and the field moisture content was determined as a percentage of the dry unit weight. The results of these tests are shown on the boring logs (Appendix B).

Laboratory Standard

The maximum density and optimum moisture content was determined for the major soil types encountered in the borings. The laboratory standard used was ASTM D-1557-78. The moisture-density relationships obtained for these soils are shown below:

	Soil Type	Location/ Depth (feet)	Maximum Dry Density-pcf	Optimum Moisture Content, %
A -	Light Olive Brown, Fine SAND	B-1 @ 4-6'	125.0	11.0
B -	Olive Brown, Silty, Fine SAND	B-3 @ 0-2'	125.0	8.0
C -	Gray, Medium to Coarse SAND	B-4 @ 4-6'	124.0	8.0
D -	Olive Brown, Sandy SILT	B-6 @ 16-18'	117.0	14.0

Expansion Testing

Expansion testing was performed for the most abundant soil type, according to UBC Standard No. 29-2 and outlined in Section 2904(b) of the Uniform Building Code (International Conference of Building Officials, 1988). The test results are indicated below as well as the expansion classification according to UBC Table No. 29.c.

	Soil Type	Expansion Index	Classification
B -	Olive Brown, Silty, Fine SAND	0	Very Low

Consolidation Testing

Consolidation testing was performed on selected undisturbed samples. The consolidation apparatus is designed to receive a 1-inch-high, soil-filled brass ring. Loads are applied in several increments in a geometric progression and the resulting deformations are recorded at selected time intervals. Porous stones are placed in contact with the top and bottom of each specimen to permit addition of and release of pore fluid. Inundation of the samples was performed at a load of 1 kip/sq. ft., and the test results are shown in Appendix C.

EMBANKMENT FACTORS

Embankment factors (shrinkage) for the site have been estimated based upon our field and laboratory testing, visual site observations, and experience. It is apparent that shrinkage would vary with depth and with areal extent over the site based on previous site use. Variables include vegetation, weed control, discing, and previous filling or exporting. However, all these factors are difficult to define in a three dimensional fashion.

Therefore, the information presented below represents average shrinkage values:

Undocumented Fill	15-20% shrinkage
Alluvium	10-15% shrinkage
Older Alluvium	5-10% shrinkage

An additional shrinkage factor item would include the removal of individual large plants or trees. These plants and trees vary in size but, when pulled, they may result in a loss of 0.5 to 1.5 cubic feet to greater than 27 cubic feet of volume, respectively. This factor needs to be multiplied by the number of significant plants or trees present to determine the net loss.

The above factors indicate that earthwork balance for the site would be difficult to define and flexibility in design is essential to achieve a balanced end product.

CONCLUSIONS AND RECOMMENDATIONS

Based on our field exploration, laboratory testing, and our engineering and geologic analyses, it is our opinion that the project site is suited for the proposed use from a soils engineering and geologic viewpoint. The recommendations presented below should be incorporated in the design, grading, and construction considerations.

General

1. Soils engineering and compaction testing services should be provided during grading to aid the contractor in removing unsuitable soils and in his effort to compact the fill.

2. Geologic inspections should be performed during grading to verify and/or further evaluate geologic conditions. Although unlikely, if adverse geologic structures are encountered, supplemental recommendations and earthwork may be warranted.

3. Groundwater is not expected to be a factor in development of the site. However, caving and sloughing may be anticipated to be a factor in all subsurface excavations and trenching.

4. At the time of preparation of this report, the proposed finish pad grades, locations of any structures, types of structures and loading were unknown. The recommendations presented below should be reviewed and revised, if necessary, by the project's soils engineer and geologist when grading plans are finalized and become available prior to the start of grading.

5. General Earthwork and Grading Guidelines are provided at the end of this report as Appendix D. Specific recommendations are provided below.

Demolition/Grubbing

1. Existing shrubs, and any miscellaneous construction materials and debris should be removed from the site. If any stockpiles exist, they may be used as fill, provided that concentrations of vegetation, trash, and miscellaneous debris are removed prior to fill placement.

2. Any previous foundation, cesspools, septic tanks, leach fields, irrigation lines, standpipes, cisterns, or other subsurface structures, uncovered during the recommended removal, should be observed by GeoSoils, Inc. so that appropriate remedial recommendations can be provided.

3. In structural fill areas, cavities or loose soils (including all trenches) remaining after demolition and site clearance should be cleaned out, inspected by the soils engineer, processed, and replaced with fill which has been moisture conditioned to at least optimum moisture content and compacted to at least 90 percent of the laboratory standard.

Treatment of Existing Ground

1. All existing fill materials should be removed to expose a natural ground surface. The underlying natural ground should then be processed as described below (Paragraph No. 2).

2. In proposed fill areas, the upper 30 to 36 inches of the underlying natural ground should be brought to at least optimum moisture content, and recompacted to a minimum relative compaction of 90 percent of the laboratory standard. Recompaction may be obtained by a combination of surficial removals/replacement and scarification or processing from the surface if suitable compaction equipment (e.g., vibrating sheepsfoot) and adequate moisture content (optimum or greater) are utilized.

3. Existing fill and removed natural ground materials may be reused as compacted fill provided that major concentrations if vegetation and miscellaneous debris are removed prior to or during fill placement.

4. Where cuts are equal to or greater than 36 inches are proposed, the are should be cut to grade, then upper 12 inches below finish grade should be scarified, brought to at least optimum moisture content, and recompacted to a minimum relative compaction of 90 percent of the laboratory standard.

5. Where the proposed cuts are 36 inches or less, the area should be cut to grade then the final surface should be scarified to an additional depth of 12 inches, or 36 inches minus the amount of cut, whichever is greater.

6. Localized deeper removals may be necessary due to buried drainage channel meanders or dry porous materials. The project soil engineer should determine the depth of the potentially compressible materials within the proposed fill area.

7. In order to achieve a uniform pad subgrade, cut portions of a transition (cut/fill) building pad should be overexcavated and replaced with compacted fill. Transition conditions (cut/fill) in pad areas should be mitigated by overexcavating the building pad area and 5 feet beyond in each direction to a depth of 18 inches.

Slope Consideration and Slope Design

All slopes should be designed and constructed in accordance with the minimum requirements of the local ordinances, the Uniform Building Code, the recommendations in Appendix D, and the following:

1. Fill slopes should be designed at 2:1 (horizontal to vertical) gradients and should not exceed 30 feet in height. Guidelines for slope construction are presented in Appendix D.

2. Cut slopes should be designed at gradients of 2:1 (horizontal to vertical) and should not exceed 20 feet in height. While stabilization of these slopes is not anticipated, adverse geologic conditions may be encountered which may require remedial grading, or laying back of the sloe to the angle of daylight.

3. Loose debris remaining on the face of the cut slope should be removed during grading. This can be accomplished by high pressure water washing or by hand scaling, as warranted.

4. Cut slopes should be mapped by the project engineering geologist during grading to allow amendments to the recommendations should exposed conditions warrant alteration of the design or stabilization.

Fill Placement

1. Fill materials should be brought to at least optimum moisture content, placed in thin 6 to 8 inch lifts and mechanically compacted to obtain a minimum relative compaction of 90 percent of the laboratory standard.

2. Fill materials should be cleansed of major vegetation and debris prior to placement.

3. Any import materials should be inspected and determined suitable by the soils engineer prior to placement on the site. Foundation designs may be altered if import materials have a greater expansion value than the onsite materials encountered in this investigation.

4. Effort should be made to keep expansive soils lower than 3 feet from the finish grade.

Landscaping and Irrigation

1. The onsite materials generally consist of noncohesive sands and are subject to erosive factors such as wind, rain, and runoff. Slope surfaces should be landscaped as soon as possible. Slope vegetation should be consistent with the typical-desert varieties found in the local area.

2. Irrigation of the slope and pad area should be consistent with a desert-type landscape. Irrigation should be minimized to just support deep-rooting vegetation that is capable of surviving in an arid climate.

FOUNDATION DESIGN

1. An allowable bearing value of 1500 pounds per square foot may be used for design of continuous footings 12 inches wide and 12 inches deep. This value may be increased by 200 lbs./sq. ft. for each additional 12 inches in depth and by 100 lbs./sq. ft. for each additional 12 inches in width to a maximum value of 2,000 lbs./sq. ft.

   This value may be increased by one-third when considering short duration seismic or wind loads.

2. Soil generated from footing excavations to be used onsite should be moisture conditioned to at least optimum moisture content and compacted to 90 percent minimum relative density, whether it is to be placed inside the foundation perimeter or outside the building areas. This material must not alter positive drainage patterns that direct drainage away from the structural area and toward the street or approved open space.

3. Footings should maintain a horizontal distance, X, between any adjacent slope face and the bottom outer edge of the footing. The horizontal distance, X, may be calculated by using X=h/2, where h is the height of the slope. X should not be less than 5 feet, nor need not be greater than 10 feet. This may be accomplished by simply deepening the footing.

Lateral Pressure

1. The active earth pressure to be utilized for retaining wall design may be computed as an equivalent fluid having a density of 30 pounds per cubic foot when the slope of the backfill behind the wall is level. Where the slope of the backfill is 2:1, an equivalent fluid pressure of 45 pounds per cubic foot may be used.

2. Passive earth pressure may be computed as an equivalent fluid having a density of 250 pounds per cubic foot, with a maximum earth pressure 1500 pounds per square foot.

3. An allowable coefficient of friction between soil and concrete of 0.4 may be used with the dead load forces.

4. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

5. The above criteria assumes that hydrostatic pressure are not allowed to build up behind the wall. Positive drainage must be provided behind all retaining walls in the form of gravel wrapped in geotechnical fabric and exit pipes or adequate weep holes.

FOUNDATION CONSTRUCTION

The following foundation construction recommendations are presented as minimum criteria from a soils engineering viewpoint. Although the onsite soils expansion potentials are generally in the very low to occasional medium range, it is anticipated that soils with a low expansion potential will be the predominate soil type exposed during site grading.

Accordingly, the following foundation construction recommendations assume that the soils in the top 3 feet of finish grade will have a low expansion potential. Recommendations by the project's design-structural engineer or architect, which may exceed the soils engineer's recommendations, should take precedence over the following minimum requirements. Final foundation design will be provided based on the expansion potential of the near surface soils encountered during grading.

Expansion Index - Very Low to Low (0-50)

1. Continuous exterior footings should be founded at a minimum depth of 12 or 18 inches below the lowest adjacent ground surface, for one- or two-story structures, respectively. Continuous interior footings may be founded at a minimum depth of 12 inches below the lowest adjacent ground surface. Two-story footings should be 15 inches wide. All footings should have one No. 4 reinforcing bar placed at the top and one No. 4 reinforcing bar placed at the bottom of each footing.

2. Isolated column footings and piers should be founded at a minimum depth of 18 inches. If expansive soils are present in the top 3 feet of finish grade, column footings should not be used or should be made continuous.

3. A grade beam reinforced as above and at least 12 inches by 12 inches should be provided across the garage entrances. The base of the grade beam should be at the same elevation as the adjoining footings.

4. Concrete slabs within areas to be covered with moisture sensitive flooring should be underlain with a vapor barrier consisting of a minimum 6 mil, polyvinyl chloride membrane with all ends overlapped a minimum of 12 inches in each direction. This membrane should be covered with a minimum of 1 inch of sand to aid in uniform curing of the concrete.

5. The design engineer should determine the actual thickness of concrete slabs based upon proposed loading and use.

6. Concrete slabs, including garage areas, should be reinforced with 6-inch by 6-inch, No. 10 by No. 10, welded-wire mesh. All slab reinforcement should be supported to ensure proper positioning at mid-height in the slab during placement of concrete. Parking area or garage slabs should be poured separately from living/working area footings. A positive separation should be maintained with expansion joint material to permit relative movement.

7. Pre-moistening and/or presaturation of the slab areas is recommended for these soils conditions on a preliminary basis. The moisture content of the subgrade soils should be equal to or greater than optimum moisture and verified by GeoSoils, Inc. to a depth equivalent to the exterior footing depth in the slab areas, 48 to 72 hours prior to Visqueen placement.

Expansion Index - Medium (51 to 90)

1. Exterior footings for one- and two-story structures should be founded at a minimum depth of 18 inches below the lowest adjacent ground surface. Interior footings may be founded at a depth of 12 inches below the lowest adjacent ground surface. All footings should be reinforced with a minimum of two No. 4 reinforcing bars at the top and two No. 4 reinforcing bars at the bottom.

   Isolated interior and/or exterior piers/columns are not recommended.

2. A grade beam, reinforced as above and at least 12 inches square, should be utilized across any garage or parking area entrance and between piers/columns. The base of this reinforced grade beam should be at the same elevation as the bottom of the adjoining footings.

3. Concrete slabs in residential or moisture sensitive areas should be underlain with a total of 4 inches of washed sand or crushed rock. In addition, a vapor barrier consisting of a minimum of 6 mil, polyvinyl chloride membrane with all laps sealed or overlaid 12 inches should be provided. One inch of the sand should be placed over the membrane to aid in uniform curing of the concrete.

4. Concrete slabs, including garages or parking areas, should be reinforced with 6 inch by 6 inch, No. 6 by No. 6, welded wire mesh or its equivalent. All slab reinforcement should be supported or hook-pulled to ensure proper mid-slab positioning during placement of concrete.

5. Garage slabs should be poured separately from adjacent footings and be quartered with expansion joints or saw cuts. A positive separation from the footings should be maintained with expansion joint material to permit relative movement.

6. The design engineer should determine the actual thickness of the slabs based on loadings and use.

7. Presaturation of slab areas is recommended for these soil conditions. The moisture content of each slab area should be 120 percent or greater above optimum and verified by this office to a depth of 18 inches below adjacent ground grade in the slab areas, within 48 hours of the polyvinyl chloride placement.

8. In any additional concrete, flatwork, pools or wall designs, the expansive nature of the soils should be considered.

9. As an alternative, an engineered post-tension foundation system may be used.

TRENCH BACKFILL

1. All utility trench backfill, exterior and interior, should be brought to at least optimum moisture content and then compacted to obtain a minimum relative compaction of 90 percent of the laboratory standard. This may be accomplished by mechanical compaction or by the flooding of suitable soils; however, density testing of all materials would be required to verify the desired results.

2. Trenches paralleling a footing and extending below a 1:1 plane projected from the outside edge of the footing should be compacted to 90 percent of the laboratory standard. Imported, clean sand backfill should not be allowed in these trench backfill areas.

3. Density testing along with probing should be accomplished to verify the desired results in the backfill of all utility line trenches.

4. Due to the non-cohesive nature of the onsite materials, sloughing and caving within the subsurface trenches should be anticipated.

FAULT SETBACK ZONES

Recommended structural setbacks along the faults encountered onsite, based on the available data, are shown on the Preliminary Geotechnical Map, Plate 1. This zone should be surveyed and recorded by the Project Civil Engineer as necessary. The structural setbacks shown are subject to future studies, which may widen, decrease, or eliminate portions of the recommended setbacks.

Undetected, potentially active faults may exist within the property outside of the recommended setback zones. However, based on the available data these do not meet the "sufficiently active" or "well defined" criteria of the Alquist-Priolo Special Studies Zone Act. Although remotely possible, potentially active faults may exist or new faults possibly occur in unpredictable locations, it is impractical to zone entire fault-bounded areas for setbacks, based on the physical nature of soil and rock materials and the above criteria.

It should be noted, however, that due to the project areas location in a zone of known active faulting, although unlikely, it is remotely possible that the recommended removals and/or grading may expose fault traces that may warrant further study and/or structural setbacks. This should be considered during the planning and construction stages of the project.

PLAN REVIEW

Final project plans should be reviewed by this office prior to construction, so that construction is in accordance with this report. Based on our review, supplemental recommendations and/or further geotechnical studies may be warranted.

INVESTIGATION LIMITATIONS

The materials encountered on the project site and utilized in our laboratory are believed representative of the total area; however, soils materials may vary in characteristics between test excavations.

Since our investigation is based upon the site materials observed, selective laboratory testing, and geologic and engineering analyses, the conclusions and recommendations are professional opinions. It is possible that variations in the soil conditions could exist beyond the points explored in this investigation. Also, changes in groundwater conditions could occur at some time in the near future due to variations in temperature, regional rainfall, and other factors.

These opinions have been derived in accordance with current standards of practice, and no warranty is expressed or implied. This report is subject to review by the controlling authorities.

We sincerely appreciate this opportunity to be of service. If you have any questions pertaining to this report, please contact us at (714) 677-9651.

Very truly yours,

GeoSoils, Inc.

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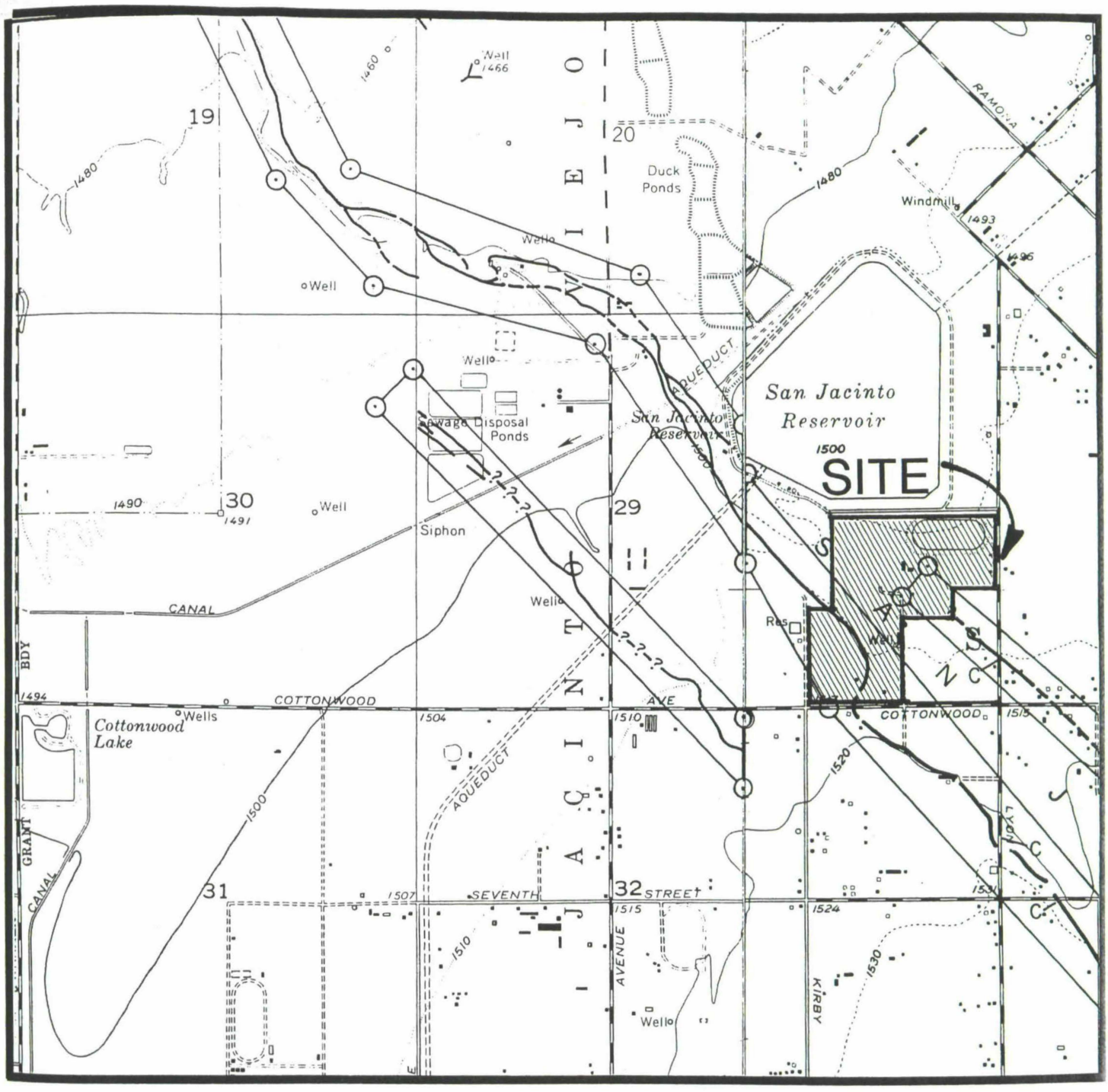




SLE/JPF/ARK/slh

Enclosures:
- Figure 1 - Site Location Map
- Figure 2 - Regional Geologic Map
- Figure 3 - Fault Map of Southern California
- Appendix A - References
- Appendix B - Boring Logs
- Appendix C - Laboratory Test Results
- Appendix D - General Earthwork and Grading Guidelines
- Plate 1 - Preliminary Geotechnical Map
- Plates 2 through 11 - Trench Logs

Distribution: (6) Addressee



BASE MAP: State of California Special Studies ZONE Map,

7-1/2 Minute San Jacinto Quadragle, 1980, and Lakeview Quadragle, 1988, 1''-2000'

N

0 2000 4000

Scale Feet

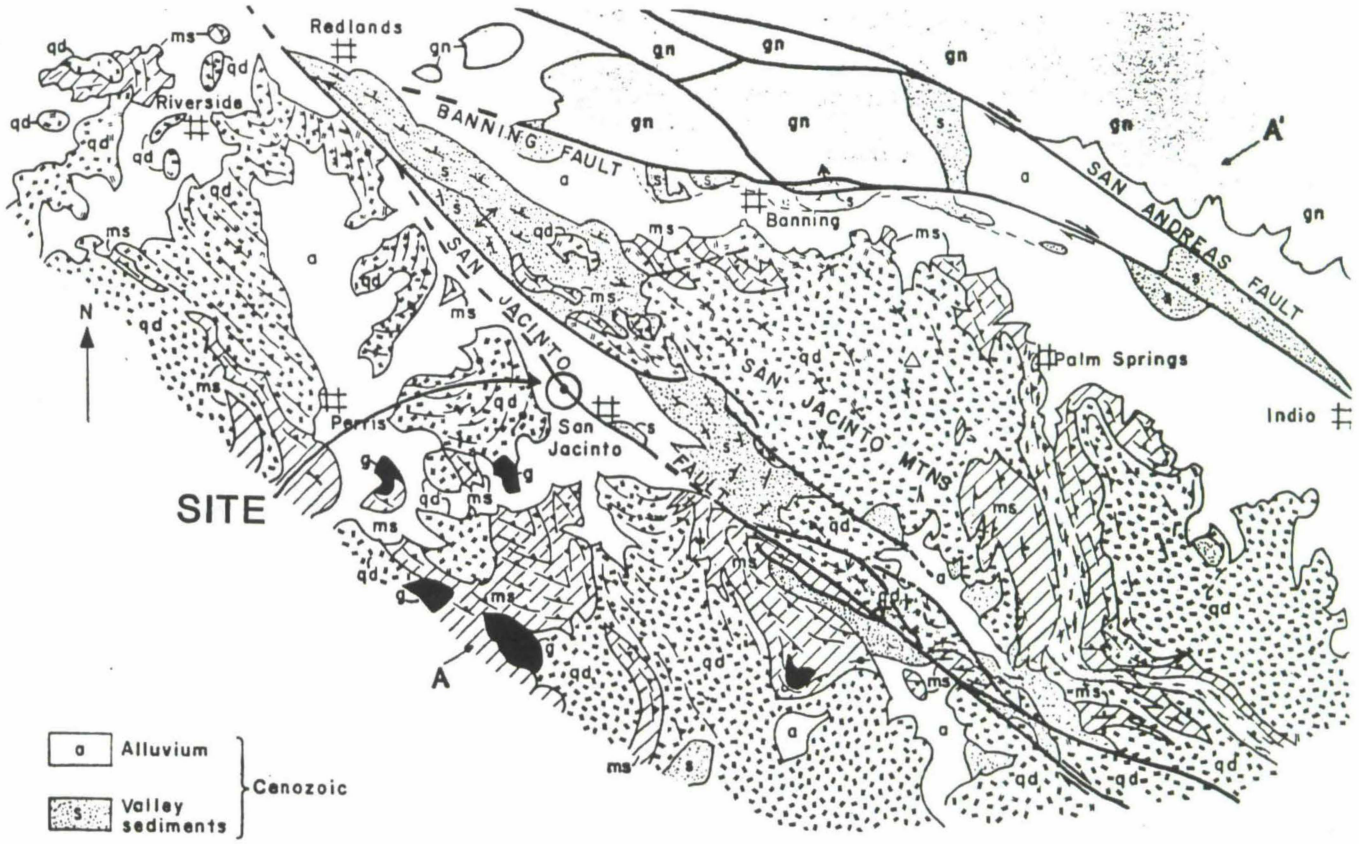
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SITE LOCATION MAP

Figure 1



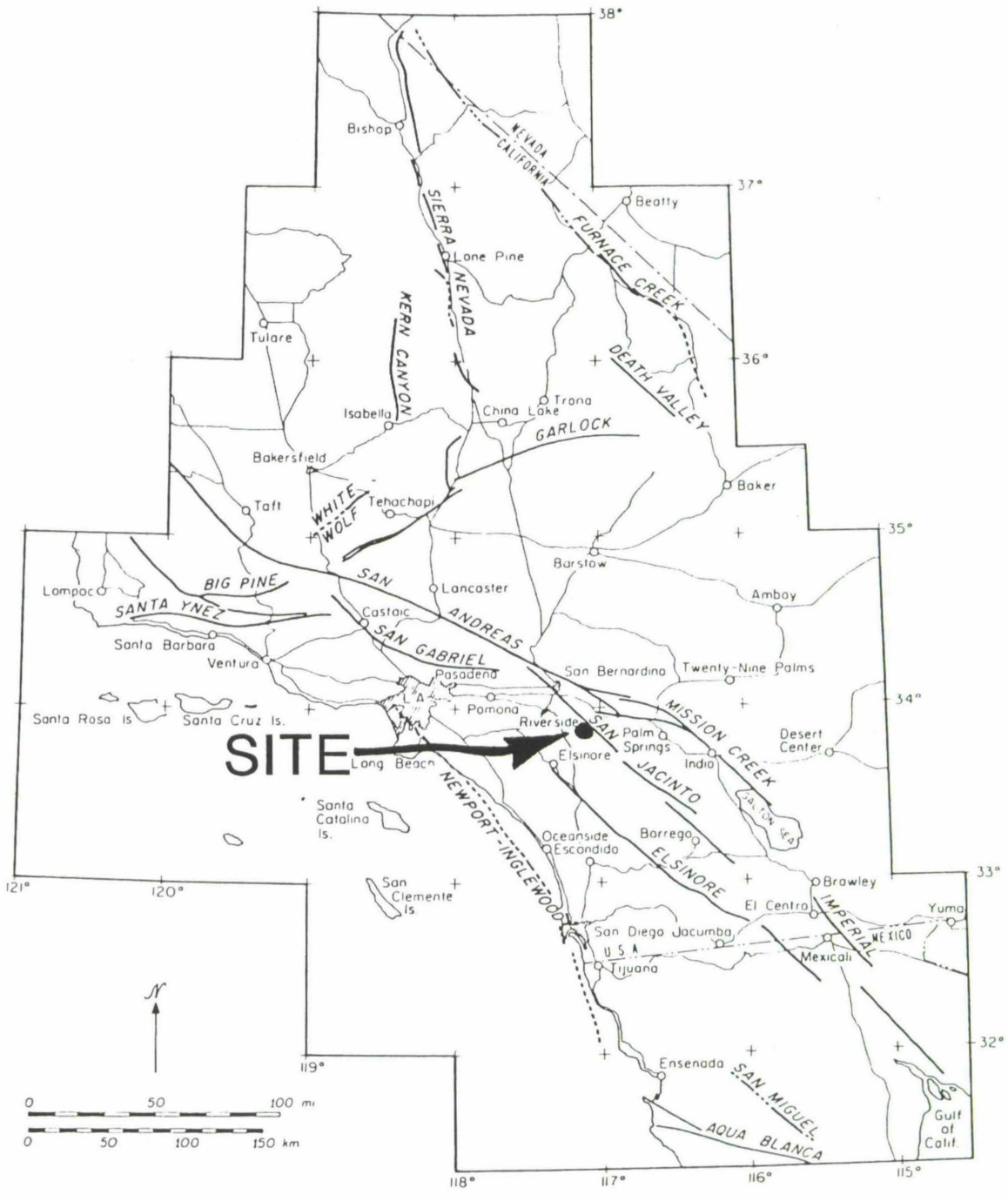
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W.O. 318-A-RC

From:
GEOLOGY OF THE SAN JACINTO MOUNTAINS, Annual Field Trip Guidebook No. 9, South Coast Geological Society, 1981

REGIONAL GEOLOGIC MAP

Figure 2



Modified after Friedman and Others, 1976

Figure 3

GeoSoils, Inc.

FAULT MAP
OF SOUTHERN CALIFORNIA

DATE 3-23-90 | W.O. NO. 318-A-RC

Geotechnical Engineering • Engineering Geology

FORM 89/6

APPENDIX A

REFERENCES

APPENDIX A

REFERENCES

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APPENDIX B

BORING LOGS

BORING LOG

GeoSoils, Inc.

W.O. 318-A-RC

PROJECT:
Khaloghli

BORING B-1 SHEET 1 OF 1

DATE EXCAVATED 3-5-90

SAMPLE METHOD: 140 lb @ 30" Drop

Standard Penetration Test Water Seepage into hole

Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
			8	SM	103.8	11.0	ARTIFICIAL FILL-UNDOCUMENTED: @ 0', Silty SAND, dark olive brown, damp, moist; fine occasional coarse, rootlets
			16	SM	96.9	4.3	
			15	SP	90.6	11.0	ALLUVIUM: @ 1', Silty SAND, dark olive brown, damp, medium dense; fine, rootlets
			21		98.0	7.2	
5			20		106.3	6.2	@ 2', SAND, light olive brown, moist, medium dense, fine @ 3', Continued as @ 2', damp @ 5', Continued as @ 5', some calcium carbonate
10			10	SW	102.5	3.3	@ 10', SAND, light gray, damp, loose; medium to coarse
15			11		90.7	10.3	@ 15', SAND, light olive gray, moist, loose; medium den to medium
20			20	SM/ML	91.7	28.0	@ 20', Silty SAND to Sandy SILT, light olive gray, wet, medium dense to very stiff
25							Total Depth 21' No Ground Water Encountered Backfilled 03-05-90

BORING LOG

GeoSoils, Inc.

W.O. 318-A-RC

PROJECT:
Khaloghli

BORING B-2 SHEET 1 OF 1

DATE EXCAVATED 3-5-90

SAMPLE METHOD: 140 lb @ 30" Drop

Standard Penetration Test Water Seepage into hole

Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Description of Material
			7	SM	98.5	10.3	ALLUVIUM: @ 0', Silty SAND, light olive brown, damp, loose; fine, rootlets
			25		91.9	3.9	@ 1', Continued as @ 0', medium dense
			10		100.8	7.5	@ 2', Continued as @ 1', loose
			9	SP			@ 3', SAND, light gray, damp, loose; fine to medium, no recovery
5			9		105.4	0.9	@ 5', Continued as @ 3', dry; medium to coarse
10			10		105.4	6.9	@ 10', Continued as @ 5', damp; fine to medium
15			14	SM/ML	100.3	19.4	@ 15', Silty SAND to Sandy SILT, olive gray, very moist medium dense to stiff; fine, micaceous
20			23	SP	96.2	2.4	@ 20', SAND, light gray, dry, medium dense; fine to medium
							Total Depth @ 21'
							No Ground Water Encountered
25							Backfilled 03-05-90

BORING LOG

GeoSoils, Inc.

W.O. 318-A-RC

PROJECT:
Khaloghli

BORING B-3 SHEET 1 OF 3

DATE EXCAVATED 3-5-90

SAMPLE METHOD: 140 lb @ 30" Drop

▨ Standard Penetration Test Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undis-turbed	Sample: Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
	■	▨	5	ML	106.1	6.2	ALLUVIUM: @ 0', Sandy SILT, olive brown, damp, loose; fine, rootlets
	■	▨	7				@ 1', No recovery
		▨	7	SW	104.8	0.6	@ 2', SAND, light gray, dry, loose; fine to medium
		▨	9		95.9	0.9	@ 3', Continued as @ 2'
5		▨	10		96.3	1.2	@ 5', Continued as @ 3'
	■						
10	■	▨	9	SM/ML	109.3	20.4	@ 10', Silty SAND to Sandy SILT, olive brown, wet, loose to medium stiff; fine, micaceous
15		▨	7		104.9	20.5	@ 15', Continued as @ 10'
20	■	▨	9		93.2	25.6	@ 20', Continued as @ 15', light olive brown, wet
25	■						

BORING LOG

GeoSoils, Inc.

W.O. 318-A-RC

PROJECT:
Khaloghli

BORING B-3 SHEET 2 OF 3

DATE EXCAVATED 3-5-90

SAMPLE METHOD: 140 lb @ 30" Drop

Standard Penetration Test Water Seepage into hole

Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undis-turbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Description of Material
35			21	SW	106.8	2.4	@ 30', SAND, gray, dry, medium dense; medium to coarse
40			11	ML	93.0	33.6	@ 40', Sandy SILT, dark olive, saturated, stiff; micaceous
45							
50			17	SM	102.6	24.4	@ 50', Silty SAND, dark olive, saturated, medium dense; very fine to fine, micaceous
55							

BORING LOG

GeoSoils, Inc.

W.O. 318-A-RC

PROJECT:
Khaloghli

BORING B-3 SHEET 3 OF 3

DATE EXCAVATED 3-5-90

SAMPLE METHOD: 140 lb @ 30" Drop

Standard Penetration Test Water Seepage into hole

Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Description of Material
			53	SP	103.4	13.2	@ 60', SAND, dark gray, moist, dense; fine

Total Depth @ 61'
Perched Ground Water Encountered @ 40' to 50'
Backfilled 03-05-90

65
70
75
80
85

BORING LOG

GeoSoils, Inc.

W.O. 318-A-RC

PROJECT:
Khaloghli

BORING B-4 SHEET 1 OF 1

DATE EXCAVATED 3-5-90

SAMPLE METHOD: 140 lb @ 30" Drop

▨ Standard Penetration Test Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undis-turbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Description of Material
		▨	6	SW	101.5	3.6	ALLUVIUM: @ 0', SAND, gray, damp, loose; medium to coarse
		▨	6		102.0	2.4	@ 1', Continued as @ 0', dry
		▨	6		104.3	2.4	@ 2', Continued as @ 1'
		▨	7				@ 3', No recovery
5	■	▨	10		*	0.9	@ 5', Continued as @ 2', fine to medium
10		▨	8		101.8	1.2	@ 10', Continued as @ 5'
15		▨	11	SM	110.2	11.0	@ 15', Silty SAND, olive gray, moist, medium dense; very fine to fine, micaceous
20		▨	19	SP	103.0	5.6	@ 20', SAND, olive gray, damp, medium dense; very fine, micaceous
25							Total Depth @ 21' No Ground Water Encountered Backfilled 03-05-90 * - Indicates Disturbed

BORING LOG

GeoSoils, Inc.

W.O. 318-A-RC

PROJECT:
Khaloghli

BORING B-5 SHEET 1 OF 1

DATE EXCAVATED 3-5-90

SAMPLE METHOD: 140 lb @ 30" Drop

Standard Penetration Test Water Seepage into hole

Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Description of Material
			12	SM	102.9	7.2	ALLUVIUM: @ 0', Silty SAND, light olive brown, damp, medium dense; fine, rootlets
			18		83.3	22.9	@ 1', Continued as @ 0', wet
			13		102.1	5.2	@ 2', Continued as @ 1', damp
			11		110.7	7.5	@ 3', Continued as @ 2'
5			9		97.9	9.6	@ 5', Continued as @ 3', moist, loose; fine to medium
10			17	SW	99.6	7.2	@ 10', No recovery, SAND, orange gray, damp, medium dense; medium to coarse
15			25		101.5	2.4	@ 15', Continued as @ 10', dry
20			22		99.5	0.9	@ 20', Continued as @ 15'
25							Total Depth @ 21' No Ground Water Encountered Backfilled 03-05-90

BORING LOG

GeoSoils, Inc.

W.O. 318-A-RC

PROJECT:
Khaloghli

BORING B-6 SHEET 1 OF 1

DATE EXCAVATED 3-5-90

SAMPLE METHOD: 140 lb @ 30" Drop

Standard Penetration Test Water Seepage into hole

Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
			6	SM	104.6	14.8	ALLUVIUM: @ 0', Silty SAND, light olive brown, moist, loose; fine, rootlets
			8				@ 1', Continued as @ 0', poor recovery
			14		93.4	15.9	@ 2', Continued as @ 1', medium dense
			12		98.2	13.3	@ 3', Continued as @ 2'
5			11		100.6	10.3	@ 5', Continued as @ 3', olive brown
10			16	SW	*	1.2	@ 10', SAND, light gray, dry, medium dense; medium to coarse
15			7	ML	79.0	4.5	@ 15', Sandy SILT, olive brown, damp, medium stiff; very fine, micaceous
20			8		91.8	28.6	@ 20', Continued as @ 15', wet
							Total Depth @ 21'
							No Ground Water Encountered
							Backfilled 03-05-90
25							* - Indicates Disturbed

APPENDIX C

LABORATORY TEST RESULTS

GeoSoils, Inc. • CONSOLIDATION - PRESSURE CURVE

CLIENT Khaloghli
PROJECT
UNDISTURBED [X] REMOLDED [ ]

W.O. 318-A-RC
DATE 3-23-90
LOCATION B-1
DEPTH 5 FT.

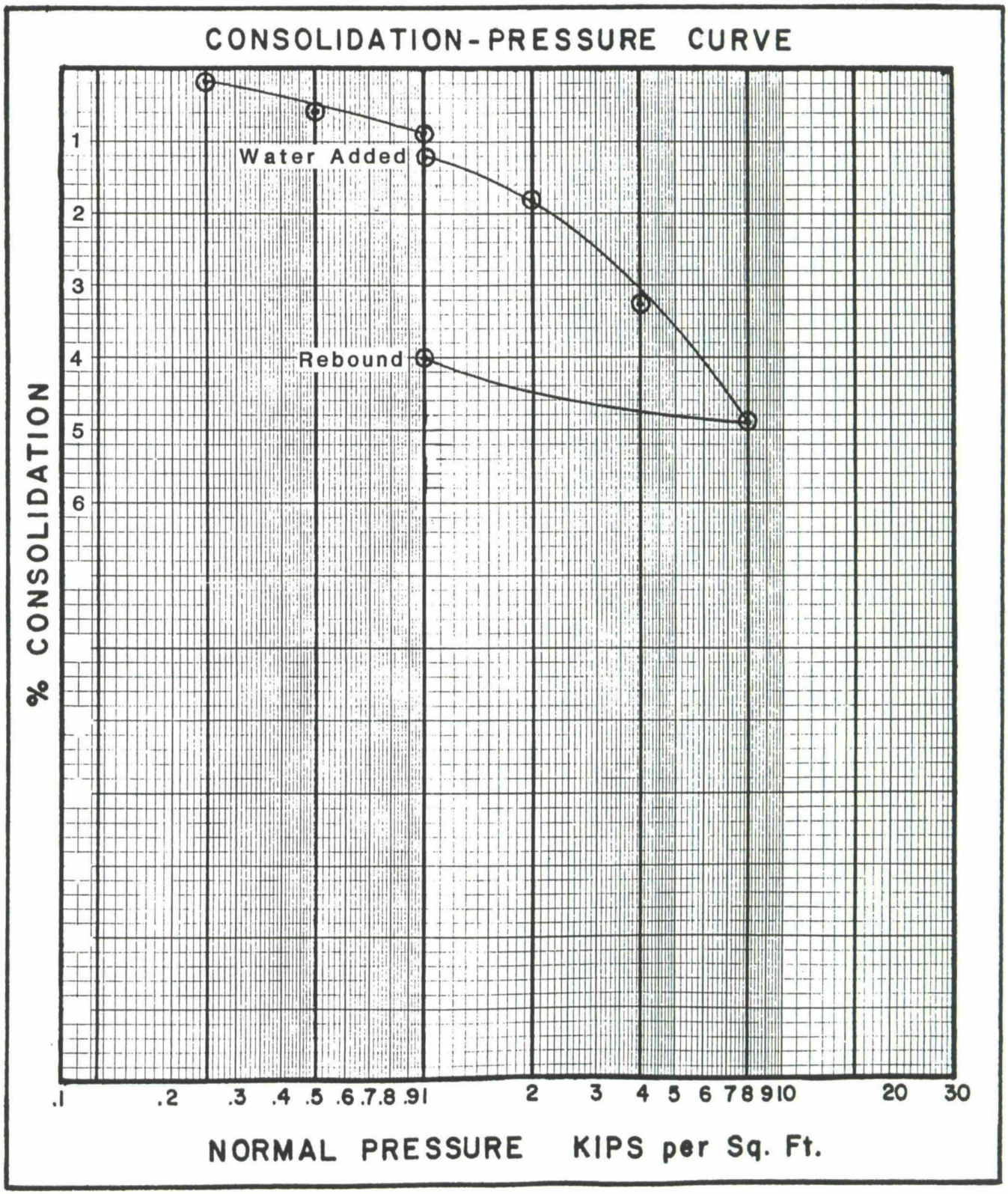


PLATE A-1

APPENDIX D

GENERAL EARTHWORK AND GRADING GUIDELINES

GeoSoils, Inc.

Geotechnical • Coastal • Geologic • Environmental

26590 Madison Avenue • Murrieta, California 92562 • (909) 677-9651 • FAX (909) 677-9301

August 17, 2004

W.O. 4451-A2-SC

Young Homes
10370 Trademark Street
Rancho Cucamonga, California 91730

Attention: Mr. Thomas Owen

Subject: Update Geotechnical Feasibility Review, ±43-Acre Site, 532 North Lyon Avenue (Hideaway Farms), City of San Jacinto, Riverside County, California

Dear Mr. Owen:

In accordance with your request and authorization, this report presents the results of GeoSoils, Inc. (GSI's) update geotechnical feasibility review of the subject site in the City of San Jacinto, Riverside County, California. Please note that this update geotechnical feasibility report will not meet current County standards for geologic/geotechnical reports. This report should only be utilized for preliminary earthwork, shrinkage, and subsidence values, etc., and for project cost estimation and feasibility purposes. Additional field studies will be required to properly evaluate the site for residential development and to provide foundation, settlement, soil bearing values, fault evaluations, etc. Accordingly, final site geotechnical recommendations may change somewhat upon completion of the additional recommended field studies. This report should be reviewed in that context.

EXECUTIVE SUMMARY

Based on our review of data, review of previous investigations conducted onsite, and on adjoining sites, by GSI (1990 and 2004d) and Leighton and Associates, Inc. (Leighton, 2002a and 2002b), the additional advancement of three exploratory hollow stem borings, laboratory testing of representative samples, site geologic reconnaissance mapping, experience in the general site area, proprietary in-house information, and geologic and engineering analyses, the proposed site appears suitable for residential development, from a geotechnical viewpoint, provided our recommendations are properly implemented. A review of general geotechnical issues pertaining to the subject site are presented below.

- Geotechnical developmental considerations include thick, potentially compressible alluvium and seismic shaking concerns.

- Our review indicates a portion of the project site is located within an Alquist-Priolo Earthquake Fault Zone (Hart and Bryant, 1997). As such, a fault finding investigation was previously conducted onsite by GSI (1990), which also included portions of the adjoining site (Tract 30841). Based on our review, active faulting was encountered onsite during that investigation, and on adjoining properties. Subsequent investigations by GSI (2004d) for Tract 30841, and Leighton (2002b), for Tract 30944, adjacent to the southern and western boundary of the site, respectively, also encountered active faulting. Accordingly, fault setback zones were established for structural areas onsite and on the adjoining sites. Based on current standards of practice, the controlling authorities may require additional fault investigations to properly evaluate the site relative to residential development and active faulting/subsidence.

- Regional seismic shaking, ranging from moderate to severe, may occur on the site associated with nearby and/or regional faults. Accordingly, the proposed structures and foundations should be designed to resist seismic forces in accordance with the criteria contained in the Uniform Building Code/California Building Code ([UBC/CBC], International Conference of Building Officials [ICBO], 1997 and 2001) for Seismic Zone 4, and the seismic parameters provided herein.

- On a preliminary basis, the footings and/or slabs should be designed to accommodate a total static settlement of up to 2 inches and a differential settlement of 1 inch (i.e., at least 1 inch in a 40-foot span), or a total seismic settlement of up to 4.0 inches and a seismic differential settlement of 2 inches (i.e., at least 2 inches in a 40-foot span). The structural engineer should determine whichever condition controls design. Any post-construction settlement of the fill should be readily mitigated by post-tension design. In addition to the above, the structural engineer should also consider estimated settlements due to short duration seismic loading and applicable load combinations, as required by the controlling authorities and/or the UBC/CBC (ICBO, 1997 and 2001). Additional onsite studies (i.e., borings and/or cone penetration testing), as recommended, may serve to reduce the preliminary settlement values provided herein.

- Removal of any artificial fill, manure and/or organic matter, colluvium/topsoil deposits, and near surface weathered alluvial deposits will be necessary prior to fill placement. On a preliminary basis, if post-tensioned foundations are utilized, remedial grading is estimated to consist of the overexcavation/removal of the upper ±5 to ±7 feet of native soils, below existing grades, followed by flooding/saturation of an additional ±3 to ±5 feet of the native soils. Proof testing of a minimum 85 percent saturation would be required via test pits and field moisture content testing. On a preliminary basis, if conventional foundations can be designed for the project based on the estimated preliminary settlement values provided herein, remedial grading for use with conventional foundations is estimated to consist of the overexcavation/removal of the upper ±8 to ±10 feet of native soils, below existing

grades, followed by flooding/saturation of an additional ±3 to ±5 feet of the native soils. Proof testing of a minimum 85 percent saturation would be required via test pits and field moisture content testing. Following moisture evaluation, compaction of the removal bottom would require a vibratory sheeps-foot to aid in the inducement of hydrocollapse in the underlying materials. A minimum of 2 feet of compacted fill is recommended below all foundation elements.

- It should be noted that the UBC/CBC specifically requires that removals of unsuitable soils be performed across all areas to be graded, not just within the influence of the residential structure. Relatively deep removals may also necessitate a special zone of consideration, on perimeter, confining areas, such that this zone is approximately equal to the depth of removals, if removals cannot performed offsite. Thus, any settlement-sensitive improvements (walls, curbs, flatwork, etc.), constructed within this zone, may require deepened foundations, reinforcement, etc., or will retain some potential for settlement and associated distress. This will require proper disclosure to all homeowners and any homeowners association.

- Based on our current subsurface investigation and field reconnaissance mapping, abundant amounts of manure, wood chips/shavings (i.e., organic materials) are stockpiled and/or were spread across localized areas of the site (race track and barn areas). The excessive manure, wood chips/shavings, approximately ±1 to ±4 feet in thickness (stockpiles), should be removed and exported offsite, or to approved areas. In addition, removals of soils contaminated with manure, wood chips/shavings (i.e., organic materials) will also be required. Observation, and if deemed necessary, testing by representatives of GSI, should be conducted to evaluate that the organic materials have been properly removed from areas proposed for settlement sensitive improvements.

- Based on previous land usage (i.e., horse ranch) site specific methane studies may be required by the controlling authorities.

- Preliminary laboratory testing of representative materials indicates the expansion potential of the soils generally appear to be low. However, very low to medium expansive soils may not be entirely precluded.

- Preliminary sulfate/corrosion testing indicates that soils generally appear to have negligible sulfate contents and low saturated resistivities, per the UBC/CBC. Accordingly, the use of sulfate resistant concrete is not currently anticipated, based on the available data. The site soils were also found to be generally very strongly alkaline (pH of 9.7) and severely corrosive toward ferrous metals in a saturated state. Based on the above, consultation with a corrosion engineer is recommended to provide specific advisement for foundations, piping, etc.

- No groundwater was encountered onsite during this investigation to a depth in excess of ±51 feet below the ground surface. However, due to the nature of the alluvial deposits, the possibility of local seepage due to irrigation, excess rainfall, broken utilities, etc., may not be precluded, during or after site development, and should be anticipated. Subdrainage systems for the control of localized seepage and/or groundwater may not be precluded, both during or after site development.

- Our review indicates that the site is not within a liquefaction zone established by the County of Riverside (Envicom, 1976), or State of California.

- Based on our review, the San Jacinto Basin area is regionally subsiding due to excessive groundwater withdrawal (Morton, 1994). Considering the long-term tectonic rate of subsidence, and land subsidence due to aquifer compaction caused by groundwater withdrawal, the general rate of subsidence within the central portion of the basin is considered to be on the order of ±2.5 to ±3.0 centimeters a year (Morton, 1994). Localized subsidence due to bounding faults (i.e., Casa Loma fault) will be mitigated by the proposed structural setbacks. However, it is our opinion that aerial subsidence does not constitute a significant risk to site development, and should not be any greater than for already approved projects adjoining the site.

- The recommendations presented in this report should be incorporated into the design and construction considerations of the project. This report may be subject to the review of the controlling authorities.

We appreciate the opportunity to be of service. If you have any questions, please do not hesitate to contact the undersigned.

Respectfully submitted,

GeoSoils, Inc.

John P. Franklin
Engineering Geologist, CEG 1340

David W. Skelly
Civil Engineer, RCE 47857

Todd A. Greer
Registered Geologist, RG 7739

TAG/JPF/DWS/jk

Distribution: (4) Addressee

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Appendix B - Boring Logs . . . . . Rear of Text
Appendix C - Laboratory Test Results . . . . . Rear of Text
Appendix D - General Earthwork and Grading Guidelines . . . . . Rear of Text

SCOPE OF SERVICES

The scope of our services has included the following:

1. Review of available geologic maps, data, and previous soils and geologic reports, including aerial photography, for the site and site area (see Appendix A).

2. Geologic and geomorphic site reconnaissance and mapping.

3. Performance of a photo-lineament analysis for the site and vicinity.

4. Subsurface exploration consisting of the advancement of three additional exploratory hollow stem borings onsite, for geotechnical logging and sampling (see Appendix B).

5. Relevant laboratory testing of representative soil samples collected during our subsurface exploration program (see Appendix C).

6. Appropriate engineering and geologic analysis of data collected.

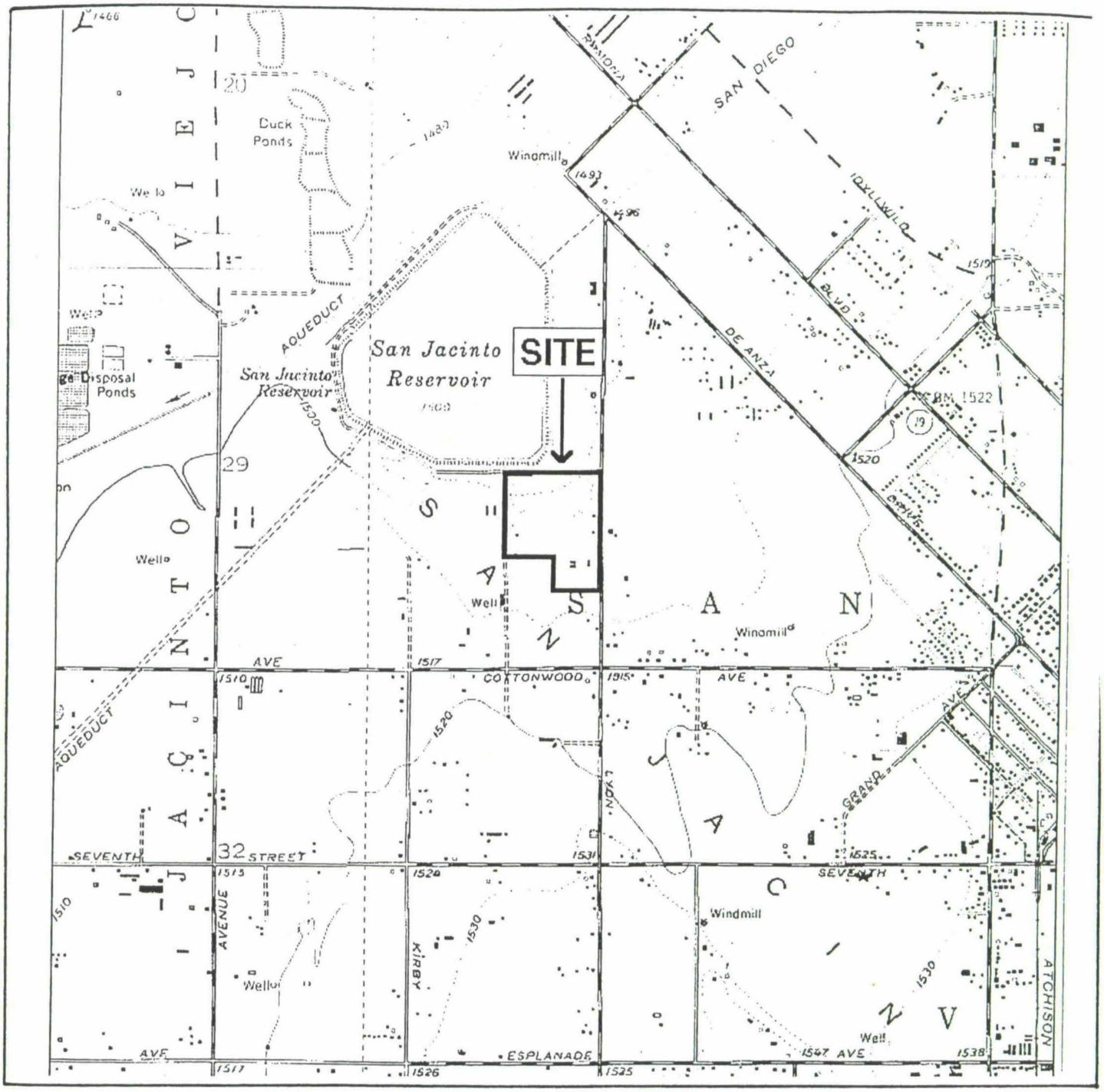
7. Preparation of this geotechnical feasibility review report, and attachments, including boring logs, laboratory test results, regional seismic evaluations, general earthwork factors, and recommendations for site grading (see Appendix D).

SITE LOCATION/CONDITIONS

The site is an irregular shaped parcel that consists of ±43-acres of developed land, located at 532 North Lyon Road in the City of San Jacinto, Riverside County, California (see Figure 1, Site Location Map). The site is currently being utilized as a thoroughbred ranch. Several residences, barns, sheds, and corrals/riding rings are located onsite. Topographically, the site is relatively flat-lying. Drainage across the site is primarily to the northwest by sheetflow, however is variable in some locations of the site.

PROPOSED DEVELOPMENT

Based on conversations with the client, it appears that typical cut and fill grading techniques would be utilized to prepare the site for residential construction, including roadway and underground utility improvements. It is also our understanding that the residential buildings would be one-and/or two-story structures, utilizing typical wood-frame



Base Map: Lakeview Quadrangle, California, Riverside Co., 7.5 minute series (topographic), 1976, photorevised 1979, USGS, and San Jacinto Quadrangle, California, Riverside Co., 7.5 minute series (topographic), 1953, photorevised 1979, USGS.

N

0 2000 4000

Scale Feet

GSI GeoSoils, Inc.

W.O. 4451-A2-SC

SITE LOCATION MAP

GeoSoils, Inc.

Figure 1

construction with slabs-on-grade and continuous footings utilizing conventional and/or post-tensioned foundations. Building loads are assumed to be typical for this type of relatively light construction. Sewage disposal is to be accommodated by tying into the regional municipal system. The need for import soils is anticipated, as it is our understanding that grades will be raised approximately ±3 feet from native grades.

FIELD STUDIES

Field investigations conducted during our evaluation of the property for this study entailed geologic reconnaissance mapping, the advancement of three additional hollow stem exploratory borings onsite. The exploratory borings were logged by staff from our firm who collected representative bulk and undisturbed ring samples for appropriate laboratory testing. Logs of the borings are presented in Appendix B. The approximate locations of the borings are shown on Figure 2.

GEOLOGY

Regional Geologic Setting

The property is situated on the eastern margin of the Perris Block, a portion of a prominent natural geomorphic province in southwestern California known as the Peninsular Ranges. The Perris Block is a stable structural block bounded on the west by the Elsinore fault zone and on the east by the San Jacinto fault zone. The Peninsular Ranges is characterized by steep, elongated ranges and valleys that trend northwesterly. This province is typified by plutonic and metamorphic rocks (bedrock) which comprise the majority of the mountain masses, with relatively thin volcanic and sedimentary deposits discontinuously overlying the bedrock, and with Plio/Pleistocene-age to older Quaternary-age alluvial fan deposits filling in the valleys and younger alluvium filling in the incised drainages. The alluvial deposits are derived from the water borne deposition of the products of weathering and erosion of the bedrock.

Local Geology and Site Earth Materials

As mapped by Morton (1972), and Dibblee (2003a and 2003b), the general site area is surficially underlain by unconsolidated alluvial deposits consisting of sands, silty sands, and clays. These surficial deposits are mapped as Holocene-age. The geologic units encountered within the project site consist of topsoil/colluvium, and alluvial deposits. Mappable geologic units are shown on Figure 2, and these units are described as follows, from youngest to oldest:

1-800-345-7334

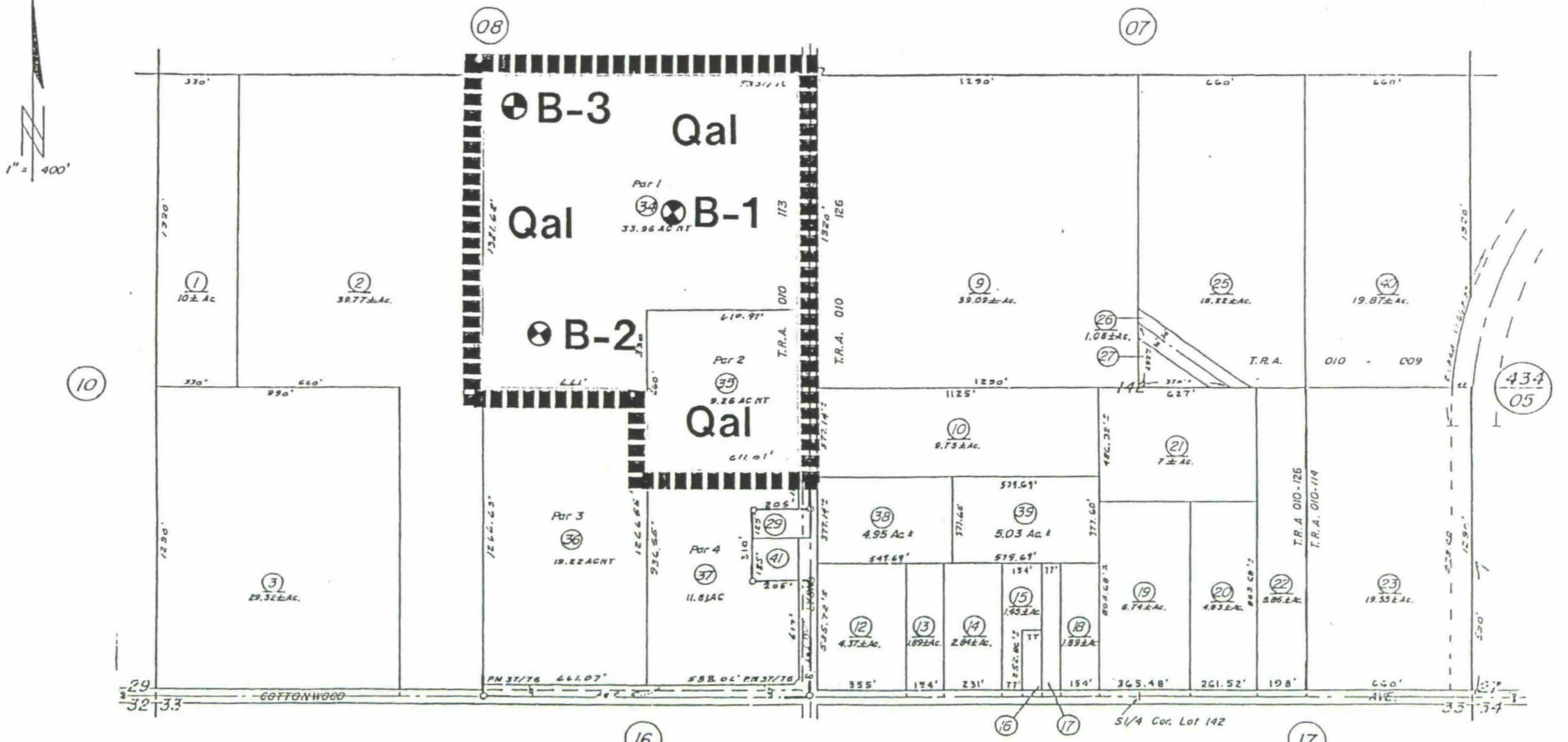
SCALE IN 1/10 OF AN INCH

431-09

T.R.A. 010-126
010-009
010-113
010-114

POR. RANCHO SAN JACINTO VIEJO
(POR. SEC. 28, T.4S., R.1W.)

THIS MAP IS FOR ASSESSMENT PURPOSES ONLY



LEGEND

Qal Quaternary alluvium

B-3 Approximate location of exploratory boring

Area under the purview of this report

GeoSoils, Inc.

RIVERSIDE CO
ORANGE CO
SAN DIEGO CO

BORING LOCATION MAP

Figure 2

W.O. 4451-A2-SC DATE 8/04 SCALE: NTS

Artificial Fill - Undocumented (Unmapped)

Relatively moderate amounts of undocumented fill materials, manure, and wood chips/shavings were observed on the site. These materials are generally associated with the current ranching operations. The soil materials likely range in thickness from ±1 foot to as much as ±5 feet. These materials typically have a low to occasionally medium expansion potential, depending on the clay content. These soil materials are considered compressible in their existing state and may settle appreciably under additional fill or foundation and improvement loadings, should they become saturated. Therefore, complete removal and recompaction is recommended. The excessive manure, wood chips/shavings, approximately ±1 to ±4 feet in thickness (stockpiles), should be removed and exported offsite.

Topsoil/Colluvium (Unmapped)

In general, the site is mantled by a relatively thin layer of topsoil/colluvium. These materials were generally observed to be brown to dark brown, dry to locally damp, loose, locally porous, silty sands. These surficial soils occasionally contained minor to locally abundant rootlets. In general, these materials typically have a very low to low, and sometimes medium expansion potential. The topsoil/colluvium was encountered ranging from ±1 to ±2 feet in thickness. Due to the potentially compressible nature of these surficial soils, they are considered unsuitable for support of structures and/or improvements in their existing state. Therefore, these soils will be need to be removed and recompacted, if not removed during planned excavation, should settlement sensitive improvements be proposed within their influence.

Quaternary Alluvium (Map Symbol - Qal)

Quaternary alluvium underlies the entire site. The alluvium was observed to be generally light grayish brown to light brown to light reddish brown, silty sand, sand, and clayey to sandy silt. These materials were generally dry to moist, and medium dense and/or stiff to very stiff. This unit typically has a very low to low and occasionally medium expansion potential. Based on our engineering analysis, if post-tensioned slabs are utilized, the upper ±5 to ±7 feet (below original natural ground) will be need to be removed and recompacted, followed by flooding/saturation of an additional ±3 to ±5 feet of the native soils. Remedial grading for conventional foundation use is estimated to consist of the overexcavation/removal of the upper ±8 to ±10 feet of native soils, below existing grades, followed by flooding/saturation of an additional ±3 to ±5 feet of the native soils, should settlement sensitive improvements be proposed within their influence. These sediments are estimated to be Holocene (less than 11,000± years old).

FAULTING AND REGIONAL SEISMICITY

The site is situated in an area of active as well as potentially-active faults. The nearby San Jacinto fault zone is considered active and is included within an Alquist-Priolo Earthquake Fault Zone. Our review indicates a portion of the project site is located within an Alquist-Priolo Earthquake Fault Zone (Hart and Bryant, 1997). As such, an additional fault finding investigation will likely be required by County and State authorities to properly evaluate the potential for additional surface rupture onsite. Appropriate fault setback zones will need to be incorporated into project development plans.

Lineament Analysis

In order to identify possible unmapped faults, identify possible fissures, and to evaluate topographic expressions of nearby and onsite published fault and lineament traces, a lineament analysis was performed. As indicated previously, stereoscopic "false-color" infrared aerial photographs (United State Department of Agriculture, 1980), at a scale of approximately 1:40,000, were utilized in our lineament analysis. Lineaments are classified according to their development as strong, moderate, or weak. A strong lineament is a well defined feature that can be continuously traced several hundred feet to a few thousand feet. A moderate lineament is less well defined, somewhat discontinuous, and can be traced for only a few hundred feet. A weak lineament is discontinuous, poorly defined, and can be traced for a few hundred feet, or less. Two strong lineaments were observed transecting the site based on the aerial photographs reviewed for this study. Based on our review one of the lineaments has been previously intersected by the fault investigation conducted by GSI (1990). Further analysis and additional fault/lineament trenching will likely be required by the controlling authorities.

Seismic Shaking Parameters

Based on the site conditions, Chapter 16 of the UBC/CBC (ICBO, 1997 and 2001), and ICBO (1998), the following seismic parameters are provided.

CHAPTER 16 OF UBC/CBC (ICBO, 1997 & 2001)	SEISMIC PARAMETERS
Seismic zone (per Figure 16-2*)	4
Seismic zone factor Z (per Table 16-I*)	0.40
Soil Profile Types (per Table 16-J*)	S_D
Seismic Coefficient C_a (per Table 16-Q*)	0.44 N_a
Seismic Coefficient C_v (per Table 16-R*)	0.64 N_v
Near Source factor N_a (per Table 16-S*)	1.3
Near Source factor N_v (per Table 16-T*)	1.6

CHAPTER 16 OF UBC/CBC (ICBO, 1997 & 2001)	SEISMIC PARAMETERS
Distance to Seismic Source (San Jacinto/Casa Loma Faults)	0 mi. (0 km)
Seismic Source Type (per Table 16-U*)	B**
Upper Bound Earthquake (San Jacinto Fault)	M_w 6.9**
* Figure and table references from Chapter 16 of the UBC (ICBO, 1997). ** ICBO (1998).	

GROUNDWATER

Seeps, springs, mottled soils, or other indications of a high groundwater level were not noted on the subject property during the time of our field investigation to depths in excess of ±50 feet. Based on historic water well data acquired from the California Department of Water Resources, "Water Data Library" (CDWR, 2004), groundwater levels in other nearby wells were previously measured at depths ranging from ±80 to in excess of ±210 feet below the ground surface. Perched groundwater onsite may also occur after periods of above normal or heavy precipitation or irrigation. Thus, perched groundwater conditions may occur in the future, and should be anticipated. Should manifestations of perched conditions (i.e., seepage) develop in the future, GSI could assess the conditions and provide mitigative recommendations, as necessary. Additional discussions of groundwater are presented within the conclusions section of this report.

OTHER GEOLOGIC HAZARDS

Liquefaction

Seismically-induced liquefaction is a phenomenon in which cyclic stresses, produced by earthquake-induced ground motion, create excess pore pressures in soils. The soils may thereby acquire a high degree of mobility, and lead to lateral movement, sliding, sand boils, consolidation and settlement of loose sediments, and other damaging deformations. This phenomenon occurs only below the water table; but after liquefaction has developed, it can propagate upward into overlying, non-saturated soil as excess pore water dissipates. Typically, liquefaction has a relatively low potential at depths greater than 45 feet and is virtually unknown below a depth of 60 feet.

Liquefaction susceptibility is related to numerous factors and the following conditions should be concurrently present for liquefaction to occur: 1) sediments must be relatively young in age and not have developed a large amount of cementation; 2) sediments generally consist of medium to fine grained relatively cohesionless sands; 3) the sediments must have low relative density; 4) free groundwater must be present in the sediment; and,

5) the site must experience a seismic event of a sufficient duration and magnitude, to induce straining of soil particles.

The condition of liquefaction has two principal effects. One is the consolidation of loose sediments with resultant settlement of the ground surface. The other effect is lateral sliding. Significant permanent lateral movement generally occurs only when there is significant differential loading, such as fill or natural ground slopes within susceptible materials. No such loading conditions exist on the site. In the site area, we found there is a potential for seismic activity and a groundwater table deeper than ±50 feet below the ground surface.

It should be noted that based on our review of previous investigations conducted onsite (GSI, 1990), relatively minor liquefaction features were previously identified onsite. Where noted, these features were generally encountered near the active splays of the Casa Loma fault system onsite. Therefore, GSI concludes that the site has been subject to minor liquefaction events in the geologic past. However, due to extensive regional groundwater pumping/withdrawal within the San Jacinto Basin area, regional groundwater levels within the valley have been drastically lowered. Previous reports indicated that much of the aquifer system within the basin had a hydraulic head of greater than ±2 meters (m) above the ground surface (Morton, 1994). By the early 1970's groundwater withdrawal within the basin had lowered the hydraulic heads by as much as ±24 to ±30 m below the land surface (Morton, 1994). Based on the continuing drought conditions experienced within southern California, continued increase of urbanization, and the continued yearly overburden extracted from the basin, it is our opinion that regional groundwater levels will likely not rise to previously documented levels, in the foreseeable future.

Based on the above, and regional groundwater levels in excess of +50 feet below the site, our evaluation indicates that the potential for liquefaction and associated adverse effects within the site is low. The site conditions will also be improved by removal and recompaction of low density near-surface soils, and the utilization of post-tensioned slab systems. Therefore, it is our opinion that the liquefaction potential does not constitute a significant risk to site development, and should not be any greater than for already approved projects adjoining the site.

Aerial Subsidence

The effects of areal subsidence generally occur at the transition or boundaries between low-lying areas and adjacent hillside terrain, where materials of substantially different engineering properties (i.e., alluvium vs. bedrock) are present. Due to the flat lying nature of the site, and the extreme depth of the underlying bedrock (basement rock), the potential for this condition does not exist onsite. However, based on our review the San Jacinto Basin area is regionally subsiding due to excessive groundwater withdrawal (Morton, 1994). Considering the long-term tectonic rate of subsidence, and land

subsidence due to aquifer compaction caused by groundwater withdrawal, the general rate of subsidence within the central portion of the basin is considered to be on the order of ±2.5 to ±3.0 centimeters a year (Morton, 1994).

In addition, our review of available data, as well as stereoscopic aerial photographs (USDA, 1980), showed no features onsite generally associated with areal subsidence (i.e., radially-directed drainages flowing into a depression(s), linearity of depressions associated with mountain fronts, etc.). Furthermore, ground fissures have been reported within the San Jacinto Basin that are generally attributed to excessive groundwater withdrawal and associated subsidence, and/or active faulting. Our review indicates that the ground fissures and associated subsidence areas documented, lie to the northwest of the site approximately ±6.5 miles away (Dibblee, 2003b). Furthermore, localized subsidence along bounding fault zones (i.e., Casa Loma fault) will inherently be mitigated by the proposed structural setback zones. Therefore, provided our recommendations are properly implemented, it is our opinion that aerial subsidence does not constitute a significant risk to site development, and should not be any greater than for already approved projects adjoining the site. However, groundwater levels may change in the future as a result of additional groundwater withdrawal/pumping, climatic change, or irrigation.

Mass Wasting

Mass wasting refers to the various processes by which earth materials are moved down slope in response to the force of gravity. Examples of these processes include slope creep, surficial failures, rockfall, deep-seated landslides, etc. Creep is the slowest form of mass wasting and generally involves the outer 5 to 10 feet of the slope surface. During heavy rains, such as those in 1969, 1978, and 1980, 1983, 1993, and 1998 creep-affected materials may become saturated, resulting in a more rapid form of down slope movement (i.e., landslides, surficial failures, and/or rockfall). The subject site consists of relatively low gradient terrain and indications of mass wasting phenomena on the site were not observed during our review of stereoscopic photographs of the area (USDA, 1980) or during our site reconnaissance.

Due to the non-cohesive materials that may exist on portions of the site, caving and sloughing should be anticipated in all subsurface excavations and trenching. Appropriate safety considerations for potential caving and sloughing, such as shoring or layback cuts, should be incorporated into the construction design details. Therefore, the potential for mass wasting phenomena within the site is considered nil. Likewise, the potential for seismically induced landsliding is considered nil.

Seiche

Our review indicates the San Jacinto Reservoir lies directly adjacent to the northern portion of the site. It is our understanding that this reservoir is utilized for the control of stormwater run-off during periods of heavy rain. Accordingly, the reservoir generally contains no appreciable amounts of water. However, based on the proximity to active faulting (i.e., Casa Loma fault) the possibility of an over-topping seiche impacting the site may not be entirely precluded, although the probability of the nearby reservoir being at full capacity and a regional seismic event large enough to breach the embankment occurring simultaneously is remote. This potential should be further evaluated by the design engineer.

LABORATORY AND FIELD TESTING

Classification

Soils were classified visually according to the Unified Soils Classification System and by supplemental index testing. The soil classifications are shown on the Boring Logs (see Appendix B).

Moisture-Density

The field moisture content and dry unit weight were determined for each undisturbed sample of the soils encountered in the borings. The dry unit weight was determined in pounds per cubic foot (pcf), and the field moisture content was determined as a percentage of the dry weight. The results of these tests are shown on the Boring Logs (see Appendix B).

Laboratory Standard

The maximum dry density and optimum moisture content was determined for the major soil type encountered in the borings. The laboratory standard used was ASTM D-1557. The moisture-density relationship obtained for this soil is shown below:

SOIL TYPE	LOCATION AND DEPTH (ft.)	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE CONTENT (%)
Sandy SILT, Dark Gray	B - 3 @ 1' - 5'	121.5	12.5

Expansion Testing

Expansion Index (E.I.) testing was performed on a representative soil sample, in accordance with UBC Standard No. 18-2 of the 1997 UBC. An E.I. of 36 was determined for the sample. Site soils may therefore be generally classified as having a low expansion potential. However, very low to medium expansive soils may not be precluded. Additionally, per the 1997 UBC, Atterberg testing was performed on all soils exhibiting expansion potentials greater than 20 (E.I. >20). The test results are provided below.

Plasticity Index Testing/Atterberg Limits

For preliminary foundation planning purposes, plasticity index testing was performed where E.I. testing indicated an E.I. greater than 20. Testing was performed to evaluate the liquid limit, plastic limit and plasticity index in general accordance with ASTM D-4318-64. The test results were also utilized to evaluate the soil classification in accordance with the Unified Soil Classification System. The test result and classification are presented in the following table:

LOCATION	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
B-6 @ 1' - 5'	33	20	13

Sulfate/Corrosion Testing

Typical samples of the site materials were analyzed for soluble sulfates, pH, and resistivity. The soluble sulfate and corrosion potential results are shown as follows:

LOCATION AND DEPTH (FT.)	SOLUBLE SULFATES PERCENTAGE BY WEIGHT	pH	RESISTIVITY (OHMS-CM)
B - 6 @ 1' - 5'	*ND	9.7	1,000

*Non-Detect

For preliminary planning purposes, based upon the soluble sulfate test results and the latest edition of the UBC, the soluble sulfate content is categorized as negligible (0.00-0.10 Water-Soluble Sulfate in Soil, percentage by weight) and sulfate-resistant concrete should not be necessary. Additionally, a modified cement to water ratio and modified concrete compressive strength should not be necessary. Based on the results of the resistivity and pH testing, the onsite soils are judged to be generally very strongly alkaline (pH of 9.7) and are considered to be severely corrosive toward ferrous metals in a saturated state.

Although the site soils are categorized as being severely corrosive to ferrous metals, no exposure conditions stated in Table 19-A-2 of the UBC are found within the subject site. It is our understanding that ferrous metals embedded in properly poured and formed Type I, II, or V concrete should be adequately protected from these conditions. Additionally, as stated above, the soluble sulfate content on the subject lots is considered negligible. Accordingly, a consulting corrosion engineer should be retained to provide specific recommendations for foundations, piping, etc.

Consolidation Testing

Consolidation testing was performed on a relatively undisturbed soil samples in general accordance with ASTM Test Method D-2435-90. The consolidation test results are presented in Appendix C.

Shear Testing

Shear testing was performed in a direct shear machine of the strain-control type. The rate of deformation is approximately 0.05 inches per minute. The sample was sheared under varying confining loads in order to determine the Coulomb shear strength parameters, angle of internal friction and cohesion. The test was performed on a remolded sample of the Quaternary alluvial deposits. The shear testing results are presented in Appendix C.

EMBANKMENT FACTORS

Embankment factors (shrinkage) for the site have been estimated based upon our field and laboratory testing, visual site observations, and experience. It is apparent that shrinkage would vary with depth and with areal extent over the site, based on previous site use. Variables include vegetation, weed control, and discing. However, all these factors are difficult to define in a three-dimensional fashion.

Therefore, the information presented below represents average shrinkage/bulking values, using certain earthwork assumptions as follows:

Range of maximum density = 129.5 to 132.0 pcf
Relative Compaction = 92%

Material	% Range
Colluvium/Topsoil Deposits	-15 to -22 (shrinkage)
Quaternary Alluvial Deposits	-12 to -18 (shrinkage)

An additional shrinkage factor item would include the removal of individual large plants or trees. The root structures/root balls of these plants and trees vary in size, but when pulled, they may result in a loss of ½ to 1½ cubic yards. This factor needs to be multiplied by the

number of significant plants or trees present to determine the net loss. Subsidence due to dynamic compaction from equipment, is estimated to be ±0.10 to ±0.20 feet, depending on haul routes etc.

The above factors indicate that earthwork balance of the site would be difficult to define and flexibility in design is essential to achieve a balanced end product.

PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

General

Based on our field exploration, laboratory testing and geotechnical engineering analysis, it is our opinion that the site appears suitable for the proposed development from a geotechnical engineering and geologic viewpoint, provided that the recommendations presented in the following sections are incorporated into the design and construction phases of site development. The primary geotechnical concerns with respect to the proposed development are:

- Potential for surface fault rupture, subsidence, and associated phenomena.
- Depth to suitable bearing strata.
- Potential for perimeter conditions leading to settlement and distress.
- Ongoing expansion and corrosion potential of site soils.
- Ongoing potential for perched water to occur after site development.
- Seismic settlement.
- Regional seismic activity.

The recommendations presented herein consider these as well as other aspects of the site. The engineering analyses performed concerning site preparation and the recommendations presented herein have been completed using the information provided by the client and obtained during our field work.

The conclusions and recommendations contained in this report shall not be considered valid unless the proposed development is reviewed and the recommendations of this report verified or modified in writing by this office. As indicated previously, additional field studies will need to be performed to properly evaluate the site relative to residential development. Accordingly, the design parameters presented herein are considered preliminary until the foundation design, layout, and structural loads are provided to this office for review.

1. Soil engineering, observation, and testing services should be provided during grading to aid the contractor in removing unsuitable soils and in his effort to compact the fill.

2. Geologic observations should be performed during grading to verify and/or further evaluate geologic conditions. Although unlikely, if adverse geologic structures are encountered, supplemental recommendations and earthwork may be warranted.

3. Existing topsoil/colluvial soils, and near surface alluvial deposits are considered unsuitable for the support of settlement-sensitive structures in their present condition, based on current industry standards. Moisture-density and consolidation test results indicate the materials are not uniform, are potentially subject to hydrocollapse, potentially compressible in their present condition, and may be subject to adverse differential settlement if not properly removed and recompacted.

4. In general and based upon the available data to date, groundwater is not expected to be a major factor in development of the site. However, due to the nature of the site materials, seepage may be encountered throughout the site along with seasonal perched water within any drainage areas. In addition, seepage may be encountered within the alluvial deposits. Therefore, subdrainage systems for the control of localized groundwater seepage should be anticipated both during grading, and after site development.

5. Cavities or loose soils remaining after demolition and site clearance should be cleaned out and observed by the soil engineer. The cavities should be replaced with fill materials that have been moisture conditioned to at least optimum moisture content and compacted to at least 90 percent of the laboratory standard.

Treatment of Existing Ground

1. Removal of any artificial fill, manure and/or organic matter, colluvium/topsoil deposits, and near surface weathered alluvial deposits will be necessary prior to fill placement. On a preliminary basis, if post-tensioned foundations are utilized, remedial grading is estimated to consist of the overexcavation/removal of the upper ±5 to ±7 feet of native soils, below existing grades, followed by flooding/saturation of an additional ±3 to ±5 feet of the native soils. Proof testing of a minimum 85 percent saturation would be required via test pits and field moisture content testing. On a preliminary basis, if conventional foundations can be designed based on the estimated preliminary settlement values provided herein, remedial grading for use with conventional foundations is estimated to consist of the overexcavation/removal of the upper ±8 to ±10 feet of native soils, below existing grades, followed by flooding/saturation of an additional ±3 to ±5 feet of the native soils . Proof testing of a minimum 85 percent saturation would be required via test pits and field moisture content testing. Following moisture evaluation, compaction of the removal bottom would require a vibratory sheeps-foot to aid in the inducement of hydrocollapse in the underlying materials. A minimum of 2 feet of compacted fill is recommended below foundation elements. Variations from these thicknesses

should be anticipated. Actual depths of removals will be evaluated in the field during grading by the soil engineer.

2. Subsequent to the above removals, the upper 12 inches of the exposed alluvial deposits should be scarified, brought to at least optimum moisture content, and recompacted to a minimum relative compaction of 90 percent of the laboratory standard.

3. Existing topsoil/colluvium, etc., and removed natural ground materials may be reused as compacted fill provided that major concentrations of vegetation and miscellaneous debris are removed prior to or during fill placement.

4. Localized deeper removal may be necessary due to buried drainage channel meanders or dry porous materials. The project soils engineer/geologist should observe all removal areas during the grading.

Fill Placement

1. Subsequent to ground preparation, fill materials should be brought to at least optimum moisture content, placed in thin 6- to 8-inch lifts and mechanically compacted to obtain a minimum relative compaction of 90 percent of the laboratory standard.

2. Fill materials should be cleansed of major vegetation and debris prior to placement. The organic content of the compacted fills should not exceed 1 percent, based on current controlling authority standards.

3. Any oversized rock materials greater than 8 inches in diameter should be placed under the recommendations and supervision of the soils engineer and/or removed from the site. Should significant amounts of oversize rock be encountered, recommendations for rock fill placement will be provided by GSI. As per UBC/CBC (ICBO, 1997 and 2001) requirements, no oversize materials greater than 12 inches in diameter should be placed within 10 feet of finish grade.

4. Any import materials should be observed and determined suitable by the soils engineer prior to placement on the site. Foundation designs may be altered if import materials have a greater expansion/sulfate corrosion value than the onsite materials encountered in this investigation.

Transition Areas/Overexcavation/Perimeter Conditions

In order to reduce the potential for differential settlements between cut and fill materials, materials of differing expansion potentials, or dense bedrock, the entire cut portion of cut/fill transitions within proposed residential lots (per the UBC/CBC) should be

overexcavated to a minimum depth of 3 feet below finish grade, or 2 feet below foundation elements, and/or a maximum ratio of fill thickness on the lot of 3:1 (h:v), whichever is more onerous, and replaced with compacted fill. It should be noted, that the UBC/CBC specifically requires that removals of unsuitable soils be performed across all areas to be graded, not just withing the influence of the residential structure. Relatively deep removals may also necessitate a special zone of consideration, on perimeter, confining areas, such that this zone is approximately equal to the depth of removals, if removals cannot performed offsite. Thus, any settlement sensitive improvements (walls, curbs, flatwork, etc.), constructed within this zone may require deepened foundations, reenforcement, etc., or will retain some potential for settlement and associated distress. This will require proper disclosure to all homeowners and any homeowners association.

SUBDRAINS

Subdrains may be necessary where local seepage along the contact between the proposed fill and underlying alluvial deposits exist, or within the proposed fill along contrasting zones of permeabilities (e.g., sand vs. silt or clay). Owing to the generally flat nature of the site, lack of canyons, lack of gradient at flowline elevations, and the lack of suitable cover (i.e., less than about 10 feet of fill), subdrains are generally not anticipated during grading, but may not be entirely precluded. If required, where removals are below the subdrain flowline, the removal materials may be reused as compacted fill provided they are granular, and at a moisture content of at least 2 percent over optimum moisture content (or 1.2 times optimum moisture content, whichever is greater).

If necessary, actual locations of subdrains will be provided during grading, based on exposed conditions. The project civil engineer should locate and map any subdrain and outlet systems. Potential subdrain locations should be re-evaluated at the 40-scale grading plan review stage.

SLOPE CONSIDERATIONS AND SLOPE DESIGN

All slopes should be designed and constructed in accordance with the minimum requirements of the UBC/CBC (ICBO, 1997 and 2001), County of Riverside, the recommendations in Appendix D, and the following:

1. Fill slopes should be designed at a 2:1 (h:v) gradients, or flatter, and should not exceed about 15 feet in height, without a slope stability evaluation. Fill slopes should be properly built and compacted to a minimum relative compaction of 90 percent throughout, including the slope surfaces. Guidelines for slope construction are presented in Appendix D.

2. Cut slopes should be designed at gradients of 2:1 and should not exceed 15 feet in height, without a slope stability evaluation. While stabilization of such slopes is not anticipated, locally adverse geologic conditions (e.g., daylighted sandy lenses, etc.) may be encountered which may require remedial grading or laying back of the slope to an angle flatter than the adverse geologic condition.

3. Local areas of highly to severely weathered alluvial deposits may be present. Should these materials be exposed in cut slopes, the potential for long term maintenance or possible slope failure exists. Evaluation of cut slopes during grading would be necessary in order to identify any areas of severely weathered alluvial materials. Should any of these materials be exposed during construction, the soils engineer/geologist, would assess the magnitude and extent of the materials and their potential affect on long-term maintenance or possible slope failures. Recommendations would then be made at the time of the field inspection.

4. Loose debris and fines remaining on the face of the cut slopes should be removed during grading. This can be accomplished by utilizing a slope board or by hand scaling, as warranted.

5. Where loose materials are exposed on the cut slopes, the project's engineering geologist would require that the slope be cleaned as described above prior to making their final inspection. Final approval of the cut slope can only be made subsequent to the slope being fully cut and cleaned.

6. Cut slopes should be mapped by the project engineering geologist during grading to allow amendments to the recommendations should exposed conditions warrant alternation of the design or stabilization.

FOUNDATION DESIGN

Based on the limited nature of our current study (i.e., Update Geotechnical Feasibility Review), preliminary foundation designs, bearing values, etc., should be provided after the completion of the additional recommended field studies. Upon request, GSI can provide additional data/consultation regarding soil parameters as related to foundation design.

PRELIMINARY ESTIMATED FOUNDATION SETTLEMENTS

On a preliminary basis, the footings and/or slabs should be designed to accommodate a total static settlement of up to 2 inches and a differential settlement of 1 inch (i.e., at least 1 inch in a 40-foot span), or a total seismic settlement of up to 4.0 inches and a differential settlement of 2 inches (i.e., at least 2 inches in a 40-foot span). The structural engineer should determine whichever condition controls the design. Any post-construction

settlement of the fill should be readily mitigated by conventional and/or post-tension design. In addition to the above, the structural engineer should also consider estimated settlements due to short duration seismic loading and applicable load combinations, as required by the County and/or the UBC/CBC (ICBO, 1997 and 2001). Additional studies (i.e., cone penetration testing), as recommended, may serve to reduce the preliminary settlement values provided herein. These estimates are based on fill materials that have generally very low to medium expansion potential, and therefore should be considered as preliminary estimates. Final settlement estimates should be provided at the completion of rough grading, based on the actual planned fill thickness and the nature of underlying materials encountered.

WALL DESIGN PARAMETERS

Conventional Retaining Walls

The design parameters provided below assume that either non expansive soils (Class 2 permeable filter material or Class 3 aggregate base) or native materials (up to and including an E.I. of 65) are used to backfill any retaining walls. The type of backfill (i.e., select or native), should be specified by the wall designer, and clearly shown on the plans. Building walls, below grade, should be water-proofed or damp-proofed, depending on the degree of moisture protection desired. The foundation system for the proposed retaining walls should be designed in accordance with the recommendations presented in this and preceding sections of this report, as appropriate. Footings should be embedded a minimum of 18 inches below adjacent grade (excluding landscape layer, 6 inches) and should be 24 inches in width. There should be no increase in bearing for footing width. Recommendations for specialty walls (i.e., crib, earthstone, geogrid, etc.) can be provided upon request, and would be based on site specific conditions.

Restrained Walls

Any retaining walls that will be restrained prior to placing and compacting backfill material or that have re-entrant or male corners, should be designed for an at-rest equivalent fluid pressure (EFP) of 65 pcf, plus any applicable surcharge loading. For areas of male or re-entrant corners, the restrained wall design should extend a minimum distance of twice the height of the wall (2H) laterally from the corner.

Cantilevered Walls

The recommendations presented below are for cantilevered retaining walls up to 10 feet high. Design parameters for walls less than 3 feet in height may be superceded by City and/or County standard design. Active earth pressure may be used for retaining wall design, provided the top of the wall is not restrained from minor deflections. An equivalent fluid pressure approach may be used to compute the horizontal pressure against the wall.

Appropriate fluid unit weights are given below for specific slope gradients of the retained material. These do not include other superimposed loading conditions due to traffic, structures, seismic events or adverse geologic conditions. When wall configurations are finalized, the appropriate loading conditions for superimposed loads can be provided upon request.

SURFACE SLOPE OF RETAINED MATERIAL (HORIZONTAL:VERTICAL)	EQUIVALENT FLUID WEIGHT P.C.F. (SELECT BACKFILL)	EQUIVALENT FLUID WEIGHT P.C.F. (NATIVE BACKFILL)
Level*	35	45
2 to 1	50	60
* Level backfill behind a retaining wall is defined as compacted earth materials, properly drained, without a slope for a distance of 2H behind the wall.		

Retaining Wall Backfill and Drainage

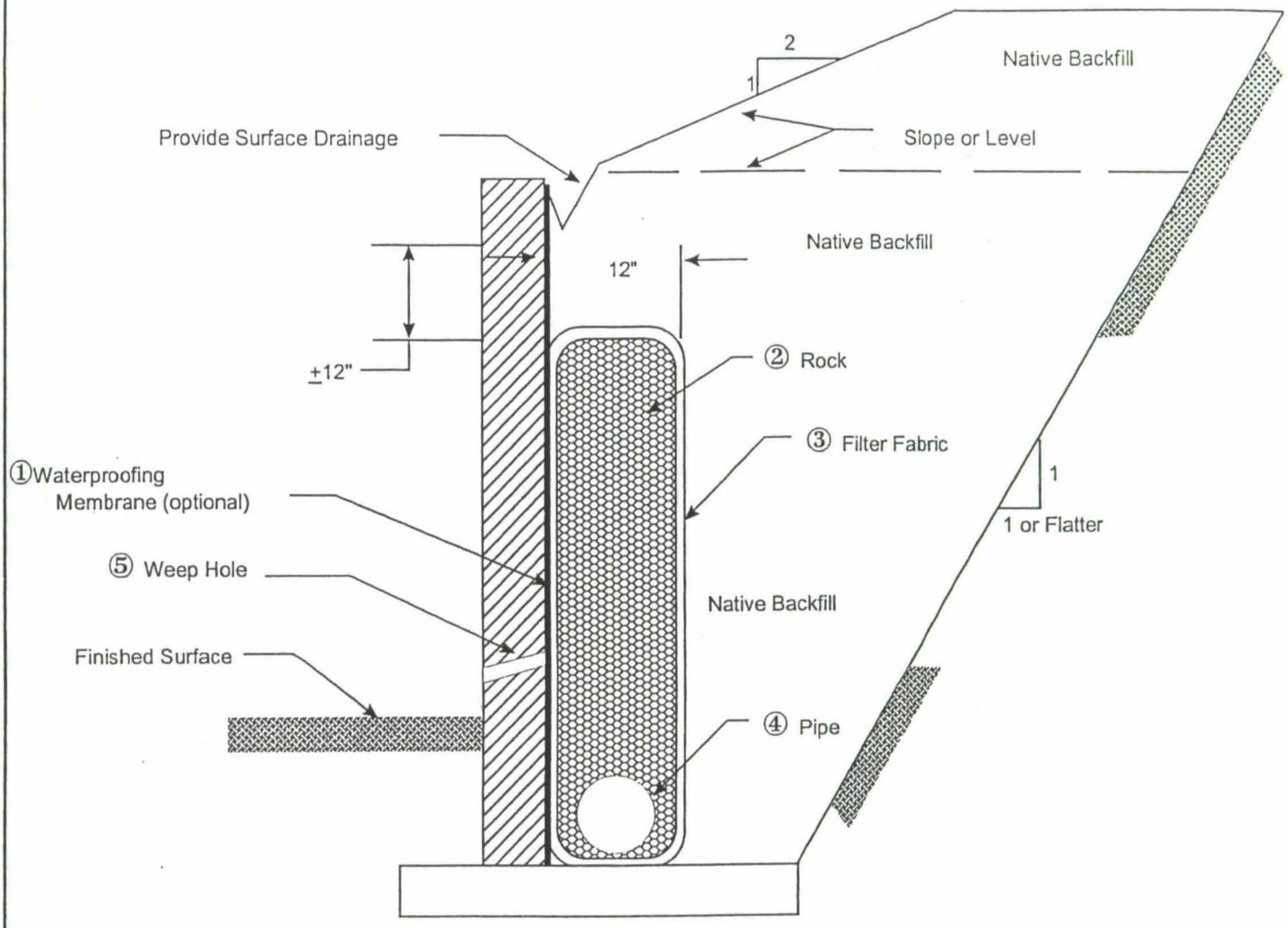
Positive drainage must be provided behind all retaining walls in the form of gravel wrapped in geofabric and outlets. A backdrain system is considered necessary for retaining walls that are 2 feet or greater in height. Details 1, 2, and 3, present the back drainage options discussed below. Backdrains should consist of a 4-inch diameter perforated PVC or ABS pipe encased in either Class 2 permeable filter material or ½-inch to ¾-inch gravel wrapped

in approved filter fabric (Mirafi 140 or equivalent). For low expansive backfill, the filter material should extend a minimum of 1 horizontal foot behind the base of the walls and upward at least 1 foot. For native backfill that has up to medium expansion potential, continuous Class 2 permeable drain materials should be used behind the wall. This material should be continuous (i.e., full height) behind the wall, and it should be constructed in accordance with the enclosed Detail 1 (Typical Retaining Wall Backfill and Drainage Detail). For limited access and confined areas, (panel) drainage behind the wall may be constructed in accordance with Detail 2 (Retaining Wall Backfill and Subdrain Detail Geotextile Drain). Materials with an E.I. potential of greater than 65 should not be used as backfill for retaining walls. For more onerous expansive situations, backfill and drainage behind the retaining wall should conform with Detail 3 (Retaining Wall And Subdrain Detail Clean Sand Backfill).

Outlets should consist of a 4-inch diameter solid PVC or ABS pipe spaced no greater than ±100 feet apart, with a minimum of two outlets, one on each end. The use of weep holes in walls higher than 2 feet should not be considered. The surface of the backfill should be sealed by pavement or the top 18 inches compacted with native soil (E.I. ≤90). Proper

DETAILS

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① **WATERPROOFING MEMBRANE (optional):**
Liquid boot or approved equivalent.

② **ROCK:**
3/4 to 1-1/2" (inches) rock.

③ **FILTER FABRIC:**
Mirafi 140N or approved equivalent; place fabric flap behind core.

④ **PIPE:**
4" (inches) diameter perforated PVC. schedule 40 or approved alternative with minimum of 1% gradient to proper outlet point.

⑤ **WEEP HOLE:**
Minimum 2" (inches) diameter placed at 20' (feet) on centers along the wall, and 3" (inches) above finished surface. (No weep holes for basement walls.)

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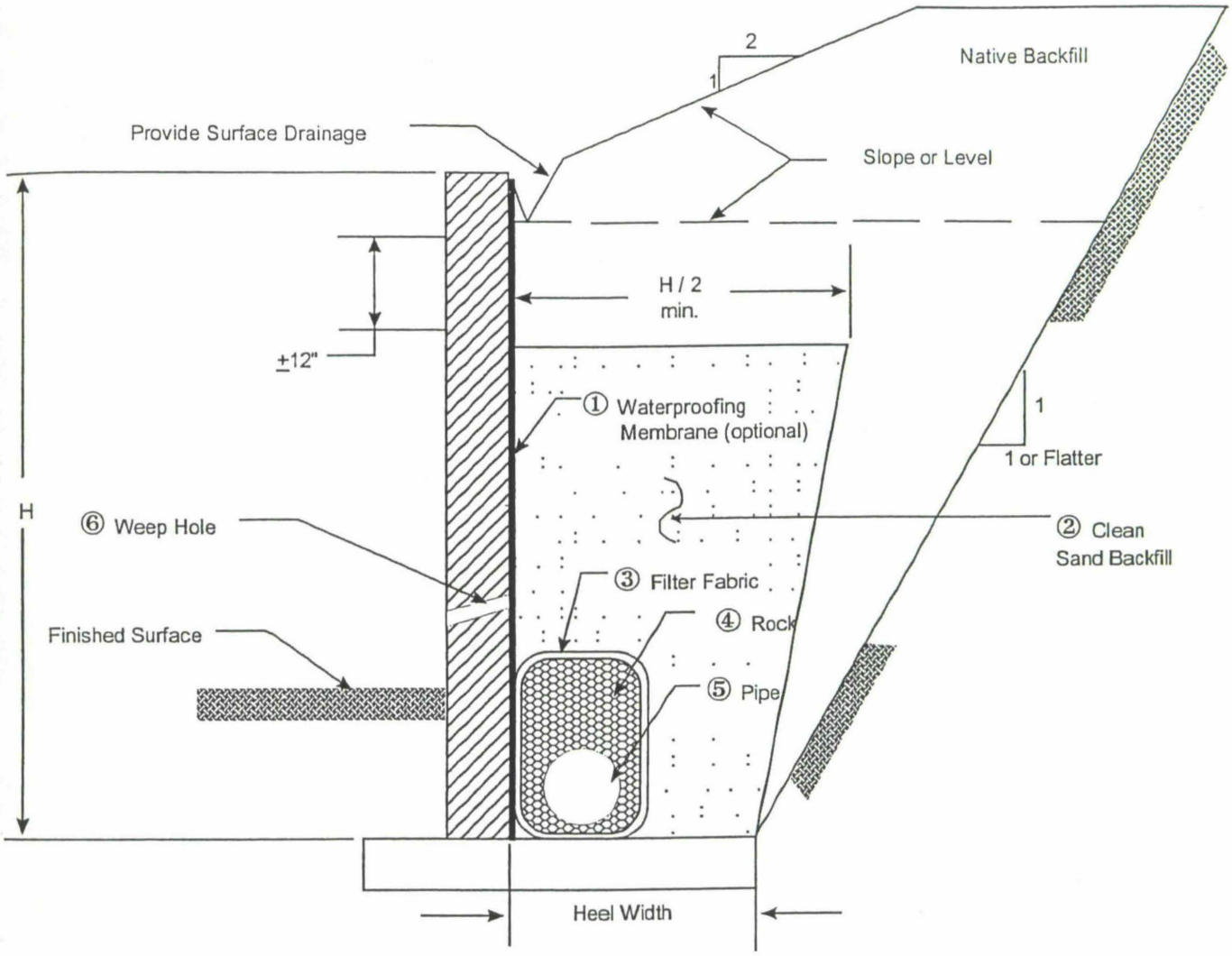
TYPICAL RETAINING WALL BACKFILL AND DRAINAGE DETAIL

DETAIL 1

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DETAILS

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① **WATERPROOFING MEMBRANE (optional):**
Liquid boot or approved equivalent.

② **CLEAN SAND BACKFILL:**
Must have sand equivalent value of 30 or greater; can be densified by water jetting.

③ **FILTER FABRIC:**
Mirafi 140N or approved equivalent.

④ **ROCK:**
1 cubic foot per linear feet of pipe or 3/4 to 1-1/2" (inches) rock.

⑤ **PIPE:**
4" (inches) diameter perforated PVC. schedule 40 or approved alternative with minimum of 1% gradient to proper outlet point.

⑥ **WEEP HOLE:**
Minimum 2" (inches) diameter placed at 20' (feet) on centers along the wall, and 3" (inches) above finished surface. (No weep holes for basement walls.)

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RETAINING WALL AND SUBDRAIN DETAIL
CLEAN SAND BACKFILL

DETAIL 3

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surface drainage should also be provided. For additional mitigation, consideration should be given to applying a water-proof membrane to the back of all retaining structures. The use of a waterstop should be considered for all concrete and masonry joints.

Wall/Retaining Wall Footing Transitions

Site walls are anticipated to be founded on footings designed in accordance with the recommendations in this report. Should wall footings transition from cut to fill, the civil designer may specify either:

a) A minimum of a 2-foot overexcavation and recompaction of cut materials for a distance of 2H, from the point of transition.

b) Increase of the amount of reinforcing steel and wall detailing (i.e., expansion joints or crack control joints) such that a angular distortion of 1/360 for a distance of 2H on either side of the transition may be accommodated. Expansion joints should be placed no greater than 20 feet on-center, in accordance with the structural engineer's/wall designer's recommendations, regardless of whether or not transition conditions exist. Expansion joints should be sealed with a flexible, non-shrink grout.

c) Embed the footings entirely into native formational material (i.e., deepened footings).

If transitions from cut to fill transect the wall footing alignment at an angle of less than 45 degrees (plan view), then the designer should follow recommendation "a" (above) and until such transition is between 45 and 90 degrees to the wall alignment.

TOP-OF-SLOPE WALLS/FENCES/IMPROVEMENTS

Slope Creep

Soils at the site may be expansive and therefore, may become desiccated when allowed to dry. Such soils are susceptible to surficial slope creep, especially with seasonal changes in moisture content. Typically in southern California, during the hot and dry summer period, these soils become desiccated and shrink, thereby developing surface cracks. The extent and depth of these shrinkage cracks depend on many factors such as the nature and expansivity of the soils, temperature and humidity, and extraction of moisture from surface soils by plants and roots. When seasonal rains occur, water percolates into the cracks and fissures, causing slope surfaces to expand, with a corresponding loss in soil density and shear strength near the slope surface. With the passage of time and several moisture cycles, the outer 3 to 5 feet of slope materials experience a very slow, but progressive, outward and downward movement, known as slope creep. For slope heights greater than 10 feet, this creep related soil movement will

typically impact all rear yard flatwork and other secondary improvements that are located within about 15 feet from the top of slopes, such as swimming pools, concrete flatwork, etc., and in particular top of slope fences/walls. This influence is normally in the form of detrimental settlement, and tilting of the proposed improvements. The dessication/swelling and creep discussed above continues over the life of the improvements, and generally becomes progressively worse. Accordingly, the developer should provide this information to any homeowners and homeowners association.

Top of Slope Walls/Fences

Due to the potential for slope creep for slopes higher than about 10 feet, some settlement and tilting of the walls/fence with the corresponding distresses, should be expected. To mitigate the tilting of top of slope walls/fences, we recommend that the walls/fences be constructed on deepened foundations without any consideration for creep forces, where the expansion index of the materials comprising the outer 15 feet of the slope is less than 50, or a combination of grade beam and caisson foundations, for expansion indices greater than 50 comprising the slope, with creep forces taken into account. The grade beam should be at a minimum of 12 inches by 12 inches in cross section, supported by drilled caissons, 12 inches minimum in diameter, placed at a maximum spacing of 6 feet on center, and with a minimum embedment length of 7 feet below the bottom of the grade beam. The strength of the concrete and grout should be evaluated by the structural engineer of record. The proper ASTM tests for the concrete and mortar should be provided along with the slump quantities. The concrete used should be appropriate to mitigate sulfate corrosion, as warranted. The design of the grade beam and caissons should be in accordance with the recommendations of the project structural engineer, and include the utilization of the following geotechnical parameters:

Creep Zone: 5-foot vertical zone below the slope face and projected upward parallel to the slope face.

Creep Load: The creep load projected on the area of the grade beam should be taken as an equivalent fluid approach, having a density of 60 pcf. For the caisson, it should be taken as a uniform 900 pounds per linear foot of caisson's depth, located above the creep zone.

Point of Fixity: Located a distance of 1.5 times the caisson's diameter, below the creep zone.

Passive Resistance: Passive earth pressure of 300 psf per foot of depth per foot of caisson diameter, to a maximum value of 4,500 psf may be used to determine caisson depth and spacing, provided that they meet or exceed the minimum requirements stated above. To determine the total lateral resistance, the contribution of the

creep prone zone above the point of fixity, to passive resistance, should be disregarded.

Allowable Axial Capacity:

Shaft capacity : 350 psf applied below the point of fixity over the surface area of the shaft.

Tip capacity: 4,500 psf.

DRIVEWAY, FLATWORK, AND OTHER IMPROVEMENTS

The soil materials on site may be expansive. The effects of expansive soils are cumulative, and typically occur over the lifetime of any improvements. On relatively level areas, when the soils are allowed to dry, the dessication and swelling process tends to cause heaving and distress to flatwork and other improvements. The resulting potential for distress to improvements may be reduced, but not totally eliminated. To that end, it is recommended that the developer should notify any homeowners or homeowners association of this long-term potential for distress. To reduce the likelihood of distress, the following recommendations are presented for all exterior flatwork:

1. The subgrade area for concrete slabs should be compacted to achieve a minimum 90 percent relative compaction, and then be presoaked to 2 to 3 percentage points above (or 125 percent of) the soils' optimum moisture content, to a depth of 18 inches below subgrade elevation. If very low expansive soils are present, only optimum moisture content, or greater, is required and specific presoaking is not warranted. The moisture content of the subgrade should be verified within 72 hours prior to pouring concrete.

2. Concrete slabs should be cast over a non-yielding surface, consisting of a 4-inch layer of crushed rock, gravel, or clean sand, that should be compacted and level prior to pouring concrete. If very low expansive soils are present, the rock or gravel or sand may be deleted. The layer or subgrade should be wet-down completely prior to pouring concrete, to minimize loss of concrete moisture to the surrounding earth materials.

3. Exterior slabs should be a minimum of 4 inches thick. Driveway slabs and approaches should additionally have a thickened edge (12 inches) adjacent to all landscape areas, to help impede infiltration of landscape water under the slab.

4. The use of transverse and longitudinal control joints are recommended to help control slab cracking due to concrete shrinkage or expansion. Two ways to mitigate such cracking are: a) add a sufficient amount of reinforcing steel,

increasing tensile strength of the slab; and, b) provide an adequate amount of control and/or expansion joints to accommodate anticipated concrete shrinkage and expansion.

In order to reduce the potential for unsightly cracks, slabs should be reinforced at mid-height with a minimum of No. 3 bars placed at 18 inches on center, in each direction. If subgrade soils within the top 7 feet from finish grade are very low expansive soils (i.e., E.I. ≤20), then 6x6-W1.4xW1.4 welded-wire mesh may be substituted for the rebar, provided the reinforcement is placed on chairs, at slab mid-height. The exterior slabs should be scored or saw cut, ½ to ⅜ inches deep, often enough so that no section is greater than 10 feet by 10 feet. For sidewalks or narrow slabs, control joints should be provided at intervals of every 6 feet. The slabs should be separated from the foundations and sidewalks with expansion joint filler material.

5. No traffic should be allowed upon the newly poured concrete slabs until they have been properly cured to within 75 percent of design strength. Concrete compression strength should be a minimum of 2,500 psi.

6. Driveways, sidewalks, and patio slabs adjacent to the house should be separated from the house with thick expansion joint filler material. In areas directly adjacent to a continuous source of moisture (i.e., irrigation, planters, etc.), all joints should be additionally sealed with flexible mastic.

7. Planters and walls should not be tied to the house.

8. Overhang structures should be supported on the slabs, or structurally designed with continuous footings tied in at least two directions. If very low expansion soils are present, footings need only be tied in one direction.

9. Any masonry landscape walls that are to be constructed throughout the property should be grouted and articulated in segments no more than 20 feet long. These segments should be keyed or doweled together.

10. Utilities should be enclosed within a closed utilidor (vault) or designed with flexible connections to accommodate differential settlement and expansive soil conditions.

11. Positive site drainage should be maintained at all times. Finish grade on the lots should provide a minimum of 1 to 2 percent fall to the street, as indicated herein. It should be kept in mind that drainage reversals could occur, including post-construction settlement, if relatively flat yard drainage gradients are not periodically maintained by the homeowner or homeowners association.

12. Air conditioning (A/C) units should be supported by slabs that are incorporated into the building foundation or constructed on a rigid slab with flexible couplings for plumbing and electrical lines. A/C waste water lines should be drained to a suitable non-erosive outlet.

13. Shrinkage cracks could become excessive if proper finishing and curing practices are not followed. Finishing and curing practices should be performed per the Portland Cement Association Guidelines. Mix design should incorporate rate of curing for climate and time of year, sulfate content of soils, corrosion potential of soils, and fertilizers used on site.

DEVELOPMENT CRITERIA

Slope Deformation

Compacted fill slopes designed using customary factors of safety for gross or surficial stability and constructed in general accordance with the design specifications should be expected to undergo some differential vertical heave or settlement in combination with differential lateral movement in the out-of-slope direction, after grading. This post-construction movement occurs in two forms: slope creep, and lateral fill extension (LFE). Slope creep is caused by alternate wetting and drying of the fill soils which results in slow downslope movement. This type of movement is expected to occur throughout the life of the slope, and is anticipated to potentially affect improvements or structures (i.e., separations and/or cracking), placed near the top-of-slope, up to a maximum distance of approximately 15 feet from the top-of-slope, depending on the slope height. This movement generally results in rotation and differential settlement of improvements located within the creep zone. LFE occurs due to deep wetting from irrigation and rainfall on slopes comprised of expansive materials. Although some movement should be expected, long-term movement from this source may be minimized, but not eliminated, by placing the fill throughout the slope region, wet of the fill's optimum moisture content.

It is generally not practical to attempt to eliminate the effects of either slope creep or LFE. Suitable mitigative measures to reduce the potential of lateral deformation typically include: setback of improvements from the slope faces (per the 1997 UBC and/or CBC), positive structural separations (i.e., joints) between improvements, and stiffening and deepening of foundations. Expansion joints in walls should be placed no greater than 20 feet on-center, in accordance with the structural engineer's recommendations. All of these measures are recommended for design of structures and improvements. The ramifications of the above conditions, and recommendations for mitigation, should be provided to each homeowner and/or any homeowners association.

Slope Maintenance and Planting

Water has been shown to weaken the inherent strength of all earth materials. Slope stability is significantly reduced by overly wet conditions. Positive surface drainage away from slopes should be maintained and only the amount of irrigation necessary to sustain plant life should be provided for planted slopes. Over-watering should be avoided as it can adversely affect site improvements, and cause perched groundwater conditions. Graded slopes constructed utilizing onsite materials would be erosive. Eroded debris may be minimized and surficial slope stability enhanced by establishing and maintaining a suitable vegetation cover soon after construction. Compaction to the face of fill slopes would tend to minimize short-term erosion until vegetation is established. Plants selected for landscaping should be light weight, deep rooted types that require little water and are capable of surviving the prevailing climate. Jute-type matting or other fibrous covers may aid in allowing the establishment of a sparse plant cover. Utilizing plants other than those recommended above will increase the potential for perched water, staining, mold, etc., to develop. A rodent control program to prevent burrowing should be implemented. Irrigation of natural (ungraded) slope areas is generally not recommended. These recommendations regarding plant type, irrigation practices, and rodent control should be provided to each homeowner. Over-steepening of slopes should be avoided during building construction activities and landscaping.

Drainage

Adequate lot surface drainage is a very important factor in reducing the likelihood of adverse performance of foundations, hardscape, and slopes. Surface drainage should be sufficient to prevent ponding of water anywhere on a lot, and especially near structures and tops of slopes. Lot surface drainage should be carefully taken into consideration during fine grading, landscaping, and building construction. Therefore, care should be taken that future landscaping or construction activities do not create adverse drainage conditions. Positive site drainage within lots and common areas should be provided and maintained at all times. Drainage should not flow uncontrolled down any descending slope. Water should be directed away from foundations and not allowed to pond and/or seep into the ground. In general, the area within 5 feet around a structure should slope away from the structure. We recommend that unpaved lawn and landscape areas have a minimum gradient of 1 percent sloping away from structures, and whenever possible, should be above adjacent paved areas. Consideration should be given to avoiding construction of planters adjacent to structures (buildings, pools, spas, etc.). Pad drainage should be directed toward the street or other approved area(s). Although not a geotechnical requirement, roof gutters, down spouts, or other appropriate means may be utilized to control roof drainage. Down spouts, or drainage devices should outlet a minimum of 5 feet from structures or into a subsurface drainage system. Areas of seepage may develop due to irrigation or heavy rainfall, and should be anticipated. Minimizing irrigation will lessen this potential. If areas of seepage develop, recommendations for minimizing this effect could be provided upon request.

Toe of Slope Drains/Toe Drains

Where significant slopes intersect pad areas, surface drainage down the slope allows for some seepage into the subsurface materials, sometimes creating conditions causing or contributing to perched and/or ponded water. Toe of slope/toe drains may be beneficial in the mitigation of this condition due to surface drainage. The general criteria to be utilized by the design engineer for evaluating the need for this type of drain is as follows:

- Is there a source of irrigation above or on the slope that could contribute to saturation of soil at the base of the slope?

- Are the slopes hard rock and/or impermeable, or relatively permeable, or; do the slopes already have or are they proposed to have subdrains (i.e., stabilization fills, etc.)?

- Was the lot at the base of the slope overexcavated or is it proposed to be overexcavated? Overexcavated lots located at the base of a slope could accumulate subsurface water along the base of the fill cap.

- Are the slopes north facing? North facing slopes tend to receive less sunlight (less evaporation) relative to south facing slopes and are more exposed to the currently prevailing seasonal storm tracks.

- What is the slope height? It has been our experience that slopes with heights in excess of approximately 10 feet tend to have more problems due to storm runoff and irrigation than slopes of a lesser height.

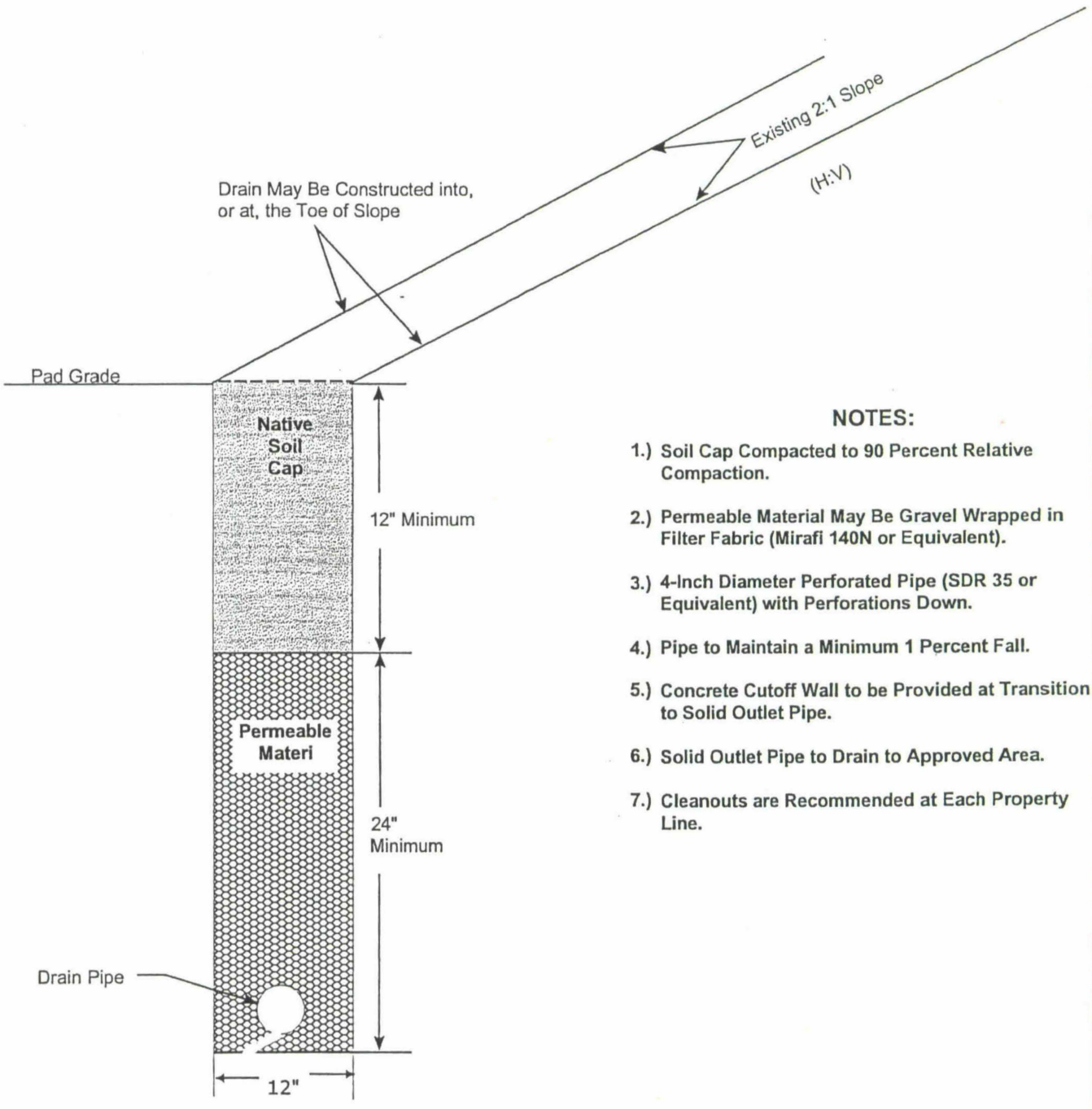
- Do the slopes "toe out" into a residential lot or a lot where perched or ponded water may adversely impact its proposed use?

Based on these general criteria, the construction of toe drains may be considered by the design engineer along the toe of slopes, or at retaining walls in slopes, descending to the rear of such lots. Following are Detail 4 (Schematic Toe Drain Detail) and Detail 5 (Subdrain Along Retaining Wall Detail). Other drains may be warranted due to unforeseen conditions, homeowner irrigation, or other circumstances. Where drains are constructed during grading, including subdrains, the locations/elevations of such drains should be surveyed, and recorded on the final as-built grading plans by the design engineer. It is recommended that the above be disclosed to all interested parties, including homeowners and any homeowners association.

DETAILS

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SCHEMATIC TOE DRAIN DETAIL



NOTES:

1.) Soil Cap Compacted to 90 Percent Relative Compaction.

2.) Permeable Material May Be Gravel Wrapped in Filter Fabric (Mirafi 140N or Equivalent).

3.) 4-Inch Diameter Perforated Pipe (SDR 35 or Equivalent) with Perforations Down.

4.) Pipe to Maintain a Minimum 1 Percent Fall.

5.) Concrete Cutoff Wall to be Provided at Transition to Solid Outlet Pipe.

6.) Solid Outlet Pipe to Drain to Approved Area.

7.) Cleanouts are Recommended at Each Property Line.

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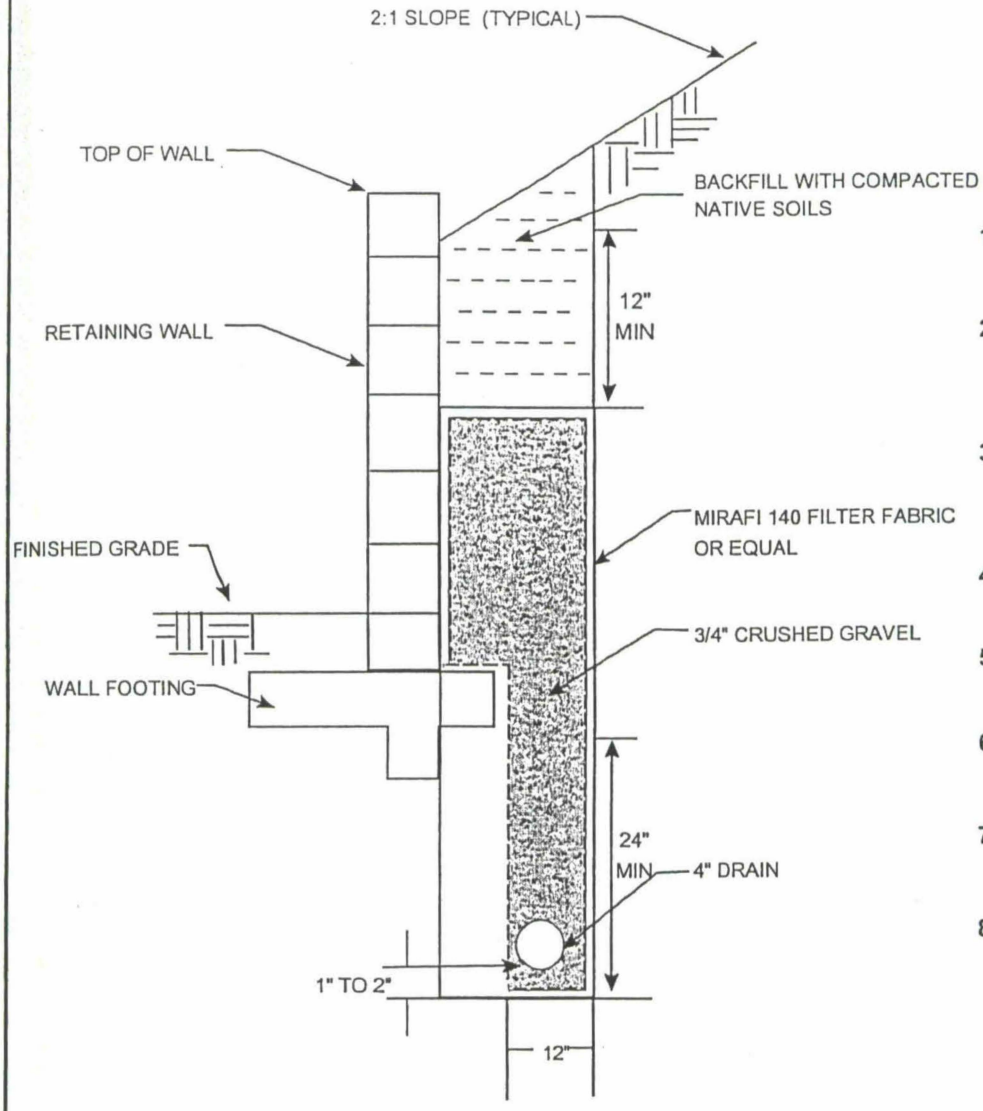
SCHEMATIC TOE DRAIN DETAIL

DETAIL 4

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DETAILS

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NOTES:

1.) **Soil Cap Compacted to 90 Percent Relative Compaction.**

2.) **Permeable Material May Be Gravel Wrapped in Filter Fabric (Mirafi 140N or Equivalent).**

3.) **4-Inch Diameter Perforated Pipe (SDR-35 of Equivalent) with Perforations Down.**

4.) **Pipe to Maintain a Minimum 1 Percent Fall.**

5.) **Concrete Cutoff Wall to be Provided at Transition to Solid Outlet Pipe.**

6.) **Solid Outlet Pipe to Drain to Approved Area.**

7.) **Cleanouts are Recommended at Each Property Line.**

8.) **Compacted Effort Should Be Applied to Drain Rock.**

SUBDRAIN ALONG RETAINING WALL DETAIL

NOT TO SCALE

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SUBDRAIN ALONG RETAINING WALL DETAIL

DETAIL 5

Geotechnical • Coastal • Geologic • Environmental

Erosion Control

Cut and fill slopes will be subject to surficial erosion during and after grading. Onsite earth materials have a moderate to high erosion potential. Consideration should be given to providing hay bales and silt fences for the temporary control of surface water, from a geotechnical viewpoint.

Landscape Maintenance

Only the amount of irrigation necessary to sustain plant life should be provided. Over-watering the landscape areas will adversely affect proposed site improvements. We would recommend that any proposed open-bottom planters adjacent to proposed structures be eliminated for a minimum distance of 10 feet. As an alternative, closed-bottom type planters could be utilized. An outlet placed in the bottom of the planter, could be installed to direct drainage away from structures or any exterior concrete flatwork. If planters are constructed adjacent to structures, the sides and bottom of the planter should be provided with a moisture barrier to prevent penetration of irrigation water into the subgrade. Provisions should be made to drain the excess irrigation water from the planters without saturating the subgrade below or adjacent to the planters. Graded slope areas should be planted with drought resistant vegetation. Consideration should be given to the type of vegetation chosen and their potential effect upon surface improvements (i.e., some trees will have an effect on concrete flatwork with their extensive root systems). From a geotechnical standpoint leaching is not recommended for establishing landscaping. If the surface soils are processed for the purpose of adding amendments, they should be recompacted to 90 percent minimum relative compaction.

Gutters and Downspouts

As previously discussed in the drainage section, the installation of gutters and downspouts should be considered to collect roof water that may otherwise infiltrate the soils adjacent to the structures. If utilized, the downspouts should be drained into PVC collector pipes or non-erosive devices that will carry the water away from the house. Downspouts and gutters are not a requirement; however, from a geotechnical viewpoint, provided that positive drainage is incorporated into project design (as discussed previously).

Subsurface and Surface Water

Subsurface and surface water are not anticipated to affect site development, provided that the recommendations contained in this report are incorporated into final design and construction and that prudent surface and subsurface drainage practices are incorporated into the construction plans. Perched groundwater conditions along zones of contrasting permeabilities may not be precluded from occurring in the future due to site irrigation, poor drainage conditions, or damaged utilities, and should be anticipated. Should perched groundwater conditions develop, this office could assess the affected area(s) and provide

the appropriate recommendations to mitigate the observed groundwater conditions. Groundwater conditions may change with the introduction of irrigation, rainfall, or other factors.

Site Improvements

Recommendations for exterior concrete flatwork design and construction can be provided upon request. If in the future, any additional improvements (e.g., pools, spas, etc.) are planned for the site, recommendations concerning the geological or geotechnical aspects of design and construction of said improvements could be provided upon request. This office should be notified in advance of any fill placement, grading of the site, or trench backfilling after rough grading has been completed. This includes any grading, utility trench, and retaining wall backfills.

Tile Flooring

Tile flooring can crack, reflecting cracks in the concrete slab below the tile, although small cracks in a conventional slab may not be significant. Therefore, the designer should consider additional steel reinforcement for concrete slabs-on-grade where tile will be placed. The tile installer should consider installation methods that reduce possible cracking of the tile such as slipsheets. Slipsheets or a vinyl crack isolation membrane (approved by the Tile Council of America/Ceramic Tile Institute) are recommended between tile and concrete slabs on grade.

Additional Grading

This office should be notified in advance of any fill placement, supplemental regrading of the site, or trench backfilling after rough grading has been completed. This includes completion of grading in the street and parking areas and utility trench and retaining wall backfills.

Footing Trench Excavation

All footing excavations should be observed by a representative of this firm subsequent to trenching and prior to concrete form and reinforcement placement. The purpose of the observations is to verify that the excavations are made into the recommended bearing material and to the minimum widths and depths recommended for construction. If loose or compressible materials are exposed within the footing excavation, a deeper footing or removal and recompaction of the subgrade materials would be recommended at that time. Footing trench spoil and any excess soils generated from utility trench excavations should be compacted to a minimum relative compaction of 90 percent, if not removed from the site.

Trenching

Considering the nature of the onsite soils, it should be anticipated that caving or sloughing could be a factor in subsurface excavations and trenching. Shoring or excavating the trench walls at the angle of repose (typically 25 to 45 degrees) may be necessary and should be anticipated. All excavations should be observed by one of our representatives and minimally conform to CAL-OSHA and local safety codes.

Utility Trench Backfill

1. All interior utility trench backfill should be brought to at least 2 percent above optimum moisture content and then compacted to obtain a minimum relative compaction of 90 percent of the laboratory standard. As an alternative for shallow (12-inch to 18-inch) under-slab trenches, sand having a sand equivalent value of 30 or greater may be utilized and jetted or flooded into place. Observation, probing and testing should be provided to verify the desired results.

2. Exterior trenches adjacent to, and within areas extending below a 1:1 plane projected from the outside bottom edge of the footing, and all trenches beneath hardscape features and in slopes, should be compacted to at least 90 percent of the laboratory standard. Sand backfill, unless excavated from the trench, should not be used in these backfill areas. Compaction testing and observations, along with probing, should be accomplished to verify the desired results.

3. All trench excavations should conform to CAL-OSHA and local safety codes.
4. Utilities crossing grade beams, perimeter beams, or footings should either pass below the footing or grade beam utilizing a hardened collar or foam spacer, or pass through the footing or grade beam in accordance with the recommendations of the structural engineer.

SUMMARY OF RECOMMENDATIONS REGARDING GEOTECHNICAL OBSERVATION AND TESTING

We recommend that observation and/or testing be performed by GSI at each of the following construction stages:

- During grading/recertification.
- During significant excavation (i.e., higher than 4 feet).
- During placement of subdrains, toe drains, or other subdrainage devices, prior to placing fill and/or backfill.

- After excavation of building footings, retaining wall footings, and free standing walls footings, prior to the placement of reinforcing steel or concrete.

- Prior to pouring any slabs or flatwork, after presoaking/presaturation of building pads and other flatwork subgrade, before the placement of concrete, reinforcing steel, capillary break (i.e., sand, pea-gravel, etc.), or vapor barriers (i.e., visqueen, etc.).

- During retaining wall subdrain installation, prior to backfill placement.

- During placement of backfill for area drain, interior plumbing, utility line trenches, and retaining wall backfill.

- During slope construction/repair.

- When any unusual soil conditions are encountered during any construction operations, subsequent to the issuance of this report.

- When any developer or homeowner improvements, such as flatwork, spas, pools, walls, etc., are constructed.

- A report of geotechnical observation and testing should be provided at the conclusion of each of the above stages, in order to provide concise and clear documentation of site work, and/or to comply with code requirements.

- GSI should review project sales documents to homeowners/homeowners associations for geotechnical aspects, including irrigation practices, the conditions outlined above, etc., prior to any sales. At that stage, GSI will provide homeowners maintenance guidelines which should be incorporated into such documents.

OTHER DESIGN PROFESSIONALS/CONSULTANTS

The design civil engineer, structural engineer, post-tension designer, architect, landscape architect, wall designer, etc., should review the recommendations provided herein, incorporate those recommendations into all their respective plans, and by explicit reference, make this report part of their project plans. This report presents minimum design criteria for the design of slabs, foundations and other elements possibly applicable to the project. These criteria should not be considered as substitutes for actual designs by the structural engineer/designer. The structural engineer/designer should analyze actual soil-structure interaction and consider, as needed, bearing, expansive soil influence, and strength, stiffness and deflections in the various slab, foundation, and other elements in order to develop appropriate, design-specific details. As conditions dictate, it is possible that other influences will also have to be considered. The structural engineer/designer

should consider all applicable codes and authoritative sources where needed. If analyses by the structural engineer/designer result in less critical details than are provided herein as minimums, the minimums presented herein should be adopted. It is considered likely that some, more restrictive details will be required. If the structural engineer/designer has any questions or requires further assistance, they should not hesitate to call or otherwise transmit their requests to GSI. In order to mitigate potential distress, the foundation and/or improvement's designer should confirm to GSI and the governing agency, in writing, that the proposed foundations and/or improvements can tolerate the amount of differential settlement and/or expansion characteristics and design criteria specified herein.

PLAN REVIEW

Final project plans should be reviewed by this office prior to construction, so that construction is in accordance with the conclusions and recommendations of this report. Based on our review, supplemental recommendations and/or further geotechnical studies may be warranted.

LIMITATIONS

The materials encountered on the project site and utilized for our analysis are believed representative of the area; however, soil and bedrock materials vary in character between excavations and natural outcrops or conditions exposed during mass grading. Site conditions may vary due to seasonal changes or other factors.

Inasmuch as our study is based upon our review and engineering analyses and laboratory data, the conclusions and recommendations are professional opinions. These opinions have been derived in accordance with current standards of practice, and no warranty is expressed or implied. Standards of practice are subject to change with time. GSI assumes no responsibility or liability for work or testing performed by others, or their inaction; or work performed when GSI is not requested to be onsite, to evaluate if our recommendations have been properly implemented. Use of this report constitutes an agreement and consent by the user to all the limitations outlined above, notwithstanding any other agreements that may be in place. In addition, this report may be subject to review by the controlling authorities. Thus, this report brings to completion our scope of services for this portion of the project.

APPENDIX A

REFERENCES

APPENDIX A

REFERENCES

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APPENDIX B

BORING LOGS

BORING LOG

GeoSoils, Inc.

W.O. 4451-A2-SC

PROJECT: YOUNG HOMES
±43-Acre Parcel, "Hideway Farms", 532 N. Lyon Ave., San Jacinto

BORING B-1 SHEET 1 OF 2

DATE EXCAVATED 7-28-04

SAMPLE METHOD: 8" HOLLOW STEM AUGER, 140 LB @ 30" DROP

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undis-turbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
				ML				**ARTIFICIAL FILL:** @ 0' SANDY SILT, brown to dark brown, damp to moist, medium stiff; fine grained, wood chips in upper ½'.
			17	SM/ML	101.8	15.5	65.9	**COLLUVIUM/TOPSOIL:** @ 1½' SANDY SILT and SILTY SAND, medium brown to brown, moist, stiff and medium dense; fine grained.
5			17	SM	93.1	12.9	43.9	**QUATERNARY ALLUVIUM:** @ 4' SILTY SAND, light reddish brown to medium brown, damp, medium dense; fine to medium grained.
10			27	SW	104.6	2.2	9.8	@ 10' SAND w/trace GRAVEL, light grayish brown, dry, medium dense; fine to coarse grained.
15			34	SP	103.5	1.6	7.0	@ 15' SAND, light reddish brown to light brown, dry, medium dense; fine to medium grained.
20			34	SW	110.5	1.6	8.4	@ 20' SAND, light grayish brown to light brown, dry, medium dense; fine to coarse grained.
25			46		109.1	1.9	9.7	@ 25' SAND w/trace GRAVEL, light grayish brown to light brown, dry, dense; fine to coarse grained.

BORING LOG

GeoSoils, Inc.

W.O. 4451-A2-SC

PROJECT: YOUNG HOMES
±43-Acre Parcel, "Hideway Farms", 532 N. Lyon Ave., San Jacinto

BORING B-1 SHEET 2 OF 2

DATE EXCAVATED 7-28-04

SAMPLE METHOD: 8" HOLLOW STEM AUGER, 140 LB @ 30" DROP

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undis-turbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
			78	SW	109.4	1.8	9.3	@ 30' SAND w/trace GRAVEL, light reddish brown to light grayish brown to light brown, dry, very dense; fine to coarse grained.
35			34	SP		3.5		@ 35' SAND, light grayish brown to light brown, dry, dense; fine to medium grained.
40			92		110.0	2.6	13.6	@ 40' SAND, light grayish brown to light brown, dry, very dense; fine to medium grained.
45			9	ML		23.8		@ 45' CLAYEY to SANDY SILT, medium brown to dark brown, wet, stiff; fine grained.
50			31		101.1	24.4	101.6	@ 50' CLAYEY to SANDY SILT, medium brown to dark brown, saturated, very stiff; fine grained.
								Total Depth = 51½' No Groundwater Encountered Backfilled 7-28-2004
55								

BORING LOG

GeoSoils, Inc.

W.O. 4451-A2-SC

PROJECT: YOUNG HOMES
±43-Acre Parcel, "Hideway Farms", 532 N. Lyon Ave., San Jacinto

BORING B-2 SHEET 1 OF 2

DATE EXCAVATED 7-28-04

SAMPLE METHOD: 8" HOLLOW STEM AUGER, 140 LB @ 30" DROP

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undis-turbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
				SM				**COLLUVIUM/TOPSOIL:** @ 0' SILTY SAND, brown to dark brown, dry to damp, loose; fine to medium grained, trace roots.
			22	SM	108.2	3.1	15.5	**QUATERNARY ALLUVIUM:** @ 2' SILTY SAND w/trace GRAVEL, medium brown, dry, medium dense; fine to medium grained.
5			21	ML/SM	104.7	8.6	39.4	@ 5' CLAYEY to SILTY SAND and SANDY SILT, medium brown, damp, medium dense and very stiff; fine to medium grained.
10			21	SM/ML	102.9	18.4	80.4	@ 10' CLAYEY to SANDY SILT and SILTY SAND, light to medium brown, wet, very stiff and medium dense; fine to medium grained.
15			18	ML/SM	98.0	18.6	71.5	@ 15' SILTY SAND and SANDY SILT, light reddish brown to light to medium brown, moist to locally wet, medium dense and stiff; fine to medium grained.
20			32	SM	104.5	16.0	72.8	@ 20' SILTY SAND, light reddish brown to light to medium brown, moist, medium dense; fine to medium grained.
25			21	ML	112.2	15.7	87.6	@ 25' CLAYEY to SANDY SILT, dark to medium brown, wet, very stiff; fine grained.

BORING LOG

GeoSoils, Inc.

W.O. 4451-A2-SC

PROJECT: YOUNG HOMES
±43-Acre Parcel, "Hideway Farms", 532 N. Lyon Ave., San Jacinto

BORING B-2 SHEET 2 OF 2

DATE EXCAVATED 7-28-04

SAMPLE METHOD: 8" HOLLOW STEM AUGER, 140 LB @ 30" DROP

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undis-turbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
		▨	21	SM	101.0	16.4	68.0	@ 30' CLAYEY to SILTY SAND, light to medium brown, moist, medium dense; fine to medium grained.
								Total Depth = 31'
								No Groundwater Encountered
								Backfilled 7-28-2004
35								
40								
45								
50								
55								

BORING LOG

GeoSoils, Inc.

W.O. 4451-A2-SC

PROJECT: YOUNG HOMES
±43-Acre Parcel, "Hideway Farms", 532 N. Lyon Ave., San Jacinto

BORING B-3 SHEET 1 OF 2

DATE EXCAVATED 7-28-04

SAMPLE METHOD: 8" HOLLOW STEM AUGER, 140 LB @ 30" DROP

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undis-turbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
								ARTIFICIAL FILL:
								@ 0' WOOD CHIPS and DRIED MANURE.
				ML				**QUATERNARY ALLUVIUM:**
			21		105.6	4.8	22.5	@ 1' SANDY SILT, light brownish gray to grayish brown, dry, medium stiff to stiff; fine grained.
								@ 3' SANDY SILT, light grayish brown to medium brown, dry, very stiff; fine grained.
5			23					@ 6' No recovery, very stiff.
10			21	SM	98.7	6.9	27.1	@ 10' SILTY SAND w/minor inlayered SILTY CLAY (2" seam), light to dark brown, damp, medium dense to very stiff; dominantly fine grained with occasional medium grained sands.
15			24	SM/SC /CL	114.5	8.5	50.5	@ 15' SANDY CLAY and CLAYEY to SILTY SAND, light to medium to dark brown, moist, medium dense and very stiff; fine to medium grained.
20			6	ML/SM		21.8		@ 20' SILTY SAND and SANDY SILT, medium brown, wet, loose and medium stiff; fine grained.
25			66	SW	112.7	3.7	21.2	@ 25' SAND, light reddish brown to light grayish brown, dry, dense; fine to coarse grained.

BORING LOG

GeoSoils, Inc.

W.O. 4451-A2-SC

PROJECT: YOUNG HOMES
±43-Acre Parcel, "Hideway Farms", 532 N. Lyon Ave., San Jacinto

BORING B-3 SHEET 2 OF 2

DATE EXCAVATED 7-28-04

SAMPLE METHOD: 8" HOLLOW STEM AUGER, 140 LB @ 30" DROP

Standard Penetration Test

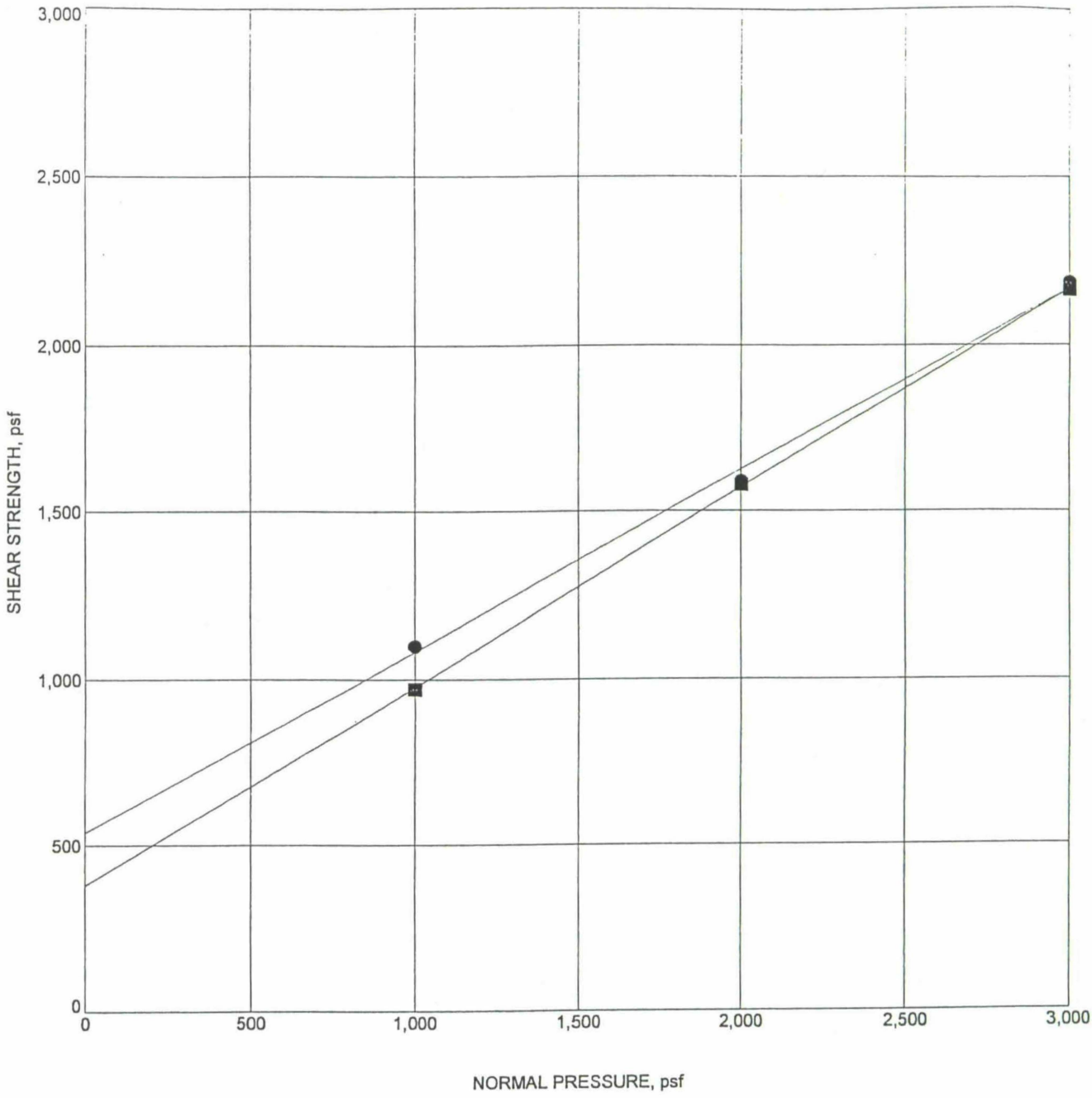
Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undis-turbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
			22	SW		11.2		@ 30' SAND w/trace SILT and trace GRAVEL, light to medium brown, dry to damp, medium dense; fine to coarse grained.
								Total Depth = 31½' No Groundwater Encountered Backfilled 7-28-2004
35								
40								
45								
50								
55								

APPENDIX C

LABORATORY TEST RESULTS



	Sample	Depth/El.	Primary/Residual Shear	Sample Type	γ_d	MC%	c	ϕ
●	B-3	1.0	Primary Shear	Remolded	109.4	12.5	539	29
■	B-3	1.0	Residual Shear	Remolded	109.4	12.5	379	31

Note: Sample Innundated prior to testing

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5741 Palmer Way
Carlsbad, CA 92008
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Fax: (760) 931-0915

DIRECT SHEAR TEST

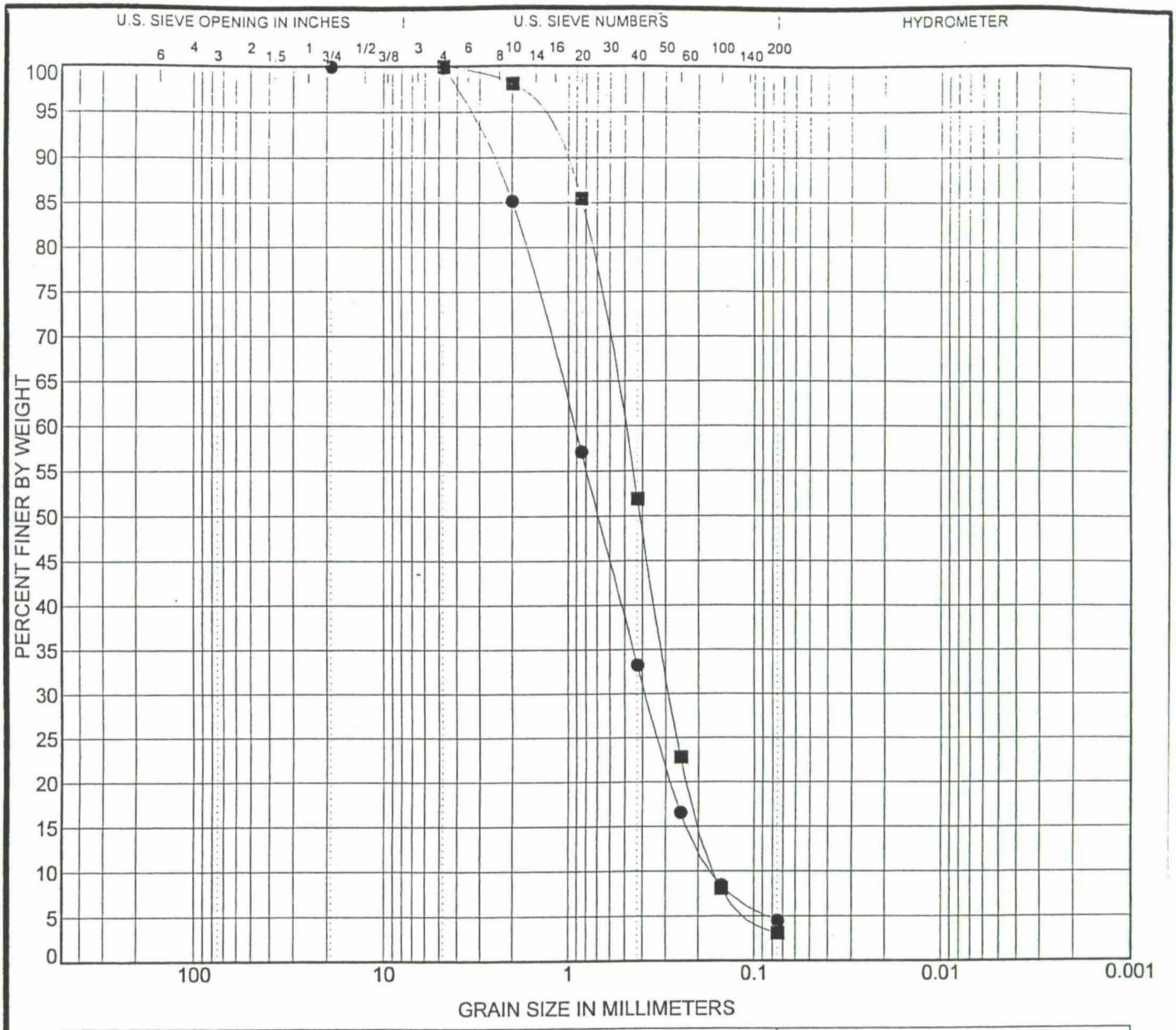
Project: YOUNG HOMES

Number: 4451-A2-SC

Date: August 2004

Plate: C - 1

US DIRECT SHEAR 4451A2.GPJ US_LAB.GDT 8/18/04



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Sample	Depth	Classification	LL	PL	PI	Cc	Cu
●	B-1	10.0	POORLY GRADED SAND(SP)	NP	NP	NP	0.96	5.60
■	B-1	15.0	POORLY GRADED SAND(SP)	NP	NP	NP	1.01	3.13

	Sample	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-1	10.0	19	0.927	0.383	0.165	0.1	95.4	4.5	
■	B-1	15.0	4.75	0.502	0.285	0.16	0.0	96.9	3.1	

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GRAIN SIZE DISTRIBUTION

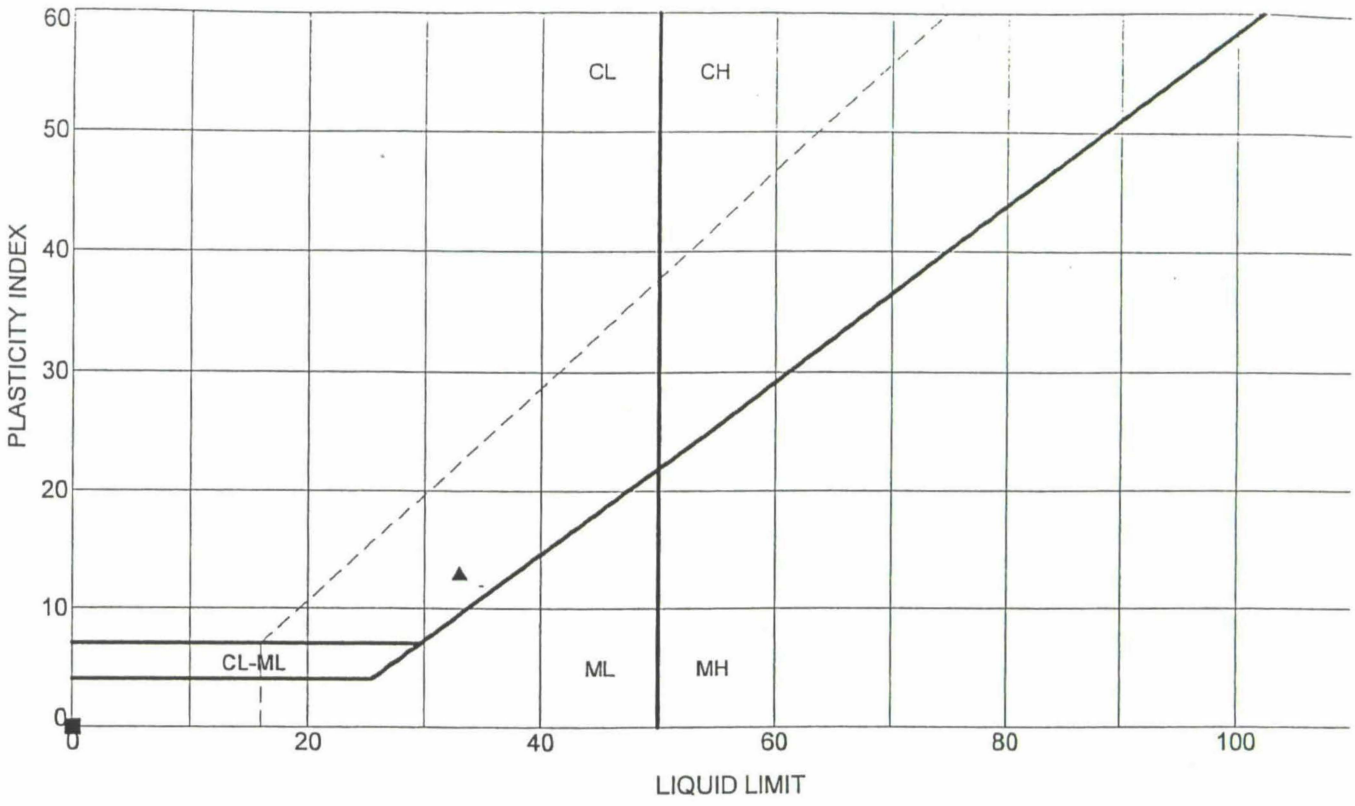
Project: YOUNG HOMES

Number: 4451-A2-SC

Date: August 2004

Plate: C - 3

US GRAIN SIZE 4451A2 GPJ US LAB.GDT 8/18/04



	Sample	Depth/El.	LL	PL	PI	Fines	Classification
●	B-1	10.0	NP	NP	NP	5	POORLY GRADED SAND(SP)
■	B-1	15.0	NP	NP	NP	3	POORLY GRADED SAND(SP)
▲	B-3	1.0	33	20	13		

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ATTERBERG LIMITS' RESULTS

Project: YOUNG HOMES

Number: 4451-A2-SC

Date: August 2004

Plate: C - 4

US ATTERBERG LIMITS 4451A2.GPJ US LAB.GDT 8/18/04

APPENDIX D

GENERAL EARTHWORK AND GRADING GUIDELINES

GENERAL EARTHWORK AND GRADING GUIDELINES

General

These guidelines present general procedures and requirements for earthwork and grading as shown on the approved grading plans, including preparation of areas to filled, placement of fill, installation of subdrains and excavations. The recommendations contained in the geotechnical report are part of the earthwork and grading guidelines and would supercede the provisions contained hereafter in the case of conflict. Evaluations performed by the consultant during the course of grading may result in new recommendations which could supercede these guidelines or the recommendations contained in the geotechnical report.

The contractor is responsible for the satisfactory completion of all earthwork in accordance with provisions of the project plans and specifications. The project soil engineer and engineering geologist (geotechnical consultant) or their representatives should provide observation and testing services, and geotechnical consultation during the duration of the project.

EARTHWORK OBSERVATIONS AND TESTING

Geotechnical Consultant

Prior to the commencement of grading, a qualified geotechnical consultant (soil engineer and engineering geologist) should be employed for the purpose of observing earthwork procedures and testing the fills for conformance with the recommendations of the geotechnical report, the approved grading plans, and applicable grading codes and ordinances.

The geotechnical consultant should provide testing and observation so that determination may be made that the work is being accomplished as specified. It is the responsibility of the contractor to assist the consultants and keep them apprised of anticipated work schedules and changes, so that they may schedule their personnel accordingly.

All clean-outs, prepared ground to receive fill, key excavations, and subdrains should be observed and documented by the project engineering geologist and/or soil engineer prior to placing and fill. It is the contractors's responsibility to notify the engineering geologist and soil engineer when such areas are ready for observation.

Laboratory and Field Tests

Maximum dry density tests to determine the degree of compaction should be performed in accordance with American Standard Testing Materials test method ASTM designation D-1557-78. Random field compaction tests should be performed in accordance with test method ASTM designation D-1556-82, D-2937 or D-2922 and D-3017, at intervals of approximately 2 feet of fill height or every 100 cubic yards of fill placed. These criteria

would vary depending on the soil conditions and the size of the project. The location and frequency of testing would be at the discretion of the geotechnical consultant.

Contractor's Responsibility

All clearing, site preparation, and earthwork performed on the project should be conducted by the contractor, with observation by geotechnical consultants and staged approval by the governing agencies, as applicable. It is the contractor's responsibility to prepare the ground surface to receive the fill, to the satisfaction of the soil engineer, and to place, spread, moisture condition, mix and compact the fill in accordance with the recommendations of the soil engineer. The contractor should also remove all major non-earth material considered unsatisfactory by the soil engineer.

It is the sole responsibility of the contractor to provide adequate equipment and methods to accomplish the earthwork in accordance with applicable grading guidelines, codes or agency ordinances, and approved grading plans. Sufficient watering apparatus and compaction equipment should be provided by the contractor with due consideration for the fill material, rate of placement, and climatic conditions. If, in the opinion of the geotechnical consultant, unsatisfactory conditions such as questionable weather, excessive oversized rock, or deleterious material, insufficient support equipment, etc., are resulting in a quality of work that is not acceptable, the consultant will inform the contractor, and the contractor is expected to rectify the conditions, and if necessary, stop work until conditions are satisfactory.

During construction, the contractor shall properly grade all surfaces to maintain good drainage and prevent ponding of water. The contractor shall take remedial measures to control surface water and to prevent erosion of graded areas until such time as permanent drainage and erosion control measures have been installed.

SITE PREPARATION

All major vegetation, including brush, trees, thick grasses, organic debris, and other deleterious material should be removed and disposed of off-site. These removals must be concluded prior to placing fill. Existing fill, soil, alluvium, colluvium, or rock materials determined by the soil engineer or engineering geologist as being unsuitable in-place should be removed prior to fill placement. Depending upon the soil conditions, these materials may be reused as compacted fills. Any materials incorporated as part of the compacted fills should be approved by the soil engineer.

Any underground structures such as cesspools, cisterns, mining shafts, tunnels, septic tanks, wells, pipelines, or other structures not located prior to grading are to be removed or treated in a manner recommended by the soil engineer. Soft, dry, spongy, highly fractured, or otherwise unsuitable ground extending to such a depth that surface

processing cannot adequately improve the condition should be overexcavated down to firm ground and approved by the soil engineer before compaction and filling operations continue. Overexcavated and processed soils which have been properly mixed and moisture conditioned should be re-compacted to the minimum relative compaction as specified in these guidelines.

Existing ground which is determined to be satisfactory for support of the fills should be scarified to a minimum depth of 6 inches or as directed by the soil engineer. After the scarified ground is brought to optimum moisture content or greater and mixed, the materials should be compacted as specified herein. If the scarified zone is grater that 6 inches in depth, it may be necessary to remove the excess and place the material in lifts restricted to about 6 inches in compacted thickness.

Existing ground which is not satisfactory to support compacted fill should be overexcavated as required in the geotechnical report or by the on-site soils engineer and/or engineering geologist. Scarification, disc harrowing, or other acceptable form of mixing should continue until the soils are broken down and free of large lumps or clods, until the working surface is reasonably uniform and free from ruts, hollow, hummocks, or other uneven features which would inhibit compaction as described previously.

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical), the ground should be stepped or benched. The lowest bench, which will act as a key, should be a minimum of 15 feet wide and should be at least 2 feet deep into firm material, and approved by the soil engineer and/or engineering geologist. In fill over cut slope conditions, the recommended minimum width of the lowest bench or key is also 15 feet with the key founded on firm material, as designated by the Geotechnical Consultant. As a general rule, unless specifically recommended otherwise by the Soil Engineer, the minimum width of fill keys should be approximately equal to ½ the height of the slope.

Standard benching is generally 4 feet (minimum) vertically, exposing firm, acceptable material. Benching may be used to remove unsuitable materials, although it is understood that the vertical height of the bench may exceed 4 feet. Pre-stripping may be considered for unsuitable materials in excess of 4 feet in thickness.

All areas to receive fill, including processed areas, removal areas, and the toe of fill benches should be observed and approved by the soil engineer and/or engineering geologist prior to placement of fill. Fills may then be properly placed and compacted until design grades (elevations) are attained.

COMPACTED FILLS

Any earth materials imported or excavated on the property may be utilized in the fill provided that each material has been determined to be suitable by the soil engineer. These materials should be free of roots, tree branches, other organic matter or other deleterious materials. All unsuitable materials should be removed from the fill as directed by the soil engineer. Soils of poor gradation, undesirable expansion potential, or substandard strength characteristics may be designated by the consultant as unsuitable and may require blending with other soils to serve as a satisfactory fill material.

Fill materials derived from benching operations should be dispersed throughout the fill area and blended with other bedrock derived material. Benching operations should not result in the benched material being placed only within a single equipment width away from the fill/bedrock contact.

Oversized materials defined as rock or other irreducible materials with a maximum dimension greater than 12 inches should not be buried or placed in fills unless the location of materials and disposal methods are specifically approved by the soil engineer. Oversized material should be taken off-site or placed in accordance with recommendations of the soil engineer in areas designated as suitable for rock disposal. Oversized material should not be placed within 10 feet vertically of finish grade (elevation) or within 20 feet horizontally of slope faces.

To facilitate future trenching, rock should not be placed within the range of foundation excavations, future utilities, or underground construction unless specifically approved by the soil engineer and/or the developers representative.

If import material is required for grading, representative samples of the materials to be utilized as compacted fill should be analyzed in the laboratory by the soil engineer to determine its physical properties. If any material other than that previously tested is encountered during grading, an appropriate analysis of this material should be conducted by the soil engineer as soon as possible.

Approved fill material should be placed in areas prepared to receive fill in near horizontal layers that when compacted should not exceed 6 inches in thickness. The soil engineer may approve thick lifts if testing indicates the grading procedures are such that adequate compaction is being achieved with lifts of greater thickness. Each layer should be spread evenly and blended to attain uniformity of material and moisture suitable for compaction.

Fill layers at a moisture content less than optimum should be watered and mixed, and wet fill layers should be aerated by scarification or should be blended with drier material. Moisture condition, blending, and mixing of the fill layer should continue until the fill materials have a uniform moisture content at or above optimum moisture.

After each layer has been evenly spread, moisture conditioned and mixed, it should be uniformly compacted to a minimum of 90 percent of maximum density as determined by ASTM test designation, D-1557-78, or as otherwise recommended by the soil engineer. Compaction equipment should be adequately sized and should be specifically designed for soil compaction or of proven reliability to efficiently achieve the specified degree of compaction.

Where tests indicate that the density of any layer of fill, or portion thereof, is below the required relative compaction, or improper moisture is in evidence, the particular layer or portion shall be re-worked until the required density and/or moisture content has been attained. No additional fill shall be placed in an area until the last placed lift of fill has been tested and found to meet the density and moisture requirements, and is approved by the soil engineer.

Compaction of slopes should be accomplished by over-building a minimum of 3 feet horizontally, and subsequently trimming back to the design slope configuration. Testing shall be performed as the fill is elevated to evaluate compaction as the fill core is being developed. Special efforts may be necessary to attain the specified compaction in the fill slope zone. Final slope shaping should be performed by trimming and removing loose materials with appropriate equipment. A final determination of fill slope compaction should be based on observation and/or testing of the finished slope face. Where compacted fill slopes are designed steeper than 2:1 (horizontal to vertical), specific material types, a higher minimum relative compaction, and special grading procedures, may be recommended.

If an alternative to over-building and cutting back the compacted fill slopes is selected, then special effort should be made to achieve the required compaction in the outer 10 feet of each lift of fill by undertaking the following:

1. An extra piece of equipment consisting of a heavy short shanked sheepsfoot should be used to roll (horizontal) parallel to the slopes continuously as fill is placed. The sheepsfoot roller should also be used to roll perpendicular to the slopes, and extend out over the slope to provide adequate compaction to the face of the slope.

2. Loose fill should not be spilled out over the face of the slope as each lift is compacted. Any loose fill spilled over a previously completed slope face should be trimmed off or be subject to re-rolling.

3. Field compaction tests will be made in the outer (horizontal) 2 to 8 feet of the slope at appropriate vertical intervals, subsequent to compaction operations.

4. After completion of the slope, the slope face should be shaped with a small tractor and then re-rolled with a sheepsfoot to achieve compaction to near the slope face. Subsequent to testing to verify compaction, the slopes should be grid-rolled to

achieve compaction to the slope face. Final testing should be used to confirm compaction after grid rolling.

5. Where testing indicates less than adequate compaction, the contractor will be responsible to rip, water, mix and re-compact the slope material as necessary to achieve compaction. Additional testing should be performed to verify compaction.

6. Erosion control and drainage devices should be designed by the project civil engineer in compliance with ordinances of the controlling governmental agencies, and/or in accordance with the recommendation of the soil engineer or engineering geologist.

SUBDRAIN INSTALLATION

Subdrains should be installed in approved ground in accordance with the approximate alignment and details indicated by the geotechnical consultant. Subdrain locations or materials should not be changed or modified without approval of the geotechnical consultant. The soil engineer and/or engineering geologist may recommend and direct changes in subdrain line, grade and drain material in the field, pending exposed conditions. The location of constructed subdrains should be recorded by the project civil engineer.

EXCAVATIONS

Excavations and cut slopes should be examined during grading by the engineering geologist. If directed by the engineering geologist, further excavations or overexcavation and re-filling of cut areas should be performed and/or remedial grading of cut slopes should be performed. When fill over cut slopes are to be graded, unless otherwise approved, the cut portion of the slope should be observed by the engineering geologist prior to placement of materials for construction of the fill portion of the slope.

The engineering geologist should observe all cut slopes and should be notified by the contractor when cut slopes are started. If, during the course of grading, unforeseen adverse or potential adverse geologic conditions are encountered, the engineering geologist and soil engineer should investigate, evaluate and make recommendations to treat these problems. The need for cut slope buttressing or stabilizing should be based on in-grading evaluation by the engineering geologist, whether anticipated or not.

Unless otherwise specified in soil and geological reports, no cut slopes should be excavated higher or steeper than that allowed by the ordinances of controlling governmental agencies. Additionally, short-term stability of temporary cut slopes is the contractors responsibility.

Erosion control and drainage devices should be designed by the project civil engineer and should be constructed in compliance with the ordinances of the controlling governmental agencies, and/or in accordance with the recommendations of the soil engineer or engineering geologist.

COMPLETION

Observation, testing and consultation by the geotechnical consultant should be conducted during the grading operations in order to state an opinion that all cut and filled areas are graded in accordance with the approved project specifications.

After completion of grading and after the soil engineer and engineering geologist have finished their observations of the work, final reports should be submitted subject to review by the controlling governmental agencies. No further excavation or filling should be undertaken without prior notification of the soil engineer and/or engineering geologist.

All finished cut and fill slopes should be protected from erosion and/or be planted in accordance with the project specifications and/or as recommended by a landscape architect. Such protection and/or planning should be undertaken as soon as practical after completion of grading.

JOB SAFETY

General

At GeoSoils, Inc. (GSI) getting the job done safely is of primary concern. The following is the company's safety considerations for use by all employees on multi-employer construction sites. On ground personnel are at highest risk of injury and possible fatality on grading and construction projects. GSI recognizes that construction activities will vary on each site and that site safety is the prime responsibility of the contractor; however, everyone must be safety conscious and responsible at all times. To achieve our goal of avoiding accidents, cooperation between the client, the contractor and GSI personnel must be maintained.

In an effort to minimize risks associated with geotechnical testing and observation, the following precautions are to be implemented for the safety of field personnel on grading and construction projects:

Safety Meetings: GSI field personnel are directed to attend contractors regularly scheduled and documented safety meetings.

Safety Vests: Safety vests are provided for and are to be worn by GSI personnel at all times when they are working in the field.

Safety Flags: Two safety flags are provided to GSI field technicians; one is to be affixed to the vehicle when on site, the other is to be placed atop the spoil pile on all test pits.

Flashing Lights: All vehicles stationary in the grading area shall use rotating or flashing amber beacon, or strobe lights, on the vehicle during all field testing. While operating a vehicle in the grading area, the emergency flasher on the vehicle shall be activated.

In the event that the contractor's representative observes any of our personnel not following the above, we request that it be brought to the attention of our office.

Test Pits Location, Orientation and Clearance

The technician is responsible for selecting test pit locations. A primary concern should be the technicians's safety. Efforts will be made to coordinate locations with the grading contractors authorized representative, and to select locations following or behind the established traffic pattern, preferably outside of current traffic. The contractors authorized representative (dump man, operator, supervisor, grade checker, etc.) should direct excavation of the pit and safety during the test period. Of paramount concern should be the soil technicians safety and obtaining enough tests to represent the fill.

Test pits should be excavated so that the spoil pile is placed away form oncoming traffic, whenever possible. The technician's vehicle is to be placed next to the test pit, opposite the spoil pile. This necessitates the fill be maintained in a driveable condition. Alternatively, the contractor may wish to park a piece of equipment in front of the test holes, particularly in small fill areas or those with limited access.

A zone of non-encroachment should be established for all test pits. No grading equipment should enter this zone during the testing procedure. The zone should extend approximately 50 feet outward from the center of the test pit. This zone is established for safety and to avoid excessive ground vibration which typically decreased test results.

When taking slope tests the technician should park the vehicle directly above or below the test location. If this is not possible, a prominent flag should be placed at the top of the slope. The contractor's representative should effectively keep all equipment at a safe operation distance (e.g., 50 feet) away from the slope during this testing.

The technician is directed to withdraw from the active portion of the fill as soon as possible following testing. The technician's vehicle should be parked at the perimeter of the fill in a highly visible location, well away from the equipment traffic pattern. The contractor should inform our personnel of all changes to haul roads, cut and fill areas or other factors that may affect site access and site safety.

In the event that the technicians safety is jeopardized or compromised as a result of the contractors failure to comply with any of the above, the technician is required, by company policy, to immediately withdraw and notify his/her supervisor. The grading contractors representative will eventually be contacted in an effort to effect a solution. However, in the interim, no further testing will be performed until the situation is rectified. Any fill place can be considered unacceptable and subject to reprocessing, recompaction or removal.

In the event that the soil technician does not comply with the above or other established safety guidelines, we request that the contractor brings this to his/her attention and notify this office. Effective communication and coordination between the contractors representative and the soils technician is strongly encouraged in order to implement the above safety plan.

Trench and Vertical Excavation

It is the contractor's responsibility to provide safe access into trenches where compaction testing is needed.

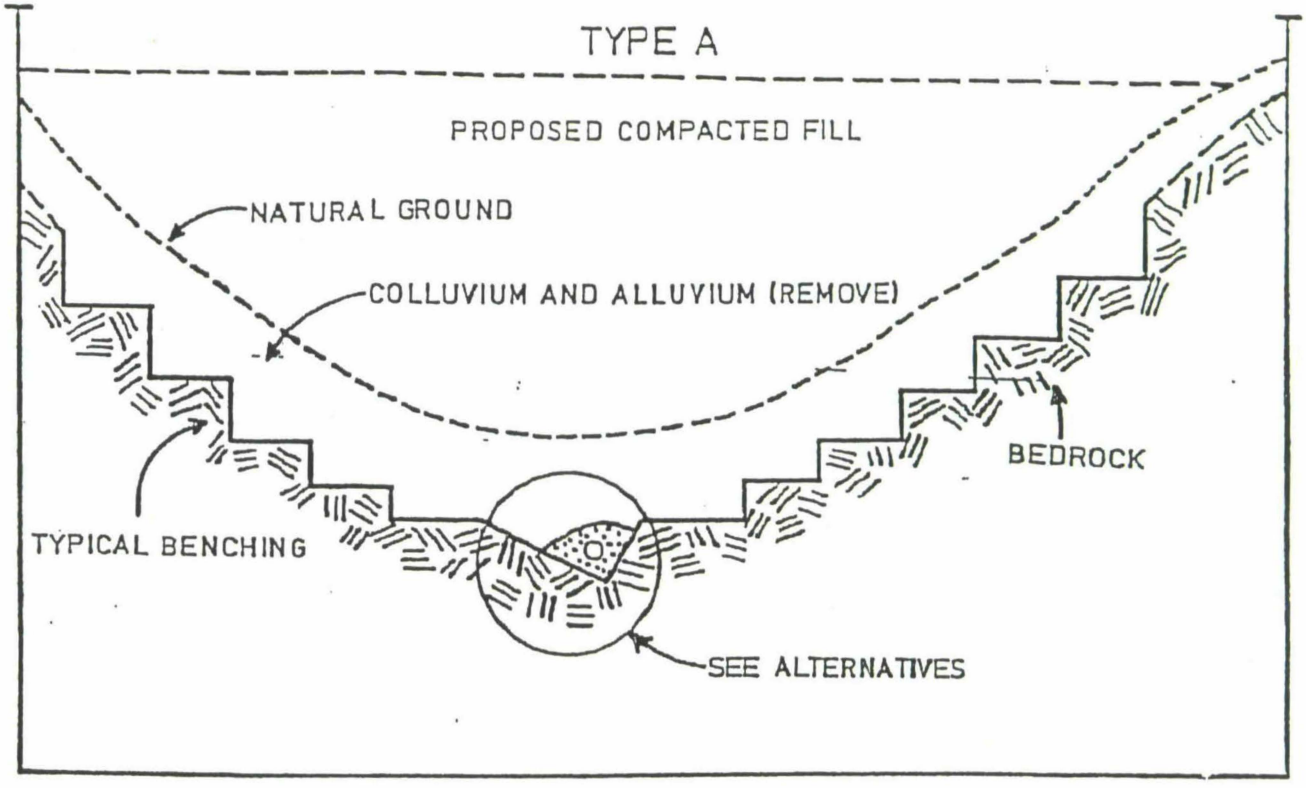
Our personnel are directed not to enter any excavation or vertical cut which: 1) is 5 feet or deeper unless shored or laid back; 2) displays any evidence of instability, has any loose rock or other debris which could fall into the trench; or 3) displays any other evidence of any unsafe conditions regardless of depth.

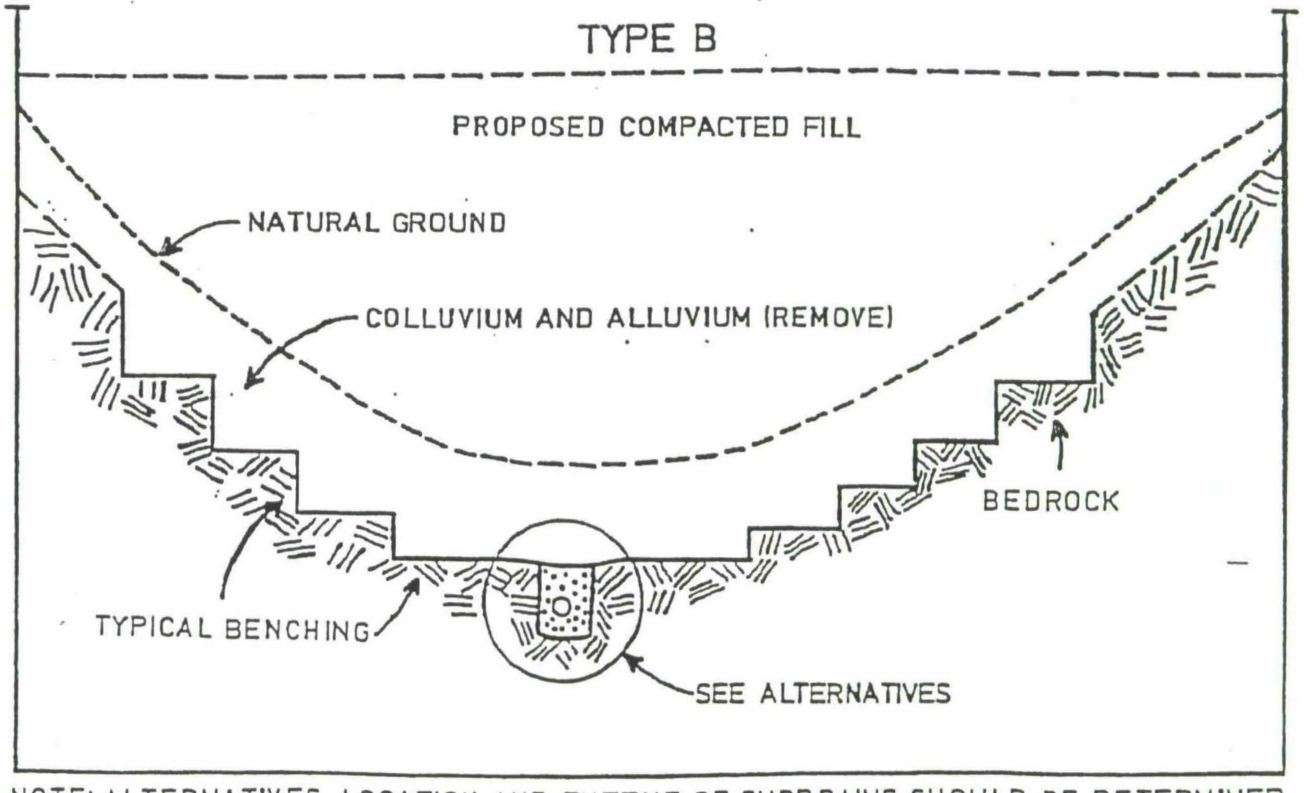
All trench excavations or vertical cuts in excess of 5 feet deep, which any person enters, should be shored or laid back. Trench access should be provided in accordance with CAL-OSHA and/or state and local standards. Our personnel are directed not to enter any trench by being lowered or "riding down" on the equipment.

If the contractor fails to provide safe access to trenches for compaction testing, our company policy requires that the soil technician withdraw and notify his/her supervisor. The contractors representative will eventually be contacted in an effort to effect a solution. All backfill not tested due to safety concerns or other reasons could be subject to reprocessing and/or removal.

If GSI personnel become aware of anyone working beneath an unsafe trench wall or vertical excavation, we have a legal obligation to put the contractor and owner/developer on notice to immediately correct the situation. If corrective steps are not taken, GSI then has an obligation to notify CAL-OSHA and/or the proper authorities.

CANYON SUBDRAIN DETAIL





NOTE: ALTERNATIVES, LOCATION AND EXTENT OF SUBDRAINS SHOULD BE DETERMINED BY THE SOILS ENGINEER AND/OR ENGINEERING GEOLOGIST DURING GRADING.

PLATE EG-1

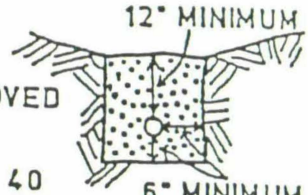
CANYON SUBDRAIN ALTERNATE DETAILS

ALTERNATE 1: PERFORATED PIPE AND FILTER MATERIAL



A–1

FILTER MATERIAL: MINIMUM VOLUME OF 9 FT.³ /LINEAR FT. 6" ø ABS OR PVC PIPE OR APPROVED SUBSTITUTE WITH MINIMUM 8 (1/4" ø) PERFS. LINEAR FT. IN BOTTOM HALF OF PIPE.
ASTM D2751, SDR 35 OR ASTM D1527, SCHD. 40
ASTM D3034, SDR 35 OR ASTM D1785, SCHD. 40
FOR CONTINUOUS RUN IN EXCESS OF 500 FT. USE 8" ø PIPE

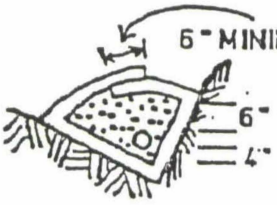


B–1

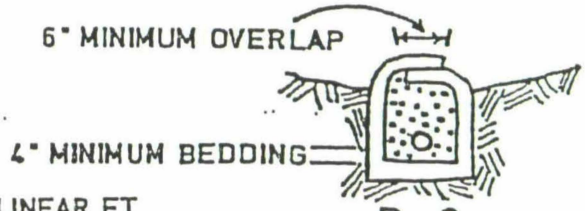
FILTER MATERIAL

SIEVE SIZE	PERCENT PASSING
1 INCH	100
3/4 INCH	90–100
3/8 INCH	40–100
NO. 4	25–40
NO. 8	18–33
NO. 30	5–15
NO. 50	0–7
NO. 200	0–3

ALTERNATE 2: PERFORATED PIPE, GRAVEL AND FILTER FABRIC



A–2

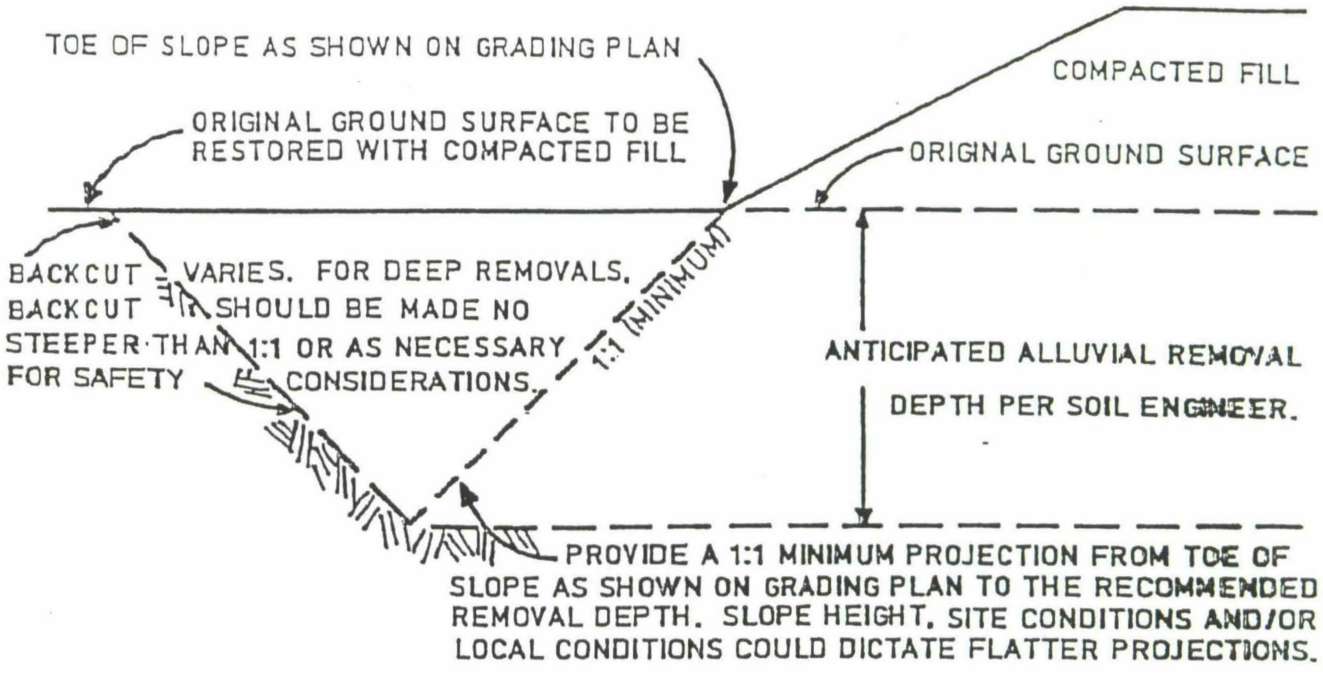


B–2

GRAVEL MATERIAL 9 FT³/LINEAR FT.
PERFORATED PIPE: SEE ALTERNATE 1
GRAVEL: CLEAN 3/4 INCH ROCK OR APPROVED SUBSTITUTE
FILTER FABRIC: MIRAFI 140 OR APPROVED SUBSTITUTE

PLATE EG–2

DETAIL FOR FILL SLOPE TOEING OUT ON FLAT ALLUVIATED CANYON



REMOVAL ADJACENT TO EXISTING FILL

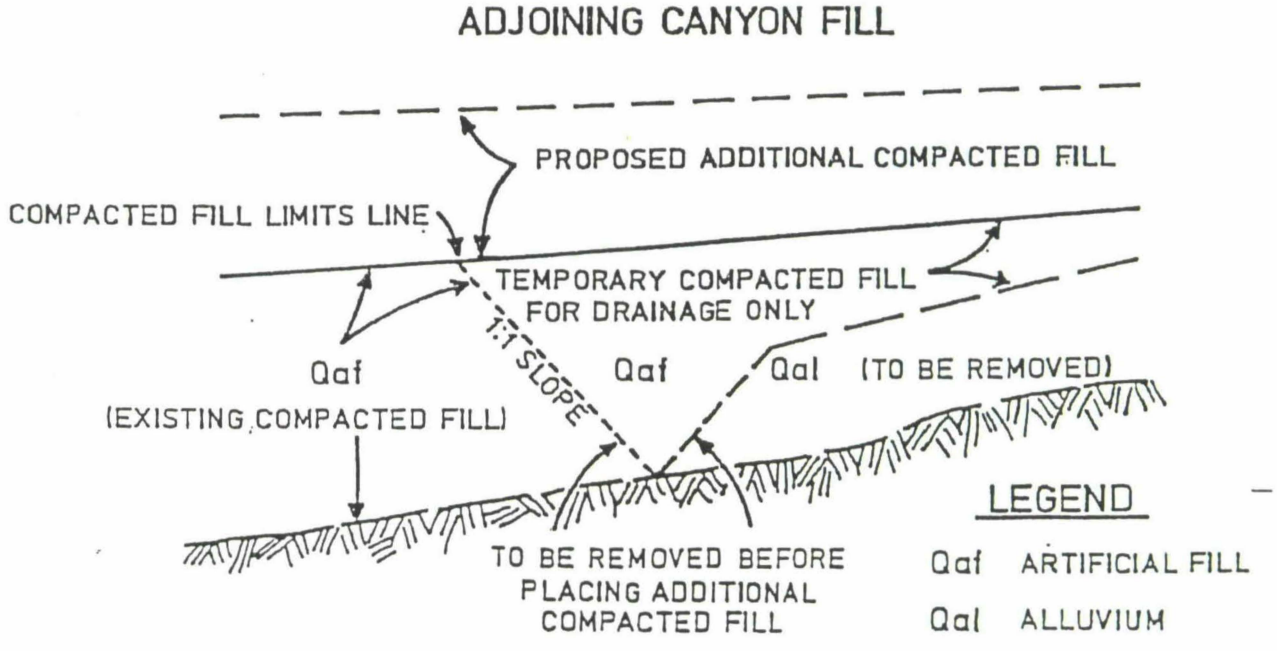


PLATE EG—3

TYPICAL STABILIZATION / BUTTRESS FILL DETAIL

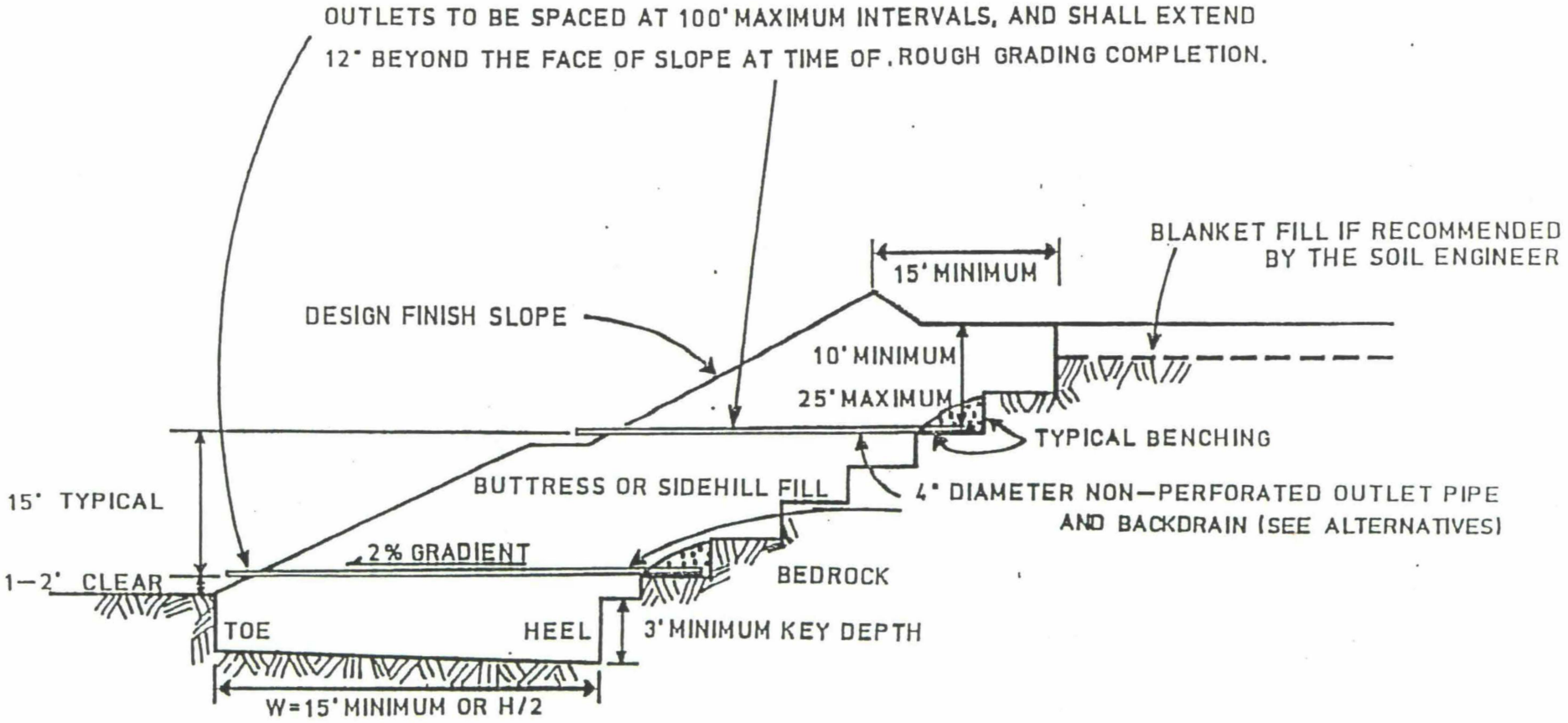
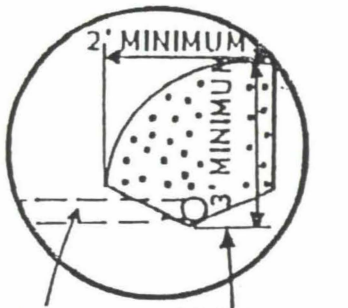
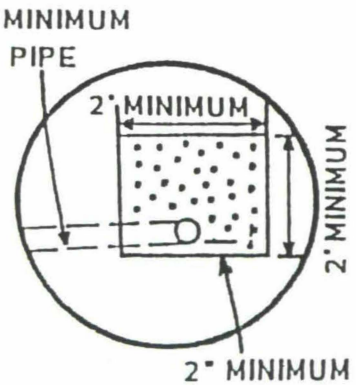


PLATE EG—4

TYPICAL STABILIZATION / BUTTRESS SUBDRAIN DETAIL





FILTER MATERIAL: MINIMUM OF FIVE Ft^3/LINEAR Ft OF PIPE OR FOUR Ft^3/LINEAR Ft OF PIPE WHEN PLACED IN SQUARE CUT TRENCH.

ALTERNATIVE IN LIEU OF FILTER MATERIAL: GRAVEL MAY BE ENCASED IN APPROVED FILTER FABRIC. FILTER FABRIC SHALL BE MIRAFI 140 OR EQUIVALENT. FILTER FABRIC SHALL BE LAPPED A MINIMUM OF 12" ON ALL JOINTS.

MINIMUM 4" DIAMETER PIPE: ABS—ASTM D—2751, SDR 35 OR ASTM D—1527 SCHEDULE 40 PVC—ASTM D—3034, SDR 35 OR ASTM D—1785 SCHEDULE 40 WITH A CRUSHING STRENGTH OF 1,000 POUNDS MINIMUM, AND A MINIMUM OF 8 UNIFORMLY SPACED PERFORATIONS PER FOOT OF PIPE INSTALLED WITH PERFORATIONS OF BOTTOM OF PIPE. PROVIDE CAP AT UPSTREAM END OF PIPE. SLOPE AT 2% TO OUTLET PIPE. OUTLET PIPE TO BE CONNECTED TO SUBDRAIN PIPE WITH TEE OR ELBOW.

NOTE: 1. TRENCH FOR OUTLET PIPES TO BE BACKFILLED WITH ON—SITE SOIL.

2. BACKDRAINS AND LATERAL DRAINS SHALL BE LOCATED AT ELEVATION OF EVERY BENCH DRAIN. FIRST DRAIN LOCATED AT ELEVATION JUST ABOVE LOWER LOT GRADE. ADDITIONAL DRAINS MAY BE REQUIRED AT THE DISCRETION OF THE SOILS ENGINEER AND/OR ENGINEERING GEOLOGIST.

FILTER MATERIAL SHALL BE OF THE FOLLOWING SPECIFICATION OR AN APPROVED EQUIVALENT:

SIEVE SIZE	PERCENT PASSING
1 INCH	100
3/4 INCH	90—100
3/8 INCH	40—100
NO. 4	25—40
NO. 8	18—33
NO. 30	5—15
NO. 50	0—7
NO. 200	0—3

GRAVEL SHALL BE OF THE FOLLOWING SPECIFICATION OR AN APPROVED EQUIVALENT:

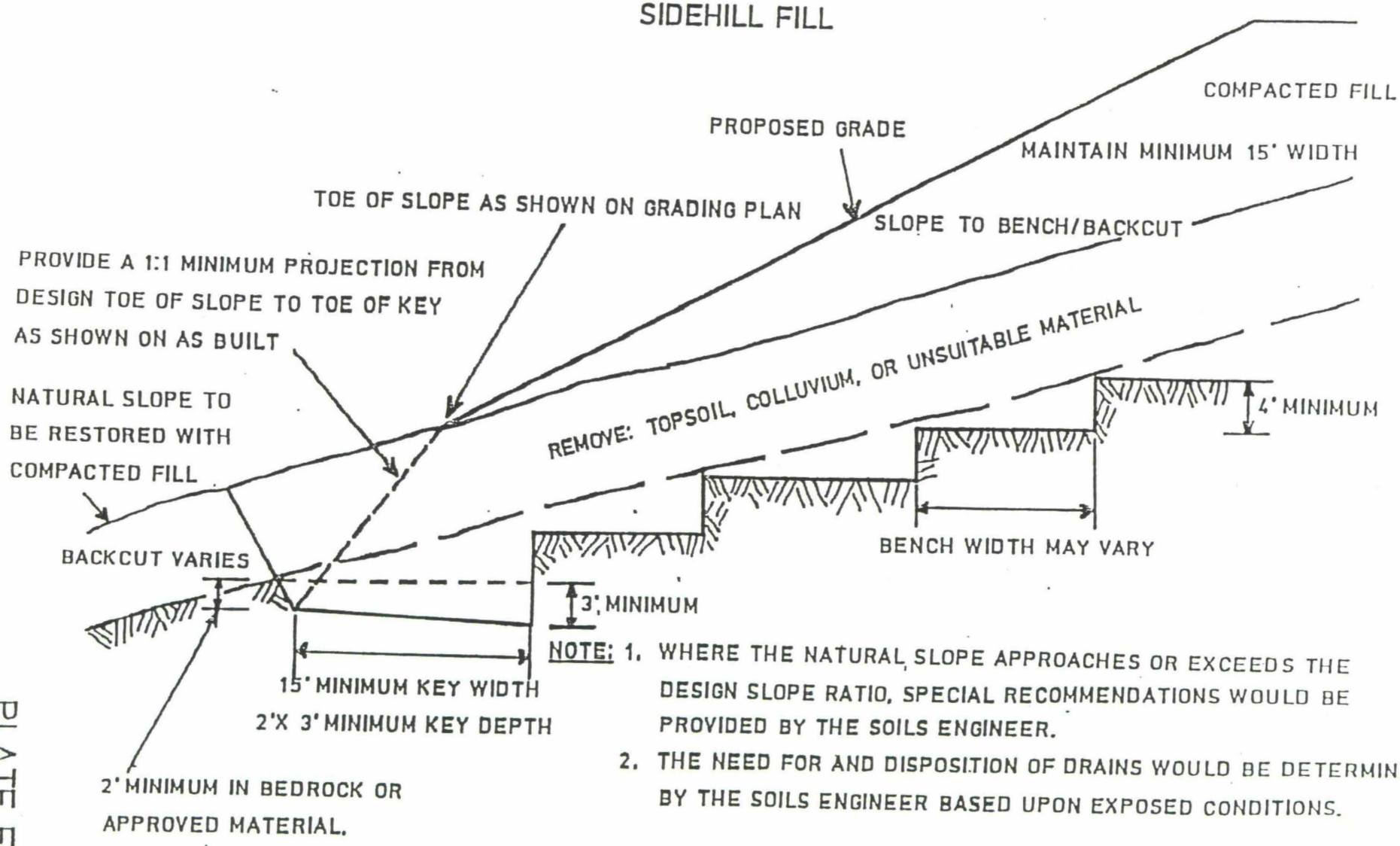
SIEVE SIZE	PERCENT PASSING
1 1/2 INCH	100
NO. 4	50
NO. 200	8

SAND EQUIVALENT: MINIMUM OF 51

PLATE EG—5

FILL OVER NATURAL DETAIL

SIDEHILL FILL

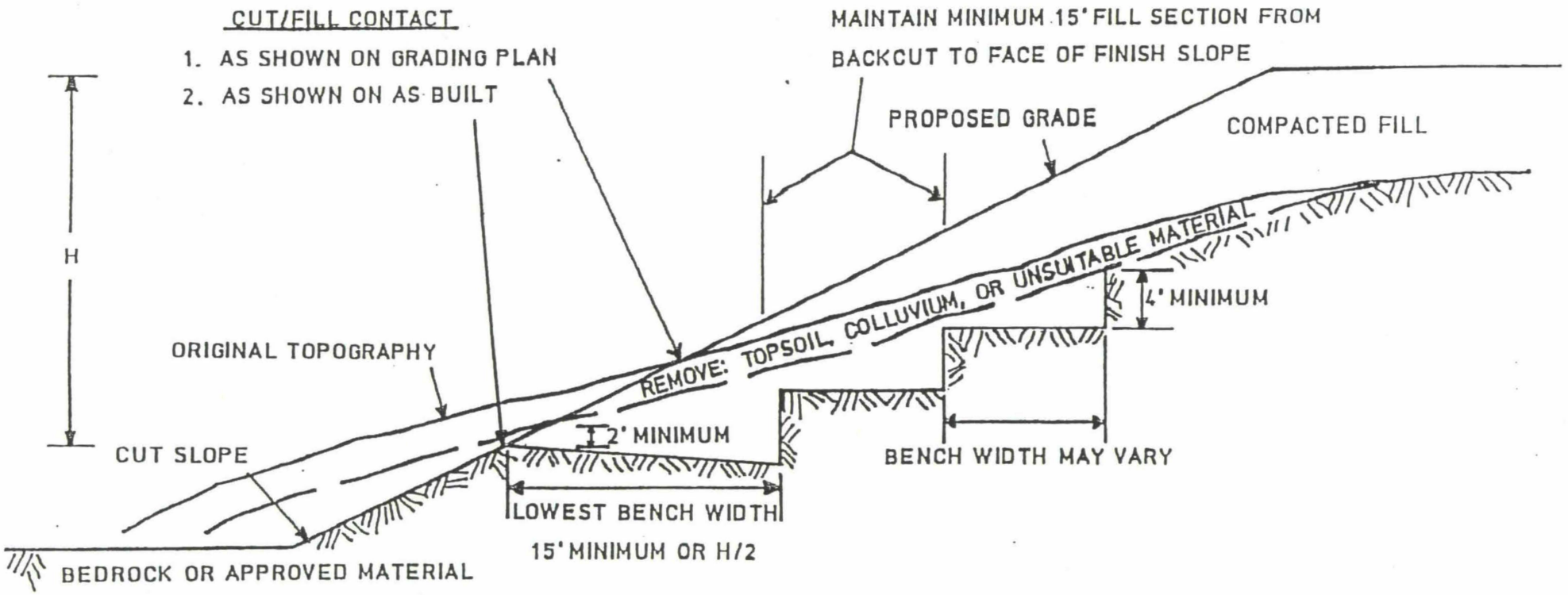


NOTE: 1. WHERE THE NATURAL SLOPE APPROACHES OR EXCEEDS THE DESIGN SLOPE RATIO, SPECIAL RECOMMENDATIONS WOULD BE PROVIDED BY THE SOILS ENGINEER.

2. THE NEED FOR AND DISPOSITION OF DRAINS WOULD BE DETERMINED BY THE SOILS ENGINEER BASED UPON EXPOSED CONDITIONS.

PLATE EG—6

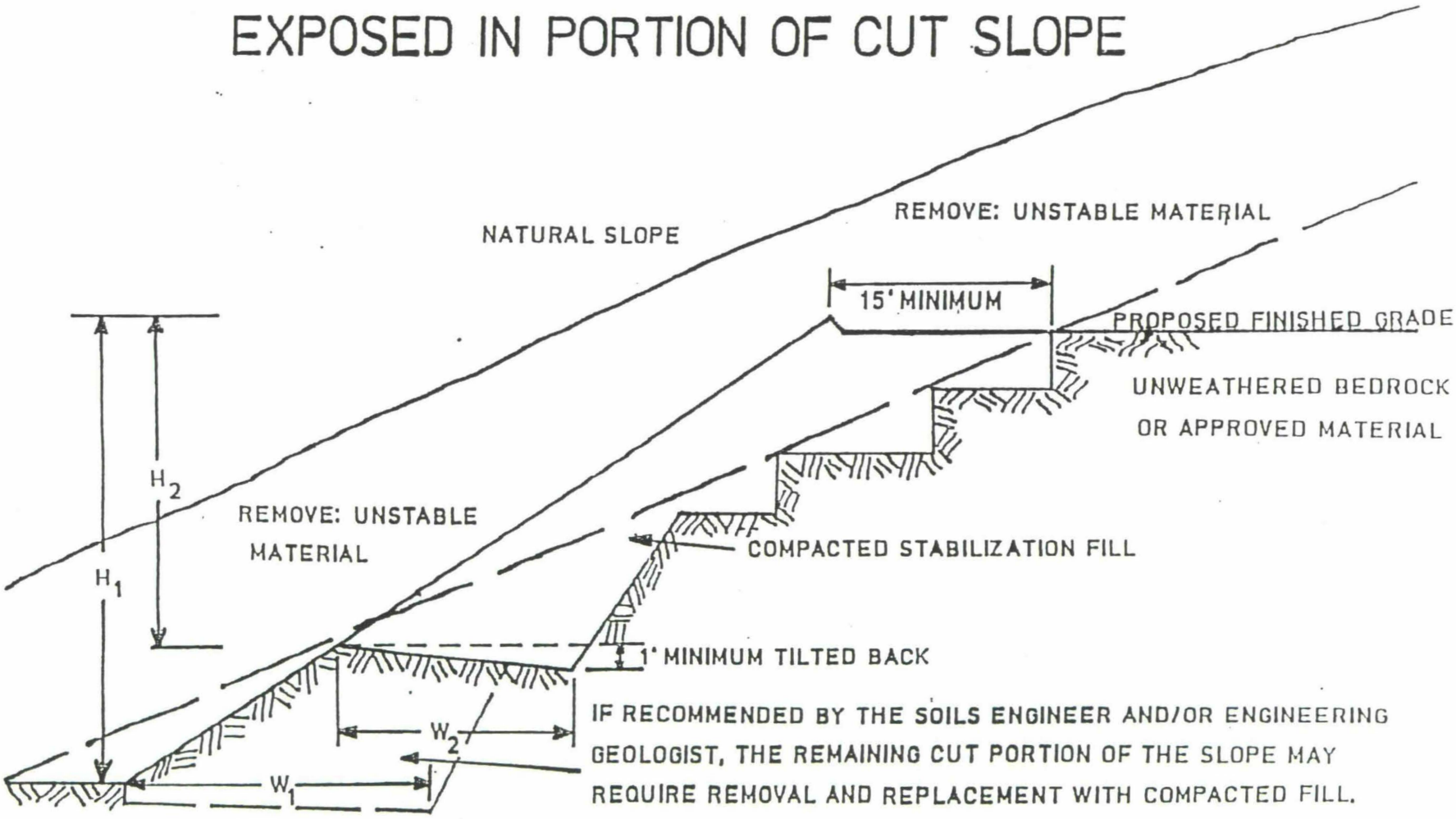
FILL OVER CUT DETAIL



NOTE: THE CUT PORTION OF THE SLOPE SHOULD BE EXCAVATED AND EVALUATED BY THE SOILS ENGINEER AND/OR ENGINEERING GEOLOGIST PRIOR TO CONSTRUCTING THE FILL PORTION.

PLATE EG-7

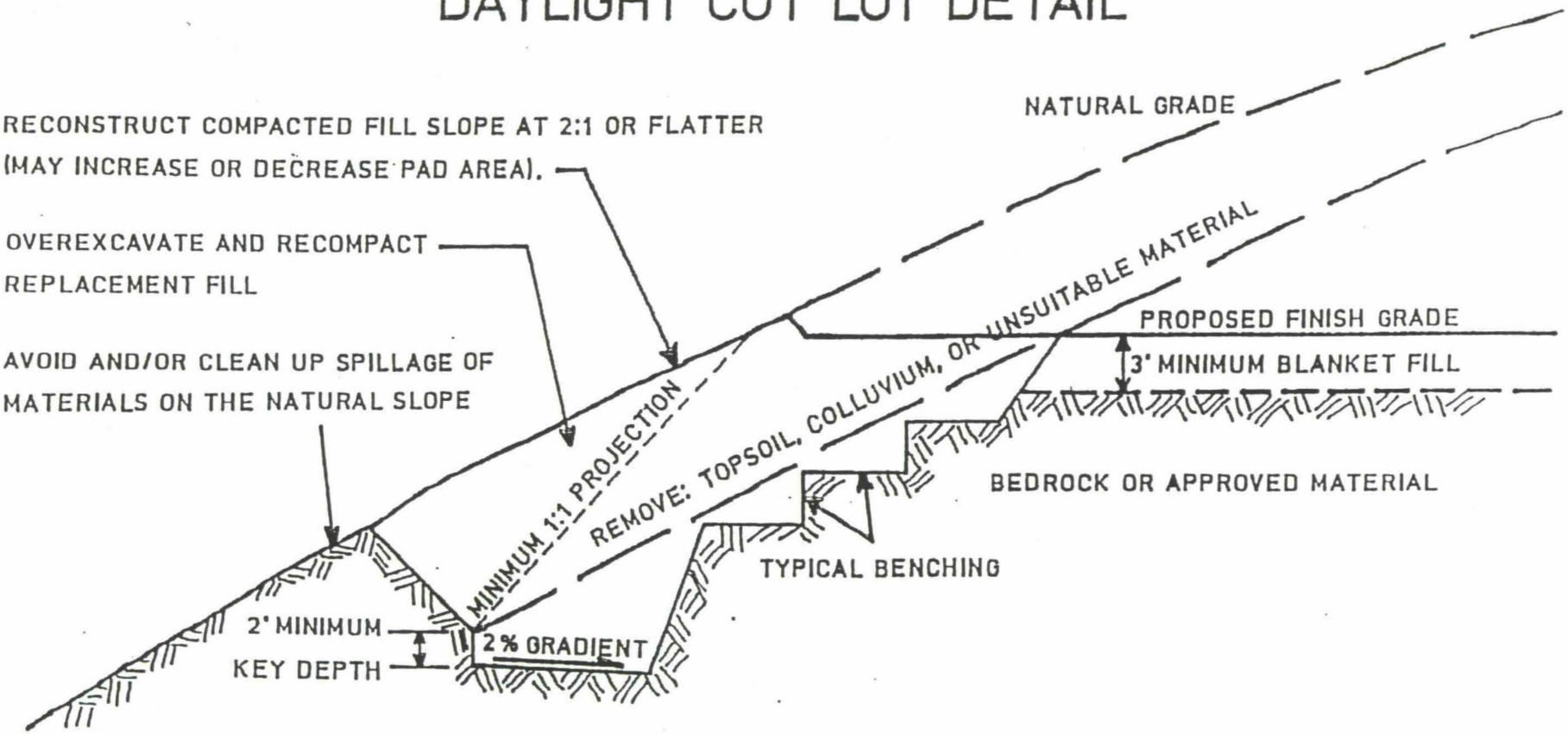
STABILIZATION FILL FOR UNSTABLE MATERIAL EXPOSED IN PORTION OF CUT SLOPE



NOTE: 1. SUBDRAINS ARE NOT REQUIRED UNLESS SPECIFIED BY SOILS ENGINEER AND/OR ENGINEERING GEOLOGIST,

2. "W" SHALL BE EQUIPMENT WIDTH (15') FOR SLOPE HEIGHTS LESS THAN 25 FEET. FOR SLOPES GREATER THAN 25 FEET "W" SHALL BE DETERMINED BY THE PROJECT SOILS ENGINEER AND /OR ENGINEERING GEOLOGIST. AT NO TIME SHALL "W" BE LESS THAN H/2.

DAYLIGHT CUT LOT DETAIL



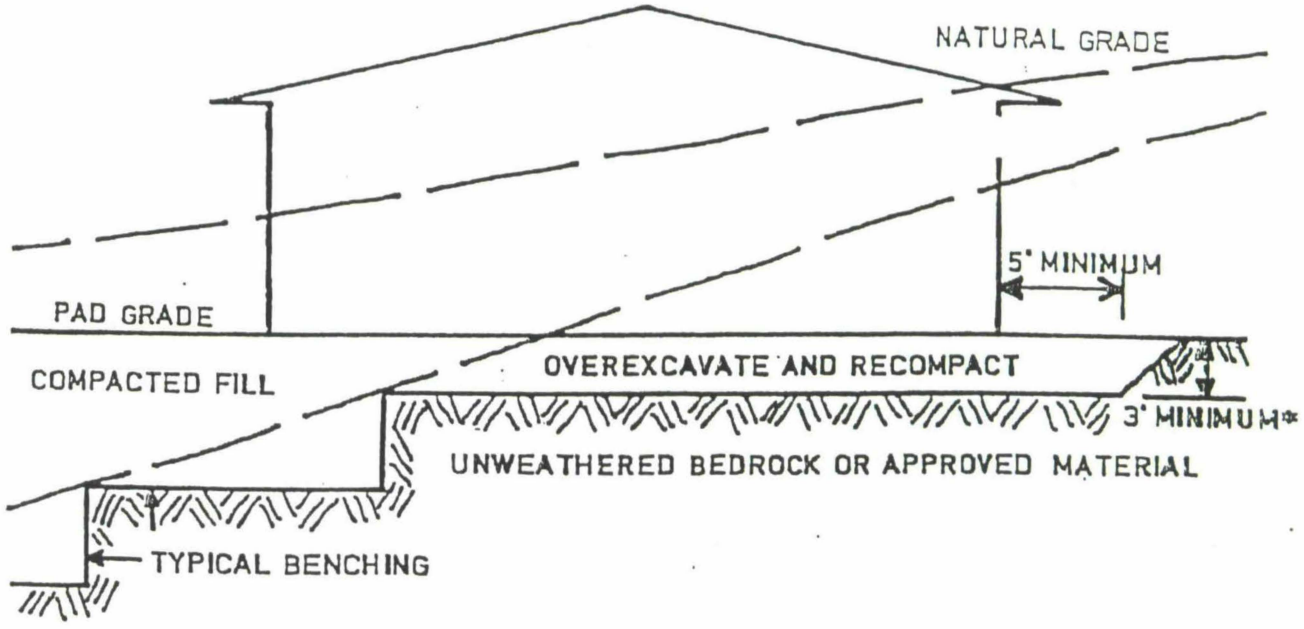
NOTE: 1. SUBDRAIN AND KEY WIDTH REQUIREMENTS WILL BE DETERMINED BASED ON EXPOSED SUBSURFACE CONDITIONS AND THICKNESS OF OVERBURDEN.

2. PAD OVER EXCAVATION AND RECOMPACTION SHOULD BE PERFORMED IF DETERMINED NECESSARY BY THE SOILS ENGINEER AND/OR THE ENGINEERING GEOLOGIST.

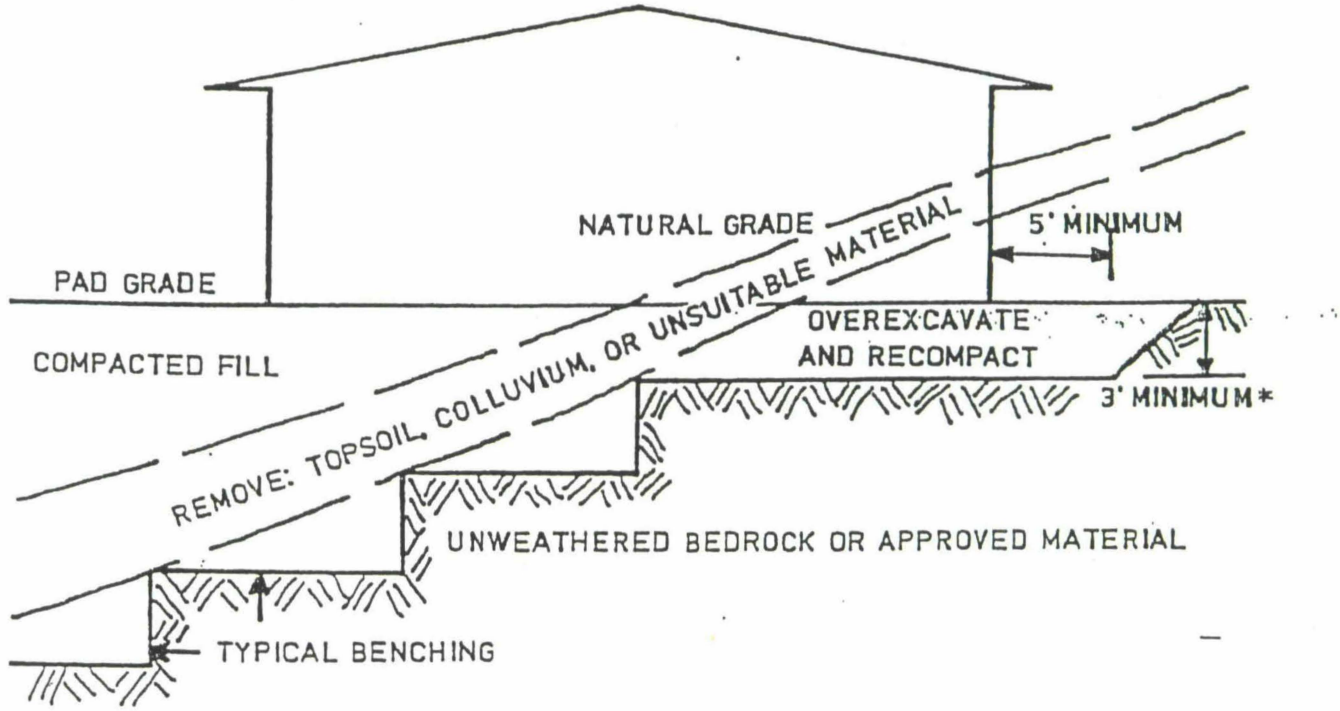
PLATE EG—10

TRANSITION LOT DETAIL

CUT LOT (MATERIAL TYPE TRANSITION)



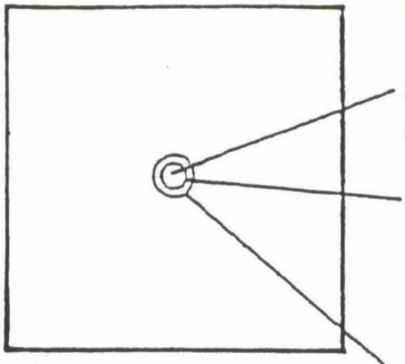
CUT—FILL LOT (DAYLIGHT TRANSITION)



NOTE: * DEEPER OVEREXCAVATION MAY BE RECOMMENDED BY THE SOILS ENGINEER AND/OR ENGINEERING GEOLOGIST IN STEEP CUT—FILL TRANSITION AREAS.

PLATE EG—11

SETTLEMENT PLATE AND RISER DETAIL

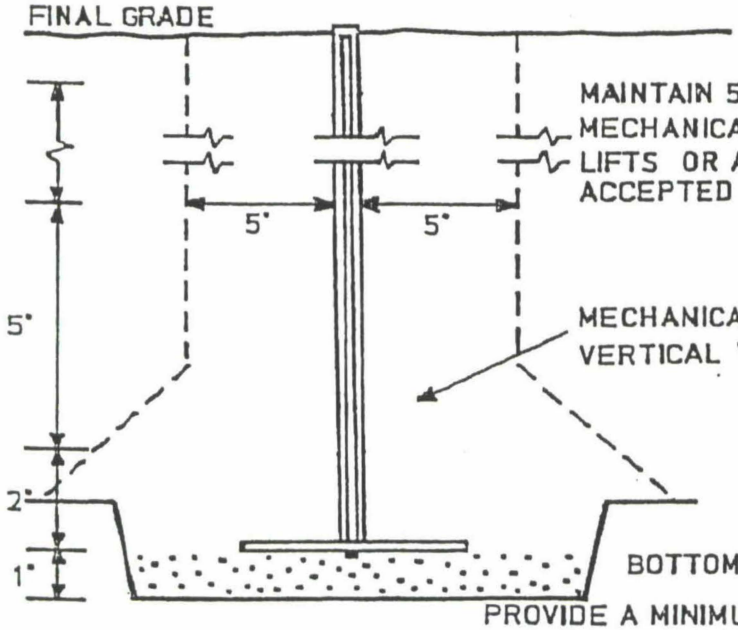


2'X 2'X 1/4" STEEL PLATE

STANDARD 3/4" PIPE NIPPLE WELDED TO TOP OF PLATE.

3/4" X 5' GALVANIZED PIPE, STANDARD PIPE THREADS TOP AND BOTTOM. EXTENSIONS THREADED ON BOTH ENDS AND ADDED IN 5' INCREMENTS.

3 INCH SCHEDULE 40 PVC PIPE SLEEVE, ADD IN 5' INCREMENTS WITH GLUE JOINTS.



MAINTAIN 5' CLEARANCE OF HEAVY EQUIPMENT. MECHANICALLY HAND COMPACT IN 2' VERTICAL LIFTS OR ALTERNATIVE SUITABLE TO AND ACCEPTED BY THE SOILS ENGINEER.

MECHANICALLY HAND COMPACT THE INITIAL 5' VERTICAL WITHIN A 5' RADIUS OF PLATE BASE.

BOTTOM OF CLEANOUT

PROVIDE A MINIMUM 1' BEDDING OF COMPACTED SAND

NOTE:

1. LOCATIONS OF SETTLEMENT PLATES SHOULD BE CLEARLY MARKED AND READILY VISIBLE (RED FLAGGED) TO EQUIPMENT OPERATORS.
2. CONTRACTOR SHOULD MAINTAIN CLEARANCE OF A 5' RADIUS OF PLATE BASE AND WITHIN 5' (VERTICAL) FOR HEAVY EQUIPMENT. FILL WITHIN CLEARANCE AREA SHOULD BE HAND COMPACTED TO PROJECT SPECIFICATIONS OR COMPACTED BY ALTERNATIVE APPROVED BY THE SOILS ENGINEER.
3. AFTER 5' (VERTICAL) OF FILL IS IN PLACE, CONTRACTOR SHOULD MAINTAIN A 5' RADIUS EQUIPMENT CLEARANCE FROM RISER.
4. PLACE AND MECHANICALLY HAND COMPACT INITIAL 2' OF FILL PRIOR TO ESTABLISHING THE INITIAL READING.
5. IN THE EVENT OF DAMAGE TO THE SETTLEMENT PLATE OR EXTENSION RESULTING FROM EQUIPMENT OPERATING WITHIN THE SPECIFIED CLEARANCE AREA, CONTRACTOR SHOULD IMMEDIATELY NOTIFY THE SOILS ENGINEER AND SHOULD BE RESPONSIBLE FOR RESTORING THE SETTLEMENT PLATES TO WORKING ORDER.
6. AN ALTERNATE DESIGN AND METHOD OF INSTALLATION MAY BE PROVIDED AT THE DISCRETION OF THE SOILS ENGINEER.

PLATE EG—14

TYPICAL SURFACE SETTLEMENT MONUMENT

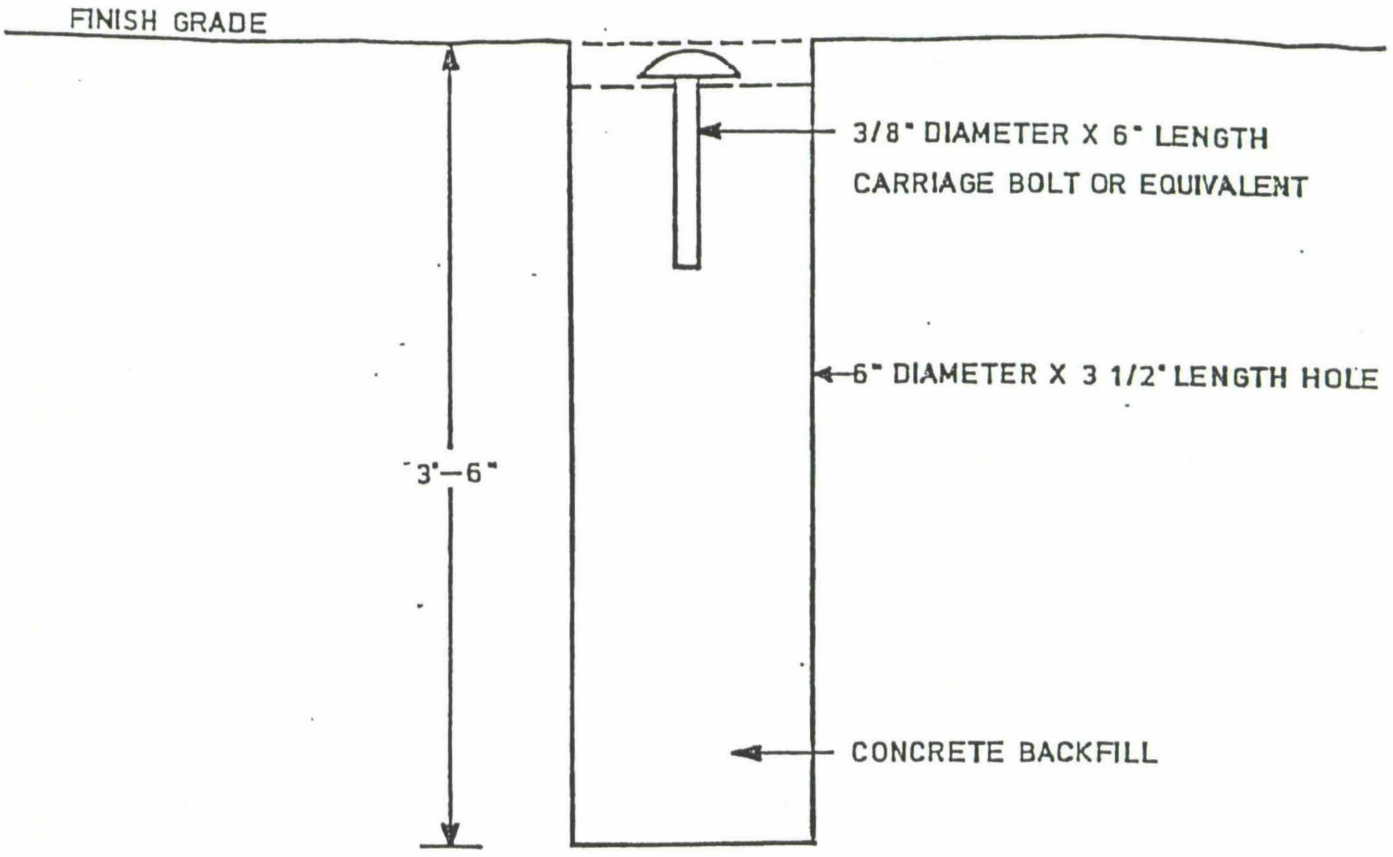
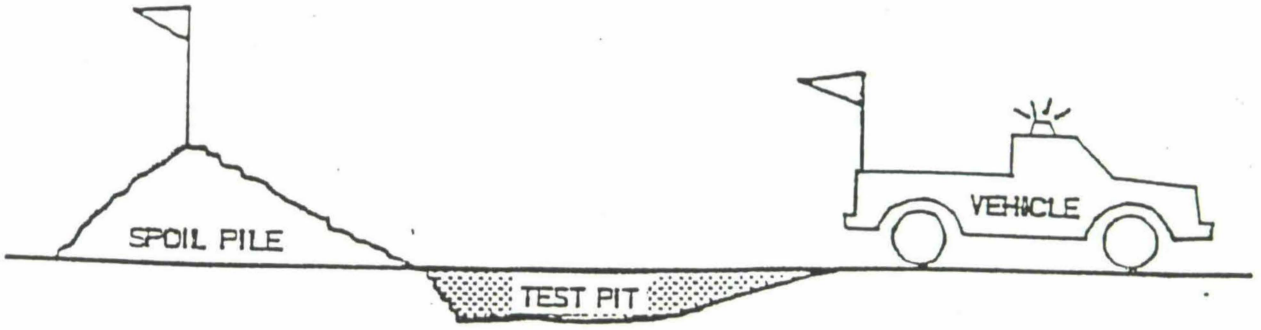


PLATE EG-15

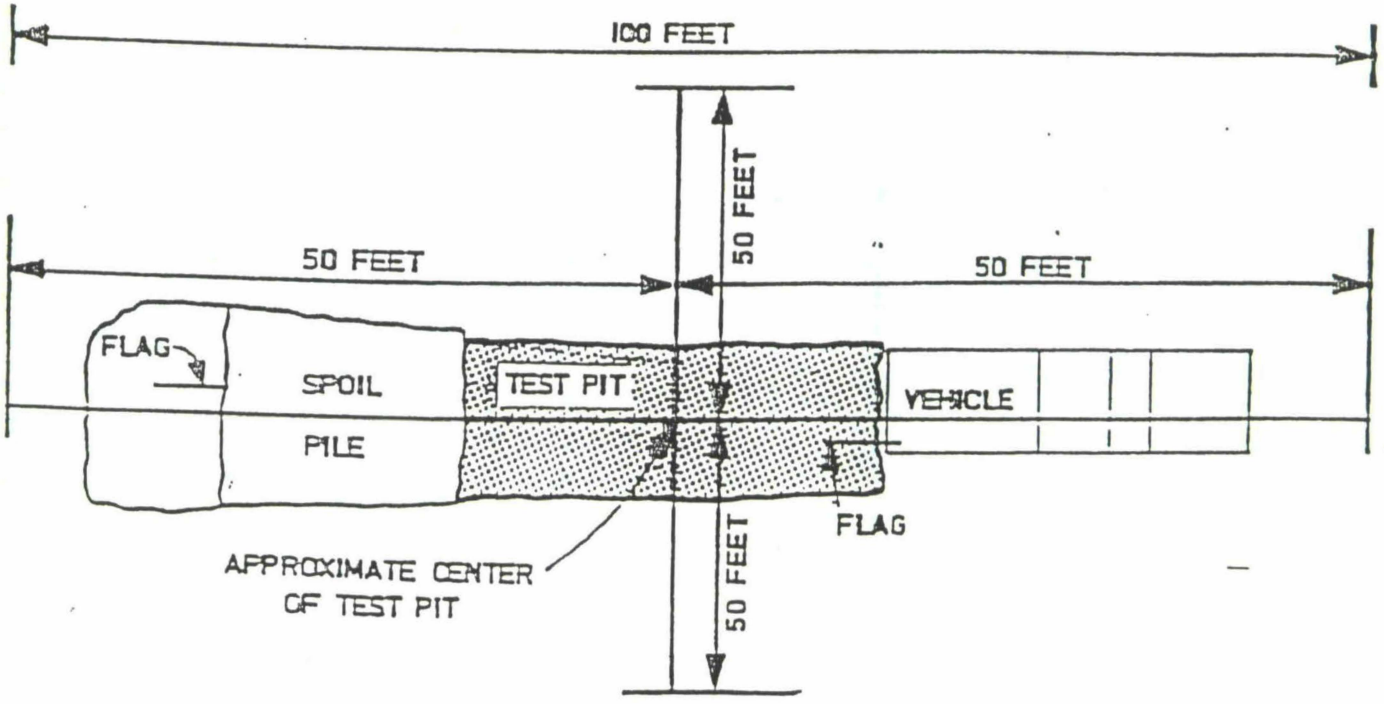
TEST PIT SAFETY DIAGRAM

SIDE VIEW



(NOT TO SCALE)

TOP VIEW

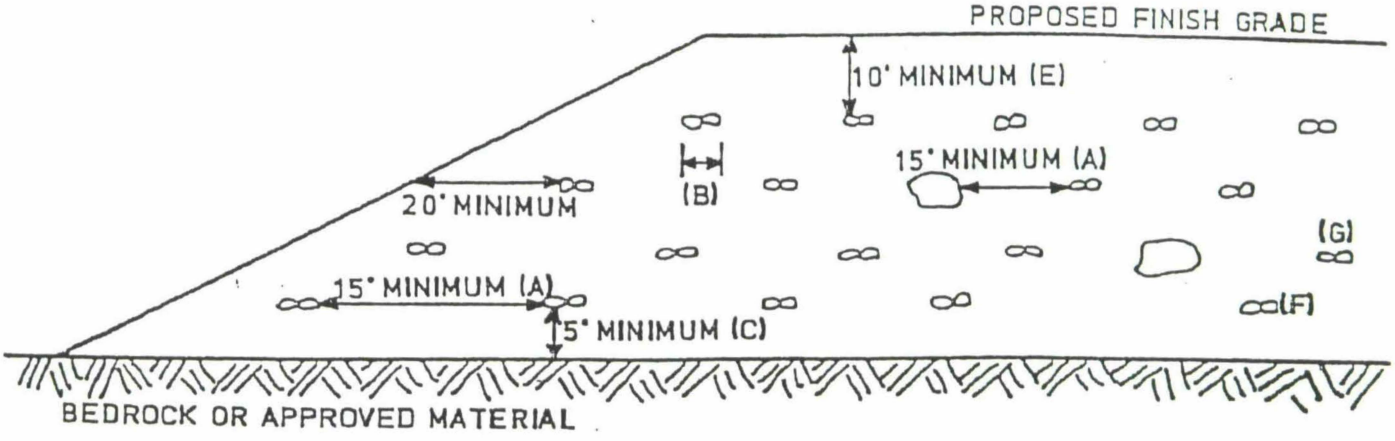


(NOT TO SCALE)

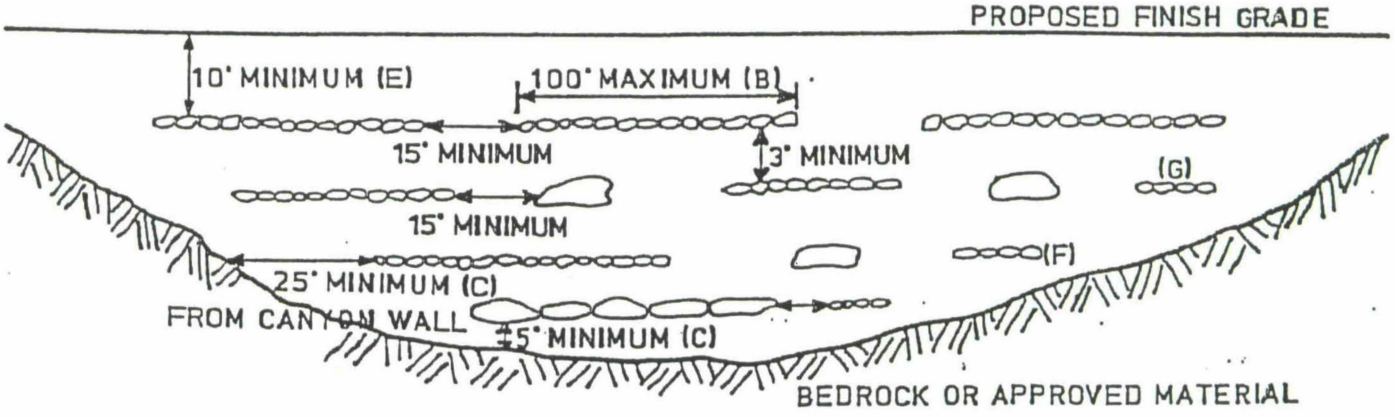
PLATE EG—16

OVERSIZE ROCK DISPOSAL

VIEW NORMAL TO SLOPE FACE



VIEW PARALLEL TO SLOPE FACE

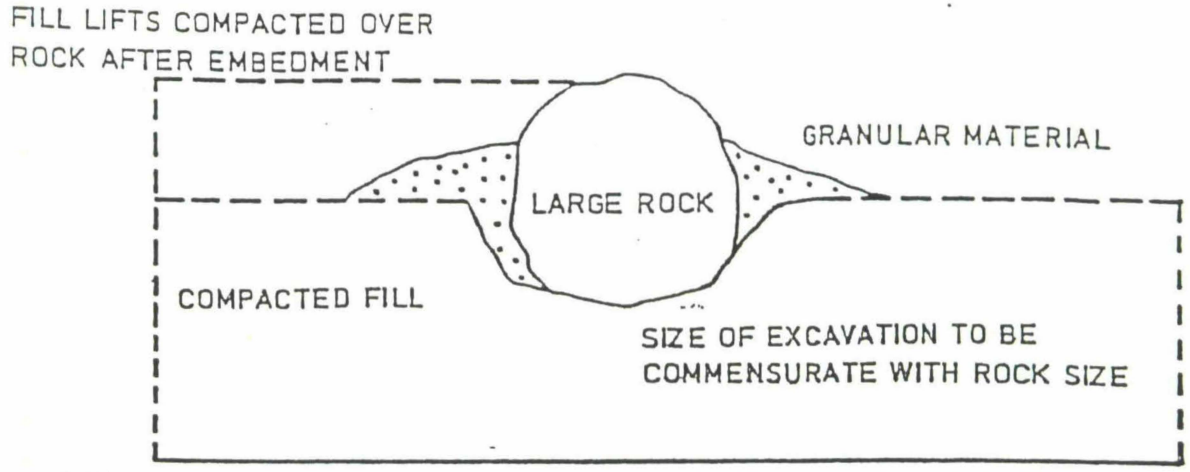


NOTE: (A) ONE EQUIPMENT WIDTH OR A MINIMUM OF 15 FEET.
(B) HEIGHT AND WIDTH MAY VARY DEPENDING ON ROCK SIZE AND TYPE OF EQUIPMENT. LENGTH OF WINDROW SHALL BE NO GREATER THAN 100' MAXIMUM.
(C) IF APPROVED BY THE SOILS ENGINEER AND/OR ENGINEERING GEOLOGIST, WINDROWS MAY BE PLACED DIRECTLY ON COMPETENT MATERIAL OR BEDROCK PROVIDED ADEQUATE SPACE IS AVAILABLE FOR COMPACTION.
(D) ORIENTATION OF WINDROWS MAY VARY BUT SHOULD BE AS RECOMMENDED BY THE SOILS ENGINEER AND/OR ENGINEERING GEOLOGIST. STAGGERING OF WINDROWS IS NOT NECESSARY UNLESS RECOMMENDED.
(E) CLEAR AREA FOR UTILITY TRENCHES, FOUNDATIONS AND SWIMMING POOLS.
(F) ALL FILL OVER AND AROUND ROCK WINDROW SHALL BE COMPACTED TO 90% RELATIVE COMPACTION OR AS RECOMMENDED.
(G) AFTER FILL BETWEEN WINDROWS IS PLACED AND COMPACTED WITH THE LIFT OF FILL COVERING WINDROW, WINDROW SHOULD BE PROOF ROLLED WITH A D-9 DOZER OR EQUIVALENT.
VIEWS ARE DIAGRAMMATIC ONLY. ROCK SHOULD NOT TOUCH AND VOIDS SHOULD BE COMPLETELY FILLED IN.

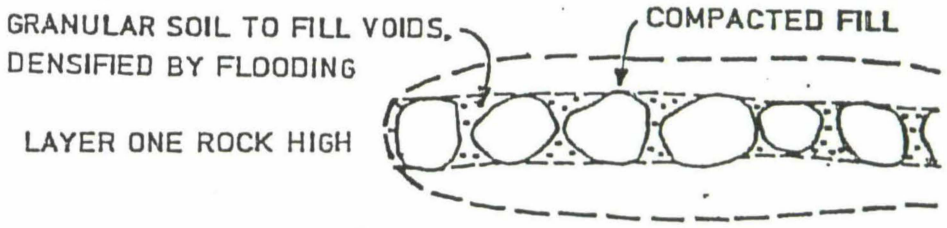
PLATE RD-1

ROCK DISPOSAL PITS

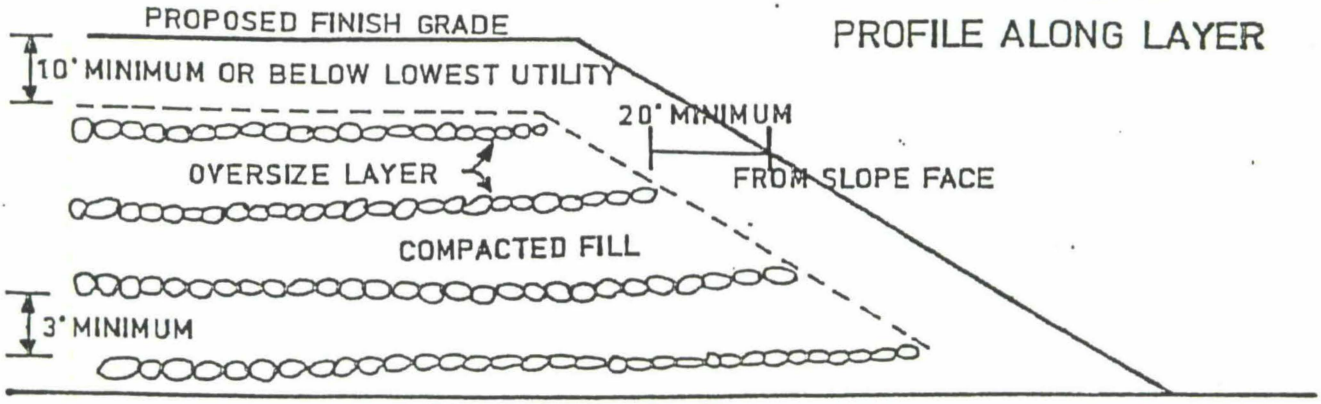
VIEWS ARE DIAGRAMMATIC ONLY. ROCK SHOULD NOT TOUCH AND VOIDS SHOULD BE COMPLETELY FILLED IN.

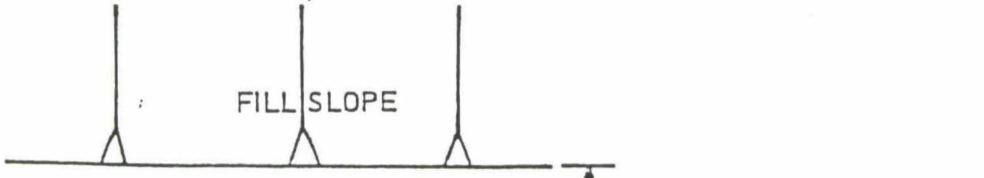


ROCK DISPOSAL LAYERS



PROFILE ALONG LAYER





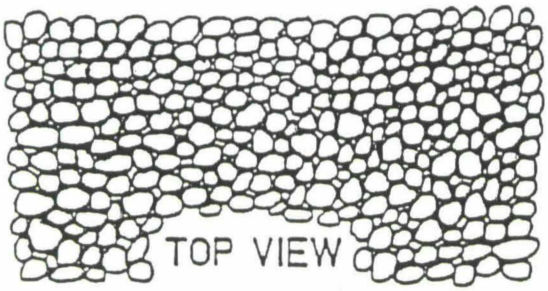


PLATE RD—2

APPENDIX 4b

Soil Map—Western Riverside Area, California
(CL-295 Lyon)



Map Scale: 1:3,210 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 45 90 180 270

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 14, Sep 13, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 15, 2022—May 28, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Cf	Chino silt loam, drained, saline-alkali	6.7	15.0%
DgB	Dello loamy sand, 0 to 5 percent slopes	0.0	0.0%
DnB	Dello loamy sand, gravelly substratum, 0 to 5 percent s lopes	2.7	6.0%
DrA	Dello loamy fine sand, gravelly substratum, 0 to 2 percent slopes	5.5	12.4%
GoB	Grangeville loamy fine sand, drained, 0 to 5 percent slopes	3.1	7.0%
GpB	Grangeville sandy loam, drained, saline-alkali, 0 to 5 percent slopes	6.2	13.8%
GwA	Grangeville fine sandy loam, loamy substratum, drained, 0 to 2 percent slopes	4.1	9.2%
MgB	Metz loamy fine sand, gravelly sand substratum, 0 to 5 percent slopes	2.9	6.4%
SfA	San Emigdio fine sandy loam, deep, 0 to 2 percent slopes	0.0	0.0%
Tr2	Traver loamy fine sand, saline-alkali, eroded	1.9	4.3%
Tt2	Traver fine sandy loam, strongly saline-alkali, eroded	11.5	25.7%
Totals for Area of Interest		**44.6**	**100.0%**

APPENDIX 5

Sladden Engineering

45090 Golf Center Parkway, Suite F, Indio, CA 92201 (760) 863-0713 Fax (760) 863-0847
6782 Stanton Avenue, Suite C, Buena Park, CA 90621 (714) 523-0952 Fax (714) 523-1369
450 Egan Avenue, Beaumont, CA 92223 (951) 845-7743 Fax (951) 845-8863
www.SladdenEngineering.com

August 23, 2022

Project No. 644-22032
22-08-118

Mr. Jordan Bursch
Corman Leigh Companies
32823 Temecula Parkway
Temecula, California 92592

Project: Proposed Residential Development
NWC Lyon Avenue & Appaloosa Drive
TTM 38468
APN 436-280-006 & 007
San Jacinto, California

Subject: Infiltration Testing for On-Site Stormwater Management

In accordance with your request, we have performed infiltration testing on the subject site to evaluate the infiltration potential of the near surface soil to assist in stormwater management system design. The infiltration rates determined by testing should be useful in the assessment of on-site stormwater management needs. The approximate locations of the tests are indicated on the attached Exploration Location Plan (Figure 3).

Infiltration testing was performed on July 18, 2022 utilizing double ring infiltrometers. The tests were performed at depths of approximately 5.0 feet below the existing ground surface (bgs) for DR-1 & DR-2. The soil conditions encountered within the test hole locations consisted of silty sand (SM) and sandy silt (ML). Testing was performed in general accordance with the *Standard Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer* (ASTM D-3385).

INFILTRATION TEST RESULTS

Test Location No.	Depth Below Existing Ground Surface (ft)	Infiltration Rate (in/hr)
DR-1	5.0	0.9
DR-2	5.0	0.8

The rates determined represent ultimate rates and an appropriate safety factor should be incorporated into the design to account for long-term saturation and potential "silting" of the surface soil. The safety factor should be determined with consideration to other factors considered in the storm water retention system design (specifically stormwater volume estimates) and the safety factors associated with the related design components.

If you have any questions regarding this memo or the testing summarized herein, please contact the undersigned.

Respectfully submitted,
SLADDEN ENGINEERING

Matthew J. Cohrt
Principal Geologist

CERTIFIED ENGINEERING GEOLOGIST
MATTHEW J. COHRT
2634
STATE OF CALIFORNIA

Brett L. Anderson
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
BRETT L. ANDERSON
No. C45389
CIVIL ENGINEERING
STATE OF CALIFORNIA

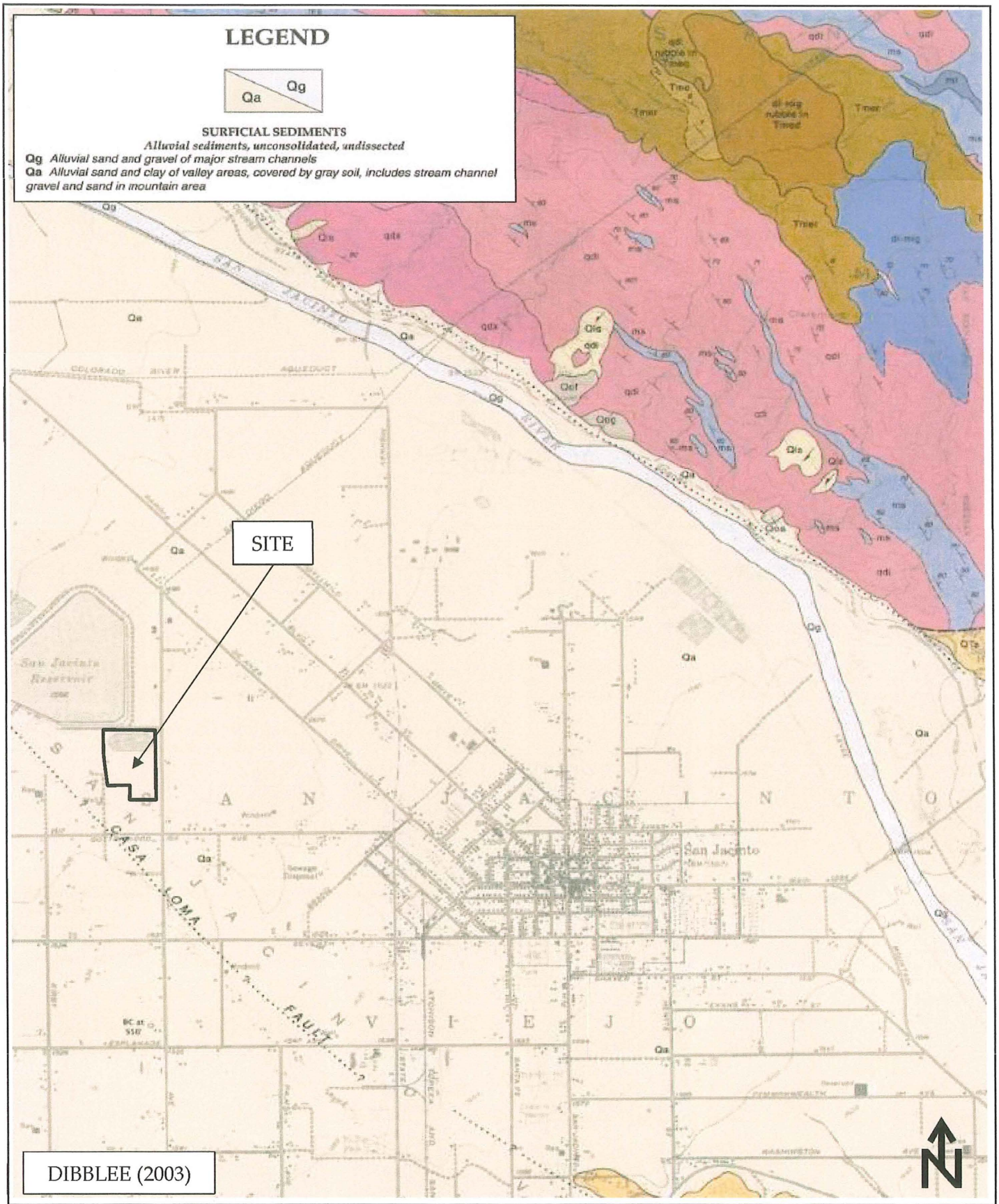
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FIGURES

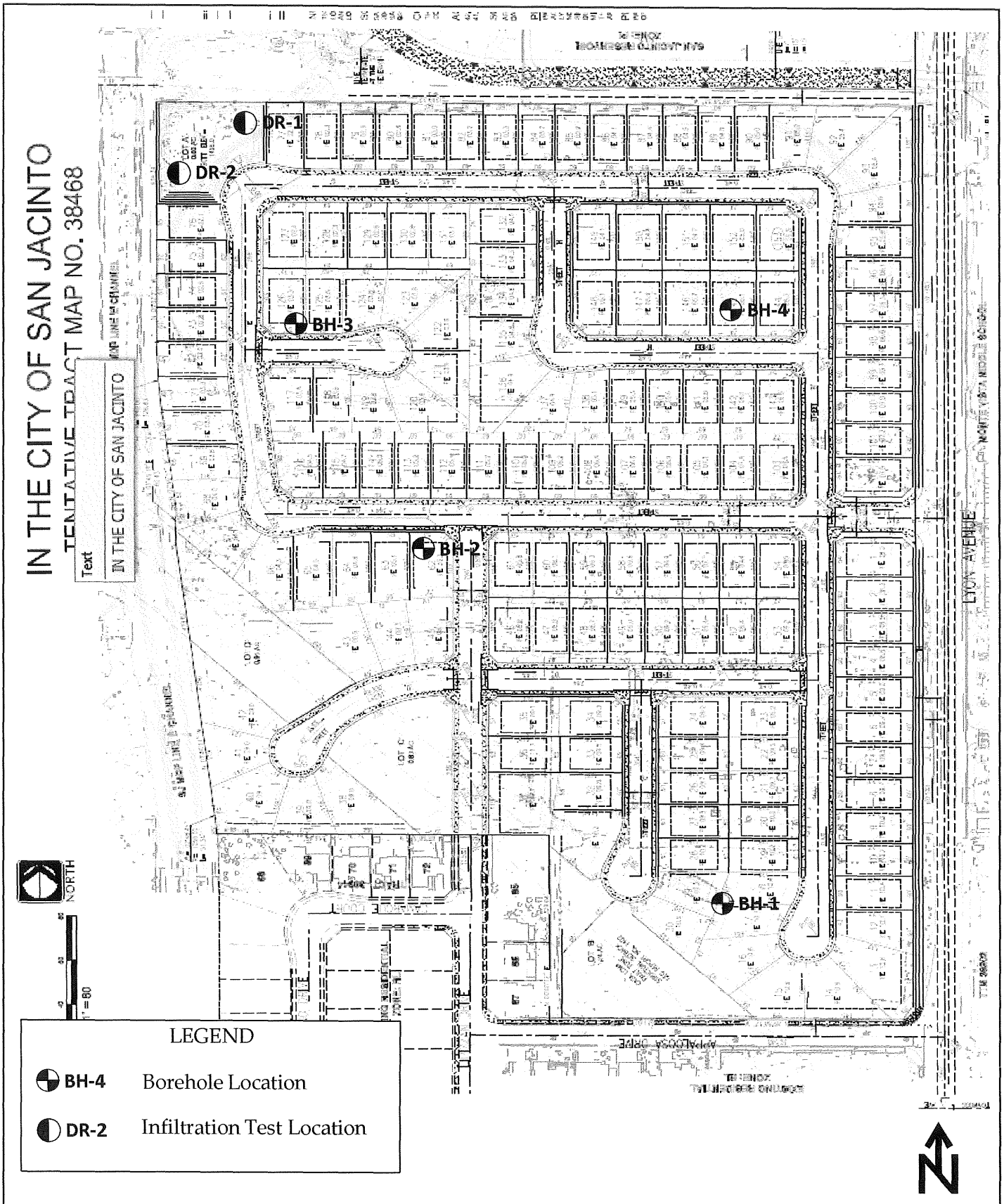
SITE LOCATION MAP
REGIONAL GEOLOGIC MAP
EXPLORATION LOCATION PLAN



Sladden Engineering	SITE LOCATION MAP	FIGURE 1
	Project Number: 644-22032	
	Report Number: 22-08-118	
	Date: August 23, 2022	



Sladden Engineering	REGIONAL GEOLOGIC MAP	FIGURE 2
	Project Number: 644-22032	
	Report Number: 22-08-118	
	Date: August 23, 2022	



Sladden Engineering	EXPLORATION LOCATION PLAN	FIGURE 3
	Project Number: 644-22032	
	Report Number: 22-08-118	
	Date: August 23, 2022	

BORELOGS

Sladden Engineering

BORE LOG

Equipment:	MOBILE B-61	Date Drilled:	6/13/2022
Elevation:	1,500 FT MSL	Boring No:	BH-1

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							2		Silty Sand (SM); grayish brown, dry, fine- to coarse-grained (Disturbed/Fill).
	5 7 10			3.3	0.4		6		Gravelly Sand (SP); grayish brown, dry, medium dense, fine- to coarse-grained (Qa).
	5 16 16			1.8	1.8		10		Sand (SP); grayish brown, dry, dense, fine- to coarse-grained (Qa).
	6 10 11			25.5	12.6	115.9	16		Silty Sand (SM); dark grayish brown, moist, medium dense, fine- to coarse-grained (Qa).
	6 8 9			13.7	7.6		20		Silty Sand (SM); grayish brown, moist, medium dense, fine-grained (Qa).
							22		Terminated at ~21.5 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							24		
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED RESIDENTIAL DEVELOPMENT
NWC LYON AVENUE AND APPALOOSA DRIVE, SAN JACINTO

Project No:	644-22032	Page	1
Report No:	22-08-118		

Sladden Engineering

BORE LOG

Equipment:	MOBILE B-61	Date Drilled:	6/13/2022
Elevation:	1,500 FT MSL	Boring No:	BH-2

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							2		Silty Sand (SM); grayish brown, dry, fine- to coarse-grained (Disturbed/Fill).
	3 7 10			3.7	1.1	107.9	4		Sand (SP); grayish brown, dry, medium dense, fine- to coarse-grained (Qa).
	3 4 9			2.0	0.8	105.1	6		Sand (SP); grayish brown, dry, loose, fine- to coarse-grained (Qa).
	5 6 5			2.2	1.4		10		Sand (SP); grayish brown, dry, medium dense, fine- to coarse-grained (Qa).
	9 8 21			14.4	8.7	118.9	16		Silty Sand (SM); grayish brown, dry to slightly moist, medium dense, fine- to coarse-grained (Qa).
	8 16 24			3.1	1.7		20		Sand (SP); grayish brown, dry, dense, fine- to coarse-grained (Qa).
	14 36 50			7.0	2.8	101.2	26		Sand (SP); grayish brown, dry, very dense, fine- to coarse-grained (Qa).
	4 3 4			72.3	28.9		30		Sandy Clay (CL); olive brown, moist, medium stiff, low plasticity with gravel (Qa).
	8 26 50			64.8	20.1	105.8	36		Sandy Silt (ML); olive brown, moist, hard, low plasticity, micaceous (Qa).
	2 3 5			73.2	27.3		40		Sandy Clay (CL); olive brown, moist, medium stiff, low plasticity (Qa).
	10 22 50			61.9	23.0	102.3	46		Sandy Silt (ML); dark grayish brown, moist , hard, low plastictiy, micaceous (Qa).
	5 6 9			81.2	30.8		50		Sandy Silt (ML); dark grayish brown, moist , stiff, low plastictiy, micaceous (Qa).

Completion Notes:
Terminated at ~51.5 Feet bgs.
No Bedrock Encountered.
No Grondwater or Seepage Encountered.

PROPOSED RESIDENTIAL DEVELOPMENT
NWC LYON AVENUE AND APPALOOSA DRIVE, SAN JACINTO

Project No:	644-22032	Page	2
Report No:	22-08-118		

Sladden Engineering

BORE LOG

Equipment:	MOBILE B-61	Date Drilled:	6/13/2022
Elevation:	1,500 FT MSL	Boring No:	BH-3

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							2		Silty Sand (SM); grayish brown, dry, fine- to coarse-grained (Disturbed/Fill).
	4 8 9			64.3	11.1		6		Sandy Silt (ML); grayish brown, slighlty moist, very stiff, low plasticity, micaceous (Qa).
	8 17 27			29.3	3.8	118.6	10		Silty Sand (SM); grayish brown, dry, medium dense, fine-grained (Qa).
	2 7 7			29.2	7.6		16		Silty Sand (SM); grayish brown, dry, medium dense, fine- to coarse-grained (Qa).
	12 14 30			11.9	1.8	103.7	20		Sand (SP); grayish brown, dry, medium dense, fine- to coarse-grained with gravel (Qa).
							22		Terminated at ~21.5 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.

Completion Notes:

PROPOSED RESIDENTIAL DEVELOPMENT
NWC LYON AVENUE AND APPALOOSA DRIVE, SAN JACINTO

Project No:	644-22032	Page	3
Report No:	22-08-118		

Sladden Engineering

BORE LOG

Equipment:	MOBILE B-61	Date Drilled:	6/13/2022
Elevation:	1,500 FT MSL	Boring No:	BH-4

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							0		Silty Sand (SM); grayish brown, dry, fine- to coarse-grained (Disturbed/Fill).
							2		
							4		
■	8 11 16			5.4	1.4	107.3	6		Gravelly Sand (SP); grayish brown, dry, medium dense, fine- to coarse-grained (Qa).
							8		
◧	4 6 5			43.7	8.5		10		Silty Sand (SM); grayish brown, dry to slightly moist, medium dense, fine- to coarse-grained (Qa).
							12		
							14		
■	11 17 16			41.5	4.7	104.3	16		Silty Sand (SM); grayish brown, dry, medium dense, fine-grained with gravel (Qa).
							18		
◧	5 7 12			36.3	5.5		20		Silty Sand (SM); grayish brown, dry to slightly moist, medium dense, fine-grained (Qa).
							22		
							24		Terminated at ~21.5 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED RESIDENTIAL DEVELOPMENT
NWC LYON AVENUE AND APPALOOSA DRIVE, SAN JACINTO

Project No:	644-22032	Page	4
Report No:	22-08-118		

Sladden Engineering

TEST PIT LOG

Equipment:	MOBILE B-61	Date Drilled:	6/13/2022
Elevation:	1,500 FT MSL	Boring No:	TP-1 (DR-1)

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							2		Silty Sand (SM); grayish brown, dry, fine- to coarse-grained (Disturbed/Fill).
							4		Gravelly Sand (SP); grayish brown, dry, fine- to coarse-grained (Qa).
							6		Terminated at ~5.0 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							8		
							10		
							12		
							14		
							16		
							18		
							20		
							22		
							24		
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED RESIDENTIAL DEVELOPMENT
NWC LYON AVENUE AND APPALOOSA DRIVE, SAN JACINTO

Project No:	644-22032	Page	5
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Sladden Engineering

TEST PIT LOG

Equipment:	MOBILE B-61	Date Drilled:	6/13/2022
Elevation:	1,500 FT MSL	Boring No:	TP-2 (DR-2)

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							2		Silty Sand (SM); grayish brown, dry, fine- to coarse-grained (Disturbed/Fill).
							4		Gravelly Sand (SP); grayish brown, dry, fine- to coarse-grained (Qa).
							6		Terminated at ~5.0 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							8		
							10		
							12		
							14		
							16		
							18		
							20		
							22		
							24		
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED RESIDENTIAL DEVELOPMENT
NWC LYON AVENUE AND APPALOOSA DRIVE, SAN JACINTO

Project No:	644-22032	Page	6
Report No:	22-08-118		

APPENDIX A

DOUBLE-RING TESTING DATA SHEETS

DOUBLE RING INFILTRATION RATE CALCULATIONS

Job No.: 544-22032

Test Hole: DR-1

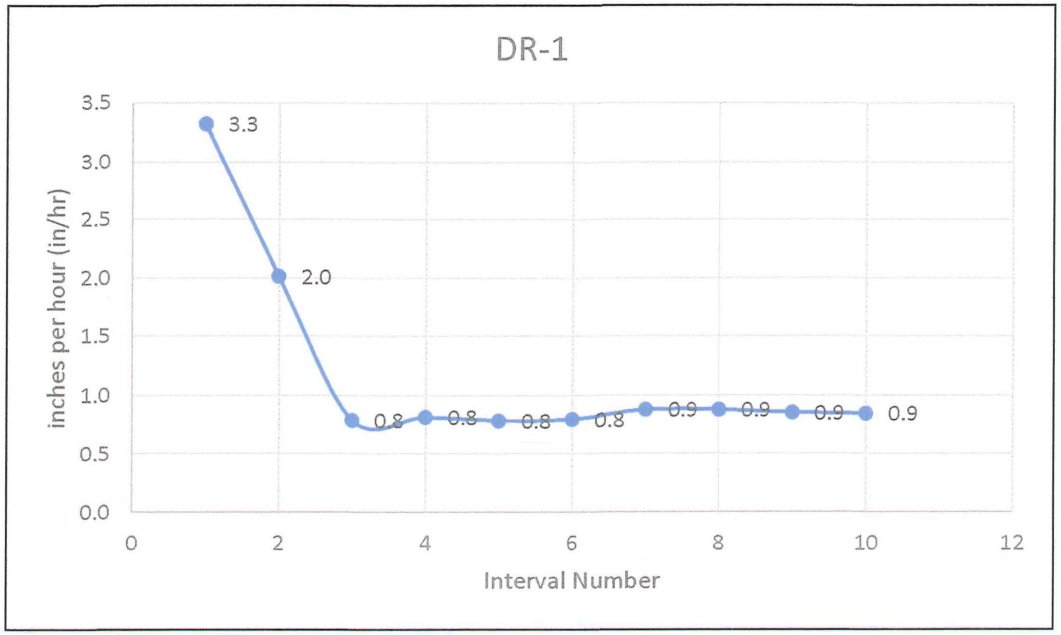
Depth (Ft.): 5.0 Ft. bgs

Date: 7/18/2022

INNER RING

Interval Number	Initial Water(cm)	Final Water(cm)	Con. Factor (cm to in)	Water (in)	Area Mar. (in2)	Volume (in3)	Area IR (in2)	Time (min)	Time (hr)	Vir (in/hr)
1	46.2	19.5	0.39	10.5	8.9	94.0	113.1	15	0.25	3.3
2	46.1	29.9	0.39	6.4	8.9	57.0	113.1	15	0.25	2.0
3	46.2	33.4	0.39	5.0	8.9	45.1	113.1	30	0.50	0.8
4	46.3	33.1	0.39	5.2	8.9	46.5	113.1	30	0.50	0.8
5	46.0	33.3	0.39	5.0	8.9	44.7	113.1	30	0.50	0.8
6	45.4	32.5	0.39	5.1	8.9	45.4	113.1	30	0.50	0.8
7	46.1	31.9	0.39	5.6	8.9	50.0	113.1	30	0.50	0.9
8	45.9	31.7	0.39	5.6	8.9	50.0	113.1	30	0.50	0.9
9	45.8	32.0	0.39	5.4	8.9	48.6	113.1	30	0.50	0.9
10	45.5	31.8	0.39	5.4	8.9	48.2	113.1	30	0.50	0.9

AVERAGE RATE* = 0.9 (in/hr)



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DOUBLE RING INFILTRATION RATE CALCULATIONS

Job No.: 544-22032

Test Hole: DR-2

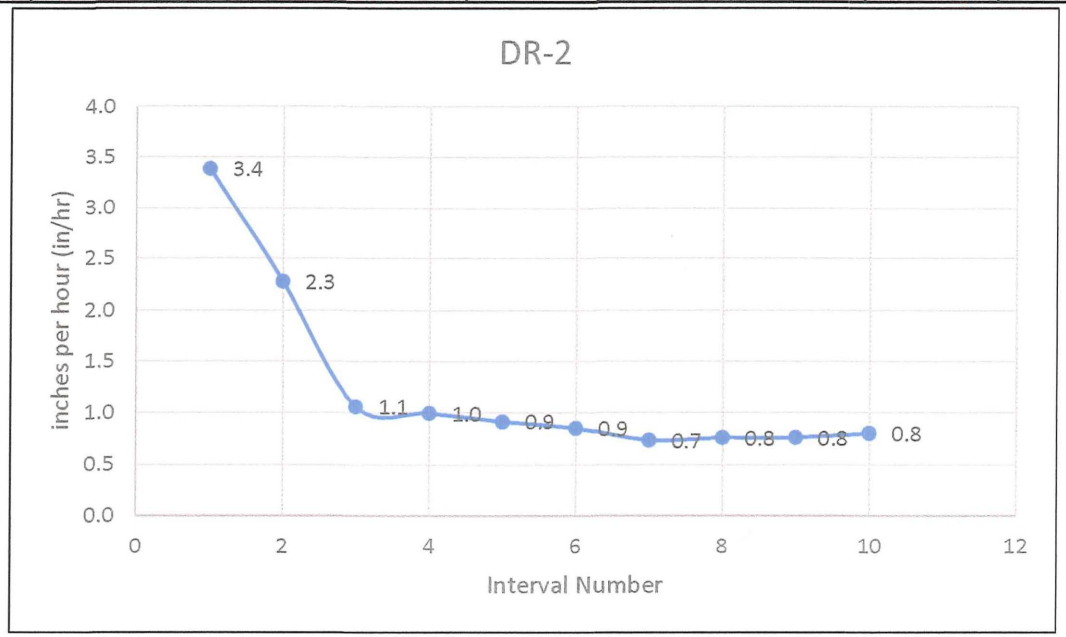
Depth (Ft.): 5.0 Ft. bgs

Date: 7/18/2022

INNER RING

Interval Number	Initial Water(cm)	Final Water(cm)	Con. Factor (cm to in)	Water (in)	Area Mar. (in2)	Volume (in3)	Area IR (in2)	Time (min)	Time (hr)	Vir (in/hr)
1	45.9	18.7	0.39	10.7	8.9	95.8	113.1	15	0.25	3.4
2	46.1	27.8	0.39	7.2	8.9	64.4	113.1	15	0.25	2.3
3	46.3	29.3	0.39	6.7	8.9	59.9	113.1	30	0.50	1.1
4	45.8	29.8	0.39	6.3	8.9	56.3	113.1	30	0.50	1.0
5	45.3	30.6	0.39	5.8	8.9	51.8	113.1	30	0.50	0.9
6	46.9	33.2	0.39	5.4	8.9	48.2	113.1	30	0.50	0.9
7	45.3	33.5	0.39	4.6	8.9	41.5	113.1	30	0.50	0.7
8	46.0	33.8	0.39	4.8	8.9	43.0	113.1	30	0.50	0.8
9	46.4	34.2	0.39	4.8	8.9	43.0	113.1	30	0.50	0.8
10	46.1	33.2	0.39	5.1	8.9	45.4	113.1	30	0.50	0.8

AVERAGE RATE* = 0.8 (in/hr)



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APPENDIX 6a

URBAN | CROSSROADS

LYON AVENUE RESIDENTIAL (TENTATIVE TRACT MAP. NO. 38468) (P22-088)

TRAFFIC ANALYSIS

PREPARED BY: Charlene So | cso@urbanxroads.com
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Reference Number	Agency	Date
15026-06 TA Report	City of San Jacinto	October 20, 2023

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Appendix 5.2: EAP (2026) Conditions Intersection Operations Analysis Worksheets

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
DIF	Development Impact Fee
EA	Existing Plus Ambient Growth
EAC	Existing Plus Ambient Growth Plus Cumulative
EAP	Existing Plus Ambient Growth Plus Project
EAPC	Existing Plus Ambient Growth Plus Project Plus Cumulative
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
MD	Mid-day
NCHRP	National Cooperative Highway Research Program
OPR	Office of Planning and Research
PHF	Peak Hour Factor
Project	Lyon Avenue Residential
RTA	Riverside Transit Authority
RTP	Regional Transportation Plan
SCAG	Southern California Association of Governments
SCS	Sustainable Communities Strategy
SHS	State Highway System
TA	Traffic Analysis
TTM	Tentative Tract Map
TUMF	Transportation Uniform Mitigation Fee
WRCOG	Western Riverside Council of Governments
v/c	Volume to Capacity
vphgpl	Vehicles per Hour Green per Lane

1 INTRODUCTION

This report presents the results of the Traffic Analysis (TA) for Lyon Avenue Residential development (Project), which is located on the west side of Lyon Avenue and north of Cottonwood Avenue in the City of San Jacinto, as shown on Exhibit 1-1. The purpose of this TA is to evaluate the potential circulation system deficiencies that may result from the development of the proposed Project, and where necessary recommend improvements to achieve acceptable operations consistent with the City's General Plan level of service goals and policies. This TA has been prepared in accordance with the City of San Jacinto's Transportation Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service (June 2020) and through consultation with City of San Jacinto staff during the scoping process. (1) The Project traffic study scoping agreement is provided in Appendix 1.1 of this TA, which has been reviewed and approved by the City of San Jacinto.

1.1 SUMMARY OF FINDINGS

The Project is to construct the following improvements as design features in conjunction with development of the site:

- Project to construct the ultimate half-section of Lyon Avenue as a Major (up to 100-foot right-of-way) along the Project's eastern frontage from the Project's northern boundary to Appaloosa Drive consistent with the City's standards. Frontage improvements also include pavement, curb-and-gutter, sidewalk, and landscaping improvements.
- Project to install stop controls for egress traffic from Project Driveway 1 on Lyon Avenue.

Additional details and intersection lane geometrics are provided in Section 1.6 *Recommendations* of this report. The Project Applicant's responsibility for the Project's contributions towards deficient off-site intersections is fulfilled through construction, payment into pre-existing fee programs (if applicable), and/or fair share contributions that would be assigned to the future construction of the identified recommended improvements. The Project Applicant would also be required to pay requisite fees consistent with the City's requirements (see Section 7 *Local and Regional Funding Mechanisms*).

1.2 PROJECT OVERVIEW

A preliminary site plan for the proposed Project is shown on Exhibit 1-2. The Project is proposed to consist of the development of 153 single family residential dwelling units. As indicated on Exhibit 1-2, vehicular access will be accommodated via Lipizzan Drive to the south to Cottonwood Avenue and a right-in/right-out access only on Lyon Avenue (Driveway 1).

In order to develop the traffic characteristics of the proposed project, trip-generation statistics published in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition, 2021). (2) The Project is anticipated to generate a total of 1,444 two-way trips per day with 107 AM peak hour trips, 141 mid-day (MD) peak hour trips, and 144 PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

EXHIBIT 1-1: LOCATION MAP

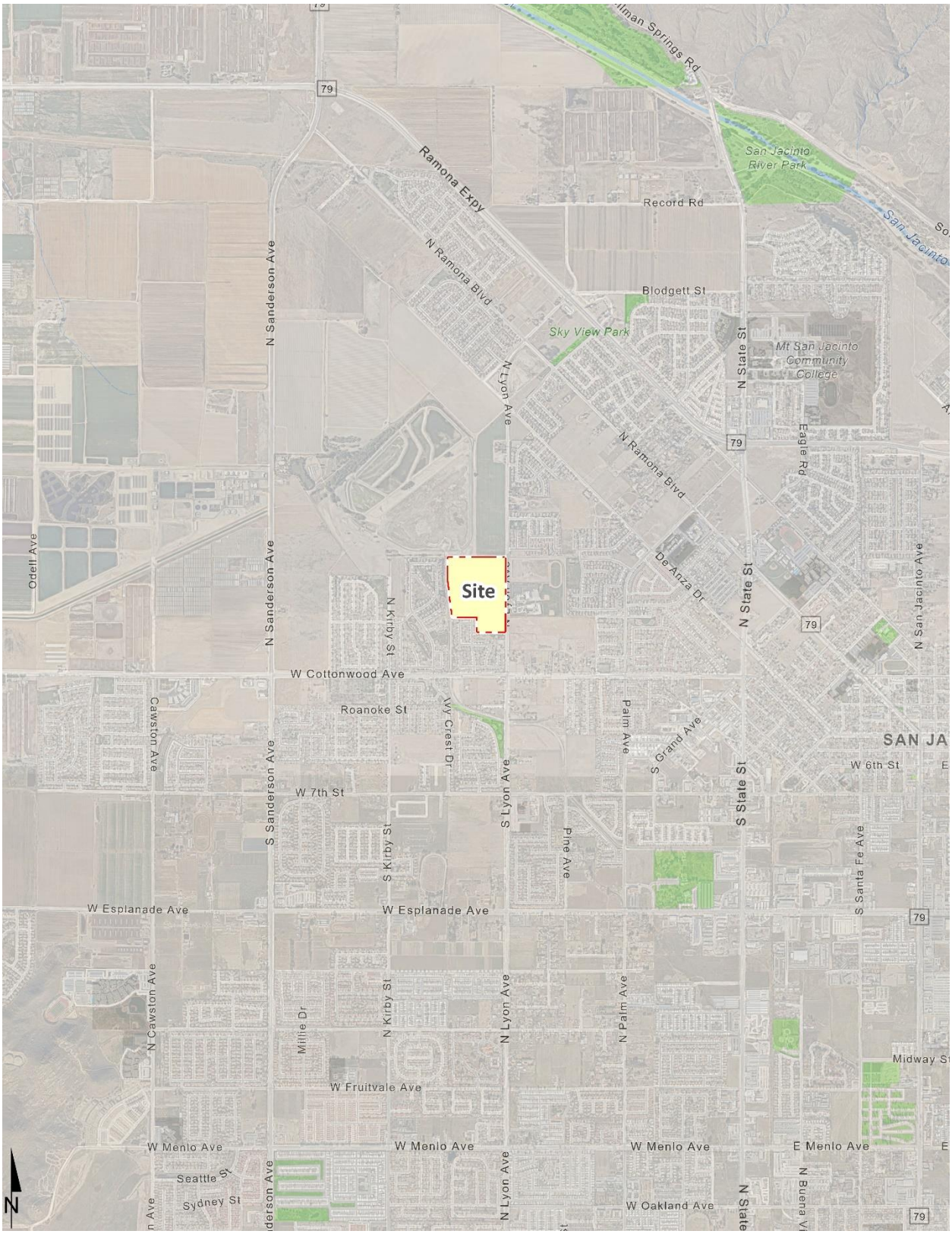
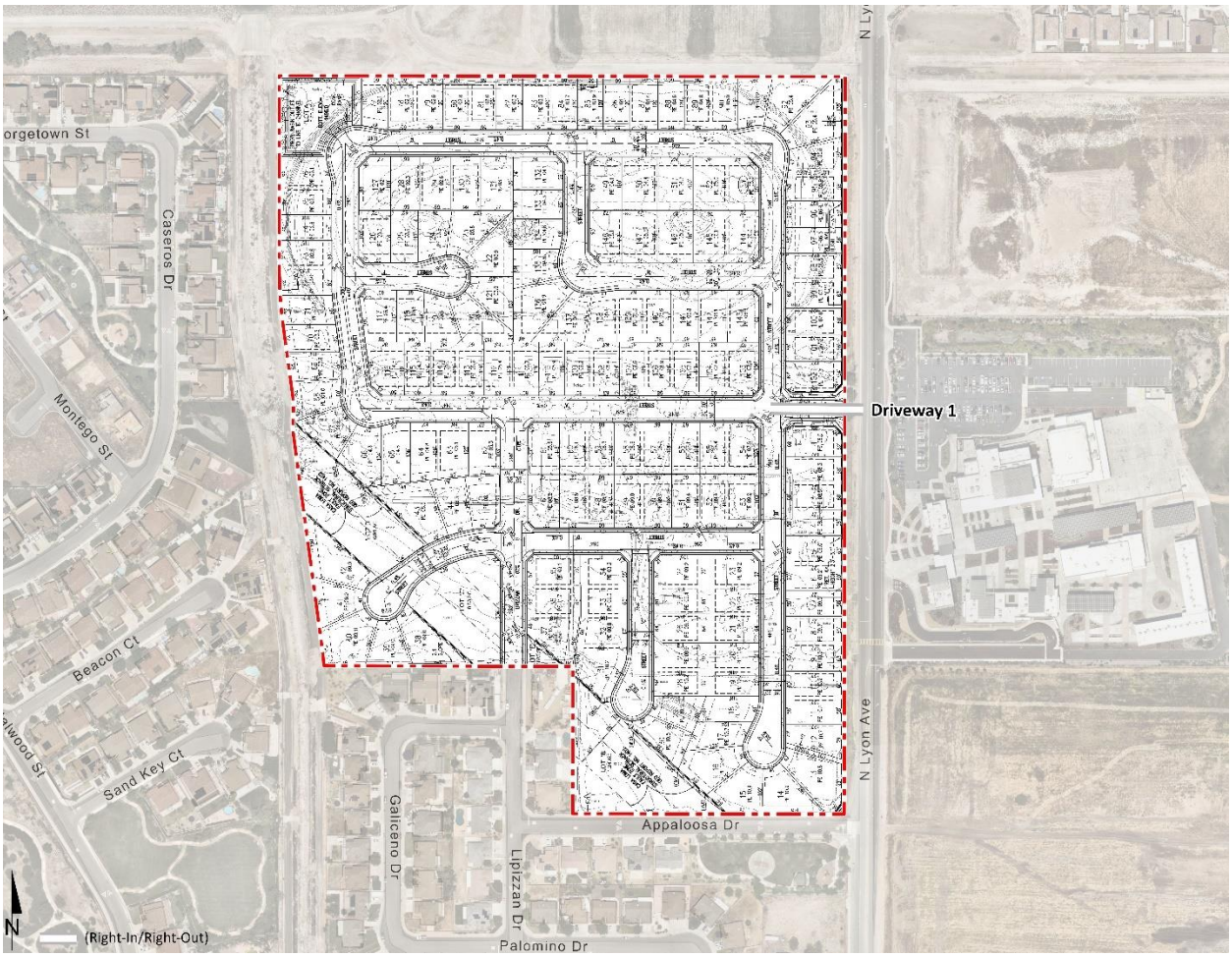


EXHIBIT 1-2: PRELIMINARY SITE PLAN



1.3 ANALYSIS SCENARIOS

For the purposes of this traffic study, potential deficiencies to traffic and circulation have been assessed for each of the following conditions:

- Existing (2023) Conditions
- Existing plus Ambient Growth (EA) (2026) Conditions
- Existing plus Ambient Growth plus Project (EAP) (2026) Conditions
- Existing plus Ambient Growth plus Cumulative (EAC) (2026) Conditions
- Existing plus Ambient Growth plus Project plus Cumulative (EAPC) (2026) Conditions

1.3.1 EXISTING (2023) CONDITIONS

Information for Existing (2023) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared. For a detailed discussion on the existing traffic counts, see Section 3.5 *Existing Traffic Counts*.

1.3.2 EA & EAP (2026) CONDITIONS

The EA and EAP (2026) conditions analysis determines the potential circulation system deficiencies based on a comparison of the EAP traffic conditions to EA conditions. The roadway network is similar to Existing conditions except for new connections to be constructed by the Project for EAP conditions. To account for background traffic growth, an ambient growth factor from Existing (2022) conditions of 6.12% (2 percent per year, compounded over 3 years) is included for both EA and EAP (2026) traffic conditions. The EAP analysis is intended to identify "Background Conditions" deficiencies associated with the development of the proposed Project based on the expected background growth within the study area.

1.3.3 EAC & EAPC (2026) CONDITIONS

The EAC and EAPC (2026) traffic conditions analysis determines the potential near-term cumulative circulation system deficiencies. The roadway network is similar to Existing conditions except for new connections to be constructed by the Project and cumulative developments projects for EAPC conditions. To account for background traffic growth, an ambient growth factor from Existing (2023) conditions of 6.12% (2 percent per year, compounded over 3 years) is included for both EAC and EAPC (2026) traffic conditions.

Conservatively, this TA estimates the area ambient traffic growth and then adds traffic generated by other known or probable related projects. These related projects are at least in part already accounted for in the assumed ambient growth rates; and some of these related projects may not be implemented and operational within the 2026 Opening Year time frame assumed for the Project. The resulting traffic growth utilized in this traffic study (ambient growth factor plus traffic generated by related projects) would therefore tend to overstate rather than understate background cumulative traffic deficiencies under 2026 conditions.

1.4 STUDY AREA

To ensure that this TA satisfies the City of San Jacinto's traffic study requirements, Urban Crossroads, Inc. prepared a Project traffic study scoping package for review by City of San Jacinto staff prior to the preparation of this report. This agreement provides an outline of the Project study area, trip generation, trip distribution, and analysis methodology. The agreement approved by the City is included in Appendix 1.1 of this TA.

The 6 study area intersections shown on Exhibit 1-3 and listed in Table 1-1 were selected for evaluation in this TA based on consultation with City of San Jacinto staff. At a minimum, the study area includes intersections where the Project is anticipated to contribute 100 or more peak hour trips per the City's Guidelines. (1) The "100 peak hour trip" criterion represents a minimum number of trips at which a typical intersection would have the potential to be affected by a given development proposal. The 100 peak hour trip criterion is a traffic engineering rule of thumb that is accepted and used throughout the City for the purposes of estimating a potential area of influence (i.e., study area).

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection	Jursidiction	CMP?
1	Lipizzan Dr. & Appaloosa Dr.	City of San Jacinto	No
2	Lipizzan Dr. & Cottonwood Av.	City of San Jacinto	No
3	Lyon Av. & De Anza Dr.	City of San Jacinto	No
4	Lyon Av. & Driveway 1	City of San Jacinto	No
5	Lyon Av. & Appaloosa Dr.	City of San Jacinto	No
6	Lyon Av. & Cottonwood Av.	City of San Jacinto	No

The intent of a Congestion Management Project (CMP) is to more link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related deficiencies, and improve air quality. The County of Riverside CMP became effective with the passage of Proposition 111 in 1990 and most recently updated in 2019 as part of the Riverside County Long Range Transportation Study. The Riverside County Transportation Commission (RCTC) adopted the 2019 CMP for the County of Riverside in December 2019. (3) There are no study area intersections identified as a Riverside County CMP intersection.

1.5 DEFICIENCIES

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 3 *Area Conditions*, Section 5 *EA & EAP (2026) Traffic Conditions*, and Section 6 *EAC & EAPC (2026) Traffic Conditions* include the detailed analysis. A summary of LOS results for all analysis scenarios is presented in Table 1-2.

EXHIBIT 1-3: STUDY AREA

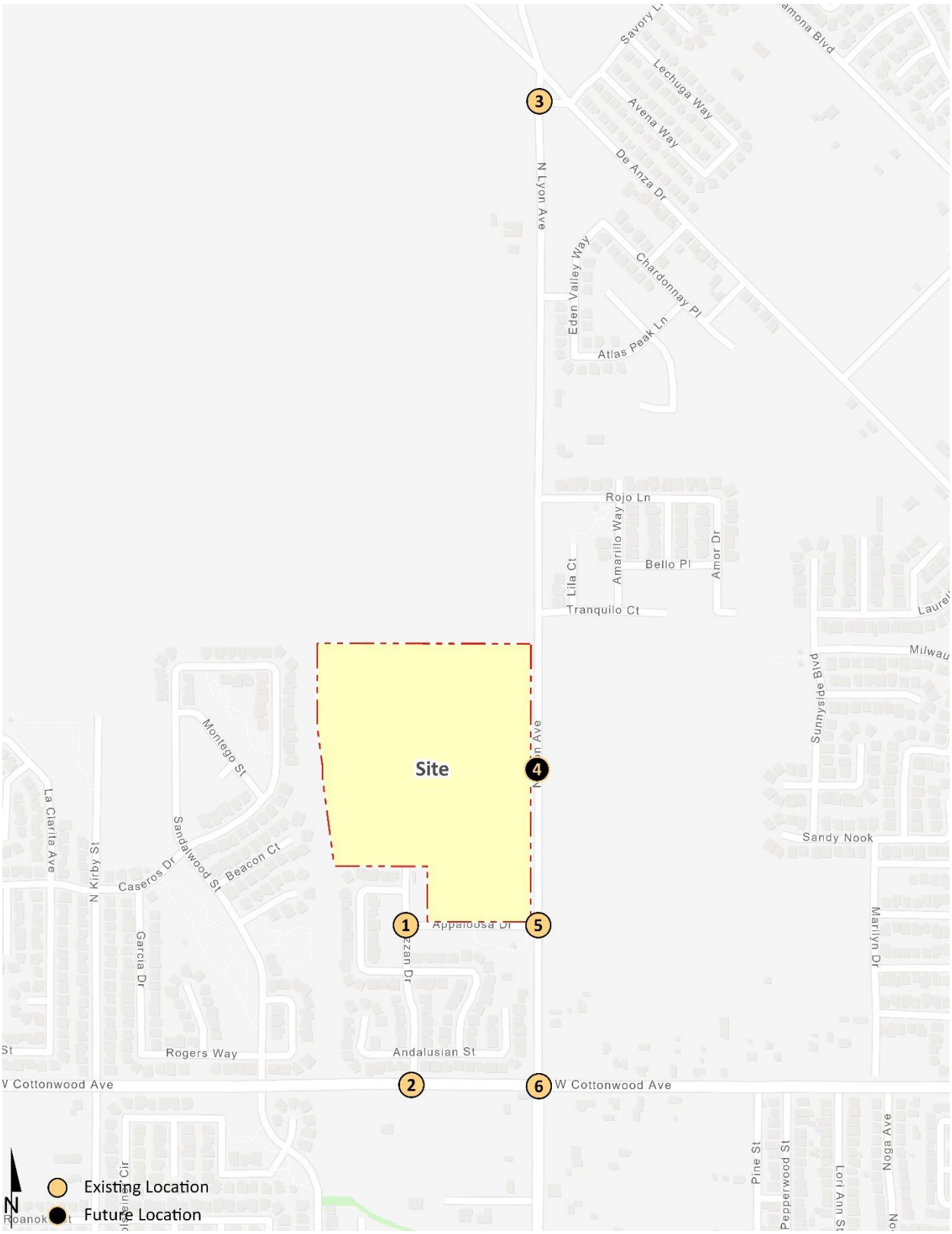


TABLE 1-2: SUMMARY OF LOS

#	Intersection	Existing (2023)			EA (2026)			EAP (2026)			EAC (2026)			EAP (2026)		
		AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM
1	Lipizzan Dr. & Appaloosa Dr.															
2	Lipizzan Dr. & Cottonwood Av.															
3	Lyon Av. & De Anza Dr.															
4	Lyon Av. & Driveway 1	N/A	N/A	N/A	N/A	N/A	N/A				N/A	N/A	N/A			
5	Lyon Av. & Appaloosa Dr.															
6	Lyon Av. & Cottonwood Av.															

LOS=A-D LOS=E LOS=F

1.5.1 EXISTING (2023) CONDITIONS

The following study area intersection is currently operating at an unacceptable LOS during the peak hours:

- Lyon Av. & Cottonwood Av. (#6) – LOS F AM peak hour; LOS E MD and PM peak hours

1.5.2 EA & EAP (2026) CONDITIONS

The following study area intersections are anticipated to operate at an unacceptable LOS during the peak hours under EA (2026) traffic conditions:

- Lyon Av. & Appaloosa Dr. (#5) – LOS E AM peak hour only
- Lyon Av. & Cottonwood Av. (#6) – LOS F AM, MD, and PM peak hours

The following additional study area intersection is anticipated to operate at an unacceptable LOS during the peak hours with the addition of Project traffic under EAP (2026) traffic conditions:

- Lyon Av. & Appaloosa Dr. (#5) – LOS E AM peak hour only

1.5.2 EAC & EAPC (2026) CONDITIONS

The following study area intersections are anticipated to operate at an unacceptable LOS during the peak hours under EAC (2026) traffic conditions:

- Lyon Av. & Appaloosa Dr. (#5) – LOS F AM and MD peak hours
- Lyon Av. & Appaloosa Dr. (#5) – LOS F AM and MD peak hours
- Lyon Av. & Cottonwood Av. (#6) – LOS F AM, MD, and PM peak hours

The following additional study area intersection is anticipated to operate at an unacceptable LOS during the peak hours with the addition of Project traffic under EAP (2026) traffic conditions:

- Lyon Av. & Appaloosa Dr. (#5) – LOS E AM peak hour only

1.6 RECOMMENDATIONS

1.6.1 SITE ADJACENT AND SITE ACCESS RECOMMENDATIONS

The following recommendations are based on the minimum improvements needed to accommodate site access and maintain acceptable peak hour operations for the proposed Project. The site adjacent recommendations are shown on Exhibits 1-4.

Recommendation 1 **– Lyon Avenue & Driveway 1** ***(#4)*** – The following improvements are necessary to accommodate site access:

- Project to install a stop control on the eastbound approach (egress Project traffic) and a right turn lane.
- Project to construct a second southbound through lane to be used as a shared through-right turn lane.

Recommendation 2 **– Lyon Avenue** – Lyon Avenue is a north-south street located along the Project's eastern boundary. The Project is to construct the ultimate half-section of Lyon Avenue as a Major (up to 100-foot right-of-way) along the Project's frontage from the Project's northern boundary to Appaloosa Drive consistent with the City's standards. Frontage improvements also include pavement, curb-and-gutter, sidewalk, and landscaping improvements.

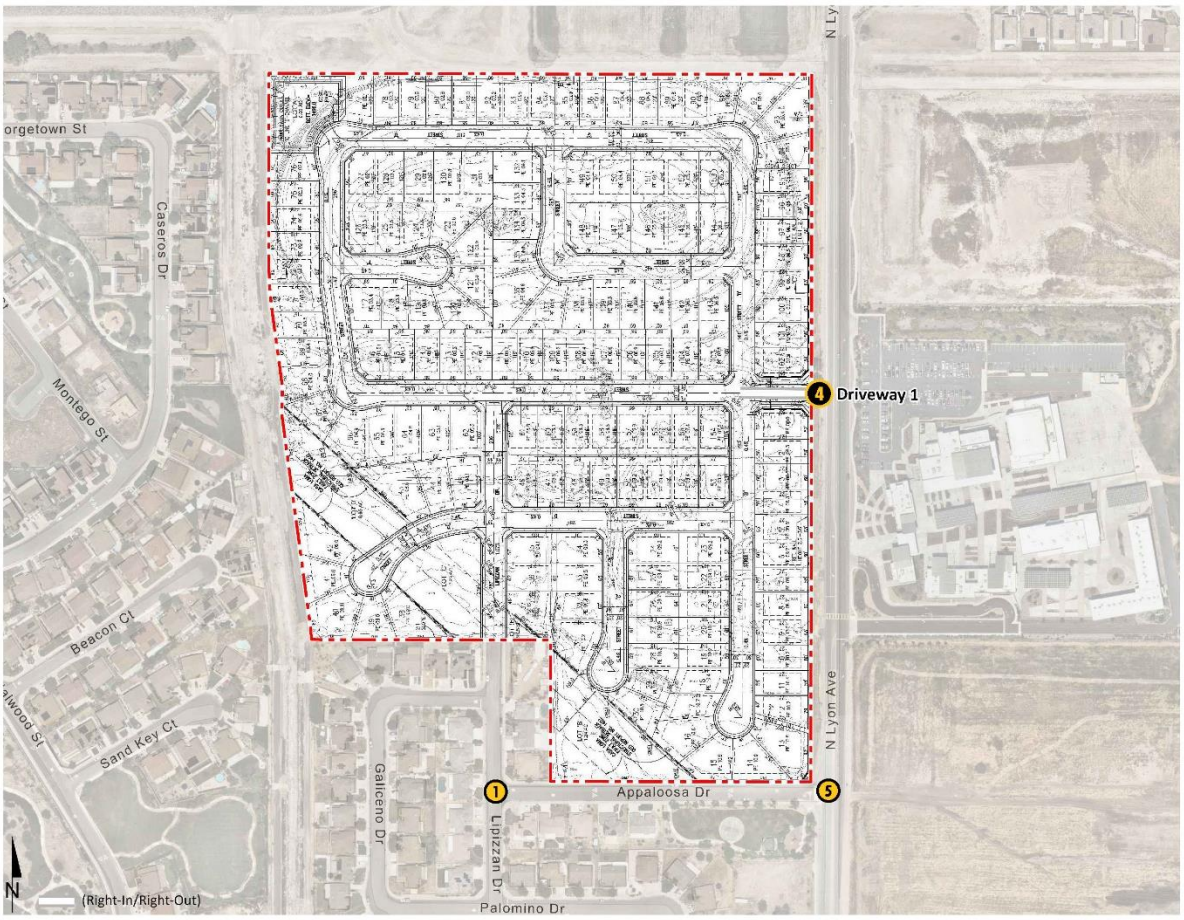
On-site traffic signing and striping should be implemented agreeable with the provisions of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and in conjunction with detailed construction plans for the Project site.

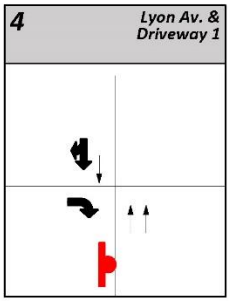
Sight distance at each project access point should be reviewed with respect to standard California Department of Transportation (Caltrans) and City of San Jacinto sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

1.6.2 OFF-SITE RECOMMENDATIONS

The recommended improvements needed to address the deficiencies identified under Existing (2023), EA & EAP (2026), and EAC & EAPC (2026) traffic conditions are shown in Table 1-3. Improvements that first appear under EAP (2026) would be the Project's responsibility to implement/construct in order to maintain acceptable LOS. For those remaining improvements listed in Table 1-3 and not constructed as part of the Project, the Project Applicant's responsibility for the Project's contributions towards deficient intersections is fulfilled through payment of fair share or payment of fees (if applicable) that would be assigned to construction of the identified recommended improvements. The Project Applicant would be required to pay fair share fees and participate in pre-existing fee programs consistent with the City's requirements (see Section 7 *Local and Regional Funding Mechanisms*).

EXHIBIT 1-4: SITE ACCESS RECOMMENDATIONS





0 = Existing Intersection Analysis Location

0 = Future Intersection Analysis Location

= Stop Sign Improvement

= Existing Lane

= Lane Improvement

TABLE 1-3: SUMMARY OF IMPROVEMENTS BY ANALYSIS SCENARIO

#	Intersection Location	Jurisdiction	Analysis Scenario Existing (2023)	EA (2026)	EAP (2026)	EAC (2026)	EAPC (2026)	Improvements in DIF, TUMF, etc.[1]	Project Responsibility[2]	Project Fair Share[3]
3	Lyon Av. & De Anza Dr.	City of San Jacinto	- None	- None	- Change from All-Way Stop to Cross-Street Stop with stop controls on the westbound approach	- N/A	- N/A	No	Construct	8.3%
					- Add SB left turn lane	- Same	- Same	No	Construct	
						- Add EB shared left-through-right turn lane	- Same	No	Fair Share	
						- Install Traffic Signal	- Same	No	Fair Share	
						- Add NB left turn lane	- Same	No	Fair Share	
5	Lyon Av. & Appaloosa Dr.	City of San Jacinto	- None	- Install Traffic Signal	- Same	- Same	- Same	No	Fair Share	12.8%
				- Add NB left turn lane	- Same	- Same	- Same	No	Fair Share	
						- Add SB left turn lane	- Same	No	Fair Share	
6	Lyon Av. & Cottonwood Av.	City of San Jacinto	- Install Traffic Signal	- Same	- Same	- Same	- Same	No	Fair Share	6.6%
			- Add NB left turn lane	- Same	- Same	- Same	- Same	No	Fair Share	
			- Add WB left turn lane	- Same	- Same	- Same	- Same	No	Fair Share	

[1] Improvements included in TUMF Nexus or City DIF programs have been identified as such.

[2] Program improvements constructed by Project may be eligible for fee credit. In lieu fee payment is at discretion of City.

[3] Total project fair share is applicable to the improvements which are not already included in the City DIF/TUMF for those intersections wholly or partially within the City.

1.7 QUEUING ANALYSIS

A queuing analysis was conducted at the study area intersections for EAPC (2026) traffic conditions to determine the turn pocket lengths necessary to accommodate 95th percentile queues. The analysis was conducted for the weekday AM, weekday MD, and weekday PM peak hours. The results have been provided in Appendix 1.2.

SimTraffic is designed to model networks of signalized and unsignalized intersections, with the primary purpose of checking and fine-tuning signal operations. SimTraffic uses the input parameters from Synchro to generate random simulations. The 95th percentile queue is derived from the average queue plus 1.65 standard deviations. The 95th percentile queue is not necessarily ever observed; it is simply based on statistical calculations (or Average Queue plus 1.65 standard deviations). Many agencies utilize the 95th percentile queues for design purposes. A vehicle is considered queued whenever it is traveling at less than 10 feet/second. The random simulations generated by SimTraffic have been utilized to determine the 95th percentile queue lengths observed for each turn movement. A SimTraffic simulation has been recorded five (5) times, during the weekday AM, weekday MD, and weekday PM peak hours, and has been seeded for 30-minute periods with 60-minute recording intervals.

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2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are consistent with City of San Jacinto's Traffic Study Guidelines.

2.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors, such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS A, representing completely free-flow conditions, to LOS F, representing breakdown in flow resulting in stop-and-go conditions. LOS E represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The 6th Edition Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (4) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of San Jacinto, City of Hemet, and California Department of Transportation (Caltrans) require signalized intersection operations analysis based on the methodology described in the HCM. (4) Intersection LOS operations are based on an intersection's average control delay. Control delays include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections LOS is related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 2-1.

The traffic modeling and signal timing optimization software package Synchro (Version 11) has been utilized to analyze signalized intersections. Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0[1]
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00	D
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00	E
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	80.01 and up	F

Source: HCM, 6th Edition

[1] If V/C is greater than 1.0 then LOS is F per HCM.

A saturation flow rate of 1900 has been utilized for all study area intersections. The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Customary practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g., PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all analysis scenarios. Per the HCM, PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak hour flows while lower PHF values are indicative of greater variability of flow during the peak hour. (4)

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of San Jacinto and City of Hemet require the operations of unsignalized intersections be evaluated using the methodology described in the HCM. (4) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2). At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. Delay for the intersection is reported for the worst individual movement at a two-way stop-controlled intersection. For all-way stop controlled intersections, LOS is computed for the intersection as a whole (average delay).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0[1]
Little or no delays.	0 to 10.00	A
Short traffic delays.	10.01 to 15.00	B
Average traffic delays.	15.01 to 25.00	C
Long traffic delays.	25.01 to 35.00	D
Very long traffic delays.	35.01 to 50.00	E
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F

Source: HCM, 6th Edition

[1] If V/C is greater than 1.0 then LOS is F per HCM.

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term “signal warrants” refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or determine the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TA uses the signal warrant criteria presented in the latest edition of the Caltrans California Manual on Uniform Traffic Control Devices (CA MUTCD). (5)

The signal warrant criteria for Existing study area intersections are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (5) Specifically, this TA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing traffic conditions and for all future analysis scenarios for existing unsignalized intersections. Warrant 3 is appropriate to use for this TA because it provides specialized warrant criteria for intersections with rural characteristics. For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection. Rural warrants have been used posted speed limits on the major roadways with unsignalized intersections that are over 40 miles per hour while urban warrants have been used where speeds are 40 miles per hour or below. Traffic signal warrant analyses were performed for the following study area intersection shown in Table 2-3:

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection
1	Lipizzan Dr. & Appaloosa Dr.
2	Lipizzan Dr. & Cottonwood Av.
3	Lyon Av. & De Anza Dr.
5	Lyon Av. & Appaloosa Dr.
6	Lyon Av. & Cottonwood Av.

Although unsignalized, the intersection of Lyon Avenue & Driveway 1 (#4) is proposed for right-in/right-out access only. As such, traffic signal warrants have not been evaluated at this location due to the access restrictions and infeasibility of a signal installation at this location. The Existing conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 *Area Conditions* of this report. The traffic signal warrant analyses for future conditions are presented in Section 5 *EA & EAP (2026) Traffic Conditions* and Section 6 *EAC & EAPC (2026) Traffic Conditions* of this report. It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

2.4 MINIMUM ACCEPTABLE LEVELS OF SERVICE (LOS)

The City of San Jacinto has identified LOS D as the standard for acceptable operating conditions for all intersections along the designated street and highway system.

2.5 DEFICIENCY CRITERIA

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies. The following deficiency criteria has been utilized for the City of San Jacinto. To determine whether the addition of project-related traffic at a study intersection would result in a deficiency, the following will be utilized:

- Any signalized study intersection operating at an acceptable LOS D or better without project traffic in which the addition of project traffic causes the intersection to degrade to a LOS E or F.
- Any signalized study intersection that is operating at LOS E or F without project traffic where the project increases delay by 5.0 or more seconds.
- Any unsignalized intersection in which the addition of project traffic causes the intersection to degrade from an acceptable LOS D or better to LOS E or F.
- Any unsignalized study intersection that is operating at LOS E or F without project traffic where the project increases delay by 5.0 or more seconds and the intersection meets the peak hour traffic signal warrant after the addition of project traffic.

2.6 PROJECT FAIR SHARE CALCULATION METHODOLOGY

Improvements found to be included in the TUMF and/or DIF will be identified as such. For improvements that do not appear to be in either of the pre-existing fee programs, a fair share contribution based on the Project's proportional share may be imposed in order to address the Project's share of deficiencies in lieu of construction. It should be noted that fair share calculations are for informational purposes only and the City Traffic Engineer will determine the appropriate improvements to be implemented by a project (to be identified in the conditions of approval). The Project's fair share contribution is determined based on the following equations, which are the ratio of Project traffic to net new traffic (where net new traffic is the future traffic less existing traffic):

Project Fair Share % = Project Traffic / (EAPC (2026) Total Traffic – Existing Traffic)

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3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of San Jacinto General Plan Circulation Network, and a review of existing peak hour intersection operations and traffic signal warrant analyses.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the scoping agreement with City of San Jacinto staff (Appendix 1.1), the study area includes a total of 6 existing and future intersections as shown previously on Exhibit 1-3, where the Project is anticipated to contribute 100 or more peak hour trips or were added at the City's request during the scoping process. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 CITY OF SAN JACINTO GENERAL PLAN CIRCULATION ELEMENT

As noted previously, the Project site is located within the City of San Jacinto. The roadway classifications and planned (ultimate) roadway cross-sections of the major roadways within the study area, as identified on the City of San Jacinto General Plan Circulation Element, are described subsequently. Exhibit 3-2 shows the City of San Jacinto General Plan Circulation Element.

Arterials are four to six-lane curbed or painted median roadways (with turn lanes developed at intersections) with a 146 to 184-foot right-of-way and an 84 to 118-foot curb-to-curb measurement. These roadways serve moderately high volumes of long distance and local traffic. The following study area roadway within the City of San Jacinto is classified as an Arterial:

- Cottonwood Avenue

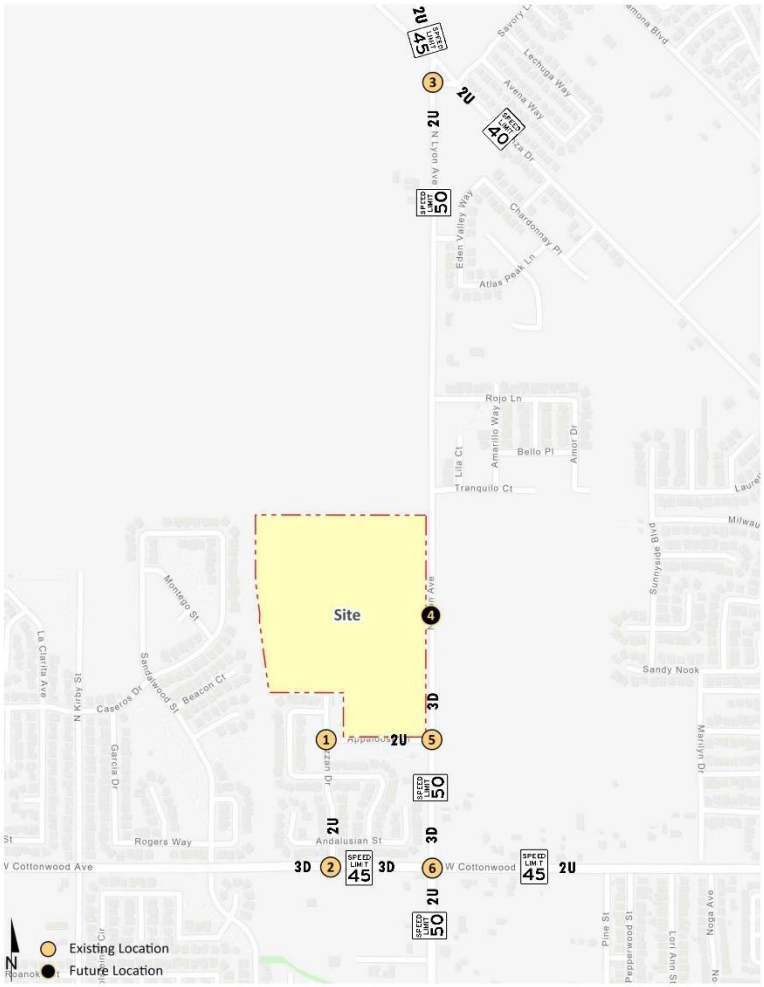
Major roadways are four-lane undivided roadways (with turn lanes and no median) with up to a 100-foot right-of-way and up to 66-foot curb-to-curb measurement. These roadways serve traffic from local and collector streets to and from highways and arterial. The following study area roadway within the City of San Jacinto is classified as a Major roadway:

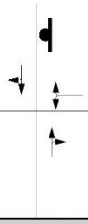
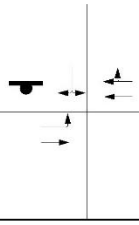
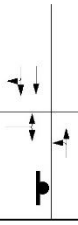
- Lyon Avenue, south of De Anza Drive

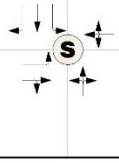
Collectors are two-lane roadways (possibly including a painted median) with a 78 to 90-foot right-of-way and a 44 to 56-foot curb-to-curb measurement. These roadways link the local street system to the arterial and major system. The following study area roadway are classified as Collectors:

- De Anza Drive
- Lyon Avenue, between De Anza Drive and Ramona Boulevard

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS

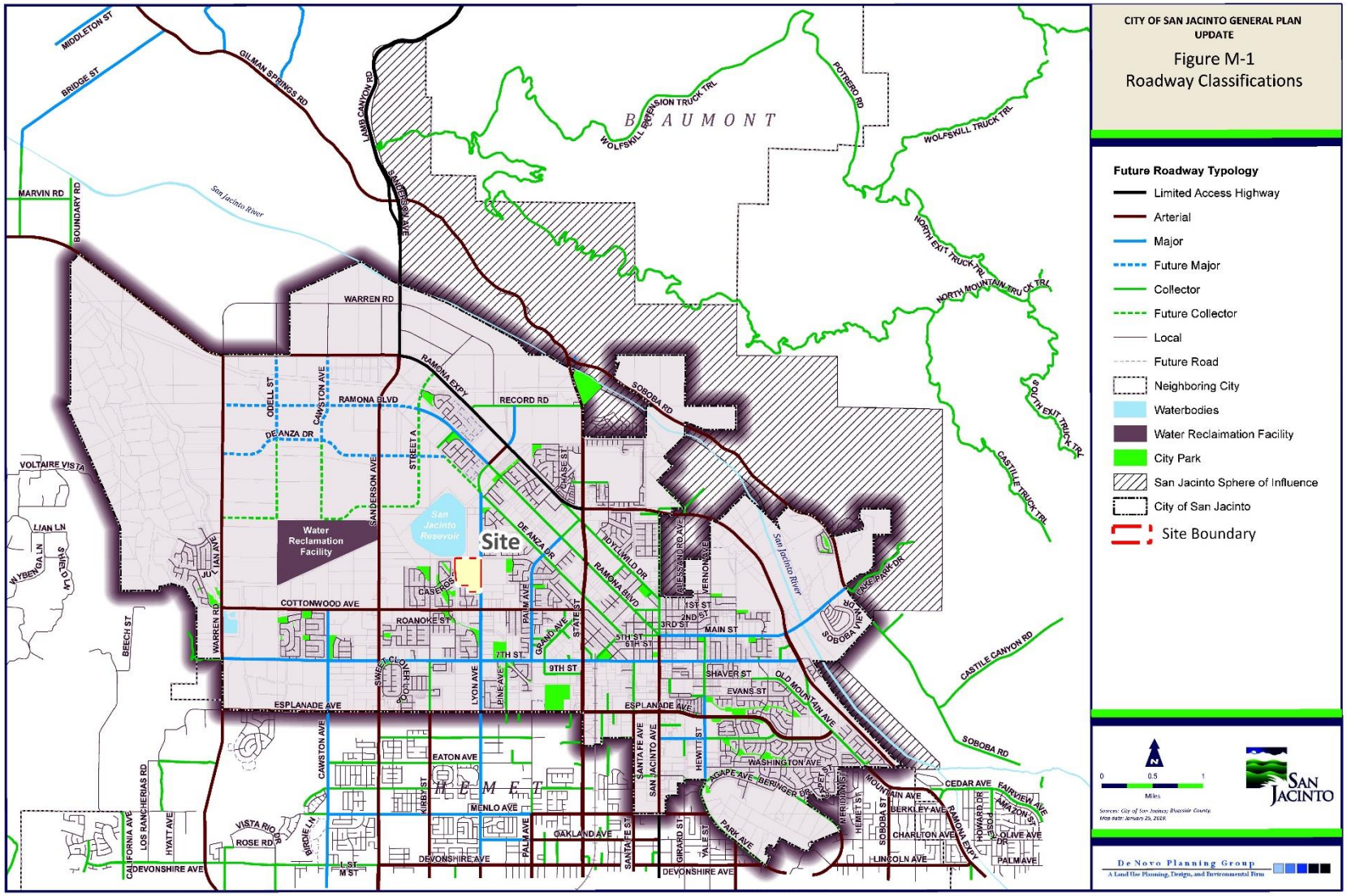


1 Lipizzan Dr. & Appaloosa Dr.	2 Lipizzan Dr. & Cottonwood Av.	3 Lyon Av. & De Anza Dr.	4 Lyon Av. & Driveway 1	5 Lyon Av. & Appaloosa Dr.
			Future Intersection	

6 Lyon Av. & Cottonwood Av.


4 = Number of Lanes
D = Divided
U = Undivided
SPEED LIMIT 55 = Speed Limit (MPH)
S = All Way Stop
= Stop Sign
= Traffic Lane

EXHIBIT 3-2: CITY OF SAN JACINTO GENERAL PLAN CIRCULATION ELEMENT



3.3 BICYCLE & PEDESTRIAN FACILITIES

The City of San Jacinto bike networks are shown on Exhibit 3-3. As shown on Exhibit 3-3, there are proposed Class I Bike Paths along Lyon Avenue and Cottonwood Avenue. Exhibit 3-4 illustrates the existing crosswalks throughout the study area. As shown on Exhibit 3-4, pedestrian facilities are built out along Appaloosa Drive, and portions of Lipizzan Drive, Cottonwood Avenue, and Lyon Avenue.

3.4 TRANSIT SERVICE

The study area is currently served by the Riverside Transit Agency (RTA). The transit services are illustrated on Exhibit 3-5. As shown on Exhibit 3-5, there are existing GoMicro stops along Cottonwood Avenue and Kirby Street. GoMicro is RTA's on-demand service that offers shared rides. Transit service is reviewed and updated by RTA periodically to address ridership, budget, and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate.

3.5 EXISTING (2023) TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in August 2023 when local schools were in session and operating on normal bell schedules. The following peak hours were selected for analysis:

- Weekday AM Peak Hour (peak hour between 7:00 AM and 9:00 AM)
- Weekday MD Peak Hour (peak hour between 1:30 PM and 3:30 PM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 6:00 PM)

There were no observations made in the field that would indicate atypical traffic conditions on the count dates, such as construction activity or detour routes and near-by schools were in session and operating on normal schedules. As such, no additional adjustments were made to the traffic counts to establish the baseline condition. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1.

Existing weekday ADT volumes on arterial highways throughout the study area are shown on Exhibit 3-6. Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 12.55 = Leg Volume

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 7.97 percent. As such, the above equation utilizing a factor of 12.55 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 7.97 percent (i.e., 1/0.0797 = 12.55) and was assumed to sufficiently estimate ADT volumes for planning-level analyses. This factor is consistent with that used for other traffic studies within the study area. Existing weekday AM and weekday PM peak hour intersection volumes are shown on Exhibit 3-6. Existing weekday MD peak hour intersection volumes are shown on Exhibit 3-7.

EXHIBIT 3-3: CITY OF SAN JACINTO GENERAL PLAN TRAILS AND BICYCLE NETWORK

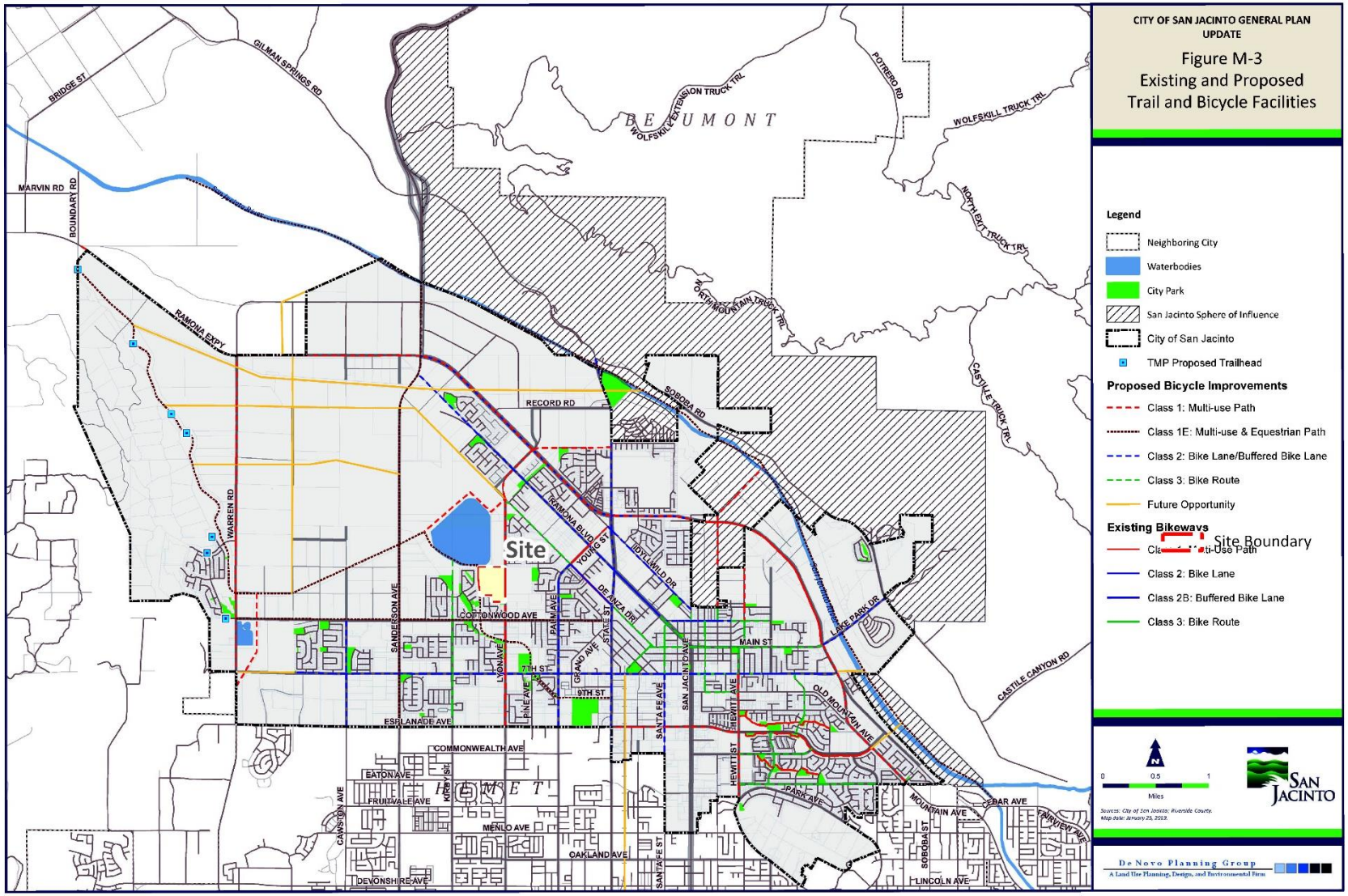


EXHIBIT 3-4: EXISTING PEDESTRIAN FACILITIES

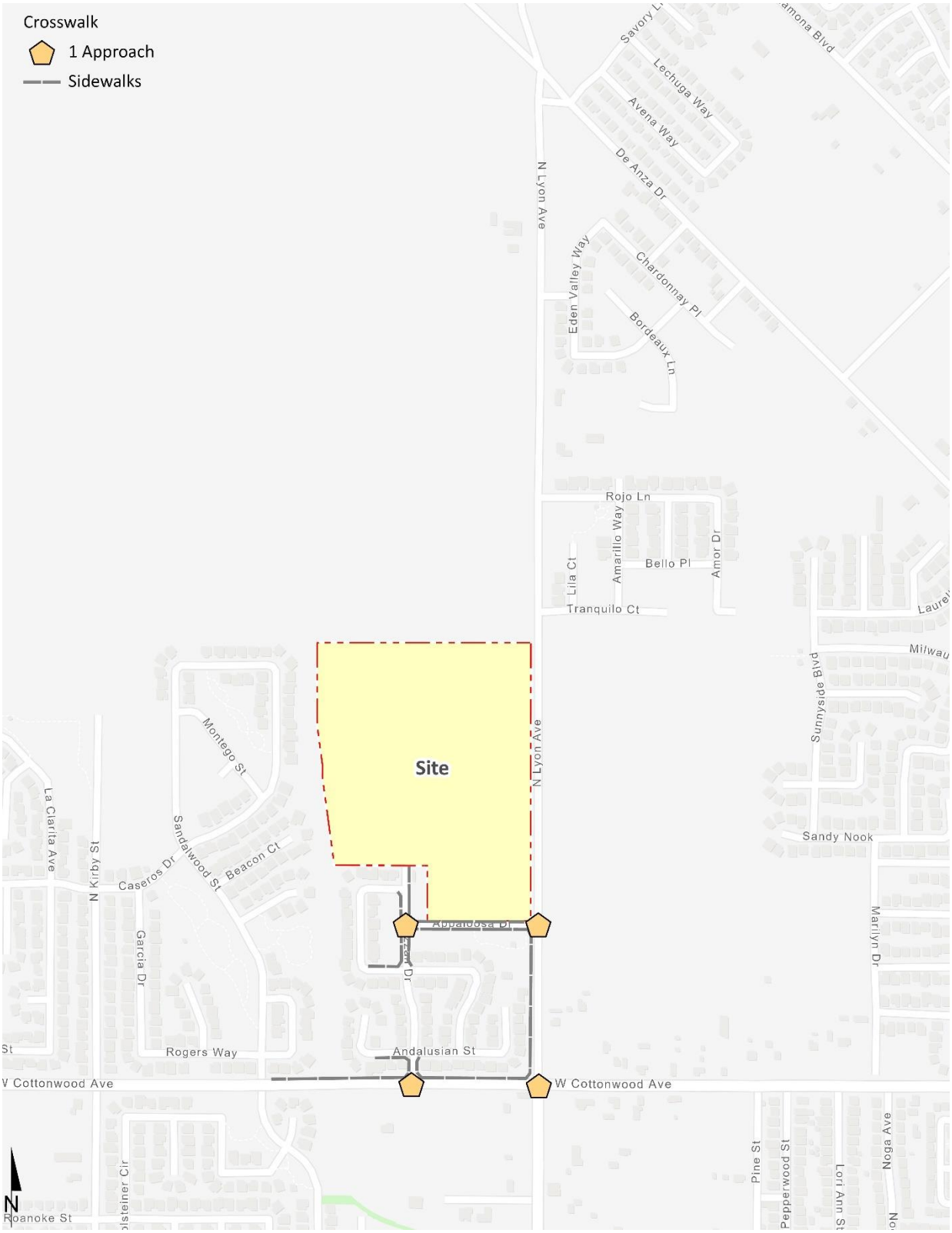


EXHIBIT 3-5: EXISTING TRANSIT ROUTES

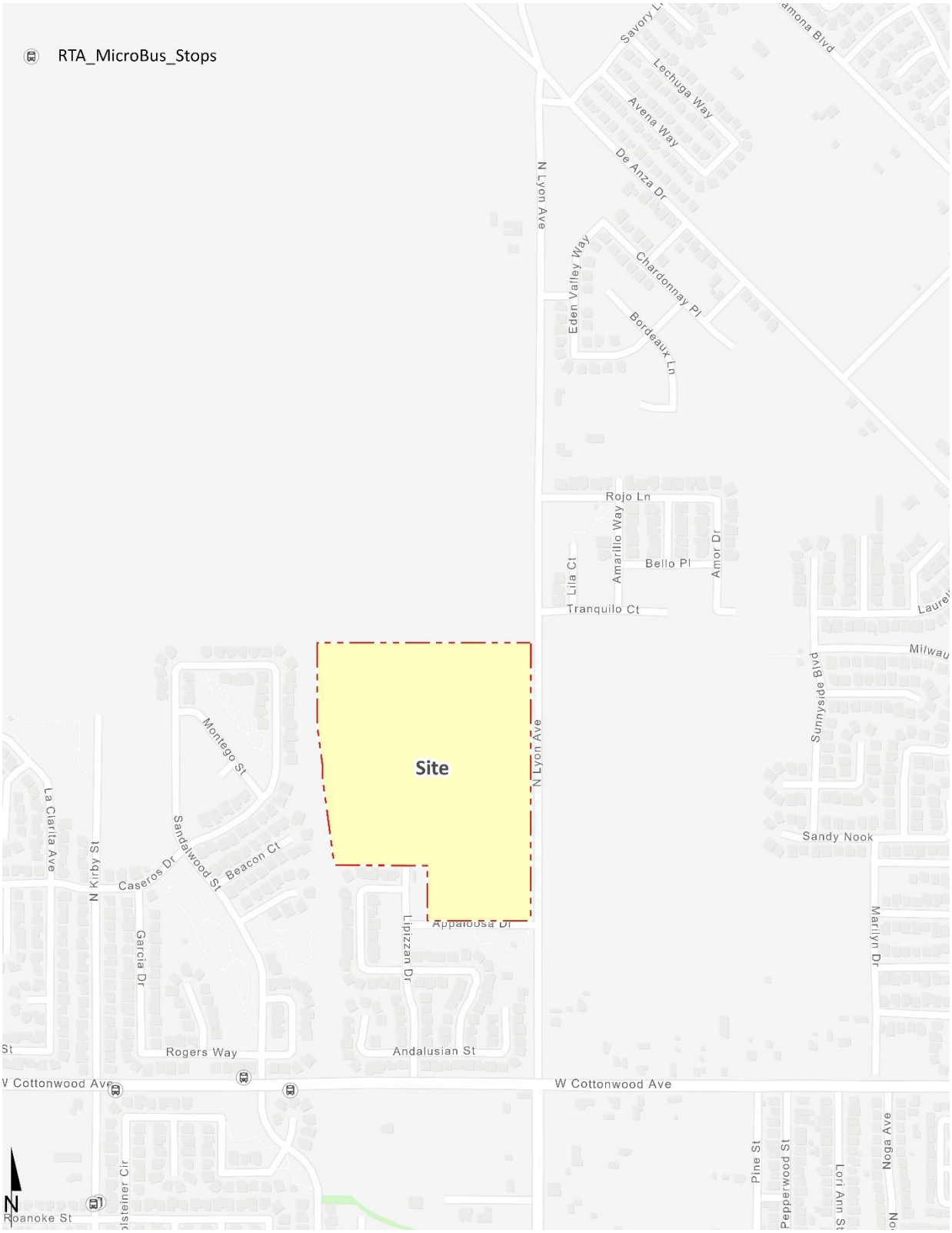
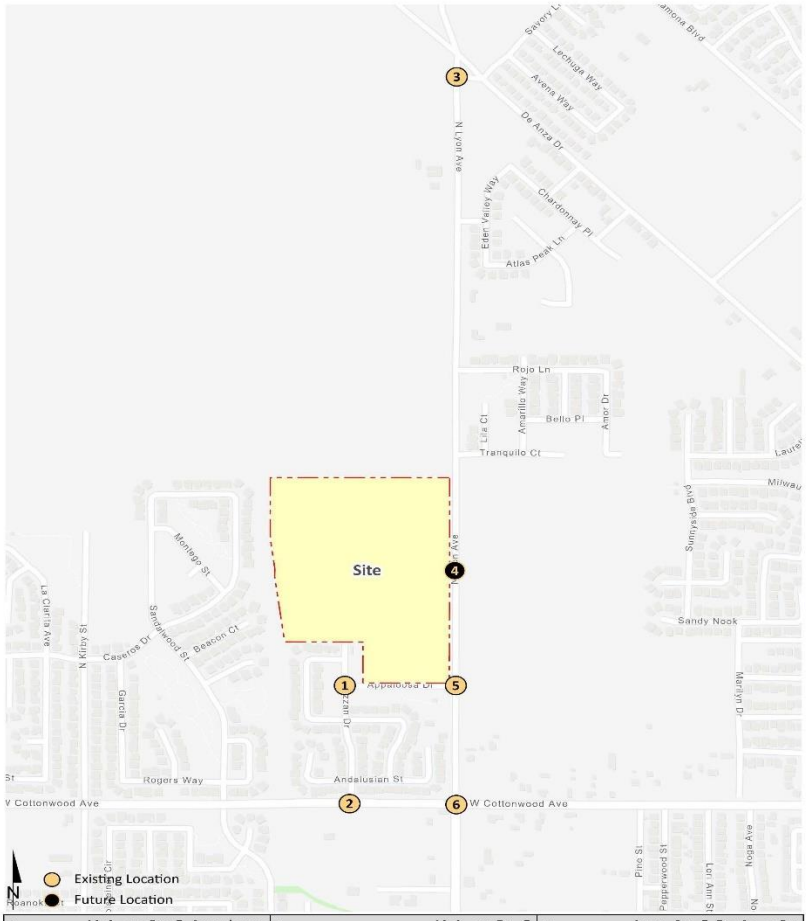


EXHIBIT 3-6: EXISTING (2023) AM, PM, AND ADT TRAFFIC VOLUMES

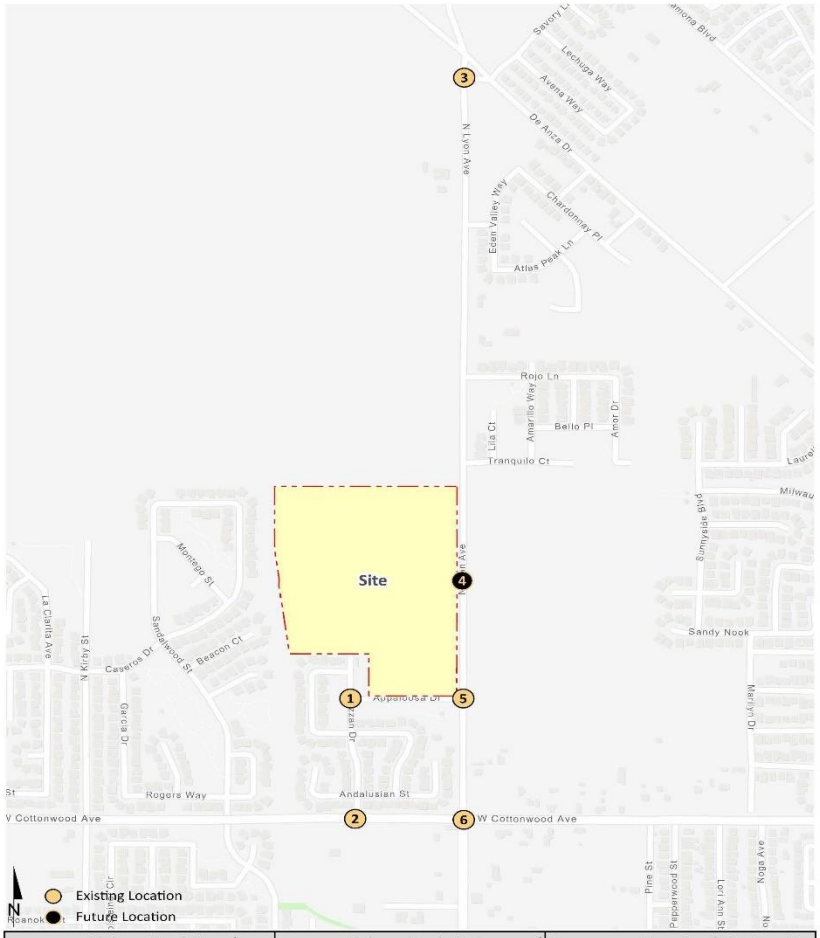


1 Lipizzan Dr. & Appaloosa Dr.	2 Lipizzan Dr. & Cottonwood Av.	3 Lyon Av. & De Anza Dr.
150 / 300	800 / 9,550	6,450 / 2,750
↓ 4(0) ↳ 6(5) / ↰ 6(3) ← 14(9)	↲ 24(15) ↳ 13(11) / ↰ 9(14) ← 303(357)	↓ 180(252) ↳ 69(72) / ↰ 73(34) ← 165(46)
→ 2(3) ↱ 30(6) / 250	27(23) ↳ 517(394) → / 9,900	→ 286(156) ↱ 255(66) / 6,550
4 Lyon Av. & Driveway 1	**5 Lyon Av. & Appaloosa Dr.**	**6 Lyon Av. & Cottonwood Av.**
6,950 / 6,950	7,300 / 6,900	7,100 / 8,050
↓ 348(310) / → 627(244)	↲ 36(7) ↓ 312(303) / 50(4) → 10(4) ↳ / ↰ 7(3) → 577(240) / 250	↲ 140(78) ↓ 149(213) ↳ 32(25) / 214(80) → 302(285) ↓ 14(40) ↳ / ↰ 150(26) ← 147(254) ↰ 23(30) / ↰ 25(39) → 213(145) ↱ 31(23) / 9,550 / 6,150

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

EXHIBIT 3-7: EXISTING (2023) MD TRAFFIC VOLUMES



1 Lipizzan Dr. & Appaloosa Dr.	2 Lipizzan Dr. & Cottonwood Av.	3 Lyon Av. & De Anza Dr.
↰ 7 3 ↓ ↳ 8 ↰ 65 ↑ ↱ 5 53	↰ 17 70 ↲ ↳ 10 ← 320 72 ↳ 387 →	↰ 54 193 ↓ ↳ 69 ↰ 135 ↑ ↱ 153 185
4 Lyon Av. & Driveway 1	**5 Lyon Av. & Appaloosa Dr.**	**6 Lyon Av. & Cottonwood Av.**
316 ↓ ↑ 357	40 ↲ 276 ↓ 23 ↳ 45 ↲ ↰ ↑ 50 334	↰ 110 129 ↲ 181 ↓ 49 ↳ ← 160 ↰ 29 118 ↳ 247 → 32 ↲ ↰ ↑ ↱ 48 144 23

MD Peak Hour Intersection Volumes

3.6 INTERSECTION OPERATIONS ANALYSIS

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1, which indicates that the following study area intersections are currently operating at an acceptable LOS during the peak hours under Existing (2023) traffic conditions:

- Lyon Av. & Cottonwood Av. (#6) – LOS F AM peak hour; LOS E MD and PM peak hours

The intersection operations analysis worksheets are included in Appendix 3.2 of this TA.

TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2023) CONDITIONS

#	Intersection	Traffic Control[1]	Delay[2] (secs.)			Level of Service		
			AM	MD	PM	AM	MD	PM
1	Lipizzan Dr. & Appaloosa Dr.	CSS	8.7	9.9	8.7	A	A	A
2	Lipizzan Dr. & Cottonwood Av.	CSS	11.6	11.3	11.4	B	B	B
3	Lyon Av. & De Anza Dr.	AWS	23.8	16.2	10.2	C	C	B
4	Lyon Av. & Driveway 1		Future Intersection					
5	Lyon Av. & Appaloosa Dr.	CSS	30.3	23.8	11.7	D	C	B
6	Lyon Av. & Cottonwood Av.	AWS	**56.2**	**44.7**	**39.6**	**F**	**E**	**E**

* **BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] AWS = All-Way Stop; CSS = Cross-Street Stop

[2] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

3.7 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. The following intersections currently meet a traffic signal warrant under Existing (2023) traffic conditions:

- Lyon Avenue & De Anza Drive (#3)
- Lyon Avenue & Cottonwood Avenue (#6)

Existing conditions traffic signal warrant analysis worksheets are provided in Appendix 3.3.

4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network. The Project is proposed to consist of the development of 153 single family residential dwelling units. Access to the Project site will be accommodated via Lipizzan Drive to the south to Cottonwood Avenue and a right-in/right-out access only on Lyon Avenue (Driveway 1). There is an existing raised median on Lyon Avenue with wrought iron fencing to restrict the access at Driveway 1

4.1 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development. In order to develop the traffic characteristics of the proposed project, trip-generation statistics published in the ITE Trip Generation Manual (11th Edition, 2021) were used to estimate the Project's trip generation. (2) Trip generation rates are summarized in Table 4-1.

TABLE 4-1: PROJECT TRIP GENERATION RATES

Land Use[1]	ITE Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	MD Peak Hour In	MD Peak Hour Out	MD Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Single Family Detached Residential	210	DU	0.18	0.52	0.70	0.50	0.42	0.92	0.59	0.35	0.94	9.43

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

[2] DU = dwelling units

The trip generation summary illustrating daily, and peak hour trip generation estimates for the proposed Project are shown in Table 4-2. The Project is anticipated to generate a total of 1,444 two-way trips per day with 107 AM peak hour trips, 141 MD peak trips, and 144 PM peak hour trips.

TABLE 4-2: PROJECT TRIP GENERATION SUMMARY

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	MD Peak Hour In	MD Peak Hour Out	MD Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Lyon Avenue Project (TTM No. 38468)	153	DU	28	79	107	76	65	141	91	53	144	1,444

[1] DU = dwelling units

4.2 PROJECT TRIP DISTRIBUTION

The Project trip distribution represents the directional orientation of traffic to and from the Project site. Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. Exhibits 4-1 and 4-2 show the Project's inbound and outbound trip distribution patterns, respectively, which follows existing travel patterns (refer to Appendix 3.1).

EXHIBIT 4-1: PROJECT INBOUND TRIP DISTRIBUTION

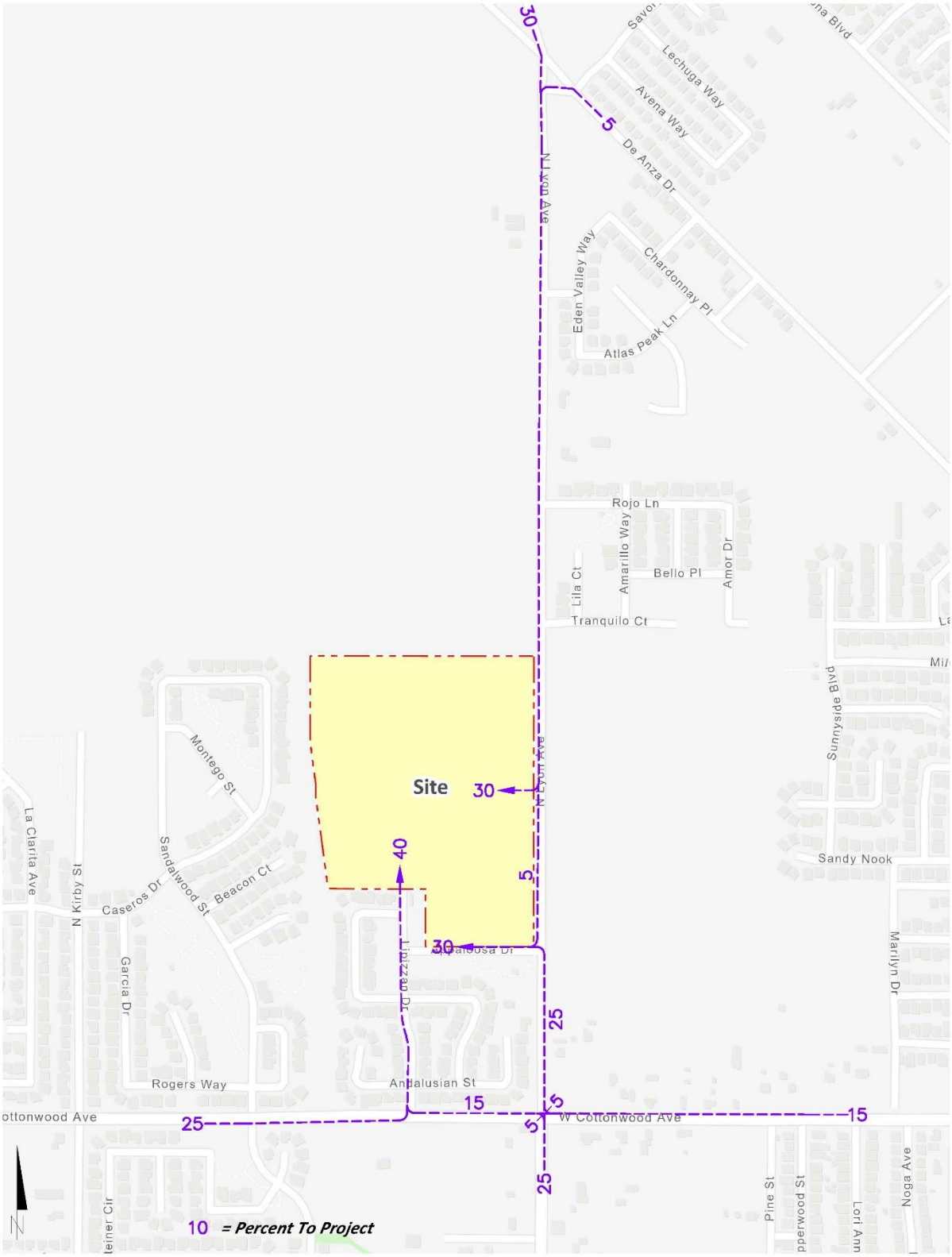
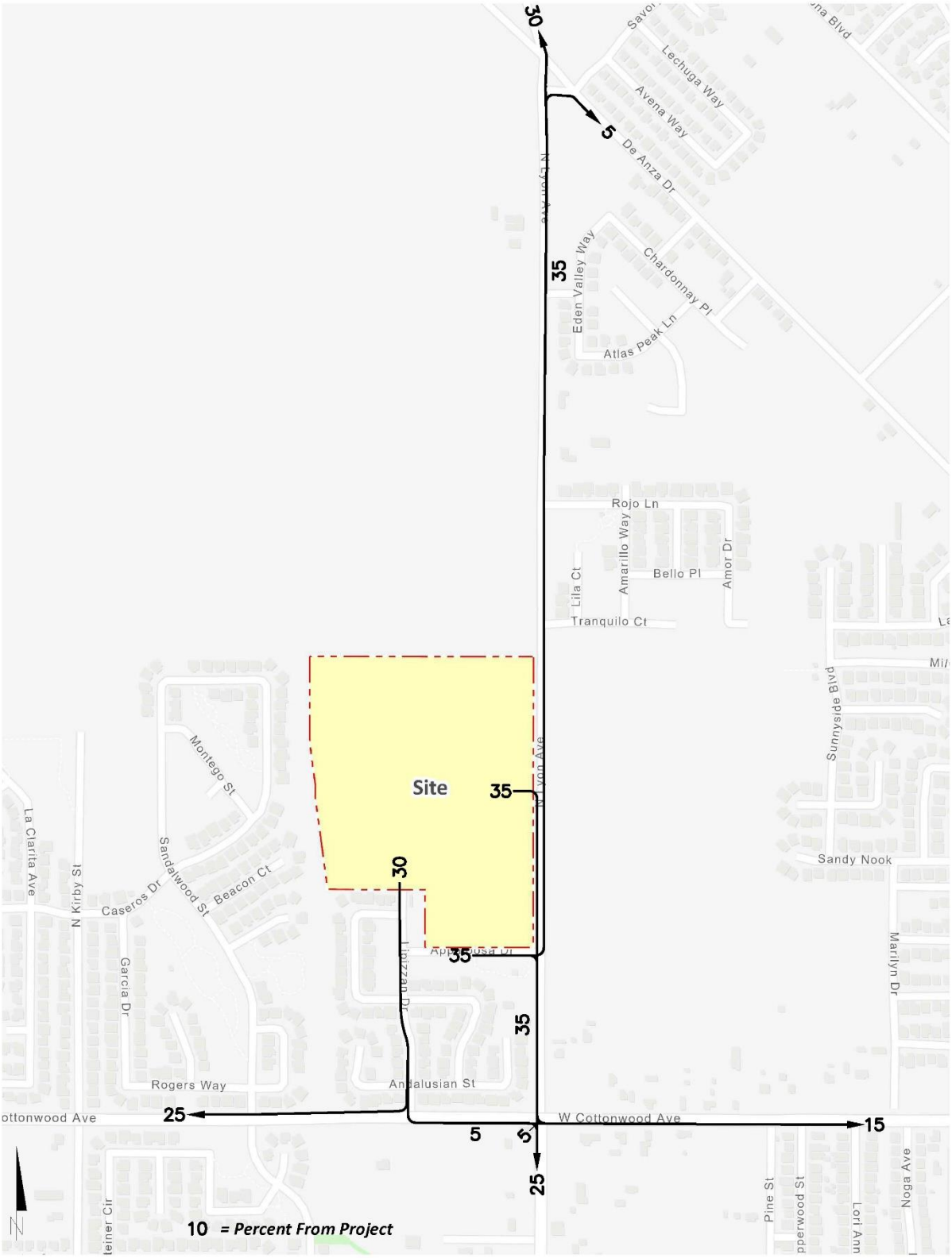


EXHIBIT 4-2: PROJECT OUTBOUND TRIP DISTRIBUTION



4.3 MODAL SPLIT

The potential for Project trips to be reduced by the use of public transit, walking or bicycling have not been included as part of the Project's estimated trip generation. Essentially, the Project's traffic projections are "conservative" in that these alternative travel modes would reduce the forecasted traffic volumes.

4.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, the Project only ADT and AM and PM peak hour intersection turning movement volumes are shown on Exhibit 4-3. The Project only MD peak hour intersection turn movement volumes are shown on Exhibit 4-4.

4.5 BACKGROUND TRAFFIC

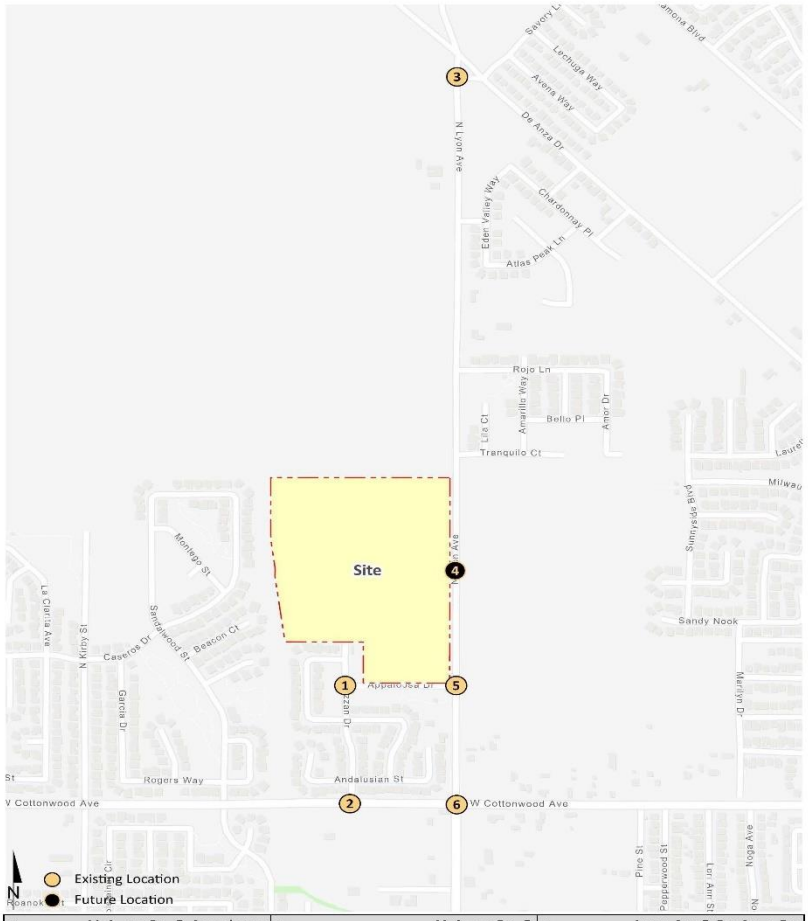
Future year traffic forecasts have been based upon background (ambient) growth at 2% per year, compounded annually, for 2026 conditions. The total ambient growth is 6.12% for 2026 traffic conditions (compounded growth of 2 percent per year over 3 years or $1.02^{3\text{ years}}$). The ambient growth factor is intended to approximate regional traffic growth. This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies.

The currently adopted Southern California Association of Governments (SCAG) 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) growth forecasts for the City of San Jacinto identifies projected growth in population of 44,800 in 2016 to 69,900 in 2045, or a 56.0 percent increase over the 29-year period. (7) The change in population equates to roughly a 1.55 percent growth rate, compounded annually. Similarly, growth over the same 29-year period in households is projected to increase by 78.6 percent, or 2.02 percent annual growth rate. Finally, growth in employment over the same 29-year period is projected to increase by 89.9 percent, or a 2.24 percent annual growth rate. This results in an average of 1.93 percent annual growth rate. As such, the 2.0 percent per year ambient growth rate utilized in this TA would appear to conservatively estimate annual traffic growth and overstate as opposed to understating future traffic forecasts.

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the City of San Jacinto and neighboring cities such as the City of Hemet. The cumulative project list includes known and foreseeable projects that are anticipated to contribute traffic to the study area intersections.

EXHIBIT 4-3: PROJECT ONLY AM, PM, AND ADT TRAFFIC VOLUMES

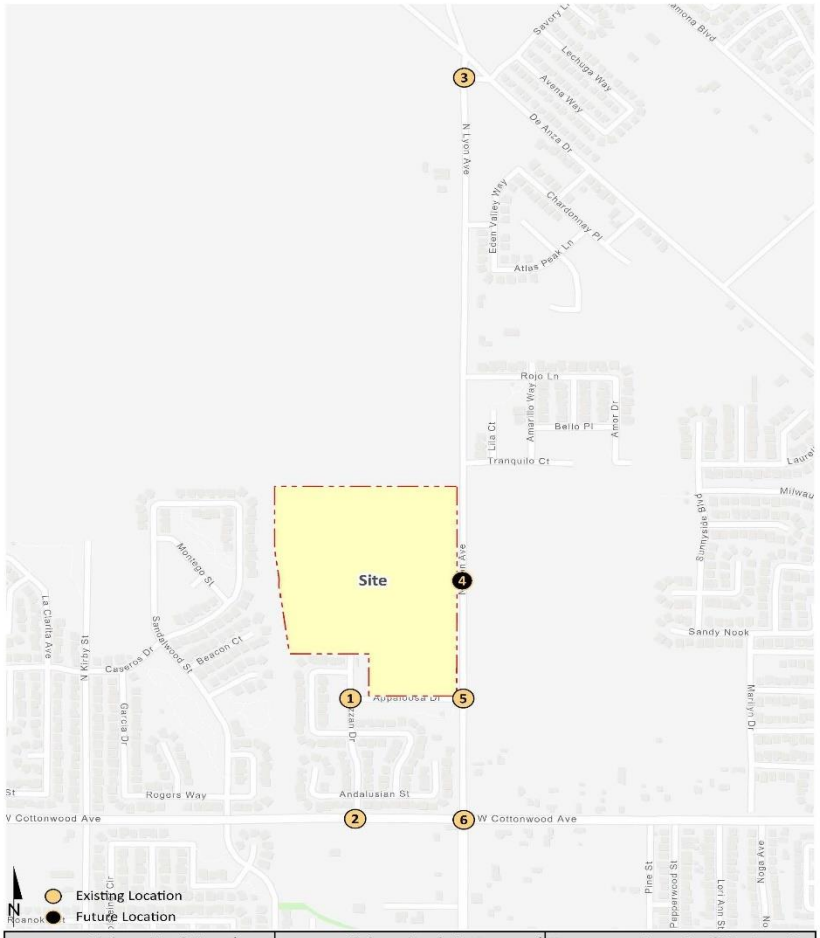


1 Lipizzan Dr. & Appaloosa Dr.		2 Lipizzan Dr. & Cottonwood Av.		3 Lyon Av. & De Anza Dr.	
1,000	450	500	150	450	Nominal
← 24(16) ↳ 28(19)	↱ 8(27)	↲ 20(13) ← 4(3)	↱ 4(14)	← 8(27)	↰ 1(5)
	→ 11(36)	7(23) →			→ 24(16) ↱ 4(3)
500		350		500	

4 Lyon Av. & Driveway 1		5 Lyon Av. & Appaloosa Dr.		6 Lyon Av. & Cottonwood Av.	
500		550		450	200
↲ 8(27) ← 1(5)	→ 28(19)	↲ 1(5) ← 28(19)	↰ 7(23)	← 16(11) ↳ 12(8)	↱ 1(5) ← 3(9)
28(19) →		28(19) →		4(3) →	↰ 1(5) → 6(18)
450	550	450	450	150	350

##(##) AM(PM) Peak Hour Intersection Volumes
Average Daily Trips

EXHIBIT 4-4: PROJECT ONLY MD TRAFFIC VOLUMES



1 Lipizzan Dr. & Appaloosa Dr.	2 Lipizzan Dr. & Cottonwood Av.	3 Lyon Av. & De Anza Dr.
↰ 20 ↳ 23 ↑ 23 ↑ 30	↰ 16 ↳ 3 ↑ 11 ↑ 19	↰ 23 ↑ 4 ↑ 20 ↱ 3
4 Lyon Av. & Driveway 1	**5 Lyon Av. & Appaloosa Dr.**	**6 Lyon Av. & Cottonwood Av.**
↰ 23 ↰ 4 ↰ 23 ↑ 23	↰ 4 ↰ 23 ↳ 23 ↰ 19	↰ 13 ↳ 10 ↑ 4 ← 8 ↰ 4 ↑ 15

MD Peak Hour Intersection Volumes

Where applicable, cumulative projects anticipated to contribute measurable traffic (i.e., 50 or more peak hour trips) to study area intersections have been manually added to the study area network to generate EAC (2026) forecasts. In other words, this list of cumulative development projects has been reviewed to determine which projects would likely contribute measurable traffic through the study area intersections (e.g., those cumulative projects in close proximity to the proposed Project). For the purposes of this analysis, the cumulative projects that were determined to affect one or more of the study area intersections are shown on Exhibit 4-5, listed in Table 4-3, and have been considered for inclusion. Any additional traffic generated by other projects not on the cumulative projects list is likely accounted for through background ambient growth factors that have been applied to the peak hour volumes at study area intersections as discussed in Section 4.5 *Background Traffic*. Cumulative Only ADT and AM and PM peak hour intersection turning movement volumes are shown on Exhibit 4-6. Cumulative Only MD peak hour intersection turning movement volumes are shown on Exhibit 4-7.

4.7 NEAR-TERM TRAFFIC CONDITIONS

The "buildup" approach combines existing traffic counts with a background ambient growth factor to forecast 2026 traffic conditions. An ambient growth factor accounts for background (area-wide) traffic increases that occur over time up the year 2026 from the year 2023. Traffic volumes generated by the Project are then added to assess the near-term traffic conditions. The 2026 roadway network is similar to the Existing conditions roadway network, with the exception of future driveways proposed to be developed by the Project. The near-term traffic analysis includes the following traffic conditions, with the various traffic components:

- EA (2026)
    - Existing 2023 counts
    - Ambient growth traffic (6.12%)
- EAP (2026)
    - Existing 2023 counts
    - Ambient growth traffic (6.12%)
    - Project traffic
- EAC (2026)
    - Existing 2023 counts
    - Ambient growth traffic (6.12%)
    - Cumulative Development traffic
- EAPC (2026)
    - Existing 2023 counts
    - Ambient growth traffic (6.12%)
    - Cumulative Development traffic
    - Project traffic

EXHIBIT 4-5: CUMULATIVE DEVELOPMENT LOCATION MAP

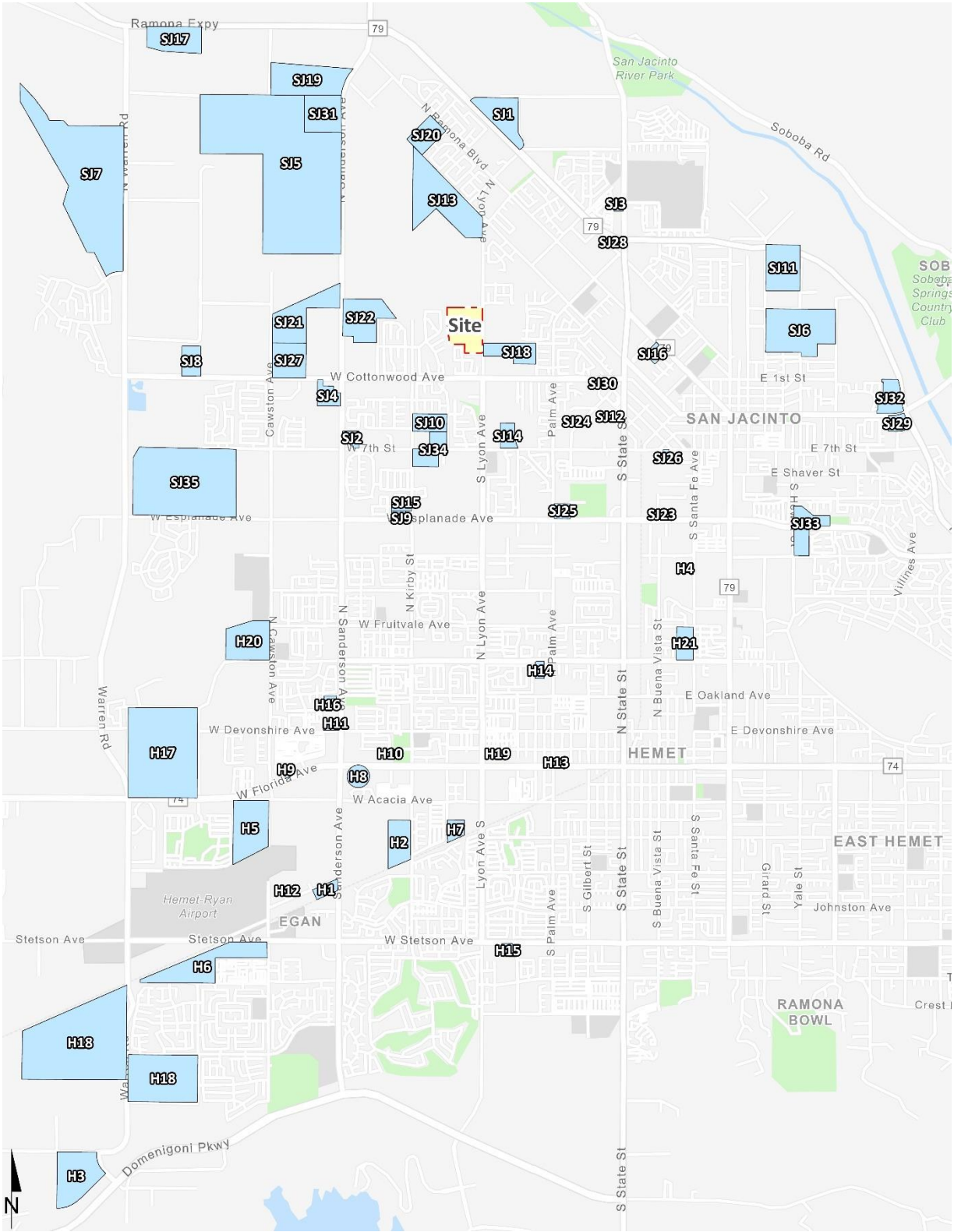
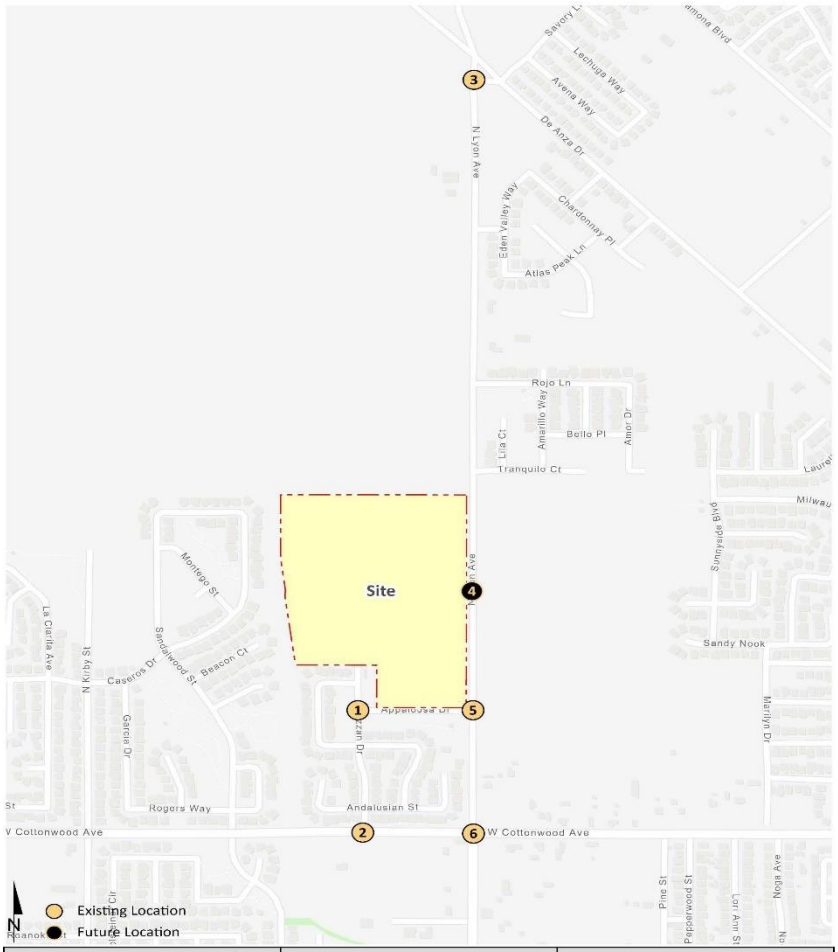


EXHIBIT 4-6: CUMULATIVE ONLY AM, PM, AND ADT TRAFFIC VOLUMES



1 Lipizzan Dr. & Appaloosa Dr.

2 Lipizzan Dr. & Cottonwood Av.

4,400
← 138(235)
172(204) →
4,400

3 Lyon Av. & De Anza Dr.

2,700
12(38) ↲
95(110) ↓
33(22) ↳
33(22) →
99(66) ↴
750
← 12(38)
↰ 3(11)
35(113) ↰
89(103) ↑
9(6) ↱
3,000
4,050

4 Lyon Av. & Driveway 1

4,050
197(187) ↓
133(222) →
4,050

5 Lyon Av. & Appaloosa Dr.

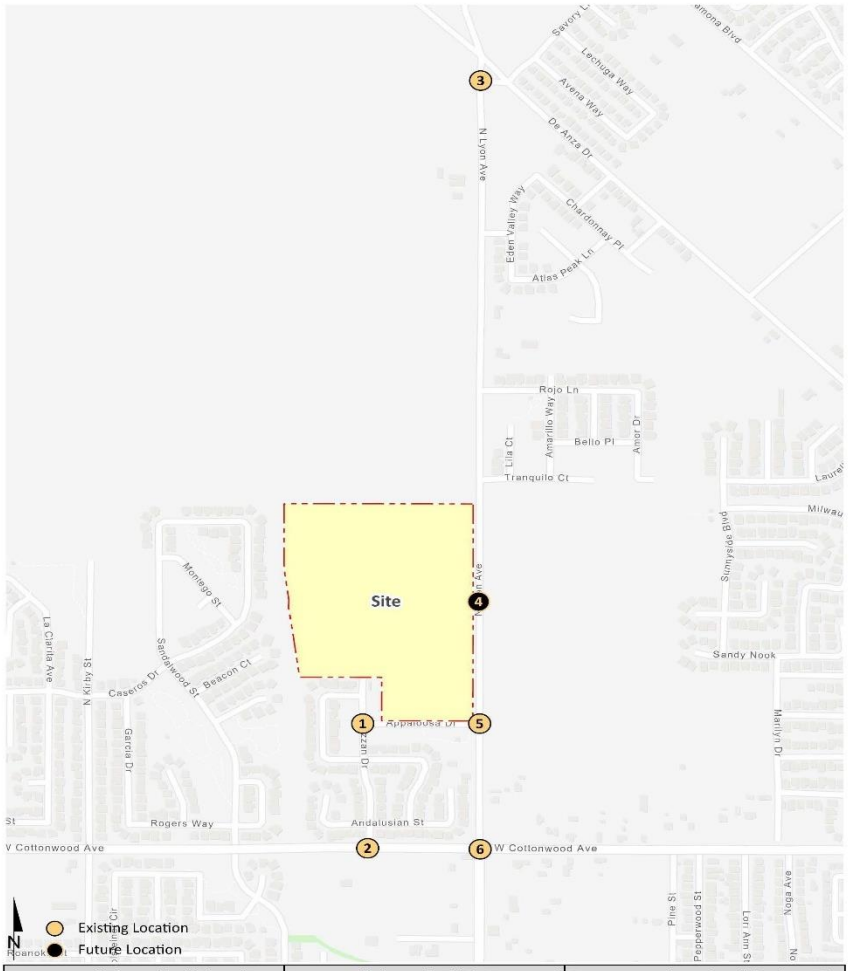
4,050
190(165) ↓
7(21) ↳
950
↱ 19(13)
↰ 33(22)
114(210) →
12(37) ↱
4,300

6 Lyon Av. & Cottonwood Av.

4,300
69(53) ↲
129(117) ↓
25(17) ↳
29(78) ↳
142(123) →
1(4) ↴
3,600
↱ 9(29)
← 65(180)
↰ 2(7)
4(3) ↰
88(141) ↑
6(4) ↱
4,400
2,700

##(##) AM(PM) Peak Hour Intersection Volumes
Average Daily Trips

EXHIBIT 4-7: CUMULATIVE ONLY MD TRAFFIC VOLUMES



1 Lipizzan Dr. & Appaloosa Dr.	2 Lipizzan Dr. & Cottonwood Av.	3 Lyon Av. & De Anza Dr.
	← 224 209 →	← 32 ↰ 9 32 ↲ 103 ↓ 27 ⤷ 27 → 81 ↲ 95 ↰ 107 → 8 ↱

4 Lyon Av. & Driveway 1	5 Lyon Av. & Appaloosa Dr.	6 Lyon Av. & Cottonwood Av.
← 193 210 →	↱ 15 175 ← 18 ⤷ ↰ 27 194 → 32 ↱	↱ 24 ← 161 ↰ 6 60 ↲ 121 ← 21 ⤷ 69 ⤷ 138 → 4 ↲ 3 ↰ 133 → 5 ↱

MD Peak Hour Intersection Volumes

TABLE 4-3: CUMULATIVE DEVELOPMENT LAND USE SUMMARY

#	Project/Location	Land Use	Quantity	Units[1]
City of San Jacinto				
SJ1	TTM 38019	Residential	149	DU
SJ2	Rancho Estudillo Plaza (Phase 2)	Car Wash	1	Tunnel
		Fast-Food Restaurant with Drive-Thru	5.100	TSF
SJ3	1310 N State Street	Medical Office	24.874	TSF
SJ4	Sanderson Crossroads Shopping Center	Shopping Center	20.000	TSF
		Restaurant/Retail	10.000	TSF
		Self-Storage Facility	194.103	TSF
SJ5	San Jacinto Commerce Center	Warehousing	7,900.000	TSF
		Industrial	4,180.000	TSF
SJ6	Starling Point	Single-Family Detached Residential	369	DU
SJ7	Warren Foothill Specific Plan/Tract Map	Single-Family Residential	917	DU
SJ8	Green Acres	Cannabis Cultivation	6.3	AC
SJ9	Kirby Villas	Single-Family Residential	27	DU
SJ10	TTM38339	Single-Family Residential	76	DU
SJ11	Tract 34271	Single-Family Residential	152	DU
SJ12	SJ Warehouse	Cannabis Cultivation and Distribution	11.008	TSF
SJ13	McLeish Ranch	Single-Family Residential	424	DU
SJ14	Rancho Madrina	Residential	150	DU
SJ15	Monte Vista	Single-Family Residential	36	DU
SJ16	SJ44	Single-Family Residential	44	DU
SJ17	Ramona Land Development	Cannabis Cultivation	17.1	AC
SJ18	Bray Map	Single-Family Residential	181	DU
SJ19	Trifecta Investment	Cannabis Cultivation	65.6	AC
SJ20	Silver Beach Grand San Jacinto	Single-Family Residential	138	DU
SJ21	TS Farms	Cannabis Cultivation	60.5	AC
SJ22	The Sanderson Ranch	Single-Family Residential	90	DU
		Multi-Family Residential	6	DU
SJ23	We Architects Group	Cannabis Cultivation	18.534	TSF
SJ24	Soyland Industrial	Industrial	4.000	TSF
SJ25	Renaissance Valley Academy	Charter School	250	Stu
SJ26	High Girl	Cannabis Cultivation	18.360	TSF
		Cannabis Distribution	15.785	TSF
SJ27	Rancho de Alamo	Residential	191	DU
SJ28	Dutch Bros	Coffee Shop with Drive-Thru	0.950	TSF
SJ29	SPDR 17-07	Retail	14.583	TSF
SJ30	33 Holdings Canna-Park	Cannabis Cultivation and Distribution	21.811	TSF
SJ31	Sunterra	Single-Family Residential	215	DU
SJ32	KPC Promenade	Retail	6.300	TSF
		Convenience Store	3.500	TSF
		Restaurant	12.800	TSF
		Medical Office	6.000	TSF
		Gas-Station with Carwash	8	VFP
		Hotel	120	RM
		Senior Housing	114	DU
SJ33	Mountain Bridge	Single-Family Detached Residential	81	DU
SJ34	Ashford Pointe (40% Complete)	Single-Family Detached Residential	89	DU

#	Project/Location	Land Use	Quantity	Units[1]
SJ35	Esplanade SPA	Single Family Detached Residential	851	DU
		Multifamily (Low-Rise) Residential	194	DU
		Active Park	10.0	Acres
		Elementary School	600	STU
		Shopping Center (>150,000 SF)	283.500	TSF
City of Hemet				
H1	National Tube Steel	Industrial	85.230	TSF
H2	Kirby Industrial	Warehousng	838.880	TSF
		Office	19.282	TSF
H3	Simpson Business Park	Warehousng	1,317.360	TSF
H4	Pacific Mobile Structure	Warehousing	52.386	TSF
		Office	12.386	TSF
H5	Hemet 63 Warehouse & Industrial	Warehousing	1,100.000	TSF
H6	Morgan Hill	Single-Family Residential	150	DU
H7	JD Fields & Company	Warehousing	22.000	TSF
H8	Dutch Bros	Coffee Shop with Drive-Thru	0.871	TSF
H9	Holiday Inn & Express	Hotel	80	DU
H10	Pacific Inland Healthcare	Elderly Care Facility	38.732	TSF
H11	Delfina at Devonshire	Apartments	61	DU
H12	Brightside Warehouse	Warehousing	10.000	TSF
H13	Express Car Wash - Palm	Car Wash	1	Tunnel
H14	Menlo Apartments	Apartments	105	DU
H15	High Pointe	Apartments	228	DU
H16	Copenhagen	Apartments	40	DU
H17	Ramona Creek	Residential	363	DU
H18	Rancho Diamante II (Lennar Homes) (50% Complete)	Single-Family Detached Residential	588	DU
		Shopping Center	100.000	TSF
H19	The Latham	Apartments	111	DU
H20	Tract 29843 (10% Complete)	Senior Residential	456	DU
H21	Santa Fe Pointe	Multi-Family Residential	241	DU

[1] TSF = Thousand Square Feet; DU = Dwelling Unit; VFP = Vehicle Fueling Position ; AC = Acres; RM = Rooms; STU = Students

5 EA AND EAP (2026) TRAFFIC CONDITIONS

This section discusses the traffic forecasts for EA and EAP (2026) conditions and the resulting intersection operations and traffic signal warrant analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EA and EAP (2026) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for EAP (2026) conditions only (e.g., intersection and roadway improvements at the Project's frontage and driveways).

5.2 TRAFFIC VOLUME FORECASTS

5.2.1 EA (2026) TRAFFIC CONDITIONS

This scenario includes Existing (2023) traffic volumes plus an ambient growth factor of 6.12%. The weekday ADT volumes and weekday AM and PM peak hour volumes which can be expected for EA (2026) traffic conditions are shown on Exhibit 5-1. The weekday MD peak hour volumes which can be expected for EAP (2026) traffic conditions are shown on Exhibit 5-2.

5.2.2 EAP (2026) TRAFFIC CONDITIONS

This scenario includes Existing (2023) traffic volumes plus an ambient growth factor of 6.12% and the addition of Project traffic. The weekday ADT volumes and weekday AM and PM peak hour volumes which can be expected for EAP (2026) traffic conditions are shown on Exhibit 5-3. The weekday MD peak hour volumes which can be expected for EAP (2026) traffic conditions are shown on Exhibit 5-4.

5.3 INTERSECTION OPERATIONS ANALYSIS

EA (2026) peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. The intersection analysis results are summarized in Table 5-1 for EA (2026) traffic conditions, which indicates that the following study area intersections are anticipated to operate at an unacceptable LOS during the peak hours:

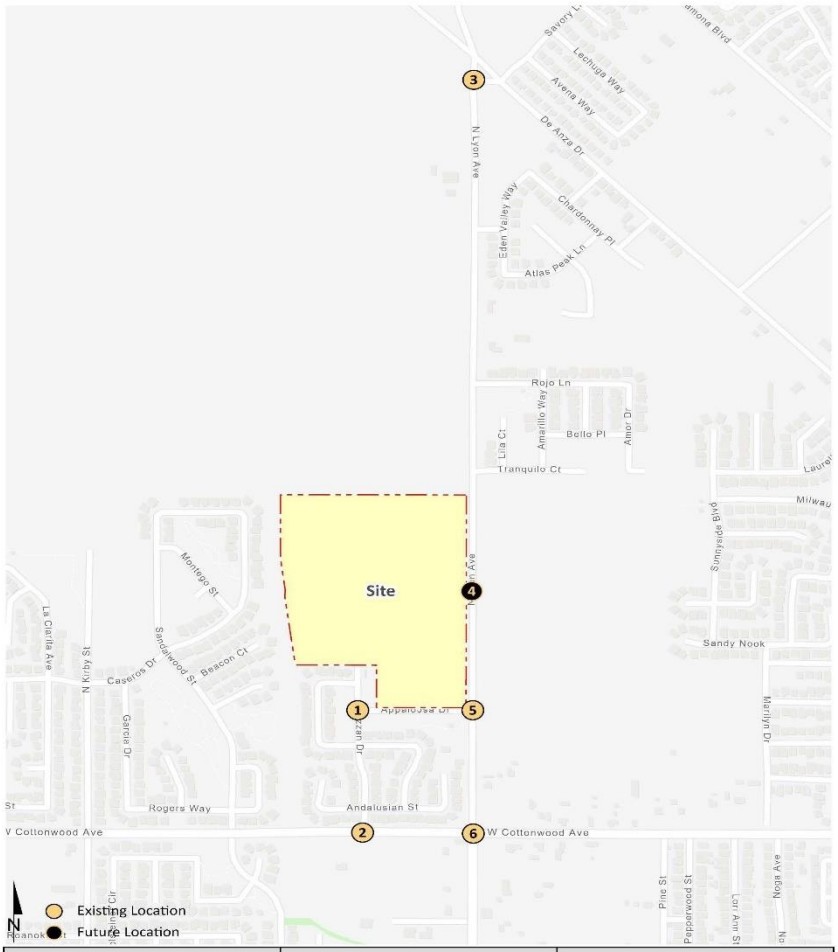
- Lyon Av. & Appaloosa Dr. (#5) – LOS E AM peak hour only
- Lyon Av. & Cottonwood Av. (#6) – LOS F AM, MD, and PM peak hours

The following additional study area intersection is anticipated to operate at an unacceptable LOS during the peak hours with the addition of Project traffic under EAP (2026) traffic conditions:

- Lyon Av. & Appaloosa Dr. (#5) – LOS E AM peak hour only

The intersection operations analysis worksheets for EA and EAP (2026) traffic conditions are included in Appendices 5.1 and 5.2 of this TA, respectively.

EXHIBIT 5-1: EA (2026) AM, PM, AND ADT TRAFFIC VOLUMES

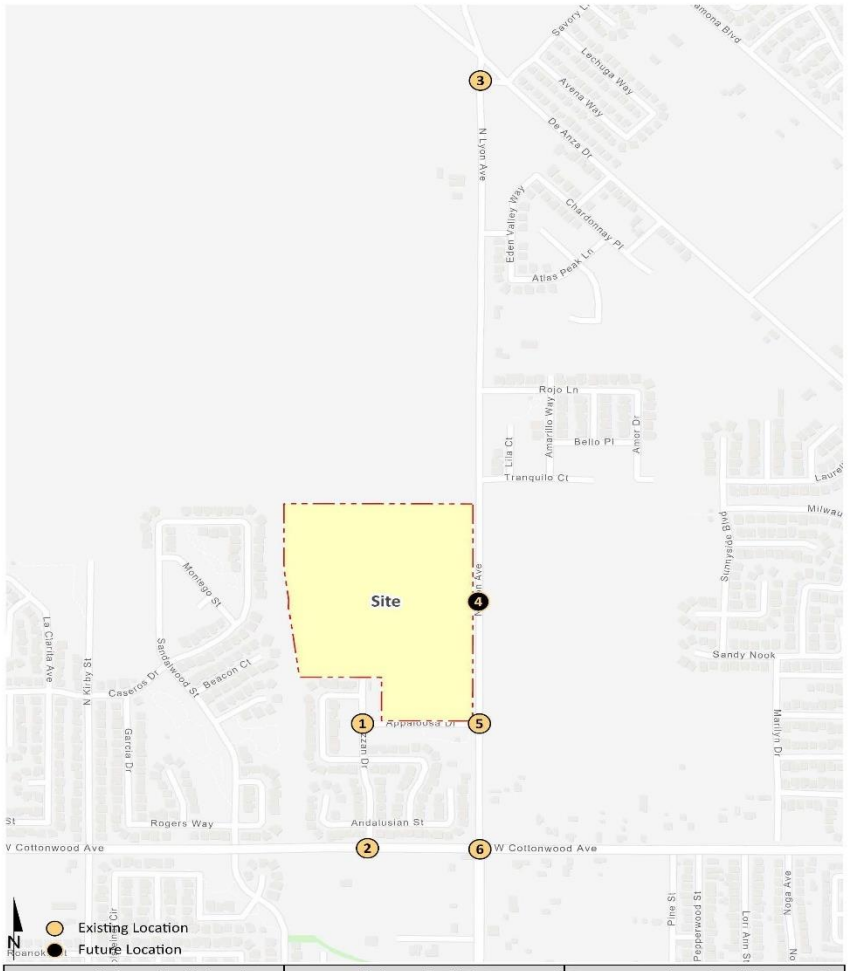


1 Lipizzan Dr. & Appaloosa Dr.	2 Lipizzan Dr. & Cottonwood Av.	3 Lyon Av. & De Anza Dr.
150 / 300 4(0) 6(5) 6(3) 15(10) 2(3) 32(6) 250	850 / 10,100 25(16) 14(12) 10(15) 322(379) 29(24) 549(418) 10,500	6,850 / 2,900 191(267) 73(76) 77(36) 175(49) 304(166) 271(70) 6,950
4 Lyon Av. & Driveway 1	**5 Lyon Av. & Appaloosa Dr.**	**6 Lyon Av. & Cottonwood Av.**
7,400 369(329) 665(259) 7,400	7,700 38(7) 331(322) 53(4) 11(4) 7(3) 612(255) 250 / 7,350	7,550 / 8,550 149(83) 158(226) 34(27) 159(28) 156(270) 24(32) 227(85) 320(302) 15(42) 27(41) 226(154) 33(24) 10,100 / 6,550

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

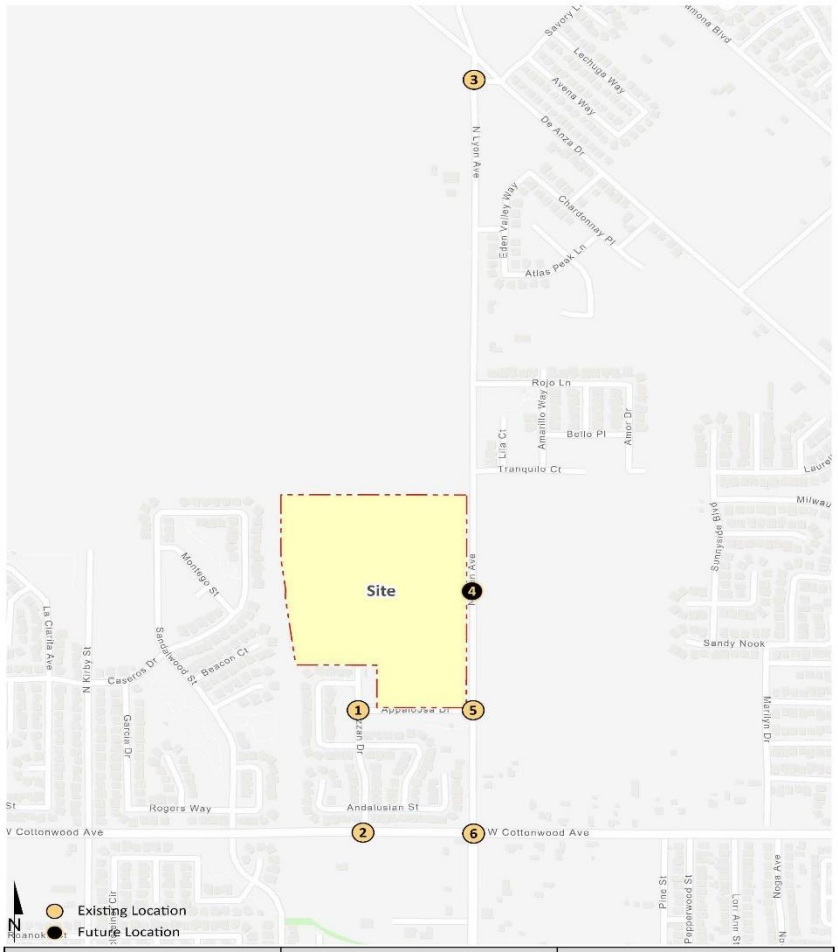
EXHIBIT 5-2: EA (2026) MD TRAFFIC VOLUMES



1 Lipizzan Dr. & Appaloosa Dr.	2 Lipizzan Dr. & Cottonwood Av.	3 Lyon Av. & De Anza Dr.
↓ 3 ↳ 8 ↰ 69 ↱ 7 → 5 ↱ 56	← 74 ↳ 11 76 ↳ 411 → ↱ 18 ← 340	↓ 205 ↳ 73 ↰ 143 ↱ 57 → 162 ↱ 196
4 Lyon Av. & Driveway 1	**5 Lyon Av. & Appaloosa Dr.**	**6 Lyon Av. & Cottonwood Av.**
↓ 335 → 379	← 42 ↓ 293 24 ↳ 48 ↲ ↳ 53 → 354	← 137 ↓ 192 ↳ 52 125 ↳ 262 → 34 ↲ ↰ 117 ← 170 ↰ 31 ↰ 51 → 153 ↱ 24

MD Peak Hour Intersection Volumes

EXHIBIT 5-3: EAP (2026) AM, PM, AND ADT TRAFFIC VOLUMES



1 Lipizzan Dr. & Appaloosa Dr.

1,100 | 28(16) ↓ 34(24) ↳ | 800
↰ 14(30)
↰ 15(10)
13(39) → 32(6) ↱ | 750

2 Lipizzan Dr. & Cottonwood Av.

1,350 | 45(29) ↲ 18(15) ↳ | 10,250
↱ 14(29)
← 322(379)
36(47) ↳
549(418) → | 10,850

3 Lyon Av. & De Anza Dr.

7,300 | 199(294) ↓ 73(76) ↳ | 3,000
↰ 77(36)
↰ 176(54)
328(182) → ↱ 275(73) | 7,450

4 Lyon Av. & Driveway 1

7,900 | 8(27) ↲ 370(334) ↓ | 7,900
28(19) ↲ 693(278) → | 450

5 Lyon Av. & Appaloosa Dr.

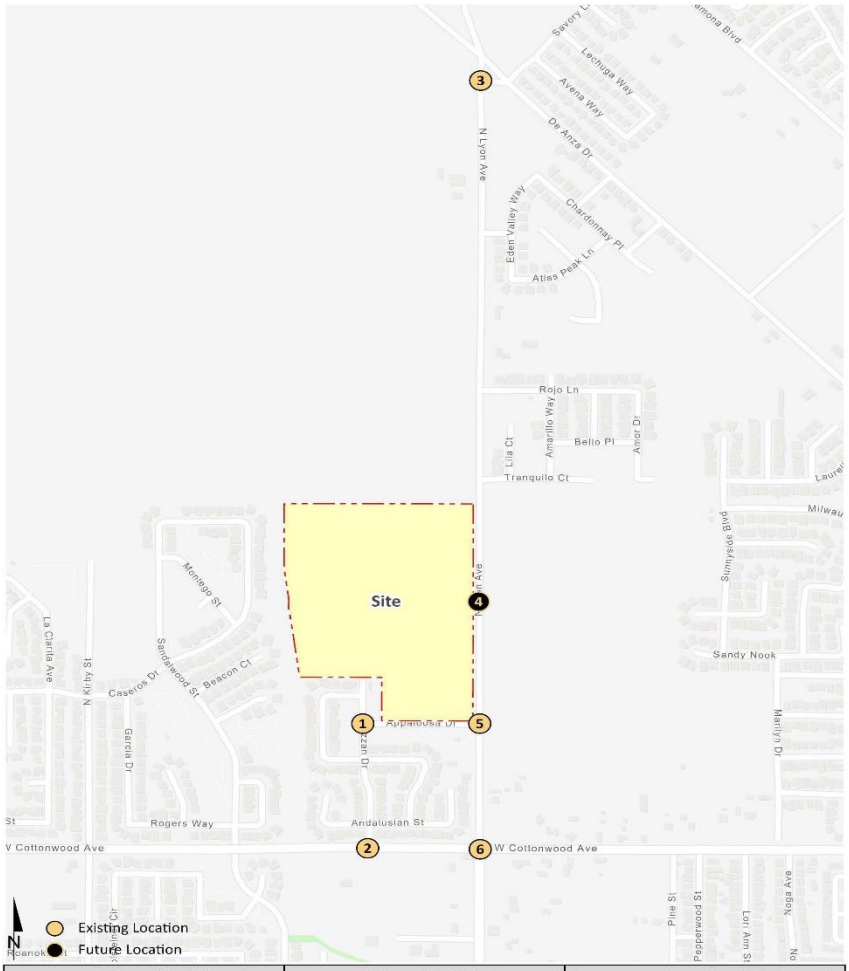
8,250 | 39(12) ↲ 359(341) ↓ | 7,750
81(23) ↳
↰ 14(26) 612(255) →
11(4) ↲ | 700

6 Lyon Av. & Cottonwood Av.

8,000 | 149(83) ↲ 174(237) ↓ 46(35) ↳ | 8,800
↱ 160(33)
← 159(279)
↰ 24(32)
227(85) ↳
320(302) →
19(45) ↲
↰ 28(46) → 232(172) ↱ 33(24) | 6,900
10,250

##(##) AM(PM) Peak Hour Intersection Volumes
Average Daily Trips

EXHIBIT 5-4: EAP (2026) MD TRAFFIC VOLUMES



1 Lipizzan Dr. & Appaloosa Dr.	2 Lipizzan Dr. & Cottonwood Av.	3 Lyon Av. & De Anza Dr.
↰ 30 ↙ 23 ↳ 31 ↰ 69 → 35 ↱ 56	↱ 29 ↙ 90 ↳ 14 ← 340 95 ↳ 411 →	↱ 57 ↙ 228 ↳ 73 ↰ 147 → 182 ↱ 199
4 Lyon Av. & Driveway 1	**5 Lyon Av. & Appaloosa Dr.**	**6 Lyon Av. & Cottonwood Av.**
↙ 23 ← 339 → 402 23 ↳	↙ 46 ← 316 47 ↳ ↰ 72 → 354 48 ↳	↱ 121 ↙ 137 ← 205 ↳ 62 ↰ 31 125 ↳ 262 → 37 ↳ ↰ 55 → 168 ↱ 24

MD Peak Hour Intersection Volumes

TABLE 5-1: INTERSECTION ANALYSIS FOR EA AND EAP (2026) CONDITIONS

#	Intersection	Traffic Control[2]	EA (2026) Delay[1] (secs.) AM	MD	PM	EA (2026) Level of Service AM	MD	PM	EAP (2026) Delay[1] (secs.) AM	MD	PM	EAP (2026) Level of Service AM	MD	PM
1	Lipizzan Dr. & Appaloosa Dr.	CSS	8.7	10.0	8.7	A	B	A	9.1	12.4	9.3	A	B	A
2	Lipizzan Dr. & Cottonwood Av.	CSS	12.0	11.7	11.6	B	B	B	11.9	12.3	11.7	B	B	B
3	Lyon Av. & De Anza Dr.	AWS	31.2	18.4	10.5	D	C	B	**38.6**	21.7	11.2	**E**	C	B
4	Lyon Av. & Driveway 1	**CSS**	Future Intersection						9.7	9.6	9.5	A	A	A
5	Lyon Av. & Appaloosa Dr.	CSS	**35.2**	26.9	12.1	**E**	D	B	**61.5**	**69.8**	15.9	**F**	**F**	C
6	Lyon Av. & Cottonwood Av.	AWS	**67.8**	**56.1**	**51.2**	**F**	**F**	**F**	**75.7**	**67.4**	**61.1**	**F**	**F**	**F**

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[2] AWS = All-Way Stop; CSS = Cross-Street Stop; **CSS** = Improvement

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

The traffic signal warrant analysis for EA and EAP (2026) traffic conditions are based on the peak hour volumes traffic signal warrants. There are no unsignalized study area intersections anticipated to meet a traffic signal warrant under EA or EAP (2026) traffic conditions (see Appendices 5.3 and 5.4).

5.5 PROJECT DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

This section provides a summary of Project deficiencies and recommended improvements. Based on the City of San Jacinto deficiency criteria discussed in Section 2.5 *Deficiency Criteria*, roadway intersections were found to be deficient. Improvements necessary to improve project-related traffic deficiencies are shown in Table 5-2. Table 5-2 indicates the physical improvements needed to address LOS deficiencies at each of the study area intersections under EAP (2026) traffic conditions. Intersection analysis worksheets for EAP (2026) traffic conditions, with improvements, are provided in Appendix 5.5.

TABLE 5-2: INTERSECTION ANALYSIS FOR EAP (2026) CONDITIONS WITH IMPROVEMENTS

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1] Northbound L	T	R	Southbound L	T	R	Eastbound L	T	R	Westbound L	T	R	Delay[2] (secs.) AM	MD	PM	Level of Service AM	MD	PM
3	Lyon Av. & De Anza Dr.																			
	Without Improvements	AWS	0	1	0	0	1	0	0	0	0	1	0	1	**38.6**	21.7	11.2	**E**	C	B
	With Improvements	**CSS**	0	1	0	**1**	1	0	0	0	0	1	0	1	23.7	24.7	13.9	C	C	B
5	Lyon Av. & Appaloosa Dr.																			
	Without Improvements	CSS	0	1	0	0	2	0	0	1	0	0	0	0	**61.5**	**69.8**	15.9	**F**	**F**	C
	With Improvements	**TS**	**1**	1	0	0	2	0	0	1	0	0	0	0	6.2	5.9	5.0	A	A	A
6	Lyon Av. & Cottonwood Av.																			
	Without Improvements	AWS	0	1	0	1	1	1	1	1	0	0	1	0	**75.7**	**67.4**	**61.1**	**F**	**F**	**F**
	With Improvements	**TS**	**1**	1	0	1	1	1	1	1	0	**1**	1	0	26.1	23.2	20.7	C	C	C

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right

[2] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross-Street Stop; AWS = All-Way Stop; TS = Traffic Signal; **TS** = Improvement

6 EAC AND EAPC (2026) TRAFFIC CONDITIONS

This section discusses the traffic forecasts for EAC and EAPC (2026) conditions and the resulting intersection operations and traffic signal warrant analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EAC and EAPC (2026) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for EAPC (2026) conditions (e.g., intersection and roadway improvements at the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for both EAC and EAPC (2026) conditions (e.g., intersection and roadway improvements along the cumulative development's frontages).

6.2 TRAFFIC VOLUME FORECASTS

6.2.1 EAC (2026) TRAFFIC CONDITIONS

This scenario includes Existing traffic volumes plus an ambient growth factor of 6.12% and the addition of traffic generated by cumulative development projects. The weekday ADT volumes and weekday AM and PM peak hour volumes which can be expected for EAC (2026) traffic conditions are shown on Exhibit 6-1. The weekday MD peak hour volumes which can be expected for EAC (2026) traffic conditions are shown on Exhibit 6-2.

6.2.2 EAPC (2026) TRAFFIC CONDITIONS

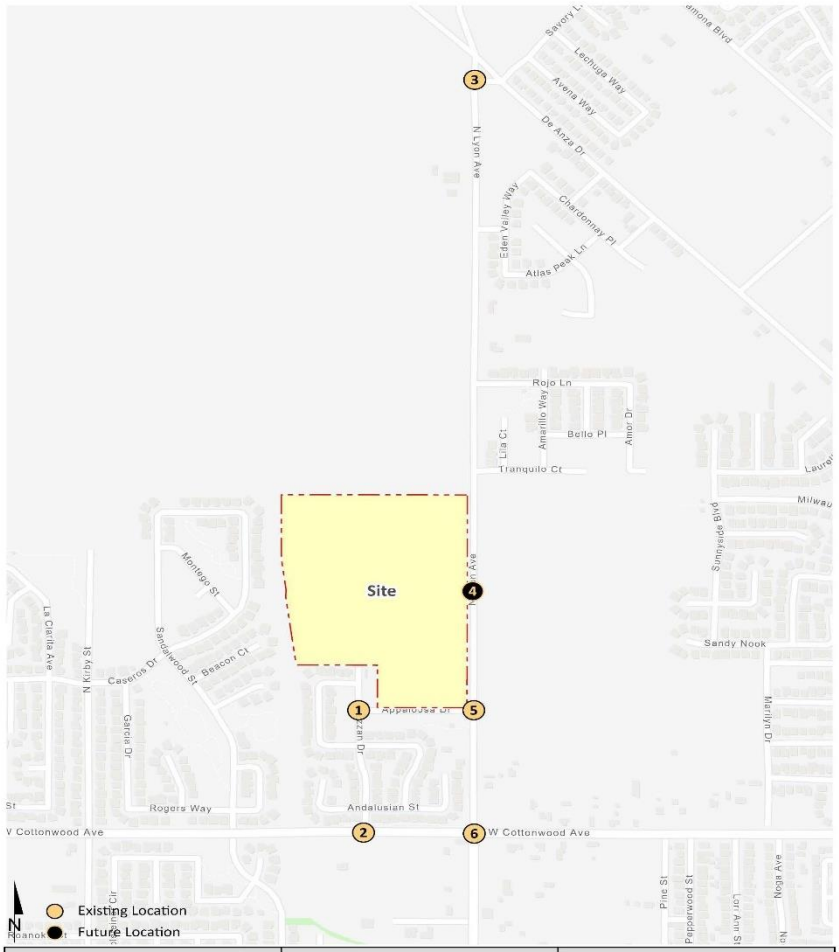
This scenario includes Existing traffic volumes plus an ambient growth factor of 6.12%, the addition of traffic generated by cumulative development projects, and the addition of Project traffic. The weekday ADT volumes and weekday AM and PM peak hour volumes which can be expected for EAPC (2026) traffic conditions are shown on Exhibit 6-3. The weekday MD peak hour volumes which can be expected for EAPC (2026) traffic conditions are shown on Exhibit 6-4.

6.3 INTERSECTION OPERATIONS ANALYSIS

EAC and EAPC (2026) peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. The intersection analysis results are summarized in Table 6-1 for EAC (2026) traffic conditions, which indicates that the following study area intersections are anticipated to operate at an unacceptable LOS during the peak hours:

- Lyon Av. & Appaloosa Dr. (#5) – LOS F AM and MD peak hours
- Lyon Av. & Appaloosa Dr. (#5) – LOS F AM and MD peak hours
- Lyon Av. & Cottonwood Av. (#6) – LOS F AM, MD, and PM peak hours

EXHIBIT 6-1: EAC (2026) AM, PM, AND ADT TRAFFIC VOLUMES



1 Lipizzan Dr. & Appaloosa Dr.

150			*300*
	4(0) ↓	6(5) ↳	↰ 6(3)
			↰ 15(10)
		2(3) →	↱ 32(6)
			250

2 Lipizzan Dr. & Cottonwood Av.

850			*14,500*
	25(16) ↲	14(12) ↳	↱ 10(15)
			← 460(614)
	29(24) ↳		
	721(622) →		
14,900			

3 Lyon Av. & De Anza Dr.

9,500			*3,650*
	12(38) ↲	286(377) ←	73(76) ↰ 178(60)
	33(22) ↳		↰ 77(36)
	33(22) →		← 12(38)
	99(66) ↲		
	35(113) ↱	392(268) →	↱ 280(76)
3,000			*10,950*

4 Lyon Av. & Driveway 1

11,450		
	← 566(515)	
		798(480) →
		11,450

5 Lyon Av. & Appaloosa Dr.

11,750			*950*
	38(7) ↲	521(486) ←	7(21) ↳ ↰ 19(13)
			↰ 33(22)
	53(4) ↳		
	11(4) ↲		7(3) ↱ 726(464) → ↱ 12(37)
250			*11,650*

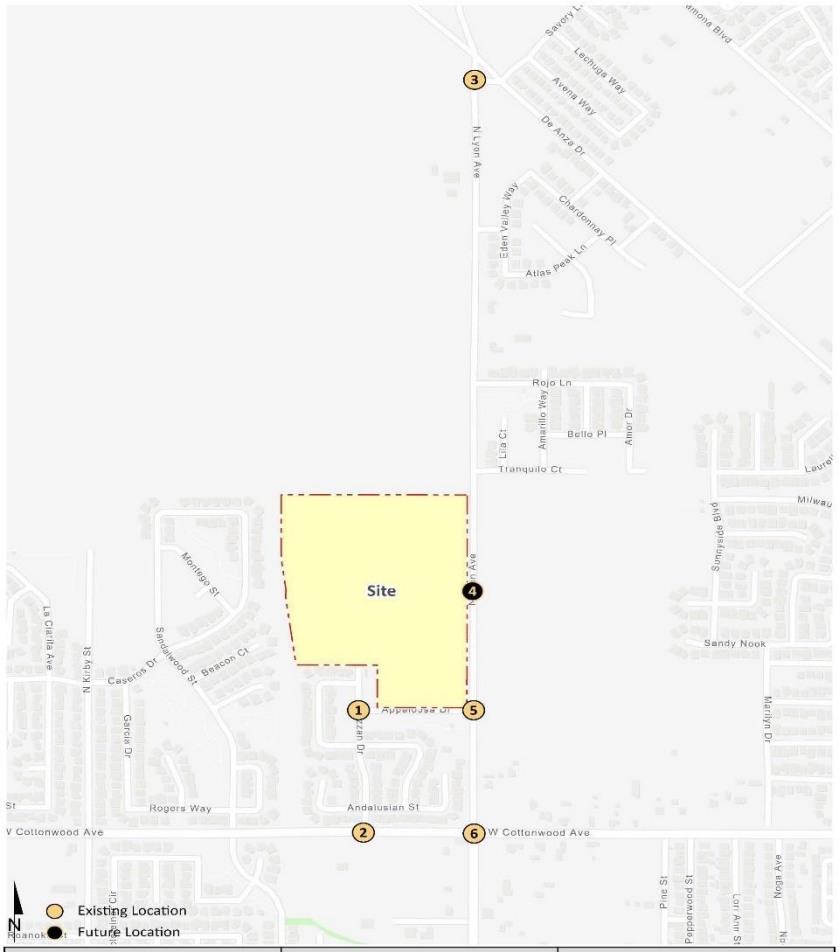
6 Lyon Av. & Cottonwood Av.

11,850			*12,150*
	217(135) ↲	287(343) ←	59(44) ↳ ↰ 168(57)
			← 221(449)
			↰ 26(39)
	256(162) ↳		
	462(425) →		
	16(46) ↲		31(44) ↱ 314(295) → ↱ 39(28)
14,500			*9,250*

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

EXHIBIT 6-2: EAC (2026) MD TRAFFIC VOLUMES



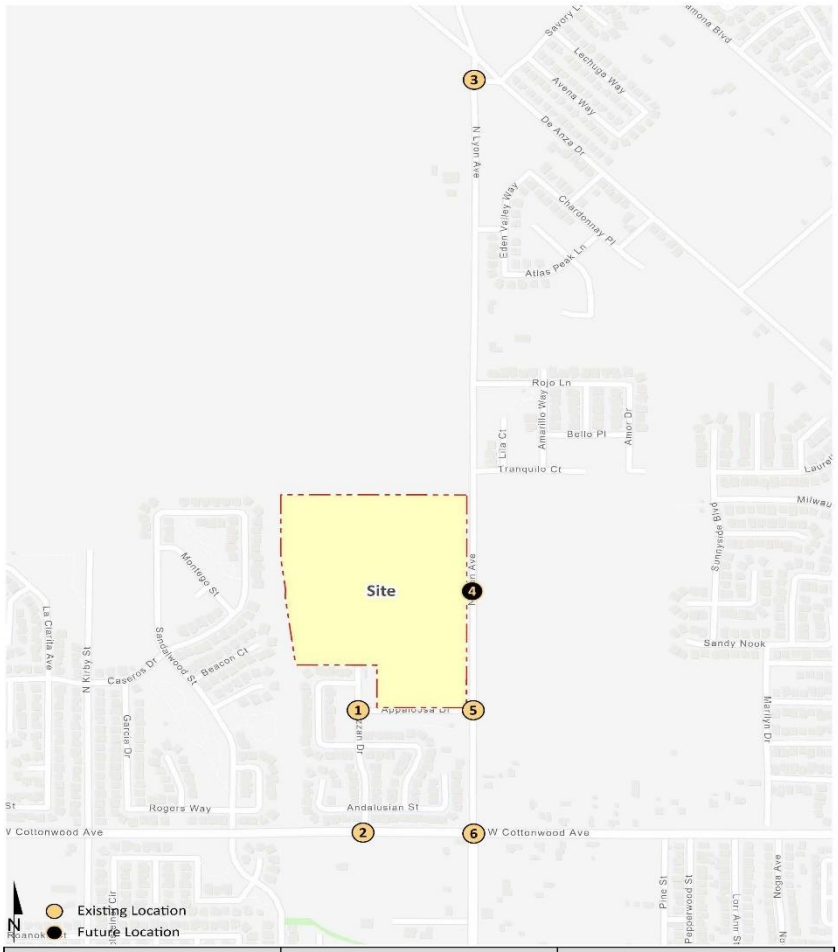
1 Lipizzan Dr. & Appaloosa Dr.			2 Lipizzan Dr. & Cottonwood Av.			3 Lyon Av. & De Anza Dr.		
150		*300*	*850*		*14,500*	*9,500*		*3,650*
	4(0) 6(5) ↙ ↳	↱ 6(3) ↰ 15(10)		25(16) 14(12) ↲ ↳	↱ 10(15) ← 460(614)	12(38) 286(377) 73(76) ↲ ← ↳	↱ 77(36) ← 12(38) ↰ 178(60)	
		2(3) 32(6) ↑ ↱		29(24) ↳ 721(622) →		33(22) ↳ 33(22) → 99(66) ↲	35(113) 392(268) 280(76) ↰ ↑ ↱	
		250	*14,900*			*3,000*		*10,950*

4 Lyon Av. & Driveway 1			5 Lyon Av. & Appaloosa Dr.			6 Lyon Av. & Cottonwood Av.		
11,450			*11,750*		*950*	*11,850*		*12,150*
	566(515) ↙			38(7) 521(486) 7(21) ↲ ↓ ↳	↱ 19(13) ↰ 33(22)	217(135) 287(343) 59(44) ↲ ↓ ↳	↱ 168(57) ← 221(449) ↰ 26(39)	
		798(480) ↑		53(4) ↳ 11(4) ↲	7(3) 726(464) 12(37) ↰ ↑ ↱	256(162) ↳ 462(425) → 16(46) ↲	31(44) 314(295) 39(28) ↰ ↑ ↱	
		11,450	*250*		*11,650*	*14,500*		*9,250*

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

EXHIBIT 6-3: EAPC (2026) AM, PM, AND ADT TRAFFIC VOLUMES



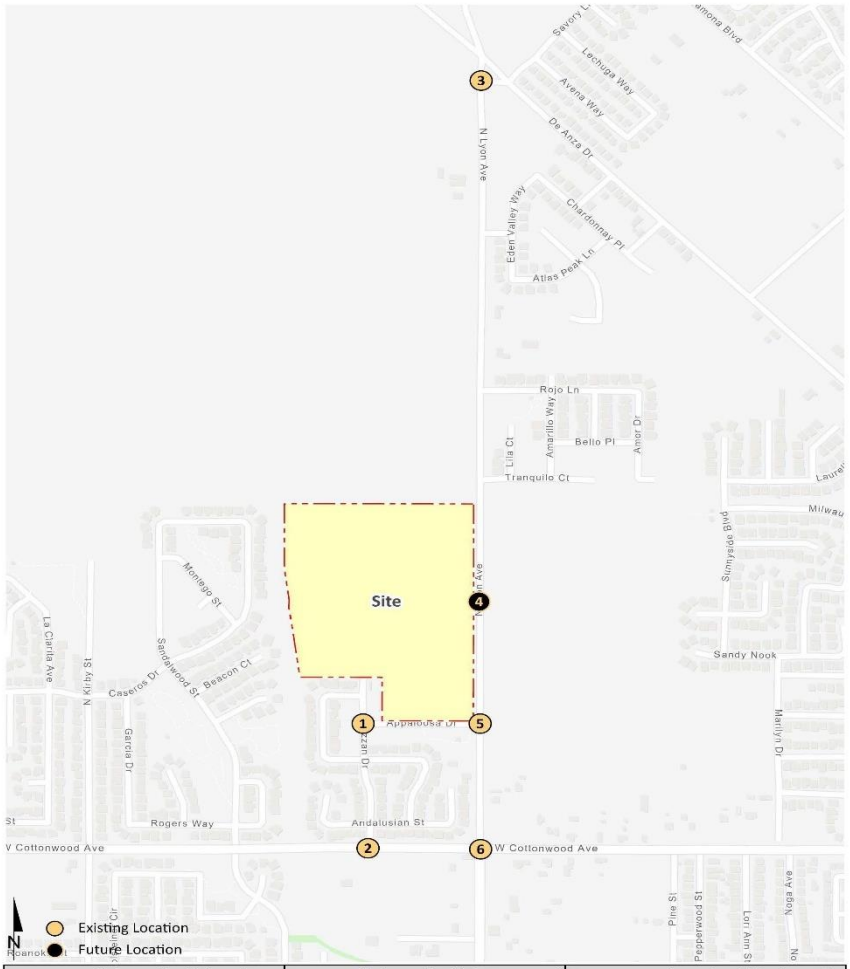
1 Lipizzan Dr. & Appaloosa Dr.				2 Lipizzan Dr. & Cottonwood Av.				3 Lyon Av. & De Anza Dr.			
1,100			800	1,350			14,650	9,950			3,750
	28(16) ↓	34(24) ↳	↱ 14(30)		45(29) ↓	18(15) ↳	↱ 14(29)		12(38) ↲	294(404) ↓	73(76) ↳ ↱ 77(36)
			↰ 15(10)				← 460(614)				← 12(38)
	13(39) →	32(6) ↱			36(47) ↳				33(22) ↳		↰ 179(65)
					721(622) →				33(22) →		35(113) ↰ 416(284) → 284(79) ↱
			750				15,250		99(66) ↲		11,500
								3,000			

4 Lyon Av. & Driveway 1				5 Lyon Av. & Appaloosa Dr.				6 Lyon Av. & Cottonwood Av.			
11,950				12,300			950	12,300			12,350
	8(27) ↲	567(520) ↓			39(12) ↲	549(505) ↓	7(21) ↳ ↱ 19(13)		217(135) ↲	303(354) ↓	71(52) ↳ ↱ 169(62)
							↰ 33(22)				← 224(458)
	28(19) ↲		826(499) →		81(23) ↳				256(162) ↳		↰ 26(39)
					11(4) ↲		14(26) ↰ 726(464) → 12(37) ↱		462(425) →		32(49) ↰ 320(313) → 39(28) ↱
			11,950				12,050		20(49) ↲		9,600
450				700				14,650			

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

EXHIBIT 6-4: EAPC (2026) MD TRAFFIC VOLUMES



1 Lipizzan Dr. & Appaloosa Dr.	2 Lipizzan Dr. & Cottonwood Av.	3 Lyon Av. & De Anza Dr.
↰ 30 ← 23 ↳ 31 ↑ 69 35 → ↱ 56	↱ 29 ← 564 ← 90 ↳ 14 95 ↳ 620 →	↱ 57 ← 32 ← 32 ↳ 73 ↑ 156 27 ↳ 27 → 81 ↳ ↰ ↑ ↱ 95 289 207
4 Lyon Av. & Driveway 1	**5 Lyon Av. & Appaloosa Dr.**	**6 Lyon Av. & Cottonwood Av.**
← 23 ← 532 611 → 23 ↳	↱ 15 ↰ 27 ← 46 ← 490 ↳ 18 47 ↳ ↰ ↑ ↱ 72 548 32 48 ↳	↱ 145 ← 338 ↰ 37 ← 196 ← 326 ↳ 83 194 ↳ ↰ ↑ ↱ 58 301 29 400 → 41 ↳

MD Peak Hour Intersection Volumes

TABLE 6-1: INTERSECTION ANALYSIS FOR EAC AND EAPC (2026) CONDITIONS

#	Intersection	Traffic Control[2]	EAC (2026) Delay[1] (secs.) AM	MD	PM	EAC (2026) Level of Service AM	MD	PM	EAPC (2026) Delay[1] (secs.) AM	MD	PM	EAPC (2026) Level of Service AM	MD	PM
1	Lipizzan Dr. & Appaloosa Dr.	CSS	8.7	10.0	8.7	A	B	A	9.1	12.4	9.3	A	B	A
2	Lipizzan Dr. & Cottonwood Av.	CSS	13.8	14.5	14.1	B	B	B	13.7	15.7	14.1	B	C	B
3	Lyon Av. & De Anza Dr.	AWS	**>100.0**	**>100.0**	28.3	**F**	**F**	D	**>100.0**	**>100.0**	34.8	**F**	**F**	D
4	Lyon Av. & Driveway 1	**CSS**	Future Intersection						10.5	10.4	10.3	B	B	B
5	Lyon Av. & Appaloosa Dr.	CSS	**>100.0**	**>100.0**	21.5	**F**	**F**	C	**>100.0**	**>100.0**	**41.3**	**F**	**F**	**E**
6	Lyon Av. & Cottonwood Av.	AWS	**>100.0**	**>100.0**	**>100.0**	**F**	**F**	**F**	**>100.0**	**>100.0**	**>100.0**	**F**	**F**	**F**

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[2] AWS = All-Way Stop; CSS = Cross-Street Stop; **CSS** = Improvement

The following additional study area intersection is anticipated to operate at an unacceptable LOS during the peak hours with the addition of Project traffic under EAP (2026) traffic conditions:

- Lyon Av. & Appaloosa Dr. (#5) – LOS E AM peak hour only

The intersection operations analysis worksheets for EAC and EAPC (2026) traffic conditions are included in Appendices 6.1 and 6.2 of this TA, respectively.

6.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

The traffic signal warrant analysis for EAC and EAPC (2026) traffic conditions are based on the peak hour volumes traffic signal warrants. The following study area intersection is anticipated to meet a traffic signal warrant under EAC traffic conditions (see Appendix 6.2):

- Lipizzan Drive Av. & Cottonwood Av. (#2)

The following additional study area intersection is anticipated to meet a traffic signal with the addition of Project traffic under EAPC (2026) traffic conditions:

- Lyon Av. & Appaloosa Dr. (#8) – LOS F AM and MD peak hours; LOS E PM peak hour

6.5 PROJECT DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

This section provides a summary of Project deficiencies and recommended improvements. Based on the City of San Jacinto deficiency criteria discussed in Section 2.5 *Deficiency Criteria*, roadway intersections were found to be deficient. Improvements necessary to improve project-related traffic deficiencies are shown in Table 6-2. Table 6-2 indicates the physical improvements needed to address LOS deficiencies at each of the study area intersections under EAPC (2026) traffic conditions. Intersection analysis worksheets for EAPC (2026) traffic conditions, with improvements, are provided in Appendix 6.3.

TABLE 6-2: INTERSECTION ANALYSIS FOR EAP (2026) CONDITIONS WITH IMPROVEMENTS

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)			Level of Service		
			Northbound			Southbound			Eastbound			Westbound								
			L	T	R	L	T	R	L	T	R	L	T	R	AM	MD	PM	AM	MD	PM
3	Lyon Av. & De Anza Dr.																			
	Without Improvements	AWS	0	1	0	0	1	0	0	1	0	1	1	0	**>100.0**	**>100.0**	34.8	**F**	**F**	D
	With Improvements	**TS**	**1**	1	0	**1**	1	0	0	1	0	1	1	0	22.6	20.0	16.3	C	B	B
5	Lyon Av. & Appaloosa Dr.																			
	Without Improvements	CSS	0	1	0	0	2	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**41.3**	**F**	**F**	**E**
	With Improvements	**TS**	**1**	1	0	**1**	2	0	0	1	0	0	1	0	12.2	12.4	9.0	B	B	A
6	Lyon Av. & Cottonwood Av.																			
	Without Improvements	AWS	0	1	0	1	1	1	1	1	0	0	1	0	**>100.0**	**>100.0**	**>100.0**	**F**	**F**	**F**
	With Improvements	**TS**	**1**	1	0	1	1	1	1	1	0	**1**	1	0	37.1	52.9	38.2	D	D	D

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right

[2] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross-Street Stop; AWS = All-Way Stop; TS = Traffic Signal; **TS** = Improvement

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7 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements within the City of San Jacinto are funded through a combination of improvements constructed by the Project, development impact fee programs. Fee programs applicable to the Project are described below.

7.1 TRANSPORTATION UNIFORM MITIGATION FEE (TUMF) PROGRAM

The WRCOG is responsible for establishing and updating TUMF rates. The County may grant developers a credit against the specific components of fees for the dedication of land or the construction of facilities identified in the list of improvements funded by each of these fee programs. Fees are based upon projected land uses and a related transportation need to address growth based upon a 2016 Nexus study.

TUMF is an ambitious regional program created to address cumulative impacts of growth throughout western Riverside County. Program guidelines are being handled on an iterative basis. Exemptions, credits, reimbursements, and local administration are being deferred to primary agencies. The County of Riverside serves this function for the proposed Project. Fees submitted to the County are passed on to the WRCOG as the ultimate program administrator.

TUMF guidelines empower a local zone committee to prioritize and arbitrate certain projects. The Project is located in the Hemet / San Jacinto Zone. The zone has developed a 5-year capital improvement program to prioritize public construction of certain roads. TUMF is focused on improvements necessitated by regional growth.

7.2 FAIR SHARE CONTRIBUTION

Project improvements may include a combination of fee payments to established programs, construction of specific improvements, payment of a fair share contribution toward future improvements or a combination of these approaches. Improvements constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate. When off-site improvements are identified with a minor share of responsibility assigned to proposed development, the approving jurisdiction may elect to collect a fair share contribution or require the development to construct improvements. Detailed fair share calculations, for each peak hour, have been provided in Table 7-1 for the applicable deficient study area intersections. These fees are collected with the proceeds solely used as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected population increases.

TABLE 7-1: PROJECT FAIR SHARE CALCULATIONS

#	Intersection		Existing (2023)	Project	EAPC (2026)	Total New Traffic	Project % of New Traffic
3	Lyon Av. & De Anza Dr.						
		AM:	1,028	37	1,547	519	7.1%
		MD:	789	50	1,407	618	8.1%
		PM:	626	51	1,243	617	**8.3%**
5	Lyon Av. & Appaloosa Dr.						
		AM:	992	64	1,491	499	**12.8%**
		MD:	768	69	1,344	576	12.0%
		PM:	561	66	1,128	567	11.6%
6	Lyon Av. & Cottonwood Av.						
		AM:	1,440	43	2,139	699	6.2%
		MD:	1,270	57	2,148	878	6.5%
		PM:	1,238	59	2,127	889	**6.6%**

BOLD = Denotes highest fair share percentage.

8 REFERENCES

1. **County of Riverside Transportation Department.** *Transportation Analysis Guidelines for Vehicle Miles Traveled and Level of Service.* City of San Jacinto : s.n., June 16, 2020.
2. **Institute of Transportation Engineers.** *Trip Generation Manual.* 11th Edition. 2021.
3. **VRPA Technologies, Inc. for Riverside County Transportation Commission.** *Riverside County Long Range Transportation Study.* County of Riverside : VRPA Technologies, Inc., December 2019.
4. **Transportation Research Board.** *Highway Capacity Manual (HCM).* 6th Edition. s.l. : National Academy of Sciences, 2016.
5. **California Department of Transportation.** California Manual on Uniform Traffic Control Devices (CA MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CA MUTCD).* 2014, Updated March 30, 2021 (Revision 6).
6. **Southern California Association of Governments (SCAG).** *2020 Regional Transportation Plan / Sustainable Communities Strategy.* Adopted September 2020.

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APPENDIX 1.1: APPROVED TRAFFIC STUDY SCOPING AGREEMENT

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Project Scoping Form

This scoping form shall be submitted to the City of San Jacinto to assist in identifying infrastructure improvements that may be required to support traffic from the proposed project.

Project Identification:

Case Number:	
Related Cases:	
SP No.	
EIR No.	
GPA No.	
CZ No.	
Project Name:	Lyon Avenue Residential (TTM No. 38468)
Project Address:	West of Lyon Avenue and north of Cottonwood Avenue
Project Opening Year:	2026
Project Description:	153 single family detached residential dwelling units

	Consultant:	**Developer:**
Name:	Urban Crossroads, Inc. - Charlene So	3rd Avenue Storage, LLC - Jordan Bursch
Address:	1133 Camelback St, #8329	32823 Temecula Pkwy.
	Newport Beach, CA 92658	Temecula, CA 92592
Telephone:	949-861-0177	951-491-6018
Fax/Email:	cso@urbanxroads.com	Jordan@cormanleigh.com

Trip Generation Information:

Trip Generation Data Source: ITE Trip Generation Manual (11th Edition, 2021)

Current General Plan Land Use: LDR - Low Density Residential

Proposed General Plan Land Use: LDR - Low Density Residential

Current Zoning: RL - Rural Living

Proposed Zoning: RL - Rural Living

	Existing Trip Generation			Proposed Trip Generation		
	In	Out	Total	In	Out	Total
AM Trips				28	79	107
PM Trips				91	53	144

Trip Internalization: ☐ Yes ☒ No (_____% Trip Discount)

Pass-By Allowance: ☐ Yes ☒ No (_____% Trip Discount)

Potential Screening Checks

Is your project screened from specific analyses (see Page 8 of the guidelines related to LOS assessment and Page 9 related to VMT).

Is the project screened from LOS assessment? ☐ Yes ☑ No

LOS screening justification (see Page 8 of the guidelines): _____

Is the project screened from VMT assessment? ☑ Yes ☐ No

VMT screening justification (see Page 9 of the guidelines): The Project meets the low VMT Area screening critera. The Project was found in RIVCOM TAZ 2156. The Project TAZ generates 23.6 VMT per service population and the City's threshold is 34.5 VMT per service population.

Level of Service Scoping

- Proposed Trip Distribution (Attach Graphic for Detailed Distribution):

North	South	East	West
35 %	25 %	15 %	25 %

- Attach list of Approved and Pending Projects that need to be considered (provided by the lead agency and adjacent agencies)
- Attach list of study intersections/roadway segments
- Attach site plan See Attached
- Note other specific items to be addressed:
  - Site access
  - On-site circulation
  - Parking
  - Consistency with Plans supporting Bikes/Peds/Transit
  - Other _____
- Date of Traffic Counts New traffic counts after 8/28/23 - will include 7-9 AM, 1:30-3:30 PM, 4-6 PM
- Attach proposed analysis scenarios (years plus proposed forecasting approach)
- Attach proposed phasing approach (if the project is phased)

VMT Scoping

For projects that are not screened, identify the following:

- Travel Demand Forecasting Model Used N/A
- Attach WRCOG Screening VMT Assessment output or describe why it is not appropriate for use
- Attach proposed Model Land Use Inputs and Assumed Conversion Factors (attach)

N Lyon Ave & Cottonwood Ave, S

Show search results for N Lyon Ave &...

Complete #1-4, Then Click "Run"

VMT. Please consult with the jurisdiction to verify which metric to use for your analysis.*

OD VMT Per Service Population

#3. Select the Baseline Year. The year available for analysis are from 2018 to 2045.*

2022

#4. Select the Threshold (% reduction from baseline year). Note each jurisdiction may have adopted a different metric by which they measure VMT. Please consult with the jurisdiction to verify which metric to use for your analysis.*

Below County Baseline (0%)

Help

Run

(1 of 3)

OBJECTID	1
Assessor Parcel Number (APN)	436280006
Traffic Analysis Zone (TAZ)	2156
Community Region	SAN JACINTO
Inside a Transit Priority Area (TPA)	No
TAZ VMT	23.6
Jurisdiction VMT	34.5
% Difference	-31.64%
VMT Metric	OD VMT Per Service Population
Threshold	34.5

Zoom to

600ft

-116.996 33.801 Degrees

Esri Community Maps Contributors, Loma Linda University, UC Riverside, County of Riverside, ...

MEMORANDUM

URBAN CROSSROADS

DATE: August 10, 2023
TO: Robert Flores, City of San Jacinto
FROM: Charlene So, Urban Crossroads
JOB NO: 15026-05 TA Scope

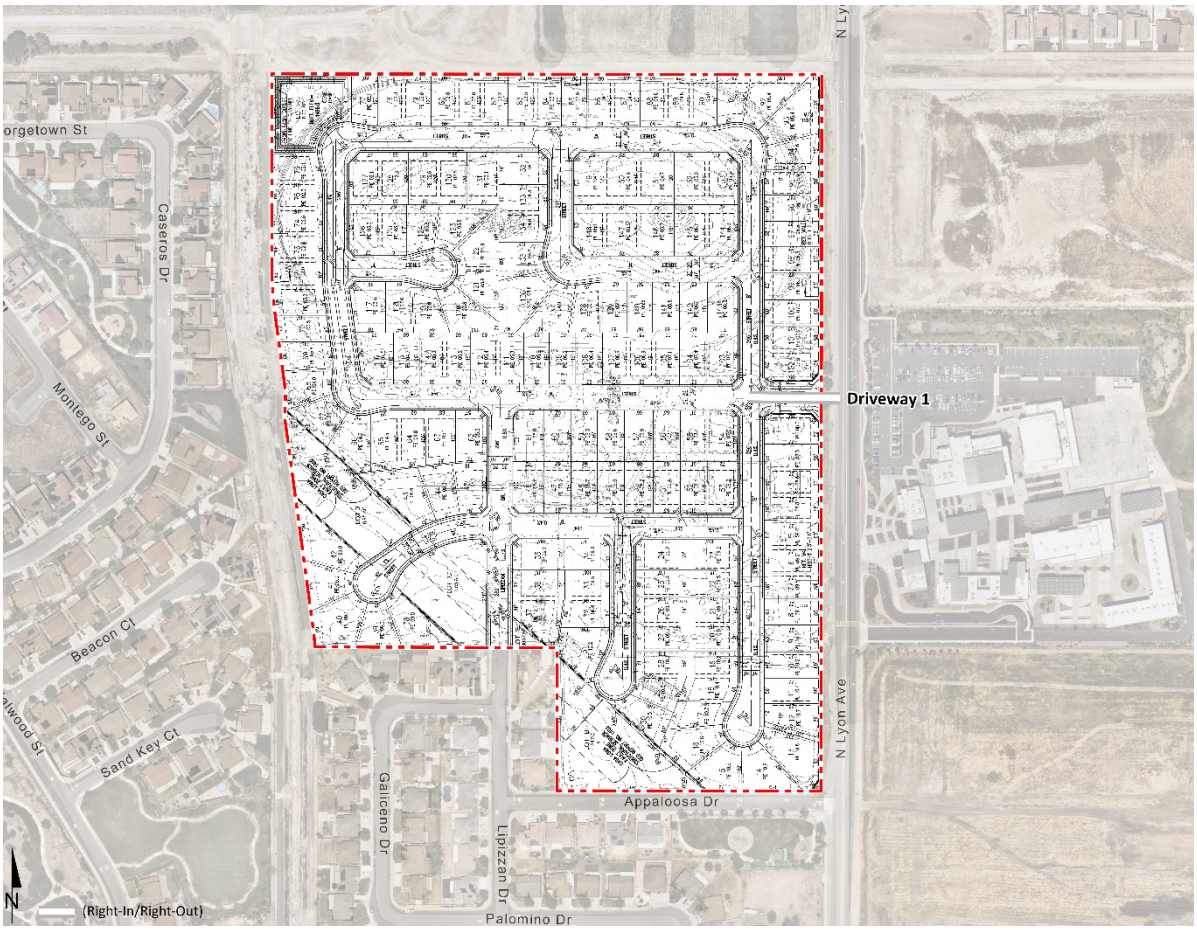
LYON AVENUE RESIDENTIAL (TENTATIVE TRACT MAP NO. 38468) (P22-088) TRAFFIC STUDY SCOPING AGREEMENT (REVISED)

Urban Crossroads, Inc. is pleased to submit the following Traffic Study Scoping Agreement for the proposed Lyon Avenue Residential (TTM No. 38468) development (**Project**), which is located on the west side of Lyon Avenue and north of Cottonwood Avenue in the City of San Jacinto (see Exhibit 1). This letter describes the proposed Project trip generation, trip distribution, and analysis methodology, which have been used to establish the draft proposed Project study area and analysis locations.

PROPOSED PROJECT

The Project is anticipated to have an Opening Year of 2026. The Project consists of the development of 153 single family residential dwelling units. A preliminary site plan for the proposed Project is shown on Exhibit 1. Access to the Project site will be accommodated via Lipizzan Drive to the south to Cottonwood Avenue and a right-in/right-out access only on Lyon Avenue (Driveway 1). There is an existing raised median on Lyon Avenue with wrought iron fencing to restrict the access at Driveway 1.

EXHIBIT 1: PRELIMINARY SITE PLAN



TRIP GENERATION

Trip generation represents the amount of traffic that is attracted and produced by a development and is based upon the specific land uses planned for a given project. In order to develop the traffic characteristics of the proposed project, trip-generation statistics published in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition, 2021) for the Single Family Detached Residential Land Use category (ITE Land Use Code 210) was used to calculate the trip generation.

TABLE 1: TRIP GENERATION RATES

Land Use[1]	ITE Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Single Family Detached Residential	210	DU	0.18	0.52	0.70	0.59	0.35	0.94	9.43

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

[2] DU = dwelling units

The trip generation summary illustrating daily, and peak hour trip generation estimates for the proposed Project are shown on Table 2. The proposed Project is anticipated to generate 1,444 two-way trip-ends per day with 107 AM peak hour trips and 144 PM peak hour trips (see Table 2).

TABLE 2: PROJECT TRIP GENERATION SUMMARY

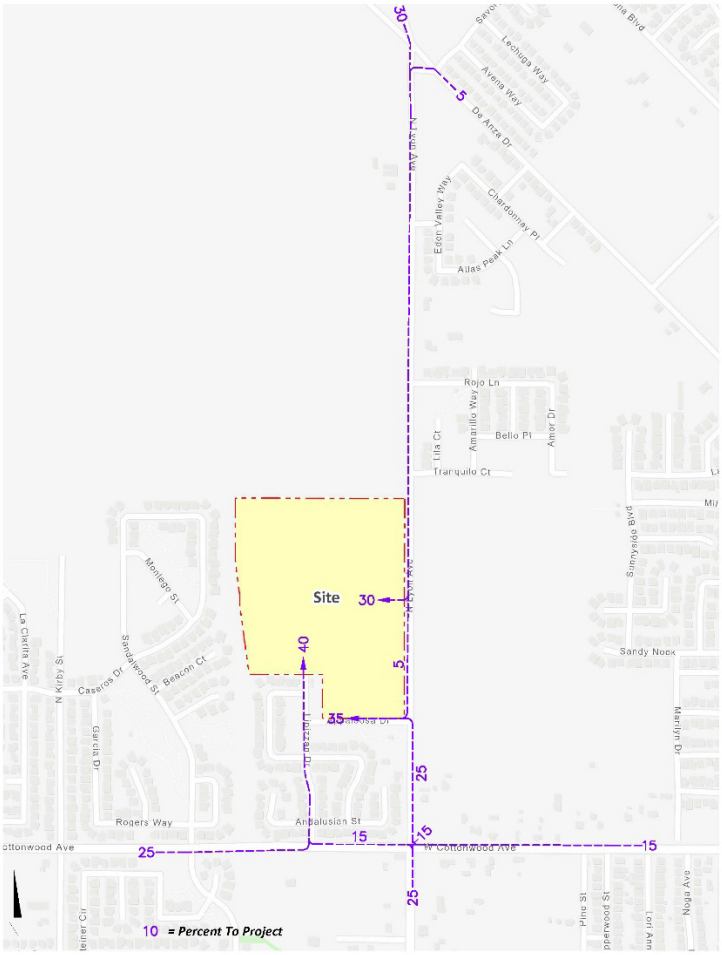
Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Lyon Avenue Project (TTM No. 38468)	153	DU	28	79	107	91	53	144	1,444

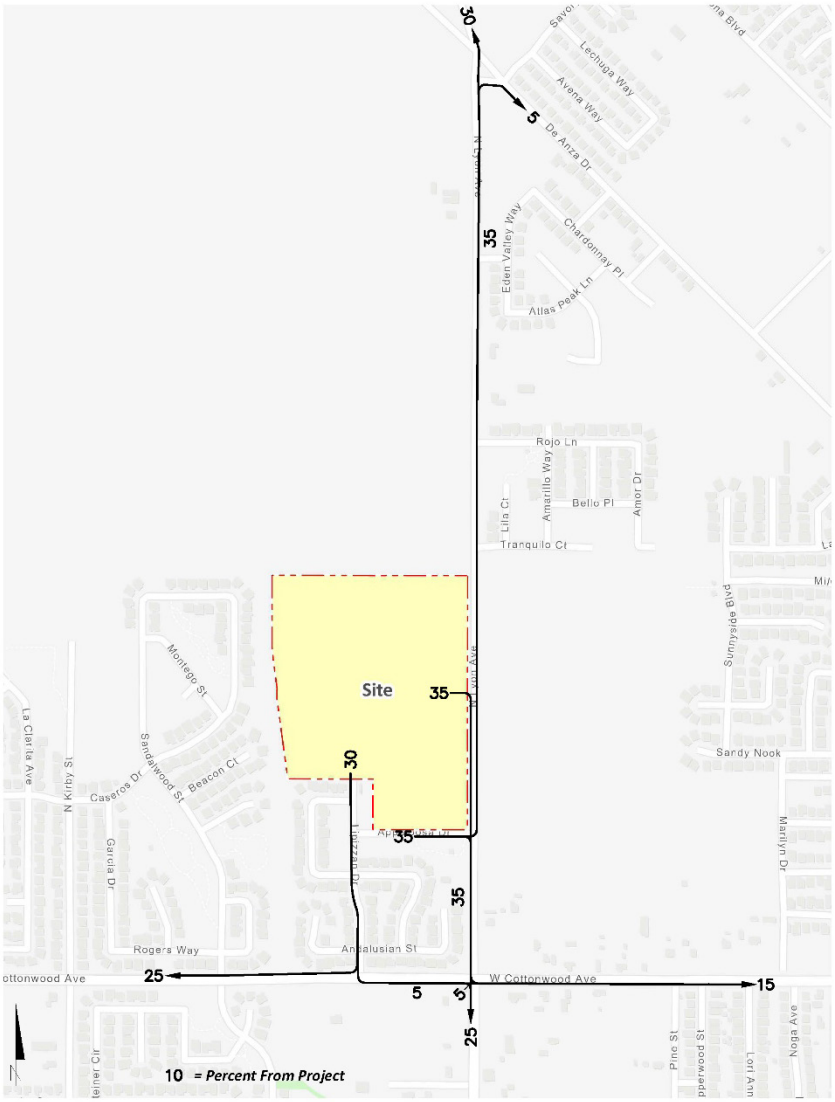
[1] DU = dwelling units

TRIP DISTRIBUTION

The Project trip distribution represents the directional orientation of traffic to and from the Project site. Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. Exhibit 2 shows the Project trip distribution patterns.

EXHIBIT 2: PROJECT TRIP DISTRIBUTION





ANALYSIS SCENARIOS

Consistent with the City's Guidelines, intersection analysis will be provided for the following analysis scenarios:

1. Existing (2023) Conditions
2. Existing plus Ambient Growth (EA) (2026) Conditions – we can include approved projects as provided by City staff to this analysis scenario
3. Existing plus Ambient Growth plus Project (EAP) (2026) Conditions
4. Existing plus Ambient Growth plus Cumulative (EAC) (2026) Conditions
5. Existing plus Ambient Growth plus Project plus Cumulative (EAPC) (2026) Conditions

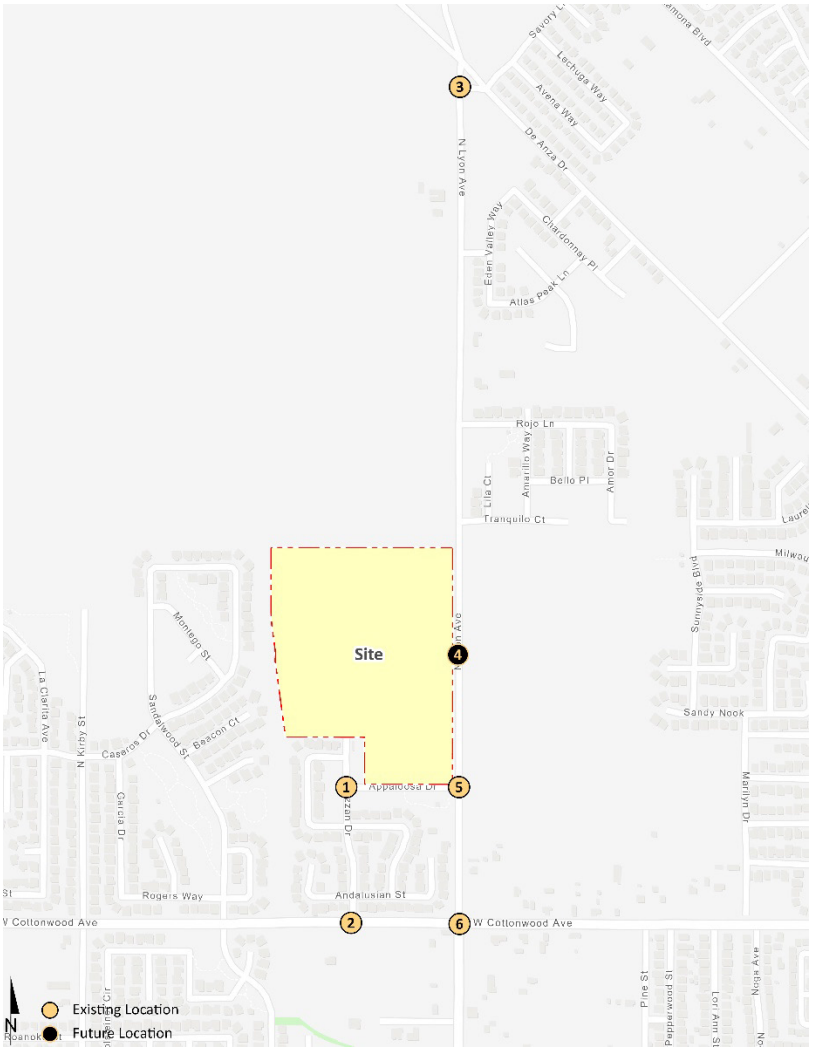
All study area intersections will be evaluated using the Highway Capacity Manual (HCM) 6th Edition analysis methodology.

STUDY AREA INTERSECTIONS

Based on the Project's anticipated travel patterns and trip generation characteristics, the following study area intersection locations shown on Exhibit 3 and listed below were selected for analysis:

ID	Intersection	Jursidiction
1	Lipizzan Dr. & Appaloosa Dr.	City of San Jacinto
2	Lipizzan Dr. & Cottonwood Av.	City of San Jacinto
3	Lyon Av. & De Anza Dr.	City of San Jacinto
4	Lyon Av. & Driveway 1	City of San Jacinto
5	Lyon Av. & Appaloosa Dr.	City of San Jacinto
6	Lyon Av. & Cottonwood Av.	City of San Jacinto

EXHIBIT 3: STUDY AREA



EXISTING COUNT DATA

New traffic counts will be conducted the week of August 28, 2023 which is the first full week of school (schools start on August 23, 2023), when local schools were in session and operating on a typical bell schedules. No volume adjustments other than those needed for volume balancing between closely spaced intersections (to ensure no loss of vehicles). New traffic counts will be conducted between the typical 7-9 AM and 4-6 PM peak hours in addition to mid-day counts between 1:30-3:30 PM to capture school release times (for the Monte Vista Middle School). Traffic associated with the morning school drop-off will coincide with the morning peak hours of 7-9 AM.

AMBIENT GROWTH

Consistent with other studies performed in the area, an ambient growth rate of 2.0% per year is proposed for the study area intersections to approximate background traffic growth not identified by nearby cumulative development projects. The rate will be compounded over a 3-year period (i.e., $1.02^{3\text{years}} = 1.0612$ or 6.12% for 2026).

CUMULATIVE PROJECTS

The City has provided a list of cumulative projects for consideration in the Traffic Study. The list will be reviewed and projects that are anticipated to contribute traffic to the study area intersections will be included.

SPECIAL ISSUES

The following special issues will also be addressed:

- VMT analysis will be evaluated in a separate document.
- Provide a queuing analysis for the project driveways.

SIGNAL TIMING

It is requested that the City provide any signal timing that should be considered for signalized study area intersections within the City.

If you have any questions or comments, I can be reached at cso@urbanxroads.com.

APPENDIX 1.2: SITE ADJACENT QUEUES

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Intersection: 4: Lyon Av. & Driveway 1

Movement	EB
Directions Served	R
Maximum Queue (ft)	43
Average Queue (ft)	16
95th Queue (ft)	38
Link Distance (ft)	1102
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

Intersection: 4: Lyon Av. & Driveway 1

Movement	EB
Directions Served	R
Maximum Queue (ft)	29
Average Queue (ft)	14
95th Queue (ft)	35
Link Distance (ft)	1102
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

Intersection: 4: Lyon Av. & Driveway 1

Movement	EB
Directions Served	R
Maximum Queue (ft)	25
Average Queue (ft)	11
95th Queue (ft)	31
Link Distance (ft)	1102
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

APPENDIX 3.1: TRAFFIC COUNTS

APPENDIX 3.1: TRAFFIC COUNTS

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Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of San Jacinto
N/S: Lipizzan Drive
E/W: Appaloosa Drive
Weather: Clear

File Name : 01_SJC_Lip_Appa AM
Site Code : 05123790
Start Date : 8/30/2023
Page No : 1

Groups Printed- Total Volume

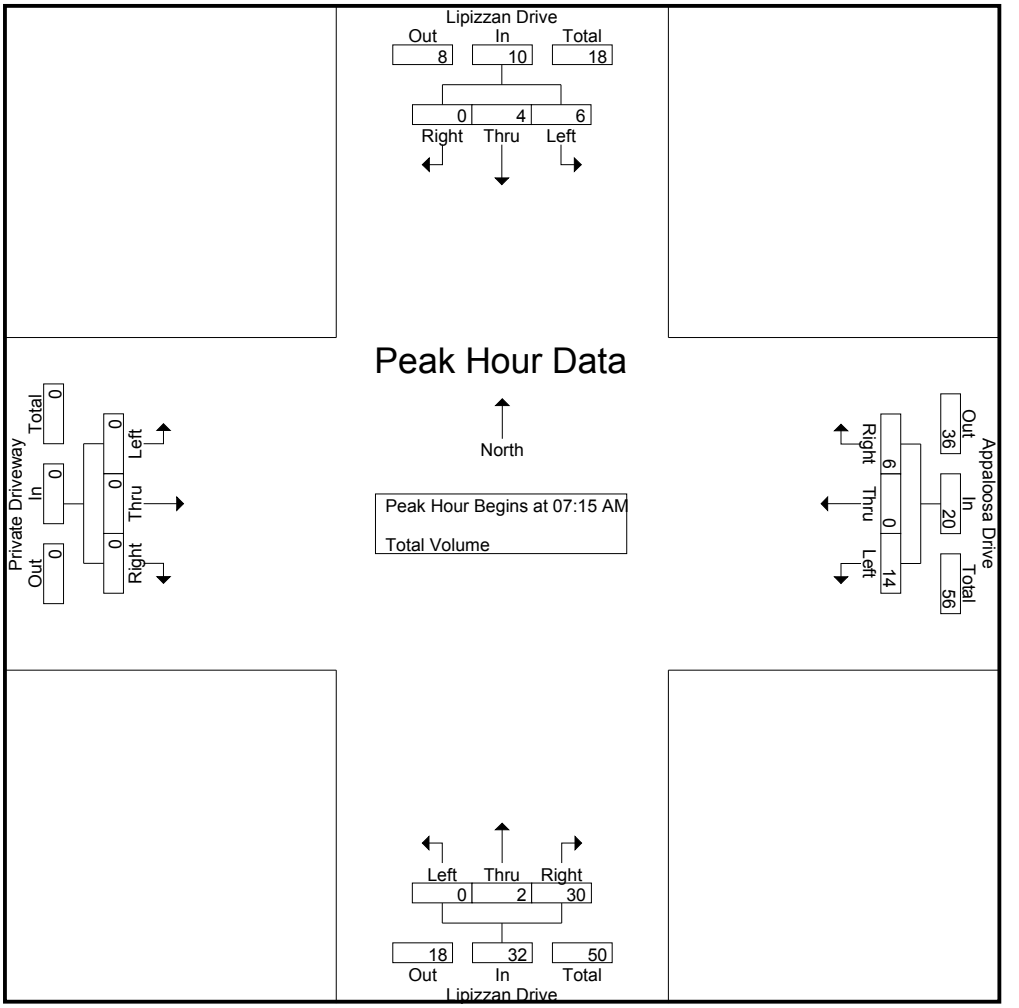
	Lipizzan Drive Southbound				Appaloosa Drive Westbound				Lipizzan Drive Northbound				Private Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	1	0	2	2	0	0	2	0	1	4	5	0	0	0	0	9
07:15 AM	1	2	0	3	1	0	2	3	0	0	3	3	0	0	0	0	9
07:30 AM	1	2	0	3	5	0	0	5	0	1	10	11	0	0	0	0	19
07:45 AM	4	0	0	4	4	0	0	4	0	0	10	10	0	0	0	0	18
Total	7	5	0	12	12	0	2	14	0	2	27	29	0	0	0	0	55
08:00 AM	0	0	0	0	4	0	4	8	0	1	7	8	0	0	0	0	16
08:15 AM	2	0	0	2	0	0	0	0	0	0	6	6	0	0	0	0	8
08:30 AM	0	1	0	1	1	0	1	2	0	1	0	1	0	0	0	0	4
08:45 AM	0	0	0	0	2	0	0	2	0	1	1	2	0	0	0	0	4
Total	2	1	0	3	7	0	5	12	0	3	14	17	0	0	0	0	32
Grand Total	9	6	0	15	19	0	7	26	0	5	41	46	0	0	0	0	87
Apprch %	60	40	0		73.1	0	26.9		0	10.9	89.1		0	0	0		
Total %	10.3	6.9	0	17.2	21.8	0	8	29.9	0	5.7	47.1	52.9	0	0	0	0	

	Lipizzan Drive Southbound				Appaloosa Drive Westbound				Lipizzan Drive Northbound				Private Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	1	**2**	0	3	1	0	2	3	0	0	3	3	0	0	0	0	9
07:30 AM	1	2	0	3	**5**	0	0	5	0	**1**	**10**	**11**	0	0	0	0	**19**
07:45 AM	**4**	0	0	**4**	4	0	0	4	0	0	10	10	0	0	0	0	18
08:00 AM	0	0	0	0	4	0	**4**	**8**	0	1	7	8	0	0	0	0	16
Total Volume	6	4	0	10	14	0	6	20	0	2	30	32	0	0	0	0	62
% App. Total	60	40	0		70	0	30		0	6.2	93.8		0	0	0		
PHF	.375	.500	.000	.625	.700	.000	.375	.625	.000	.500	.750	.727	.000	.000	.000	.000	.816

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City of San Jacinto
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File Name : 01_SJC_Lip_Appa AM
Site Code : 05123790
Start Date : 8/30/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:30 AM				07:00 AM			
+0 mins.	1	1	0	2	1	0	2	3	0	**1**	**10**	**11**	0	0	0	0
+15 mins.	1	**2**	0	3	**5**	0	0	5	0	0	10	10	0	0	0	0
+30 mins.	1	2	0	3	4	0	0	4	0	1	7	8	0	0	0	0
+45 mins.	**4**	0	0	**4**	4	0	**4**	**8**	0	0	6	6	0	0	0	0
Total Volume	7	5	0	12	14	0	6	20	0	2	33	35	0	0	0	0
% App. Total	58.3	41.7	0		70	0	30		0	5.7	94.3		0	0	0	
PHF	.438	.625	.000	.750	.700	.000	.375	.625	.000	.500	.825	.795	.000	.000	.000	.000

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City of San Jacinto
N/S: Lipizzan Drive
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Weather: Clear

File Name : 01_SJC_Lip_Appa MD
Site Code : 05123790
Start Date : 8/30/2023
Page No : 1

Groups Printed- Total Volume

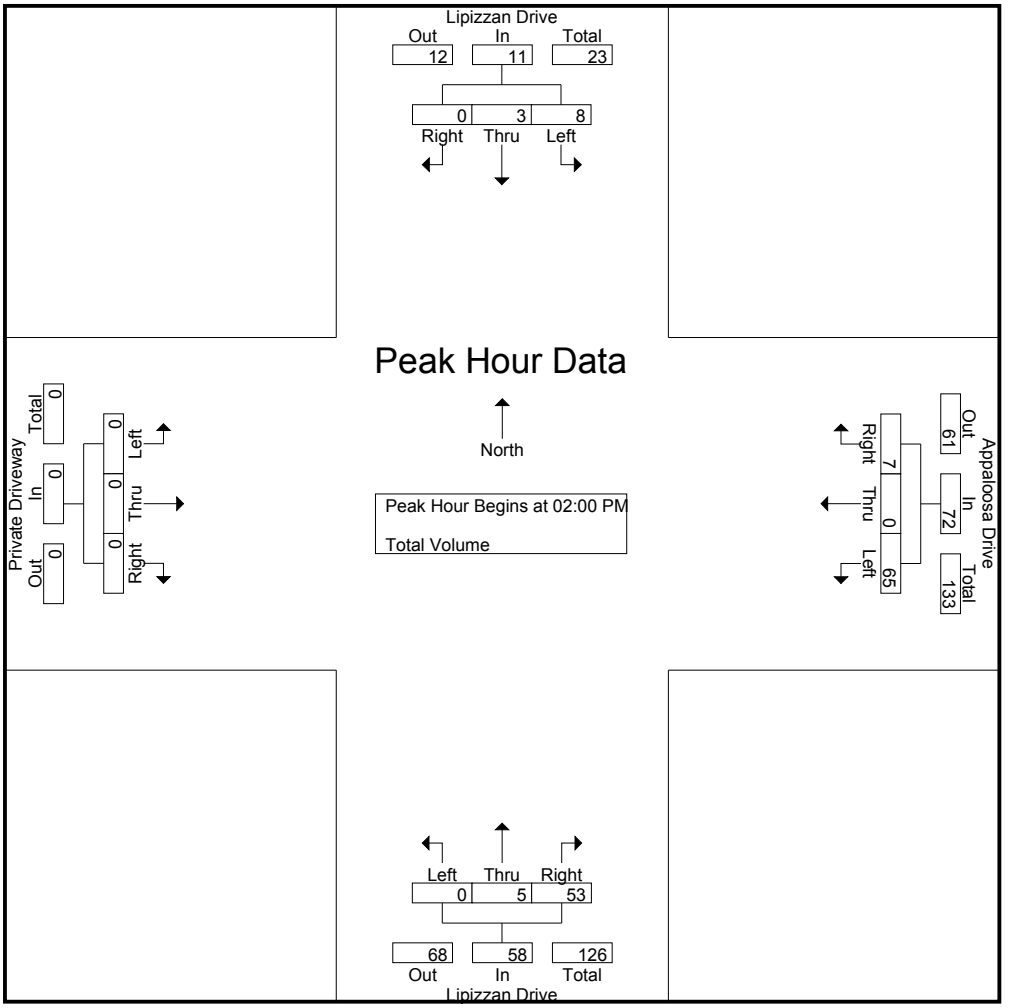
	Lipizzan Drive Southbound				Appaloosa Drive Westbound				Lipizzan Drive Northbound				Private Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
01:30 PM	2	1	0	3	1	0	0	1	0	0	3	3	0	0	0	0	7
01:45 PM	0	3	0	3	2	0	1	3	0	0	3	3	0	0	0	0	9
Total	2	4	0	6	3	0	1	4	0	0	6	6	0	0	0	0	16
02:00 PM	1	0	0	1	3	0	0	3	0	2	7	9	0	0	0	0	13
02:15 PM	3	1	0	4	6	0	2	8	0	0	24	24	0	0	0	0	36
02:30 PM	2	2	0	4	47	0	4	51	0	3	19	22	0	0	0	0	77
02:45 PM	2	0	0	2	9	0	1	10	0	0	3	3	0	0	0	0	15
Total	8	3	0	11	65	0	7	72	0	5	53	58	0	0	0	0	141
03:00 PM	2	1	0	3	2	0	0	2	0	0	2	2	0	0	0	0	7
03:15 PM	2	0	0	2	4	0	0	4	0	0	2	2	0	0	0	0	8
Grand Total	14	8	0	22	74	0	8	82	0	5	63	68	0	0	0	0	172
Apprch %	63.6	36.4	0		90.2	0	9.8		0	7.4	92.6		0	0	0		
Total %	8.1	4.7	0	12.8	43	0	4.7	47.7	0	2.9	36.6	39.5	0	0	0	0	

	Lipizzan Drive Southbound				Appaloosa Drive Westbound				Lipizzan Drive Northbound				Private Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 01:30 PM to 03:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 02:00 PM																	
02:00 PM	1	0	0	1	3	0	0	3	0	2	7	9	0	0	0	0	13
02:15 PM	**3**	1	0	**4**	6	0	2	8	0	0	**24**	**24**	0	0	0	0	36
02:30 PM	2	**2**	0	4	**47**	0	**4**	**51**	0	**3**	19	22	0	0	0	0	**77**
02:45 PM	2	0	0	2	9	0	1	10	0	0	3	3	0	0	0	0	15
Total Volume	8	3	0	11	65	0	7	72	0	5	53	58	0	0	0	0	141
% App. Total	72.7	27.3	0		90.3	0	9.7		0	8.6	91.4		0	0	0		
PHF	.667	.375	.000	.688	.346	.000	.438	.353	.000	.417	.552	.604	.000	.000	.000	.000	.458

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Site Code : 05123790
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Page No : 2



Peak Hour Analysis From 01:30 PM to 03:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:15 PM				02:00 PM				01:45 PM				01:30 PM			
+0 mins.	**3**	1	0	**4**	3	0	0	3	0	0	3	3	0	0	0	0
+15 mins.	2	**2**	0	4	6	0	2	8	0	2	7	9	0	0	0	0
+30 mins.	2	0	0	2	**47**	0	**4**	**51**	0	0	**24**	**24**	0	0	0	0
+45 mins.	2	1	0	3	9	0	1	10	0	**3**	19	22	0	0	0	0
Total Volume	9	4	0	13	65	0	7	72	0	5	53	58	0	0	0	0
% App. Total	69.2	30.8	0		90.3	0	9.7		0	8.6	91.4		0	0	0	
PHF	.750	.500	.000	.813	.346	.000	.438	.353	.000	.417	.552	.604	.000	.000	.000	.000

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City of San Jacinto
N/S: Lipizzan Drive
E/W: Appaloosa Drive
Weather: Clear

File Name : 01_SJC_Lip_Appa PM
Site Code : 05123790
Start Date : 8/30/2023
Page No : 1

Groups Printed- Total Volume

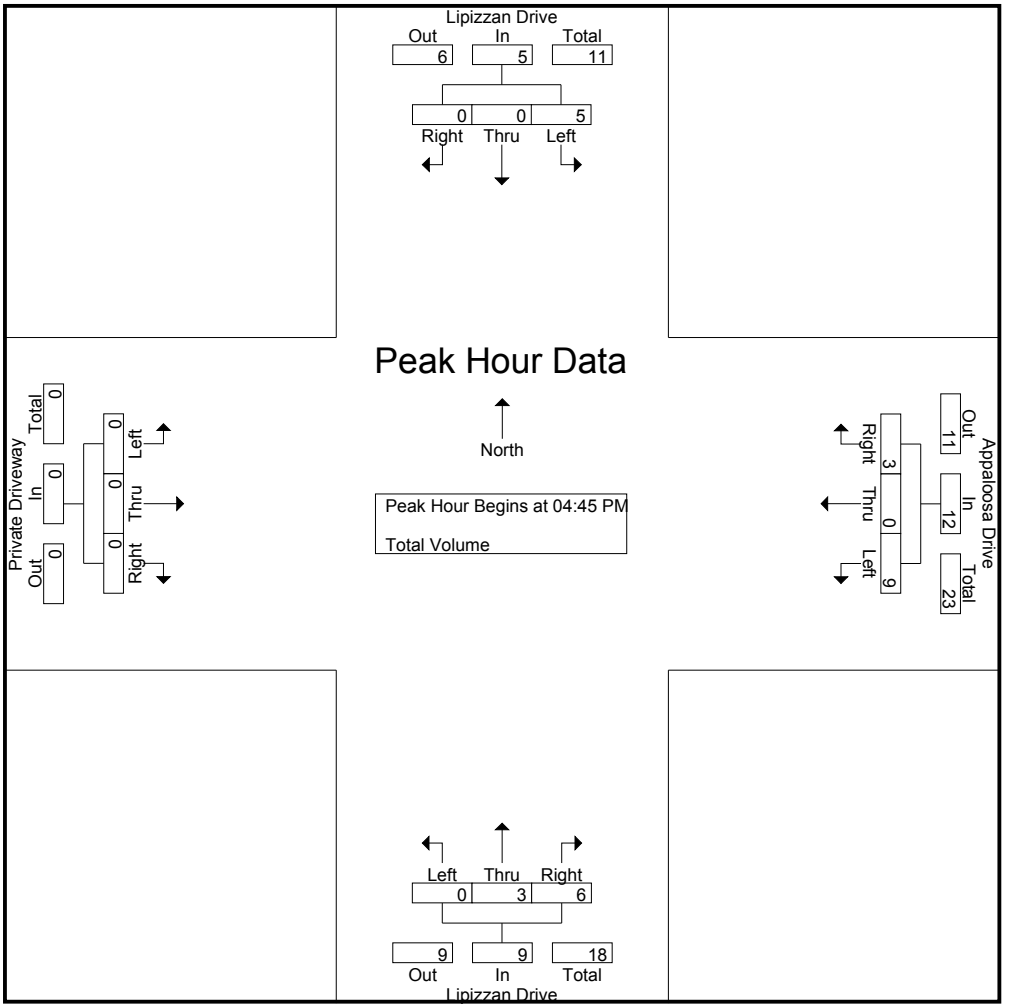
	Lipizzan Drive Southbound				Appaloosa Drive Westbound				Lipizzan Drive Northbound				Private Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	1	0	2	2	0	2	4	0	0	2	2	0	0	0	0	8
04:15 PM	0	0	0	0	2	0	1	3	0	2	1	3	0	0	0	0	6
04:30 PM	0	0	0	0	1	0	0	1	0	0	1	1	0	0	0	0	2
04:45 PM	2	0	0	2	2	0	0	2	0	1	2	3	0	0	0	0	7
Total	3	1	0	4	7	0	3	10	0	3	6	9	0	0	0	0	23
05:00 PM	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0	2
05:15 PM	3	0	0	3	3	0	3	6	0	1	2	3	0	0	0	0	12
05:30 PM	0	0	0	0	3	0	0	3	0	0	2	2	0	0	0	0	5
05:45 PM	0	0	0	0	2	0	1	3	0	0	1	1	0	0	0	0	4
Total	3	0	0	3	9	0	4	13	0	2	5	7	0	0	0	0	23
Grand Total	6	1	0	7	16	0	7	23	0	5	11	16	0	0	0	0	46
Apprch %	85.7	14.3	0		69.6	0	30.4		0	31.2	68.8		0	0	0		
Total %	13	2.2	0	15.2	34.8	0	15.2	50	0	10.9	23.9	34.8	0	0	0	0	

	Lipizzan Drive Southbound				Appaloosa Drive Westbound				Lipizzan Drive Northbound				Private Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	2	0	0	2	2	0	0	2	0	**1**	**2**	**3**	0	0	0	0	7
05:00 PM	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0	2
05:15 PM	**3**	0	0	**3**	**3**	0	**3**	**6**	0	1	2	3	0	0	0	0	**12**
05:30 PM	0	0	0	0	3	0	0	3	0	0	2	2	0	0	0	0	5
Total Volume	5	0	0	5	9	0	3	12	0	3	6	9	0	0	0	0	26
% App. Total	100	0	0		75	0	25		0	33.3	66.7		0	0	0		
PHF	.417	.000	.000	.417	.750	.000	.250	.500	.000	.750	.750	.750	.000	.000	.000	.000	.542

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City of San Jacinto
N/S: Lipizzan Drive
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Weather: Clear

File Name : 01_SJC_Lip_Appa PM
Site Code : 05123790
Start Date : 8/30/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				05:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	1	0	0	1	0	0	**2**	2	0	0	0	0
+15 mins.	2	0	0	2	**3**	0	**3**	**6**	0	**2**	1	**3**	0	0	0	0
+30 mins.	0	0	0	0	3	0	0	3	0	0	1	1	0	0	0	0
+45 mins.	**3**	0	0	**3**	2	0	1	3	0	1	2	3	0	0	0	0
Total Volume	5	0	0	5	9	0	4	13	0	3	6	9	0	0	0	0
% App. Total	100	0	0		69.2	0	30.8		0	33.3	66.7		0	0	0	
PHF	.417	.000	.000	.417	.750	.000	.333	.542	.000	.375	.750	.750	.000	.000	.000	.000

Location: San Jacinto
N/S: Lipizzan Drive
E/W: Appaloosa Drive

Date: 8/30/2023
Day: Wednesday

PEDESTRIANS

	North Leg Lipizzan Drive	East Leg Appaloosa Drive	South Leg Lipizzan Drive	West Leg Private Driveway	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	1	0	0	1
7:15 AM	1	0	0	0	1
7:30 AM	1	0	0	0	1
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	2	1	0	0	3

	North Leg Lipizzan Drive	East Leg Appaloosa Drive	South Leg Lipizzan Drive	West Leg Private Driveway	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
1:30 PM	0	0	0	0	0
1:45 PM	0	0	0	0	0
2:00 PM	0	0	0	0	0
2:15 PM	0	0	0	0	0
2:30 PM	0	1	0	0	1
2:45 PM	0	0	0	0	0
3:00 PM	0	0	0	0	0
3:15 PM	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	0	1

	North Leg Lipizzan Drive	East Leg Appaloosa Drive	South Leg Lipizzan Drive	West Leg Private Driveway	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

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Location: San Jacinto
N/S: Lipizzan Drive
E/W: Appaloosa Drive

Date: 8/30/2023
Day: Wednesday

BICYCLES

	Southbound Lipizzan Drive			Westbound Appaloosa Drive			Northbound Lipizzan Drive			Eastbound Private Driveway			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	3	0	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	3	0	0	0	3

	Southbound Lipizzan Drive			Westbound Appaloosa Drive			Northbound Lipizzan Drive			Eastbound Private Driveway			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	3	0	0	0	0	0	0	0	0	3
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	3	0	0	0	0	0	0	0	0	3

	Southbound Lipizzan Drive			Westbound Appaloosa Drive			Northbound Lipizzan Drive			Eastbound Private Driveway			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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City of San Jacinto
N/S: Lipizzan Drive
E/W: Cottonwood Avenue
Weather: Clear

File Name : 02_SJC_Lip_Cot AM
Site Code : 05123790
Start Date : 8/30/2023
Page No : 1

Groups Printed- Total Volume

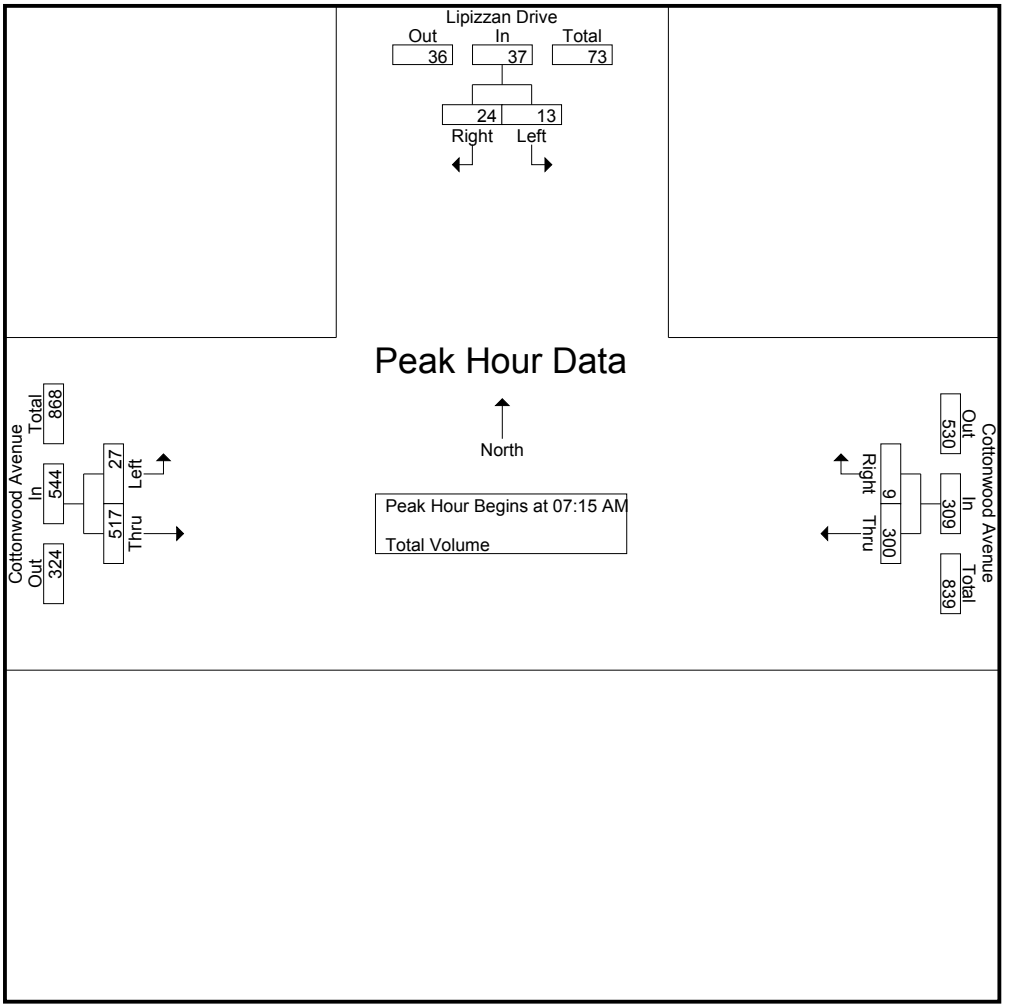
	Lipizzan Drive Southbound			Cottonwood Avenue Westbound			Cottonwood Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	3	15	18	63	1	64	7	67	74	156
07:15 AM	3	8	11	54	4	58	8	117	125	194
07:30 AM	2	10	12	60	1	61	11	131	142	215
07:45 AM	6	1	7	96	2	98	4	144	148	253
Total	14	34	48	273	8	281	30	459	489	818
08:00 AM	2	5	7	90	2	92	4	125	129	228
08:15 AM	4	3	7	97	3	100	0	87	87	194
08:30 AM	3	4	7	100	5	105	1	51	52	164
08:45 AM	3	0	3	41	2	43	3	57	60	106
Total	12	12	24	328	12	340	8	320	328	692
Grand Total	26	46	72	601	20	621	38	779	817	1510
Apprch %	36.1	63.9		96.8	3.2		4.7	95.3		
Total %	1.7	3	4.8	39.8	1.3	41.1	2.5	51.6	54.1	

	Lipizzan Drive Southbound			Cottonwood Avenue Westbound			Cottonwood Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	3	8	11	54	**4**	58	8	117	125	194
07:30 AM	2	**10**	**12**	60	1	61	**11**	131	142	215
07:45 AM	**6**	1	7	**96**	2	**98**	4	**144**	**148**	**253**
08:00 AM	2	5	7	90	2	92	4	125	129	228
Total Volume	13	24	37	300	9	309	27	517	544	890
% App. Total	35.1	64.9		97.1	2.9		5	95		
PHF	.542	.600	.771	.781	.563	.788	.614	.898	.919	.879

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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:45 AM			07:15 AM		
+0 mins.	3	**15**	**18**	96	2	98	8	117	125
+15 mins.	3	8	11	90	2	92	**11**	131	142
+30 mins.	2	10	12	97	3	100	4	**144**	**148**
+45 mins.	**6**	1	7	**100**	**5**	**105**	4	125	129
Total Volume	14	34	48	383	12	395	27	517	544
% App. Total	29.2	70.8		97	3		5	95	
PHF	.583	.567	.667	.958	.600	.940	.614	.898	.919

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City of San Jacinto
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Weather: Clear

File Name : 02_SJC_Lip_Cot MD
Site Code : 05123790
Start Date : 8/30/2023

Groups Printed- Total Volume

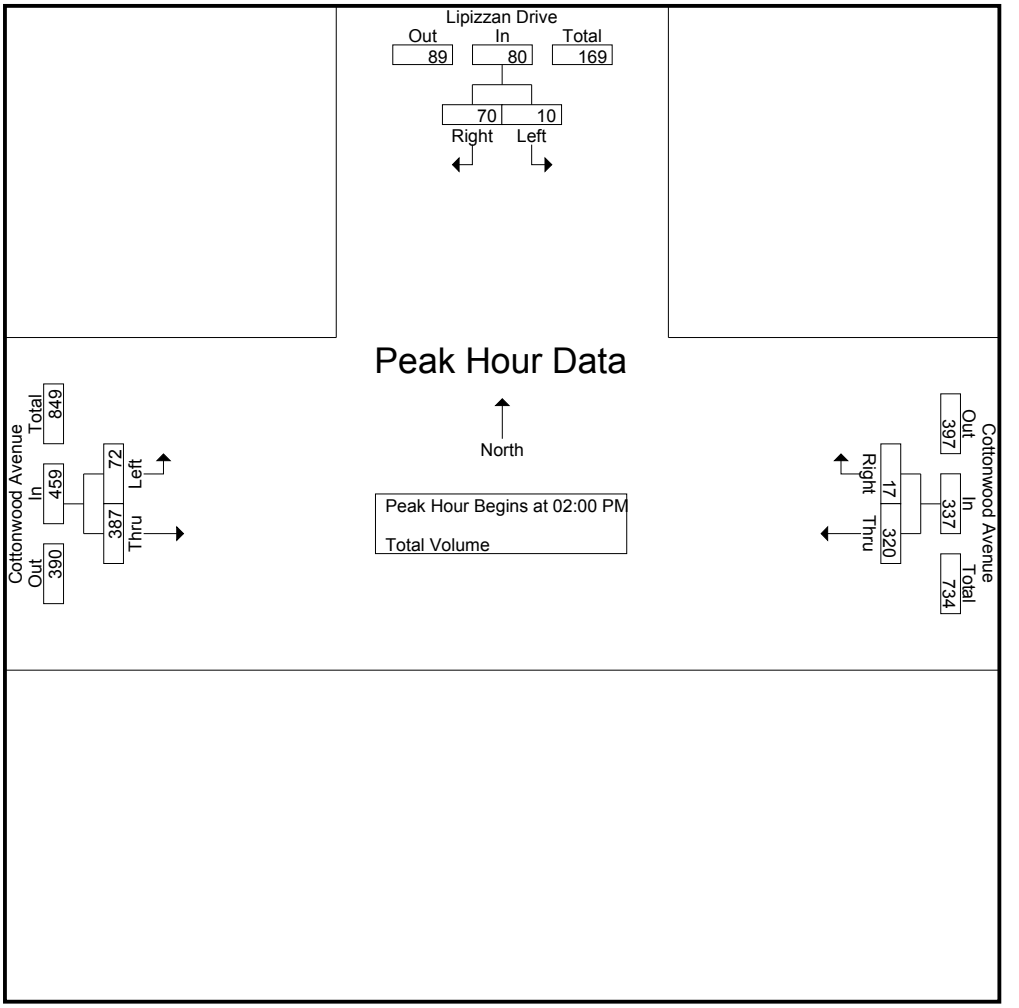
	Lipizzan Drive Southbound			Cottonwood Avenue Westbound			Cottonwood Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
01:30 PM	3	2	5	58	0	58	1	59	60	123
01:45 PM	2	5	7	58	1	59	2	65	67	133
Total	5	7	12	116	1	117	3	124	127	256
02:00 PM	3	7	10	62	5	67	14	107	121	198
02:15 PM	0	9	9	68	8	76	25	102	127	212
02:30 PM	6	46	52	110	1	111	28	92	120	283
02:45 PM	1	8	9	80	3	83	5	86	91	183
Total	10	70	80	320	17	337	72	387	459	876
03:00 PM	6	4	10	79	1	80	3	90	93	183
03:15 PM	1	3	4	70	3	73	1	95	96	173
Grand Total	22	84	106	585	22	607	79	696	775	1488
Apprch %	20.8	79.2		96.4	3.6		10.2	89.8		
Total %	1.5	5.6	7.1	39.3	1.5	40.8	5.3	46.8	52.1	

	Lipizzan Drive Southbound			Cottonwood Avenue Westbound			Cottonwood Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 01:30 PM to 03:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 02:00 PM										
02:00 PM	3	7	10	62	5	67	14	**107**	121	198
02:15 PM	0	9	9	68	**8**	76	25	102	**127**	212
02:30 PM	**6**	**46**	**52**	**110**	1	**111**	**28**	92	120	**283**
02:45 PM	1	8	9	80	3	83	5	86	91	183
Total Volume	10	70	80	320	17	337	72	387	459	876
% App. Total	12.5	87.5		95	5		15.7	84.3		
PHF	.417	.380	.385	.727	.531	.759	.643	.904	.904	.774

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City of San Jacinto
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File Name : 02_SJC_Lip_Cot MD
Site Code : 05123790
Start Date : 8/30/2023
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Peak Hour Analysis From 01:30 PM to 03:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM			02:15 PM			02:00 PM		
+0 mins.	3	7	10	68	**8**	76	14	**107**	121
+15 mins.	0	9	9	**110**	1	**111**	25	102	**127**
+30 mins.	**6**	**46**	**52**	80	3	83	**28**	92	120
+45 mins.	1	8	9	79	1	80	5	86	91
Total Volume	10	70	80	337	13	350	72	387	459
% App. Total	12.5	87.5		96.3	3.7		15.7	84.3	
PHF	.417	.380	.385	.766	.406	.788	.643	.904	.904

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City of San Jacinto
N/S: Lipizzan Drive
E/W: Cottonwood Avenue
Weather: Clear

File Name : 02_SJC_Lip_Cot PM
Site Code : 05123790
Start Date : 8/30/2023
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Groups Printed- Total Volume

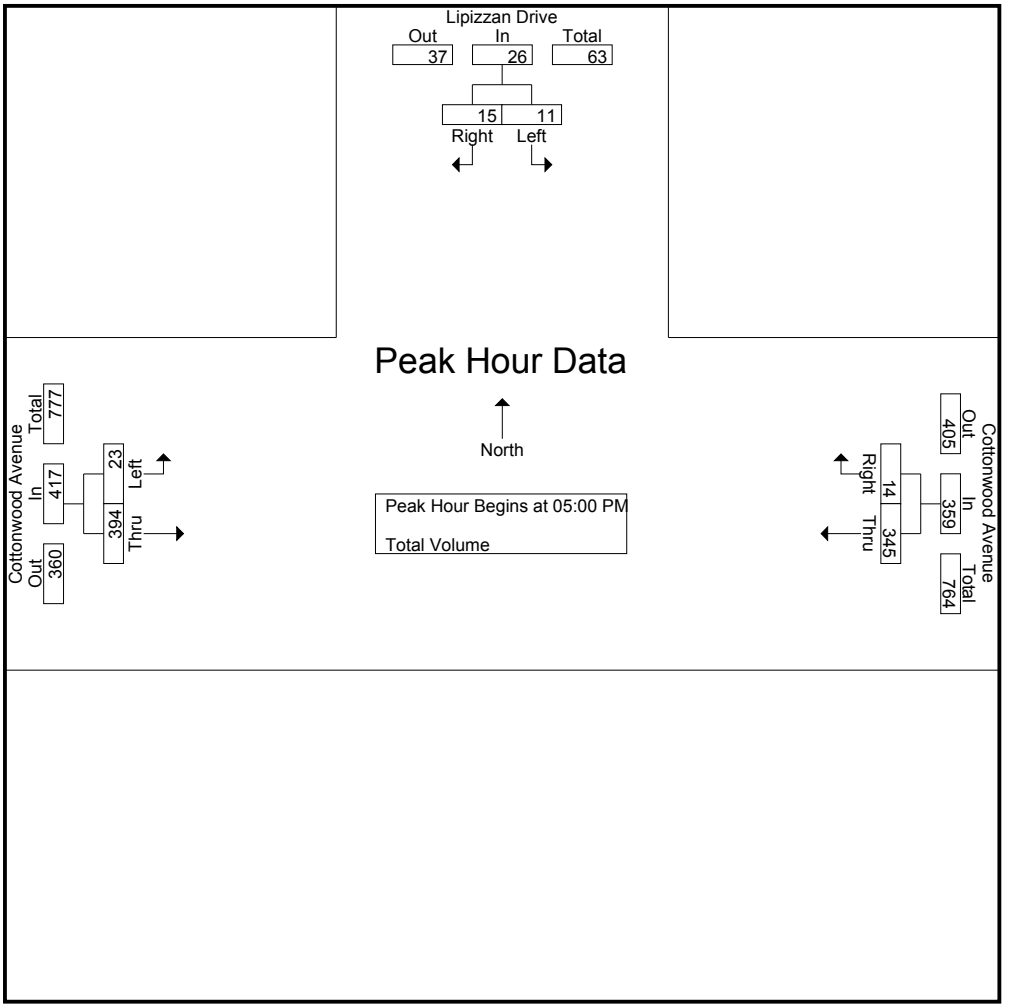
	Lipizzan Drive Southbound			Cottonwood Avenue Westbound			Cottonwood Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	3	7	10	127	7	134	4	92	96	240
04:15 PM	1	3	4	67	1	68	5	90	95	167
04:30 PM	2	0	2	83	5	88	3	86	89	179
04:45 PM	1	2	3	73	4	77	5	77	82	162
Total	7	12	19	350	17	367	17	345	362	748
05:00 PM	2	2	4	89	2	91	5	88	93	188
05:15 PM	4	4	8	76	10	86	6	105	111	205
05:30 PM	5	3	8	83	1	84	5	102	107	199
05:45 PM	0	6	6	97	1	98	7	99	106	210
Total	11	15	26	345	14	359	23	394	417	802
Grand Total	18	27	45	695	31	726	40	739	779	1550
Apprch %	40	60		95.7	4.3		5.1	94.9		
Total %	1.2	1.7	2.9	44.8	2	46.8	2.6	47.7	50.3	

	Lipizzan Drive Southbound			Cottonwood Avenue Westbound			Cottonwood Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	2	2	4	89	2	91	5	88	93	188
05:15 PM	4	4	**8**	76	**10**	86	6	**105**	**111**	205
05:30 PM	**5**	3	8	83	1	84	5	102	107	199
05:45 PM	0	**6**	6	**97**	1	**98**	**7**	99	106	**210**
Total Volume	11	15	26	345	14	359	23	394	417	802
% App. Total	42.3	57.7		96.1	3.9		5.5	94.5		
PHF	.550	.625	.813	.889	.350	.916	.821	.938	.939	.955

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City of San Jacinto
N/S: Lipizzan Drive
E/W: Cottonwood Avenue
Weather: Clear

File Name : 02_SJC_Lip_Cot PM
Site Code : 05123790
Start Date : 8/30/2023
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			04:00 PM			05:00 PM		
+0 mins.	2	2	4	**127**	**7**	**134**	5	88	93
+15 mins.	4	4	**8**	67	1	68	6	**105**	**111**
+30 mins.	**5**	3	8	83	5	88	5	102	107
+45 mins.	0	**6**	6	73	4	77	**7**	99	106
Total Volume	11	15	26	350	17	367	23	394	417
% App. Total	42.3	57.7		95.4	4.6		5.5	94.5	
PHF	.550	.625	.813	.689	.607	.685	.821	.938	.939

Location: San Jacinto
N/S: Lipizzan Drive
E/W: Cottonwood Avenue

Date: 8/30/2023
Day: Wednesday

PEDESTRIANS

	North Leg Lipizzan Drive	East Leg Cottonwood Avenue	South Leg Lipizzan Drive	West Leg Cottonwood Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	2	0	0	0	2
7:15 AM	0	0	0	0	0
7:30 AM	1	0	0	0	1
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	3	0	0	0	3

	North Leg Lipizzan Drive	East Leg Cottonwood Avenue	South Leg Lipizzan Drive	West Leg Cottonwood Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
1:30 PM	0	0	0	0	0
1:45 PM	0	0	0	0	0
2:00 PM	0	0	0	0	0
2:15 PM	0	0	0	0	0
2:30 PM	2	0	0	0	2
2:45 PM	3	0	0	0	3
3:00 PM	0	0	0	0	0
3:15 PM	0	0	0	0	0
TOTAL VOLUMES:	5	0	0	0	5

	North Leg Lipizzan Drive	East Leg Cottonwood Avenue	South Leg Lipizzan Drive	West Leg Cottonwood Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

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Location: San Jacinto
N/S: Lipizzan Drive
E/W: Cottonwood Avenue

Date: 8/30/2023
Day: Wednesday

BICYCLES

	Southbound Lipizzan Drive			Westbound Cottonwood Avenue			Northbound Lipizzan Drive			Eastbound Cottonwood Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	3	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	1
TOTAL VOLUMES:	0	0	1	0	0	0	0	0	0	3	3	0	7

	Southbound Lipizzan Drive			Westbound Cottonwood Avenue			Northbound Lipizzan Drive			Eastbound Cottonwood Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	2	0	0	2	0	0	0	0	0	0	4
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	2	0	0	2	0	0	0	0	0	0	4

	Southbound Lipizzan Drive			Westbound Cottonwood Avenue			Northbound Lipizzan Drive			Eastbound Cottonwood Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	1	0	0	0	0	0	0	1

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City of San Jacinto
N/S: Lyon Avenue
E/W: De Anza Drive
Weather: Clear

File Name : 03_SJC_Lyon_De Anza AM
Site Code : 05123790
Start Date : 8/30/2023
Page No : 1

Groups Printed- Total Volume

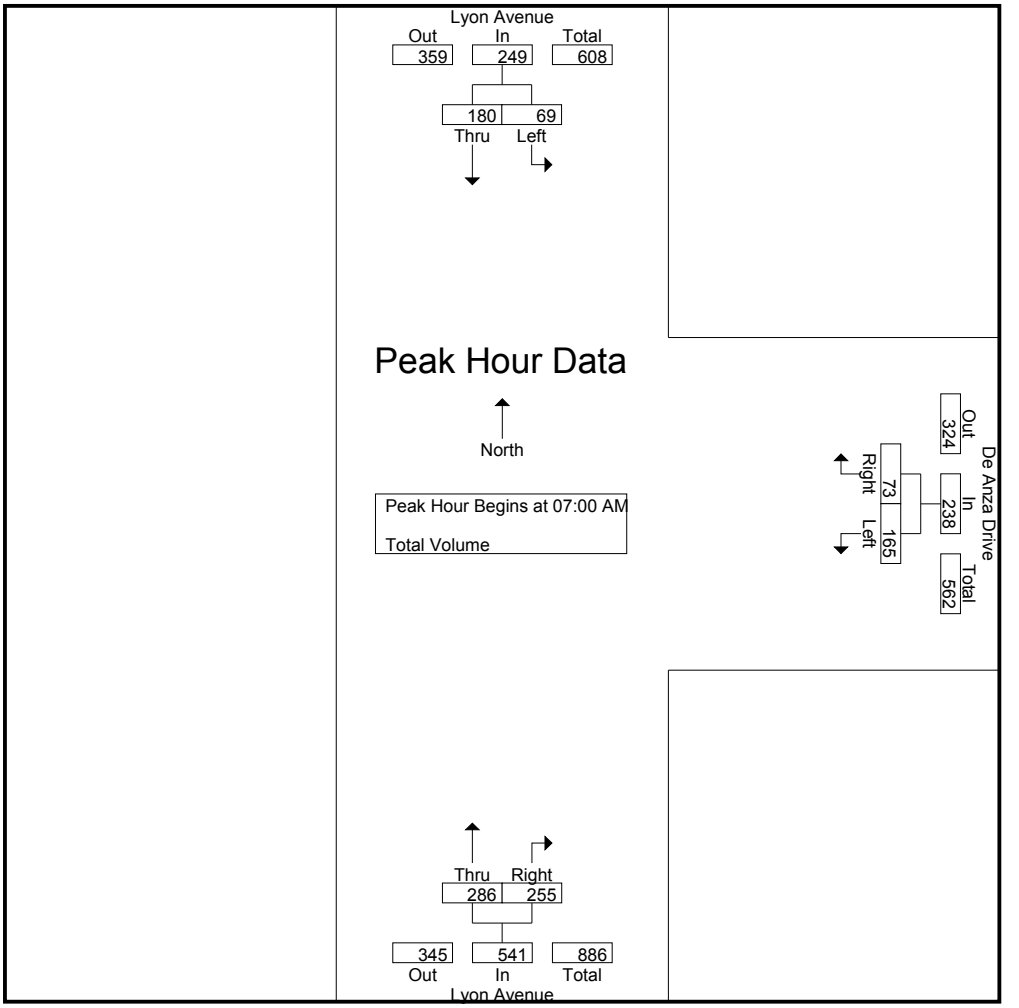
	Lyon Avenue Southbound			De Anza Drive Westbound			Lyon Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	24	19	43	19	18	37	70	27	97	177
07:15 AM	23	57	80	47	18	65	65	48	113	258
07:30 AM	14	51	65	65	23	88	76	71	147	300
07:45 AM	8	53	61	34	14	48	75	109	184	293
Total	69	180	249	165	73	238	286	255	541	1028
08:00 AM	4	42	46	15	9	24	65	40	105	175
08:15 AM	5	42	47	19	10	29	30	25	55	131
08:30 AM	3	39	42	17	8	25	35	8	43	110
08:45 AM	1	35	36	8	5	13	35	3	38	87
Total	13	158	171	59	32	91	165	76	241	503
Grand Total	82	338	420	224	105	329	451	331	782	1531
Apprch %	19.5	80.5		68.1	31.9		57.7	42.3		
Total %	5.4	22.1	27.4	14.6	6.9	21.5	29.5	21.6	51.1	

	Lyon Avenue Southbound			De Anza Drive Westbound			Lyon Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	**24**	19	43	19	18	37	70	27	97	177
07:15 AM	23	**57**	**80**	47	18	65	65	48	113	258
07:30 AM	14	51	65	**65**	**23**	**88**	**76**	71	147	**300**
07:45 AM	8	53	61	34	14	48	75	**109**	**184**	293
Total Volume	69	180	249	165	73	238	286	255	541	1028
% App. Total	27.7	72.3		69.3	30.7		52.9	47.1		
PHF	.719	.789	.778	.635	.793	.676	.941	.585	.735	.857

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Weather: Clear

File Name : 03_SJC_Lyon_De Anza AM
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:00 AM			07:15 AM		
+0 mins.	**23**	**57**	**80**	19	18	37	65	48	113
+15 mins.	14	51	65	47	18	65	**76**	71	147
+30 mins.	8	53	61	**65**	**23**	**88**	75	**109**	**184**
+45 mins.	4	42	46	34	14	48	65	40	105
Total Volume	49	203	252	165	73	238	281	268	549
% App. Total	19.4	80.6		69.3	30.7		51.2	48.8	
PHF	.533	.890	.788	.635	.793	.676	.924	.615	.746

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City of San Jacinto
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File Name : 03_SJC_Lyon_De Anza MD
Site Code : 05123790
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Groups Printed- Total Volume

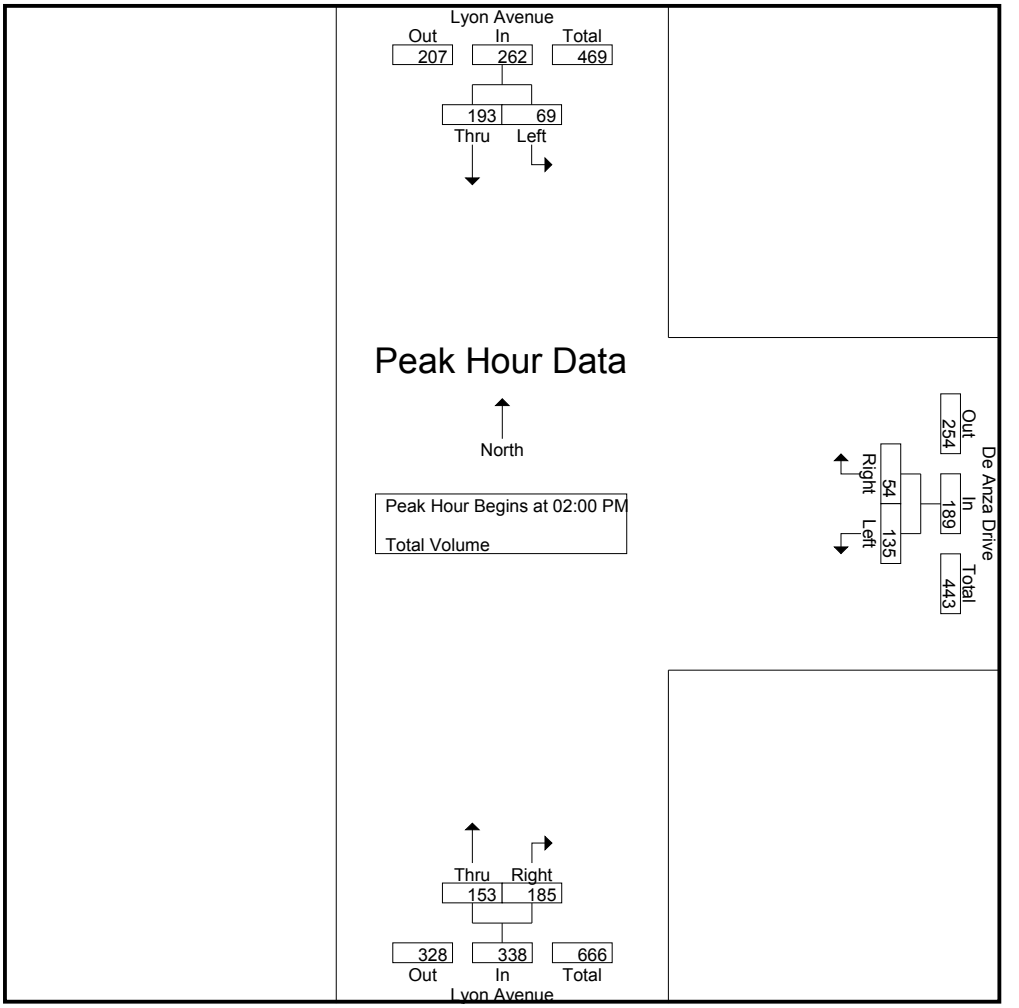
	Lyon Avenue Southbound			De Anza Drive Westbound			Lyon Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
01:30 PM	15	33	48	11	14	25	29	15	44	117
01:45 PM	16	43	59	13	9	22	29	24	53	134
Total	31	76	107	24	23	47	58	39	97	251
02:00 PM	26	59	85	45	21	66	21	14	35	186
02:15 PM	9	55	64	33	8	41	24	29	53	158
02:30 PM	18	45	63	35	10	45	68	107	175	283
02:45 PM	16	34	50	22	15	37	40	35	75	162
Total	69	193	262	135	54	189	153	185	338	789
03:00 PM	17	52	69	5	7	12	43	19	62	143
03:15 PM	16	46	62	5	12	17	38	15	53	132
Grand Total	133	367	500	169	96	265	292	258	550	1315
Apprch %	26.6	73.4		63.8	36.2		53.1	46.9		
Total %	10.1	27.9	38	12.9	7.3	20.2	22.2	19.6	41.8	

	Lyon Avenue Southbound			De Anza Drive Westbound			Lyon Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 01:30 PM to 03:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 02:00 PM										
02:00 PM	**26**	**59**	**85**	**45**	**21**	**66**	21	14	35	186
02:15 PM	9	55	64	33	8	41	24	29	53	158
02:30 PM	18	45	63	35	10	45	**68**	**107**	**175**	**283**
02:45 PM	16	34	50	22	15	37	40	35	75	162
Total Volume	69	193	262	135	54	189	153	185	338	789
% App. Total	26.3	73.7		71.4	28.6		45.3	54.7		
PHF	.663	.818	.771	.750	.643	.716	.563	.432	.483	.697

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City of San Jacinto
N/S: Lyon Avenue
E/W: De Anza Drive
Weather: Clear

File Name : 03_SJC_Lyon_De Anza MD
Site Code : 05123790
Start Date : 8/30/2023



Peak Hour Analysis From 01:30 PM to 03:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	01:45 PM			02:00 PM			02:15 PM		
+0 mins.	16	43	59	**45**	**21**	**66**	24	29	53
+15 mins.	**26**	**59**	**85**	33	8	41	**68**	**107**	**175**
+30 mins.	9	55	64	35	10	45	40	35	75
+45 mins.	18	45	63	22	15	37	43	19	62
Total Volume	69	202	271	135	54	189	175	190	365
% App. Total	25.5	74.5		71.4	28.6		47.9	52.1	
PHF	.663	.856	.797	.750	.643	.716	.643	.444	.521

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City of San Jacinto
N/S: Lyon Avenue
E/W: De Anza Drive
Weather: Clear

File Name : 03_SJC_Lyon_De Anza PM
Site Code : 05123790
Start Date : 8/30/2023
Page No : 1

Groups Printed- Total Volume

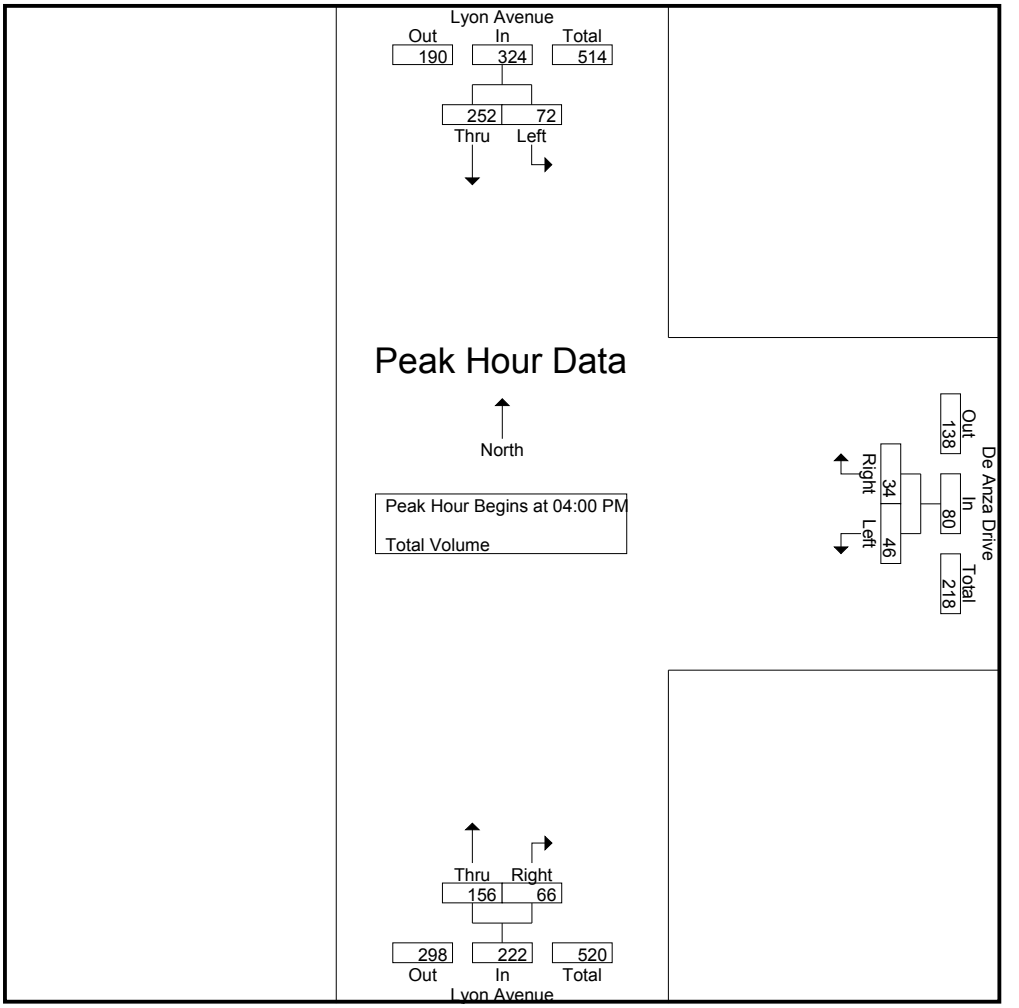
	Lyon Avenue Southbound			De Anza Drive Westbound			Lyon Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	24	69	93	18	10	28	42	10	52	173
04:15 PM	11	68	79	5	7	12	44	24	68	159
04:30 PM	15	62	77	11	9	20	29	17	46	143
04:45 PM	22	53	75	12	8	20	41	15	56	151
Total	72	252	324	46	34	80	156	66	222	626
05:00 PM	20	65	85	6	7	13	44	16	60	158
05:15 PM	17	48	65	10	6	16	47	20	67	148
05:30 PM	22	53	75	8	12	20	38	13	51	146
05:45 PM	10	53	63	13	10	23	37	12	49	135
Total	69	219	288	37	35	72	166	61	227	587
Grand Total	141	471	612	83	69	152	322	127	449	1213
Apprch %	23	77		54.6	45.4		71.7	28.3		
Total %	11.6	38.8	50.5	6.8	5.7	12.5	26.5	10.5	37	

	Lyon Avenue Southbound			De Anza Drive Westbound			Lyon Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**24**	**69**	**93**	**18**	**10**	**28**	42	10	52	**173**
04:15 PM	11	68	79	5	7	12	**44**	**24**	**68**	159
04:30 PM	15	62	77	11	9	20	29	17	46	143
04:45 PM	22	53	75	12	8	20	41	15	56	151
Total Volume	72	252	324	46	34	80	156	66	222	626
% App. Total	22.2	77.8		57.5	42.5		70.3	29.7		
PHF	.750	.913	.871	.639	.850	.714	.886	.688	.816	.905

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City of San Jacinto
N/S: Lyon Avenue
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File Name : 03_SJC_Lyon_De Anza PM
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:45 PM		
+0 mins.	**24**	**69**	**93**	**18**	**10**	**28**	41	15	56
+15 mins.	11	68	79	5	7	12	44	16	60
+30 mins.	15	62	77	11	9	20	**47**	**20**	**67**
+45 mins.	22	53	75	12	8	20	38	13	51
Total Volume	72	252	324	46	34	80	170	64	234
% App. Total	22.2	77.8		57.5	42.5		72.6	27.4	
PHF	.750	.913	.871	.639	.850	.714	.904	.800	.873

Location: San Jacinto
N/S: Lyon Avenue
E/W: De Anza Drive

Date: 8/30/2023
Day: Wednesday

PEDESTRIANS

	North Leg Lyon Avenue	East Leg De Anza Drive	South Leg Lyon Avenue	West Leg De Anza Drive	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	1	0	1
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	1	0	1

	North Leg Lyon Avenue	East Leg De Anza Drive	South Leg Lyon Avenue	West Leg De Anza Drive	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
1:30 PM	0	0	0	0	0
1:45 PM	0	0	0	0	0
2:00 PM	0	0	0	0	0
2:15 PM	0	0	0	0	0
2:30 PM	0	3	0	0	3
2:45 PM	0	1	0	0	1
3:00 PM	1	1	1	0	3
3:15 PM	0	0	0	0	0
TOTAL VOLUMES:	1	5	1	0	7

	North Leg Lyon Avenue	East Leg De Anza Drive	South Leg Lyon Avenue	West Leg De Anza Drive	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	1	0	0	0	1
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	1	0	0	0	1

Location: San Jacinto
N/S: Lyon Avenue
E/W: De Anza Drive

Date: 8/30/2023
Day: Wednesday

BICYCLES

	Southbound Lyon Avenue			Westbound De Anza Drive			Northbound Lyon Avenue			Eastbound De Anza Drive			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound Lyon Avenue			Westbound De Anza Drive			Northbound Lyon Avenue			Eastbound De Anza Drive			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound Lyon Avenue			Westbound De Anza Drive			Northbound Lyon Avenue			Eastbound De Anza Drive			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
TOTAL VOLUMES:	0	0	0	0	0	1	0	0	0	0	0	0	1

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City of San Jacinto
N/S: Lyon Avenue
E/W: Appaloosa Drive
Weather: Clear

File Name : 05_SJC_Lyon_Appa AM
Site Code : 05123790
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Groups Printed- Total Volume

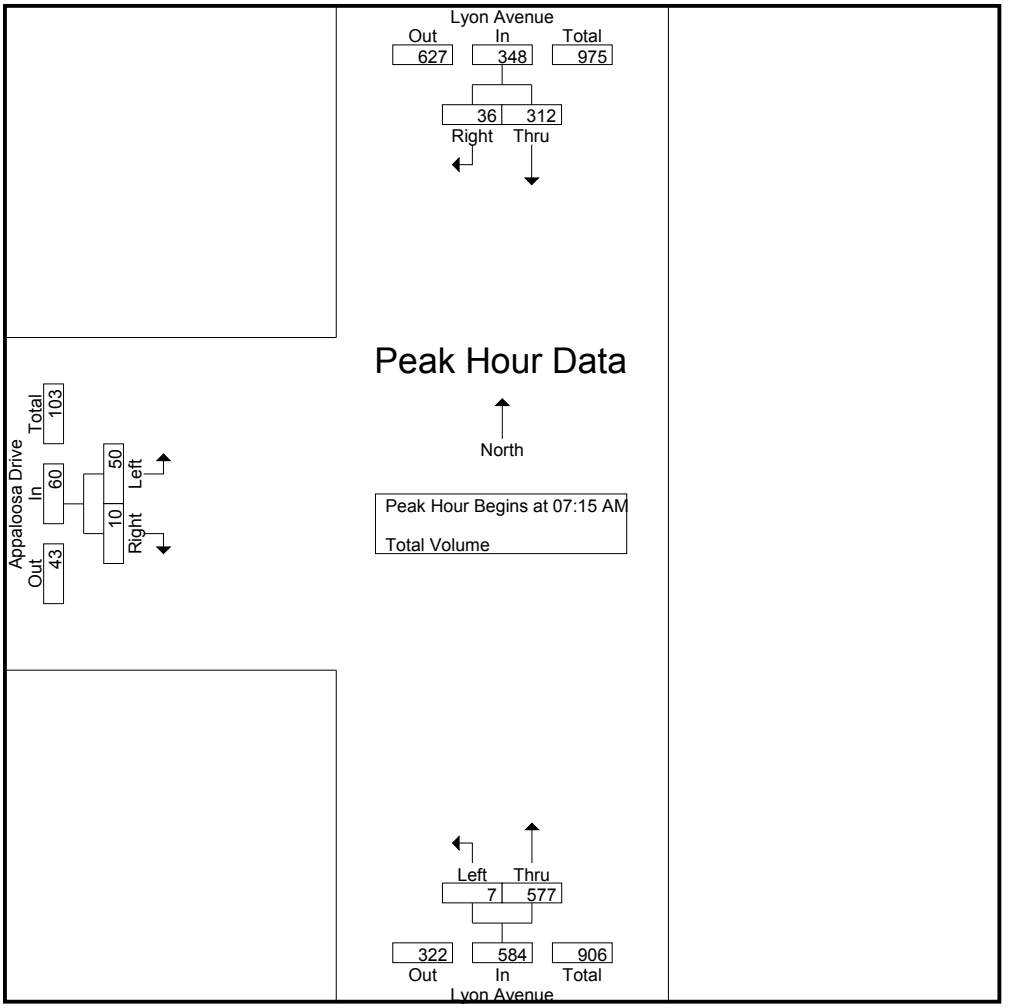
	Lyon Avenue Southbound			Lyon Avenue Northbound			Appaloosa Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	33	1	34	0	104	104	4	1	5	143
07:15 AM	69	4	73	2	138	140	7	1	8	221
07:30 AM	76	16	92	2	181	183	18	3	21	296
07:45 AM	100	8	108	2	188	190	16	6	22	320
Total	278	29	307	6	611	617	45	11	56	980
08:00 AM	67	8	75	1	70	71	9	0	9	155
08:15 AM	65	0	65	1	43	44	6	3	9	118
08:30 AM	53	1	54	1	44	45	0	0	0	99
08:45 AM	44	2	46	0	37	37	2	2	4	87
Total	229	11	240	3	194	197	17	5	22	459
Grand Total	507	40	547	9	805	814	62	16	78	1439
Apprch %	92.7	7.3		1.1	98.9		79.5	20.5		
Total %	35.2	2.8	38	0.6	55.9	56.6	4.3	1.1	5.4	

	Lyon Avenue Southbound			Lyon Avenue Northbound			Appaloosa Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	69	4	73	**2**	138	140	7	1	8	221
07:30 AM	76	**16**	92	2	181	183	**18**	3	21	296
07:45 AM	**100**	8	**108**	2	**188**	**190**	16	**6**	**22**	**320**
08:00 AM	67	8	75	1	70	71	9	0	9	155
Total Volume	312	36	348	7	577	584	50	10	60	992
% App. Total	89.7	10.3		1.2	98.8		83.3	16.7		
PHF	.780	.563	.806	.875	.767	.768	.694	.417	.682	.775

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City of San Jacinto
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:00 AM			07:30 AM		
+0 mins.	69	4	73	0	104	104	**18**	3	21
+15 mins.	76	**16**	92	**2**	138	140	16	**6**	**22**
+30 mins.	**100**	8	**108**	2	181	183	9	0	9
+45 mins.	67	8	75	2	**188**	**190**	6	3	9
Total Volume	312	36	348	6	611	617	49	12	61
% App. Total	89.7	10.3		1	99		80.3	19.7	
PHF	.780	.563	.806	.750	.813	.812	.681	.500	.693

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City of San Jacinto
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File Name : 05_SJC_Lyon_Appa MD
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Groups Printed- Total Volume

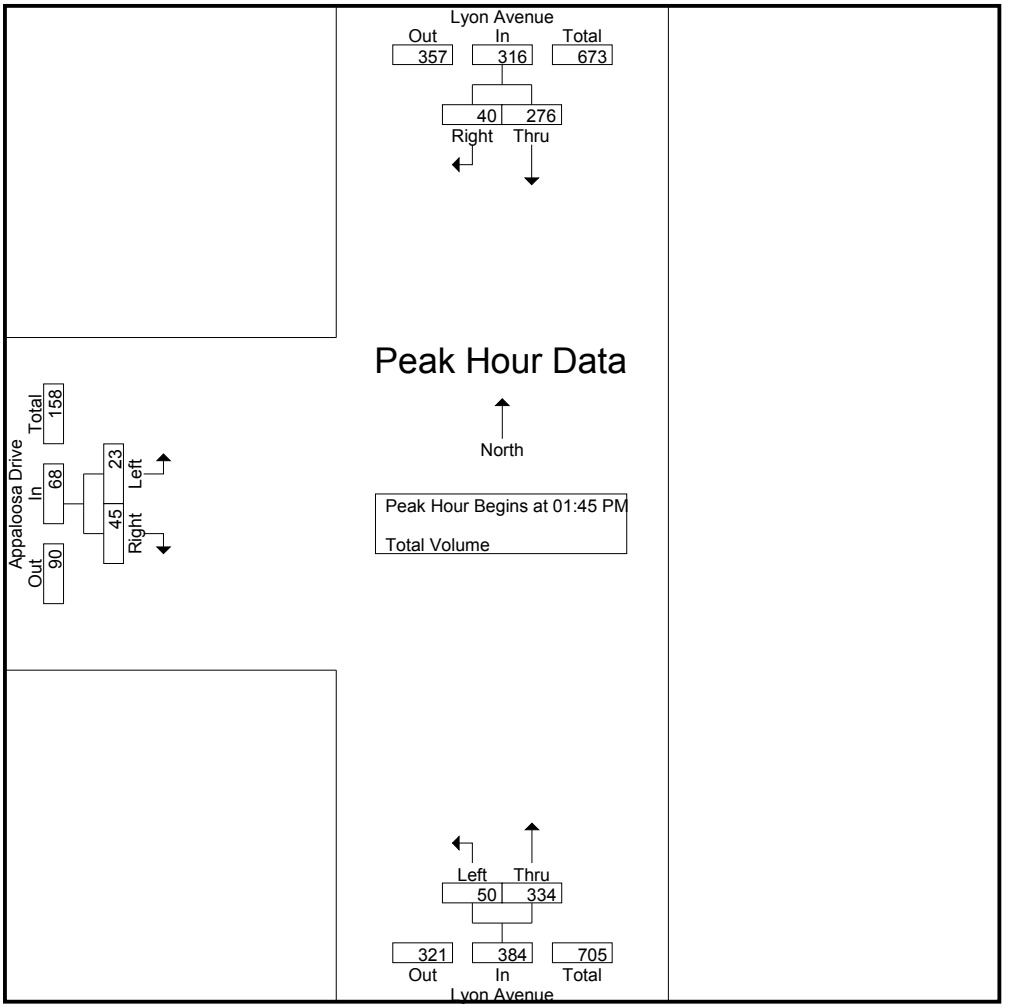
	Lyon Avenue Southbound			Lyon Avenue Northbound			Appaloosa Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
01:30 PM	36	1	37	0	42	42	2	3	5	84
01:45 PM	45	4	49	6	67	73	2	1	3	125
Total	81	5	86	6	109	115	4	4	8	209
02:00 PM	73	17	90	11	106	117	7	1	8	215
02:15 PM	55	12	67	7	64	71	6	10	16	154
02:30 PM	103	7	110	26	97	123	8	33	41	274
02:45 PM	61	5	66	7	44	51	3	2	5	122
Total	292	41	333	51	311	362	24	46	70	765
03:00 PM	55	0	55	3	45	48	4	4	8	111
03:15 PM	58	3	61	0	47	47	2	2	4	112
Grand Total	486	49	535	60	512	572	34	56	90	1197
Apprch %	90.8	9.2		10.5	89.5		37.8	62.2		
Total %	40.6	4.1	44.7	5	42.8	47.8	2.8	4.7	7.5	

	Lyon Avenue Southbound			Lyon Avenue Northbound			Appaloosa Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 01:30 PM to 03:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 01:45 PM										
01:45 PM	45	4	49	6	67	73	2	1	3	125
02:00 PM	73	**17**	90	11	**106**	117	7	1	8	215
02:15 PM	55	12	67	7	64	71	6	10	16	154
02:30 PM	**103**	7	**110**	**26**	97	**123**	**8**	**33**	**41**	**274**
Total Volume	276	40	316	50	334	384	23	45	68	768
% App. Total	87.3	12.7		13	87		33.8	66.2		
PHF	.670	.588	.718	.481	.788	.780	.719	.341	.415	.701

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City of San Jacinto
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Peak Hour Analysis From 01:30 PM to 03:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM			01:45 PM			02:00 PM		
+0 mins.	73	**17**	90	6	67	73	7	1	8
+15 mins.	55	12	67	11	**106**	117	6	10	16
+30 mins.	**103**	7	**110**	7	64	71	**8**	**33**	**41**
+45 mins.	61	5	66	**26**	97	**123**	3	2	5
Total Volume	292	41	333	50	334	384	24	46	70
% App. Total	87.7	12.3		13	87		34.3	65.7	
PHF	.709	.603	.757	.481	.788	.780	.750	.348	.427

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City of San Jacinto
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File Name : 05_SJC_Lyon_Appa PM
Site Code : 05123790
Start Date : 8/30/2023
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Groups Printed- Total Volume

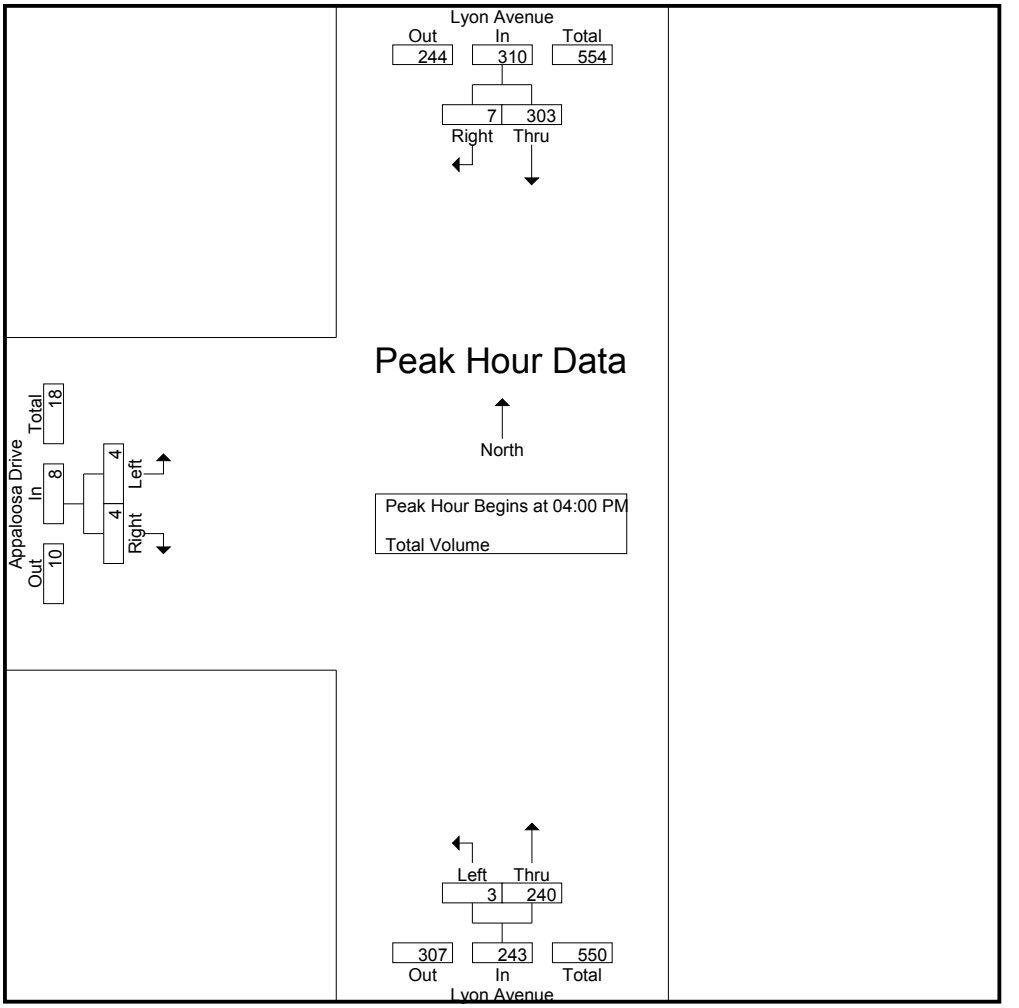
	Lyon Avenue Southbound			Lyon Avenue Northbound			Appaloosa Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	84	2	86	1	60	61	1	0	1	148
04:15 PM	85	2	87	1	78	79	1	2	3	169
04:30 PM	78	1	79	0	47	47	0	0	0	126
04:45 PM	56	2	58	1	55	56	2	2	4	118
Total	303	7	310	3	240	243	4	4	8	561
05:00 PM	68	1	69	0	65	65	0	0	0	134
05:15 PM	55	5	60	3	64	67	0	3	3	130
05:30 PM	58	4	62	1	56	57	0	3	3	122
05:45 PM	60	3	63	1	48	49	1	0	1	113
Total	241	13	254	5	233	238	1	6	7	499
Grand Total	544	20	564	8	473	481	5	10	15	1060
Apprch %	96.5	3.5		1.7	98.3		33.3	66.7		
Total %	51.3	1.9	53.2	0.8	44.6	45.4	0.5	0.9	1.4	

	Lyon Avenue Southbound			Lyon Avenue Northbound			Appaloosa Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	84	**2**	86	**1**	60	61	1	0	1	148
04:15 PM	**85**	2	**87**	1	**78**	**79**	1	**2**	3	**169**
04:30 PM	78	1	79	0	47	47	0	0	0	126
04:45 PM	56	2	58	1	55	56	**2**	2	**4**	118
Total Volume	303	7	310	3	240	243	4	4	8	561
% App. Total	97.7	2.3		1.2	98.8		50	50		
PHF	.891	.875	.891	.750	.769	.769	.500	.500	.500	.830

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City of San Jacinto
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Weather: Clear

File Name : 05_SJC_Lyon_Appa PM
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:15 PM			04:45 PM		
+0 mins.	84	**2**	86	**1**	**78**	**79**	**2**	2	**4**
+15 mins.	**85**	2	**87**	0	47	47	0	0	0
+30 mins.	78	1	79	1	55	56	0	**3**	3
+45 mins.	56	2	58	0	65	65	0	3	3
Total Volume	303	7	310	2	245	247	2	8	10
% App. Total	97.7	2.3		0.8	99.2		20	80	
PHF	.891	.875	.891	.500	.785	.782	.250	.667	.625

Location: San Jacinto
N/S: Lyon Avenue
E/W: Appaloosa Drive

Date: 8/30/2023
Day: Wednesday

PEDESTRIANS

	North Leg Lyon Avenue Pedestrians	East Leg Appaloosa Drive Pedestrians	South Leg Lyon Avenue Pedestrians	West Leg Appaloosa Drive Pedestrians	
7:00 AM	0	0	0	1	1
7:15 AM	0	0	0	1	1
7:30 AM	0	0	0	2	2
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	4	4

	North Leg Lyon Avenue Pedestrians	East Leg Appaloosa Drive Pedestrians	South Leg Lyon Avenue Pedestrians	West Leg Appaloosa Drive Pedestrians	
1:30 PM	0	0	0	0	0
1:45 PM	0	0	0	0	0
2:00 PM	0	0	0	0	0
2:15 PM	0	0	0	15	15
2:30 PM	1	0	0	101	102
2:45 PM	0	0	0	1	1
3:00 PM	0	0	0	0	0
3:15 PM	0	0	0	0	0
TOTAL VOLUMES:	1	0	0	117	118

	North Leg Lyon Avenue Pedestrians	East Leg Appaloosa Drive Pedestrians	South Leg Lyon Avenue Pedestrians	West Leg Appaloosa Drive Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	2	2
4:30 PM	0	0	0	1	1
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	3	3

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PO Box 1178
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951-268-6268

Location: San Jacinto
N/S: Lyon Avenue
E/W: Appaloosa Drive

Date: 8/30/2023
Day: Wednesday

BICYCLES

	Southbound Lyon Avenue			Westbound Appaloosa Drive			Northbound Lyon Avenue			Eastbound Appaloosa Drive			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	1	0	0	0	0	0	3	0	0	0	0	4
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
7:45 AM	0	2	0	0	0	0	1	6	0	0	0	1	10
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	3	0	0	0	0	1	12	0	0	0	1	17

	Southbound Lyon Avenue			Westbound Appaloosa Drive			Northbound Lyon Avenue			Eastbound Appaloosa Drive			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	3	0	0	0	0	0	0	0	0	0	0	3
2:30 PM	0	6	1	0	0	0	0	0	0	0	0	0	7
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	9	1	0	0	0	0	0	0	0	0	0	10

	Southbound Lyon Avenue			Westbound Appaloosa Drive			Northbound Lyon Avenue			Eastbound Appaloosa Drive			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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City of San Jacinto
N/S: Lyon Avenue
E/W: Cottonwood Avenue
Weather: Clear

File Name : 06_SJC_Lyon_Cot AM
Site Code : 05123790
Start Date : 8/30/2023
Page No : 1

Groups Printed- Total Volume

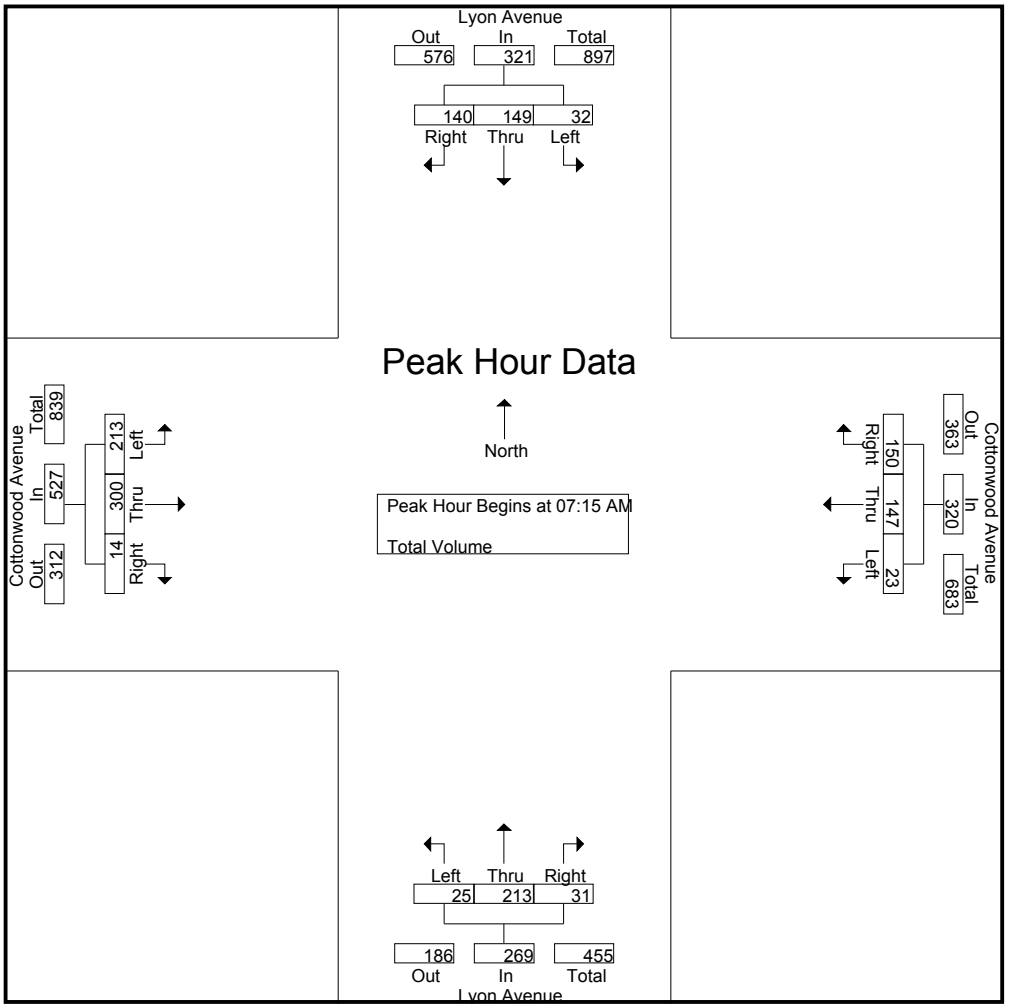
	Lyon Avenue Southbound				Cottonwood Avenue Westbound				Lyon Avenue Northbound				Cottonwood Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	6	9	18	33	5	35	21	61	10	64	6	80	22	44	5	71	245
07:15 AM	8	37	21	66	6	28	41	75	10	59	7	76	40	70	5	115	332
07:30 AM	9	44	32	85	2	26	46	74	5	58	11	74	79	57	1	137	370
07:45 AM	8	40	56	104	4	35	52	91	6	60	8	74	70	73	4	147	416
Total	31	130	127	288	17	124	160	301	31	241	32	304	211	244	15	470	1363
08:00 AM	7	28	31	66	11	58	11	80	4	36	5	45	24	100	4	128	319
08:15 AM	3	35	31	69	13	72	5	90	2	23	10	35	16	74	5	95	289
08:30 AM	2	34	19	55	7	79	4	90	1	30	5	36	7	39	6	52	233
08:45 AM	6	30	10	46	4	28	3	35	7	26	6	39	9	43	6	58	178
Total	18	127	91	236	35	237	23	295	14	115	26	155	56	256	21	333	1019
Grand Total	49	257	218	524	52	361	183	596	45	356	58	459	267	500	36	803	2382
Apprch %	9.4	49	41.6		8.7	60.6	30.7		9.8	77.6	12.6		33.3	62.3	4.5		
Total %	2.1	10.8	9.2	22	2.2	15.2	7.7	25	1.9	14.9	2.4	19.3	11.2	21	1.5	33.7	

	Lyon Avenue Southbound				Cottonwood Avenue Westbound				Lyon Avenue Northbound				Cottonwood Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	8	37	21	66	6	28	41	75	**10**	59	7	**76**	40	70	**5**	115	332
07:30 AM	**9**	**44**	32	85	2	26	46	74	5	58	**11**	74	**79**	57	1	137	370
07:45 AM	8	40	**56**	**104**	4	35	**52**	**91**	6	**60**	8	74	70	73	4	**147**	**416**
08:00 AM	7	28	31	66	**11**	**58**	11	80	4	36	5	45	24	**100**	4	128	319
Total Volume	32	149	140	321	23	147	150	320	25	213	31	269	213	300	14	527	1437
% App. Total	10	46.4	43.6		7.2	45.9	46.9		9.3	79.2	11.5		40.4	56.9	2.7		
PHF	.889	.847	.625	.772	.523	.634	.721	.879	.625	.888	.705	.885	.674	.750	.700	.896	.864

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City of San Jacinto
N/S: Lyon Avenue
E/W: Cottonwood Avenue
Weather: Clear

File Name : 06_SJC_Lyon_Cot AM
Site Code : 05123790
Start Date : 8/30/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:45 AM				07:00 AM				07:15 AM			
+0 mins.	**9**	**44**	32	85	4	35	**52**	**91**	**10**	**64**	6	**80**	40	70	**5**	115
+15 mins.	8	40	**56**	**104**	11	58	11	80	10	59	7	76	**79**	57	1	137
+30 mins.	7	28	31	66	**13**	72	5	90	5	58	**11**	74	70	73	4	**147**
+45 mins.	3	35	31	69	7	**79**	4	90	6	60	8	74	24	**100**	4	128
Total Volume	27	147	150	324	35	244	72	351	31	241	32	304	213	300	14	527
% App. Total	8.3	45.4	46.3		10	69.5	20.5		10.2	79.3	10.5		40.4	56.9	2.7	
PHF	.750	.835	.670	.779	.673	.772	.346	.964	.775	.941	.727	.950	.674	.750	.700	.896

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City of San Jacinto
N/S: Lyon Avenue
E/W: Cottonwood Avenue
Weather: Clear

File Name : 06_SJC_Lyon_Cot MD
Site Code : 05123790
Start Date : 8/30/2023
Page No : 1

Groups Printed- Total Volume

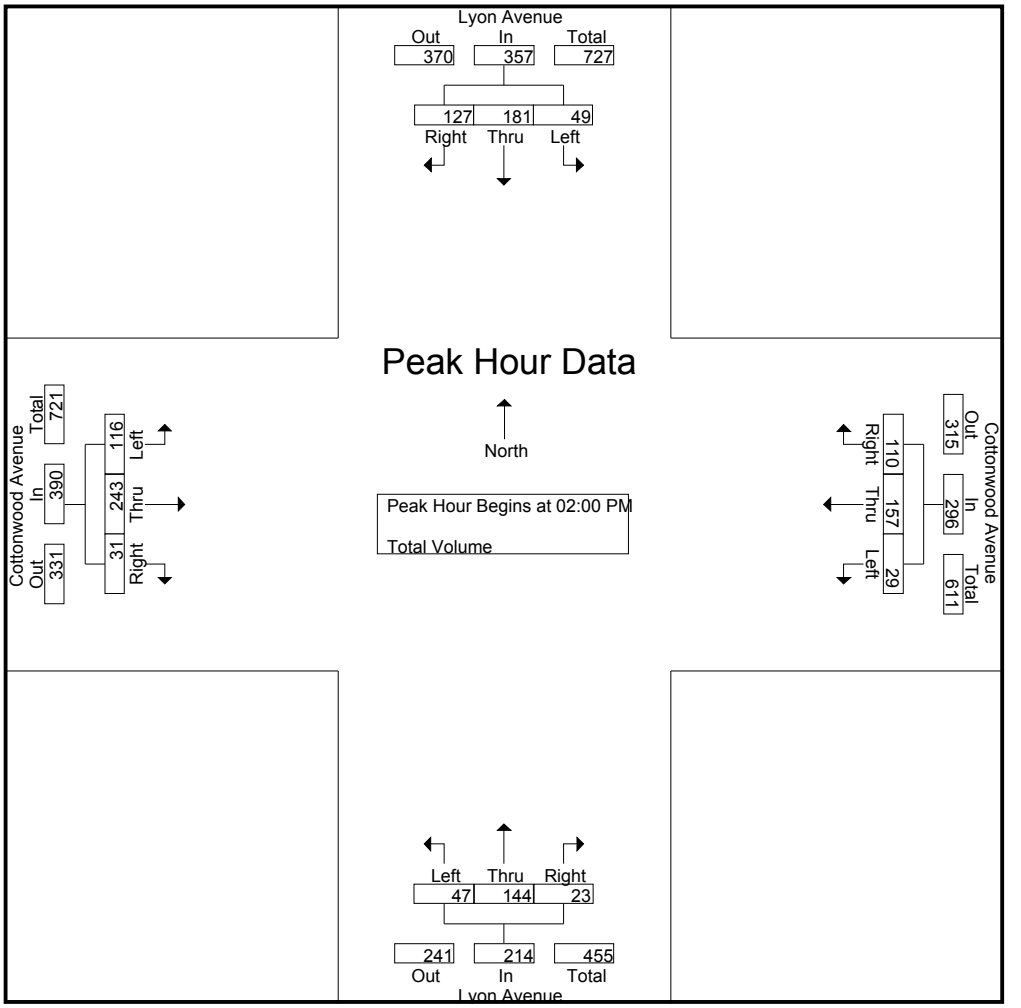
	Lyon Avenue Southbound				Cottonwood Avenue Westbound				Lyon Avenue Northbound				Cottonwood Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
01:30 PM	3	27	9	39	1	37	4	42	12	28	1	41	11	47	7	65	187
01:45 PM	2	29	13	44	3	42	17	62	6	41	7	54	14	45	9	68	228
Total	5	56	22	83	4	79	21	104	18	69	8	95	25	92	16	133	415
02:00 PM	4	41	15	60	7	38	48	93	12	30	4	46	44	52	8	104	303
02:15 PM	6	36	23	65	5	42	33	80	14	40	7	61	32	61	6	99	305
02:30 PM	34	57	66	157	8	29	23	60	14	42	7	63	29	63	15	107	387
02:45 PM	5	47	23	75	9	48	6	63	7	32	5	44	11	67	2	80	262
Total	49	181	127	357	29	157	110	296	47	144	23	214	116	243	31	390	1257
03:00 PM	8	37	16	61	9	60	7	76	4	34	14	52	9	81	8	98	287
03:15 PM	2	49	9	60	4	52	6	62	11	28	9	48	16	75	2	93	263
Grand Total	64	323	174	561	46	348	144	538	80	275	54	409	166	491	57	714	2222
Apprch %	11.4	57.6	31		8.6	64.7	26.8		19.6	67.2	13.2		23.2	68.8	8		
Total %	2.9	14.5	7.8	25.2	2.1	15.7	6.5	24.2	3.6	12.4	2.4	18.4	7.5	22.1	2.6	32.1	

	Lyon Avenue Southbound				Cottonwood Avenue Westbound				Lyon Avenue Northbound				Cottonwood Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 01:30 PM to 03:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 02:00 PM																	
02:00 PM	4	41	15	60	7	38	**48**	**93**	12	30	4	46	**44**	52	8	104	303
02:15 PM	6	36	23	65	5	42	33	80	**14**	40	**7**	61	32	61	6	99	305
02:30 PM	**34**	**57**	**66**	**157**	8	29	23	60	14	**42**	7	**63**	29	63	**15**	**107**	**387**
02:45 PM	5	47	23	75	**9**	**48**	6	63	7	32	5	44	11	**67**	2	80	262
Total Volume	49	181	127	357	29	157	110	296	47	144	23	214	116	243	31	390	1257
% App. Total	13.7	50.7	35.6		9.8	53	37.2		22	67.3	10.7		29.7	62.3	7.9		
PHF	.360	.794	.481	.568	.806	.818	.573	.796	.839	.857	.821	.849	.659	.907	.517	.911	.812

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City of San Jacinto
N/S: Lyon Avenue
E/W: Cottonwood Avenue
Weather: Clear

File Name : 06_SJC_Lyon_Cot MD
Site Code : 05123790
Start Date : 8/30/2023
Page No : 2



Peak Hour Analysis From 01:30 PM to 03:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:15 PM				02:00 PM				01:45 PM				02:00 PM			
+0 mins.	6	36	23	65	7	38	**48**	**93**	6	41	**7**	54	**44**	52	8	104
+15 mins.	**34**	**57**	**66**	**157**	5	42	33	80	12	30	4	46	32	61	6	99
+30 mins.	5	47	23	75	8	29	23	60	**14**	40	7	61	29	63	**15**	**107**
+45 mins.	8	37	16	61	**9**	**48**	6	63	14	**42**	7	**63**	11	**67**	2	80
Total Volume	53	177	128	358	29	157	110	296	46	153	25	224	116	243	31	390
% App. Total	14.8	49.4	35.8		9.8	53	37.2		20.5	68.3	11.2		29.7	62.3	7.9	
PHF	.390	.776	.485	.570	.806	.818	.573	.796	.821	.911	.893	.889	.659	.907	.517	.911

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City of San Jacinto
N/S: Lyon Avenue
E/W: Cottonwood Avenue
Weather: Clear

File Name : 06_SJC_Lyon_Cot PM
Site Code : 05123790
Start Date : 8/30/2023
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Groups Printed- Total Volume

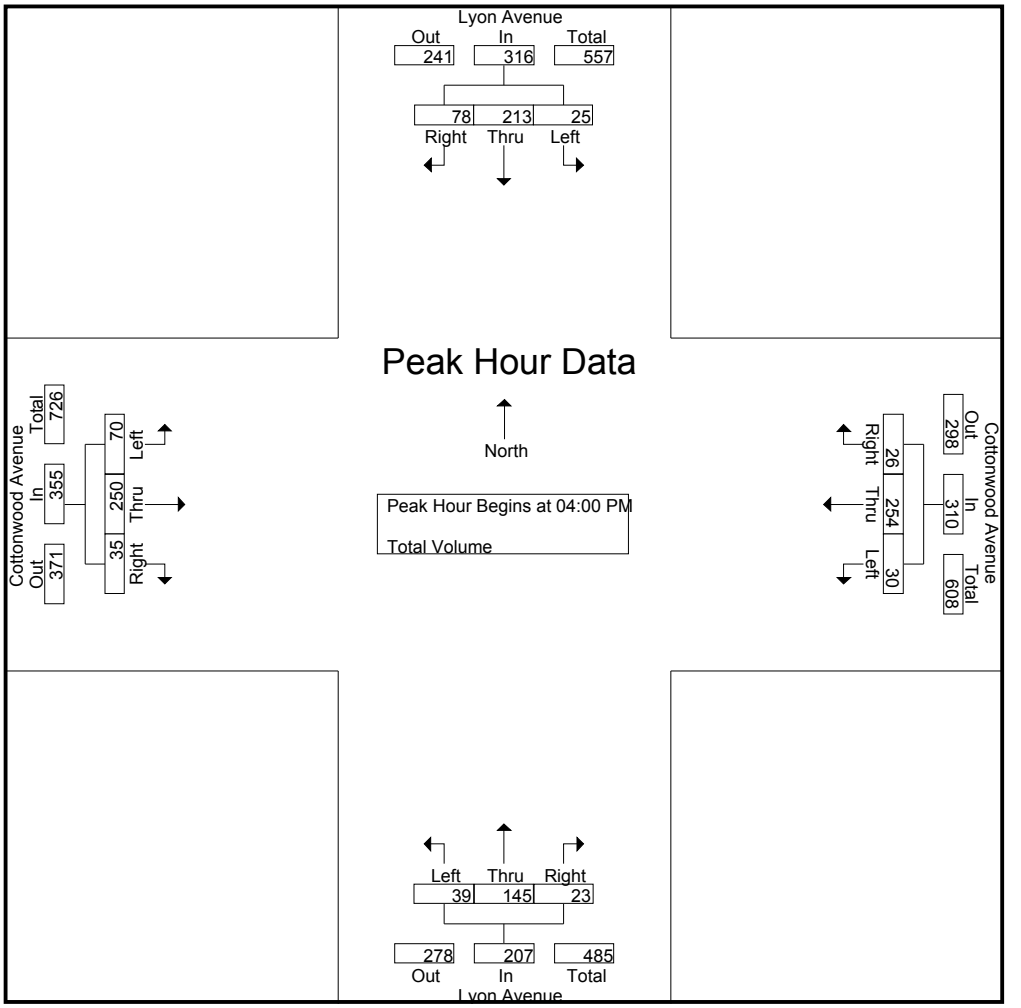
	Lyon Avenue Southbound				Cottonwood Avenue Westbound				Lyon Avenue Northbound				Cottonwood Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	3	57	25	85	14	95	8	117	10	31	8	49	22	64	6	92	343
04:15 PM	7	57	24	88	4	46	8	58	4	48	5	57	22	64	10	96	299
04:30 PM	8	56	17	81	7	59	7	73	12	31	3	46	11	67	11	89	289
04:45 PM	7	43	12	62	5	54	3	62	13	35	7	55	15	55	8	78	257
Total	25	213	78	316	30	254	26	310	39	145	23	207	70	250	35	355	1188
05:00 PM	7	47	13	67	4	72	6	82	7	46	7	60	14	68	12	94	303
05:15 PM	5	46	9	60	6	60	9	75	16	39	7	62	18	79	9	106	303
05:30 PM	7	37	18	62	6	60	4	70	7	38	7	52	14	80	10	104	288
05:45 PM	4	33	23	60	8	71	3	82	6	25	10	41	18	78	3	99	282
Total	23	163	63	249	24	263	22	309	36	148	31	215	64	305	34	403	1176
Grand Total	48	376	141	565	54	517	48	619	75	293	54	422	134	555	69	758	2364
Apprch %	8.5	66.5	25		8.7	83.5	7.8		17.8	69.4	12.8		17.7	73.2	9.1		
Total %	2	15.9	6	23.9	2.3	21.9	2	26.2	3.2	12.4	2.3	17.9	5.7	23.5	2.9	32.1	

	Lyon Avenue Southbound				Cottonwood Avenue Westbound				Lyon Avenue Northbound				Cottonwood Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	3	**57**	**25**	85	**14**	**95**	**8**	**117**	10	31	**8**	49	**22**	64	6	92	**343**
04:15 PM	7	57	24	**88**	4	46	8	58	4	**48**	5	**57**	22	64	10	**96**	299
04:30 PM	**8**	56	17	81	7	59	7	73	12	31	3	46	11	**67**	**11**	89	289
04:45 PM	7	43	12	62	5	54	3	62	**13**	35	7	55	15	55	8	78	257
Total Volume	25	213	78	316	30	254	26	310	39	145	23	207	70	250	35	355	1188
% App. Total	7.9	67.4	24.7		9.7	81.9	8.4		18.8	70	11.1		19.7	70.4	9.9		
PHF	.781	.934	.780	.898	.536	.668	.813	.662	.750	.755	.719	.908	.795	.933	.795	.924	.866

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City of San Jacinto
N/S: Lyon Avenue
E/W: Cottonwood Avenue
Weather: Clear

File Name : 06_SJC_Lyon_Cot PM
Site Code : 05123790
Start Date : 8/30/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:45 PM				05:00 PM			
+0 mins.	3	**57**	**25**	85	**14**	**95**	**8**	**117**	13	35	**7**	55	14	68	**12**	94
+15 mins.	7	57	24	**88**	4	46	8	58	7	**46**	7	60	**18**	79	9	**106**
+30 mins.	**8**	56	17	81	7	59	7	73	**16**	39	7	**62**	14	**80**	10	104
+45 mins.	7	43	12	62	5	54	3	62	7	38	7	52	18	78	3	99
Total Volume	25	213	78	316	30	254	26	310	43	158	28	229	64	305	34	403
% App. Total	7.9	67.4	24.7		9.7	81.9	8.4		18.8	69	12.2		15.9	75.7	8.4	
PHF	.781	.934	.780	.898	.536	.668	.813	.662	.672	.859	1.000	.923	.889	.953	.708	.950

Location: San Jacinto
N/S: Lyon Avenue
E/W: Cottonwood Avenue

Date: 8/30/2023
Day: Wednesday

PEDESTRIANS

	North Leg Lyon Avenue	East Leg Cottonwood Avenue	South Leg Lyon Avenue	West Leg Cottonwood Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	1	0	0	1
7:15 AM	1	5	2	0	8
7:30 AM	2	14	7	0	23
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	3	20	9	0	32

	North Leg Lyon Avenue	East Leg Cottonwood Avenue	South Leg Lyon Avenue	West Leg Cottonwood Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
1:30 PM	0	0	0	0	0
1:45 PM	0	0	0	0	0
2:00 PM	0	0	0	0	0
2:15 PM	0	0	0	0	0
2:30 PM	2	27	6	0	35
2:45 PM	0	0	0	0	0
3:00 PM	0	0	0	0	0
3:15 PM	0	0	0	0	0
TOTAL VOLUMES:	2	27	6	0	35

	North Leg Lyon Avenue	East Leg Cottonwood Avenue	South Leg Lyon Avenue	West Leg Cottonwood Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	1	0	0	0	1
5:00 PM	0	0	0	0	0
5:15 PM	0	1	0	0	1
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	1	1	0	0	2

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PO Box 1178
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951-268-6268

Location: San Jacinto
N/S: Lyon Avenue
E/W: Cottonwood Avenue

Date: 8/30/2023
Day: Wednesday

BICYCLES

	Southbound Lyon Avenue			Westbound Cottonwood Avenue			Northbound Lyon Avenue			Eastbound Cottonwood Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	1	0	0	0	0	3	0	0	0	0	1	0	5
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	1
7:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	1	0	0	0	1	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	1	0	0	0	0	5	0	0	0	2	1	0	9

	Southbound Lyon Avenue			Westbound Cottonwood Avenue			Northbound Lyon Avenue			Eastbound Cottonwood Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	3	0	2	0	0	0	0	0	0	0	0	0	5
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	3	0	2	0	0	0	0	0	0	0	0	0	5

	Southbound Lyon Avenue			Westbound Cottonwood Avenue			Northbound Lyon Avenue			Eastbound Cottonwood Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	1	0	0	0	0	0	0	0	1

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City of San Jacinto
Cottonwood Avenue
B/ Lipizzan Drive - Lyon Avenue
24 Hour Directional Volume Count

SJC002
Site Code: 051-23790

Start Time	8/30/23 Wed	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		14	55			9	62				
12:15		8	63			8	40				
12:30		7	57			8	58				
12:45		8	63	37	238	3	67	28	227	65	465
01:00		5	61			6	50				
01:15		4	72			1	65				
01:30		2	65			3	57				
01:45		2	68	13	266	4	61	14	233	27	499
02:00		2	107			4	64				
02:15		4	99			5	78				
02:30		2	108			2	115				
02:45		2	82	10	396	10	81	21	338	31	734
03:00		2	101			9	82				
03:15		1	93			9	72				
03:30		3	122			6	**91**				
03:45		5	88	11	404	4	**130**	28	375	39	779
04:00		7	92			12	**131**				
04:15		9	100			14	**73**				
04:30		4	89			22	87				
04:45		16	77	36	358	26	81	74	372	110	730
05:00		8	**94**			27	91				
05:15		10	**108**			32	85				
05:30		9	**106**			33	85				
05:45		29	**99**	56	407	38	100	130	361	186	768
06:00		26	86			35	64				
06:15		34	87			28	61				
06:30		39	71			55	65				
06:45		56	78	155	322	51	58	169	248	324	570
07:00		72	68			62	54				
07:15		**115**	82			60	46				
07:30		**138**	58			61	63				
07:45		**149**	65	474	273	**97**	49	280	212	754	485
08:00		**133**	77			**93**	75				
08:15		98	51			**105**	56				
08:30		52	69			**100**	50				
08:45		58	52	341	249	45	40	343	221	684	470
09:00		33	50			55	51				
09:15		43	46			49	39				
09:30		48	33			53	46				
09:45		45	24	169	153	65	23	222	159	391	312
10:00		40	29			55	30				
10:15		45	20			56	18				
10:30		56	23			46	18				
10:45		53	14	194	86	40	16	197	82	391	168
11:00		52	20			41	13				
11:15		59	15			58	10				
11:30		65	14			53	11				
11:45		54	15	230	64	60	8	212	42	442	106
Total		1726	3216	1726	3216	1718	2870	1718	2870	3444	6086
Combined Total		4942		4942		4588		4588		9530	
AM Peak	-	07:15	-	-	-	07:45	-	-	-	-	-
Vol.	-	535	-	-	-	395	-	-	-	-	-
P.H.F.		0.898				0.940					
PM Peak	-	-	05:00	-	-	-	03:30	-	-	-	-
Vol.	-	-	407	-	-	-	425	-	-	-	-
P.H.F.			0.834				0.811				
Percentage		34.9%	65.1%			37.4%	62.6%				
ADT/AADT		ADT 9,530		AADT 9,530							

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City of San Jacinto
Lyon Avenue
N/ Appaloosa Drive
24 Hour Directional Volume Count

SJC001
Site Code: 051-23790

Start Time	8/30/23 Wed	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		3	45			5	39				
12:15		4	39			4	39				
12:30		5	38			6	33				
12:45		4	47	16	169	6	34	21	145	37	314
01:00		5	45			10	44				
01:15		5	56			4	43				
01:30		2	44			3	38				
01:45		1	**66**	13	211	1	49	18	174	31	385
02:00		1	**102**			8	87				
02:15		6	**73**			1	69				
02:30		3	**112**			5	105				
02:45		1	48	11	335	1	72	15	333	26	668
03:00		6	53			7	58				
03:15		6	52			5	62				
03:30		6	63			1	68				
03:45		6	70	24	238	3	**111**	16	299	40	537
04:00		17	61			7	**86**				
04:15		19	78			3	**88**				
04:30		12	47			10	**79**				
04:45		17	57	65	243	9	61	29	314	94	557
05:00		28	65			24	69				
05:15		35	63			15	60				
05:30		45	56			14	63				
05:45		31	49	139	233	20	63	73	255	212	488
06:00		41	44			19	64				
06:15		55	57			28	47				
06:30		60	33			27	42				
06:45		64	38	220	172	35	40	109	193	329	365
07:00		**108**	36			34	32				
07:15		**142**	26			**74**	37				
07:30		**189**	30			**92**	44				
07:45		**203**	42	642	134	**108**	35	308	148	950	282
08:00		81	24			**75**	37				
08:15		50	22			65	35				
08:30		45	35			55	40				
08:45		39	25	215	106	48	20	243	132	458	238
09:00		37	25			39	24				
09:15		35	30			38	31				
09:30		44	14			35	19				
09:45		47	11	163	80	48	19	160	93	323	173
10:00		35	12			26	15				
10:15		36	5			38	16				
10:30		30	15			31	14				
10:45		29	7	130	39	27	12	122	57	252	96
11:00		39	7			34	14				
11:15		49	14			40	11				
11:30		40	5			38	15				
11:45		49	5	177	31	50	10	162	50	339	81
Total		1815	1991	1815	1991	1276	2193	1276	2193	3091	4184
Combined Total		3806		3806		3469		3469		7275	
AM Peak	-	07:00	-	-	-	07:15	-	-	-	-	-
Vol.	-	642	-	-	-	349	-	-	-	-	-
P.H.F.		0.791				0.808					
PM Peak	-	-	01:45	-	-	-	03:45	-	-	-	-
Vol.	-	-	353	-	-	-	364	-	-	-	-
P.H.F.			0.788				0.820				
Percentage		47.7%	52.3%			36.8%	63.2%				
ADT/AADT		ADT 7,275		AADT 7,275							

APPENDIX 3.2: EXISTING (2023) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	6	2	30	6	4
Future Vol, veh/h	14	6	2	30	6	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	7	2	37	7	5

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	40	21	0	0	39	0
Stage 1	21	-	-	-	-	-
Stage 2	19	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	972	1056	-	-	1571	-
Stage 1	1002	-	-	-	-	-
Stage 2	1004	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	968	1056	-	-	1571	-
Mov Cap-2 Maneuver	968	-	-	-	-	-
Stage 1	1002	-	-	-	-	-
Stage 2	1000	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	4.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	993	1571	-
HCM Lane V/C Ratio	-	-	0.025	0.005	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	517	303	9	13	24
Future Vol, veh/h	27	517	303	9	13	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	588	344	10	15	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	354	0	-	0	999	177
Stage 1	-	-	-	-	349	-
Stage 2	-	-	-	-	650	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1203	-	-	-	255	836
Stage 1	-	-	-	-	686	-
Stage 2	-	-	-	-	519	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1203	-	-	-	248	836
Mov Cap-2 Maneuver	-	-	-	-	377	-
Stage 1	-	-	-	-	668	-
Stage 2	-	-	-	-	519	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1203	-	-	-	586
HCM Lane V/C Ratio	0.026	-	-	-	0.072
HCM Control Delay (s)	8.1	-	-	-	11.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Intersection Delay, s/veh	23.8
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	165	73	286	255	69	180
Future Vol, veh/h	165	73	286	255	69	180
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	192	85	333	297	80	209
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	13.3	33.1	13.8
HCM LOS	B	D	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	28%
Vol Thru, %	53%	0%	0%	72%
Vol Right, %	47%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	541	165	73	249
LT Vol	0	165	0	69
Through Vol	286	0	0	180
RT Vol	255	0	73	0
Lane Flow Rate	629	192	85	290
Geometry Grp	2	7	7	2
Degree of Util (X)	0.878	0.392	0.144	0.466
Departure Headway (Hd)	5.025	7.346	6.121	5.791
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	717	489	584	620
Service Time	3.071	5.103	3.878	3.847
HCM Lane V/C Ratio	0.877	0.393	0.146	0.468
HCM Control Delay	33.1	14.8	9.9	13.8
HCM Lane LOS	D	B	A	B
HCM 95th-tile Q	10.8	1.8	0.5	2.5

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	10	7	577	312	36
Future Vol, veh/h	50	10	7	577	312	36
Conflicting Peds, #/hr	0	1	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	13	9	740	400	46

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1183	226	448	0	-	0
Stage 1	425	-	-	-	-	-
Stage 2	758	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	195	778	1111	-	-	-
Stage 1	628	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	191	776	1109	-	-	-
Mov Cap-2 Maneuver	191	-	-	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	461	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	30.3	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1109	-	218	-	-
HCM Lane V/C Ratio	0.008	-	0.353	-	-
HCM Control Delay (s)	8.3	0	30.3	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	1.5	-	-

Intersection	
Intersection Delay, s/veh	56.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	214	302	14	23	147	150	25	213	31	32	149	140
Future Vol, veh/h	214	302	14	23	147	150	25	213	31	32	149	140
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	249	351	16	27	171	174	29	248	36	37	173	163
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	2
HCM Control Delay	57.1	90.5	58.4	18.7
HCM LOS	F	F	F	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	9%	100%	0%	7%	100%	0%	0%
Vol Thru, %	79%	0%	96%	46%	0%	100%	0%
Vol Right, %	12%	0%	4%	47%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	269	214	316	320	32	149	140
LT Vol	25	214	0	23	32	0	0
Through Vol	213	0	302	147	0	149	0
RT Vol	31	0	14	150	0	0	140
Lane Flow Rate	313	249	367	372	37	173	163
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	0.89	0.697	0.976	1.04	0.104	0.46	0.4
Departure Headway (Hd)	10.634	10.345	9.789	10.059	10.33	9.806	9.072
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	344	351	375	368	349	369	399
Service Time	8.334	8.045	7.489	7.665	8.03	7.506	6.772
HCM Lane V/C Ratio	0.91	0.709	0.979	1.011	0.106	0.469	0.409
HCM Control Delay	58.4	33.7	72.9	90.5	14.2	20.6	17.7
HCM Lane LOS	F	D	F	F	B	C	C
HCM 95th-tile Q	8.6	5	11.1	12.8	0.3	2.3	1.9

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	65	7	5	53	8	3
Future Vol, veh/h	65	7	5	53	8	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	46	46	46	46	46	46
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	15	11	115	17	7

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	110	69	0	0	126	0
Stage 1	69	-	-	-	-	-
Stage 2	41	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	887	994	-	-	1460	-
Stage 1	954	-	-	-	-	-
Stage 2	981	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	876	994	-	-	1460	-
Mov Cap-2 Maneuver	876	-	-	-	-	-
Stage 1	954	-	-	-	-	-
Stage 2	969	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	5.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	886	1460	-
HCM Lane V/C Ratio	-	-	0.177	0.012	-
HCM Control Delay (s)	-	-	9.9	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	72	387	320	17	10	70
Future Vol, veh/h	72	387	320	17	10	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	94	503	416	22	13	91

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	438	0	-	0	1118	219
Stage 1	-	-	-	-	427	-
Stage 2	-	-	-	-	691	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1120	-	-	-	215	786
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	496	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1120	-	-	-	197	786
Mov Cap-2 Maneuver	-	-	-	-	332	-
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	496	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1120	-	-	-	671
HCM Lane V/C Ratio	0.083	-	-	-	0.155
HCM Control Delay (s)	8.5	-	-	-	11.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.5

Intersection	
Intersection Delay, s/veh	16.2
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	135	54	153	185	69	193
Future Vol, veh/h	135	54	153	185	69	193
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	193	77	219	264	99	276
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	13	18.2	16
HCM LOS	B	C	C

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	26%
Vol Thru, %	45%	0%	0%	74%
Vol Right, %	55%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	338	135	54	262
LT Vol	0	135	0	69
Through Vol	153	0	0	193
RT Vol	185	0	54	0
Lane Flow Rate	483	193	77	374
Geometry Grp	2	7	7	2
Degree of Util (X)	0.679	0.385	0.128	0.577
Departure Headway (Hd)	5.063	7.19	5.967	5.552
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	715	500	599	648
Service Time	3.106	4.941	3.718	3.599
HCM Lane V/C Ratio	0.676	0.386	0.129	0.577
HCM Control Delay	18.2	14.4	9.6	16
HCM Lane LOS	C	B	A	C
HCM 95th-tile Q	5.3	1.8	0.4	3.7

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	23	45	50	334	276	40
Future Vol, veh/h	23	45	50	334	276	40
Conflicting Peds, #/hr	0	1	0	0	0	116
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	64	71	477	394	57

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1158	343	567	0	-	0
Stage 1	539	-	-	-	-	-
Stage 2	619	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	203	654	1003	-	-	-
Stage 1	550	-	-	-	-	-
Stage 2	536	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	144	581	892	-	-	-
Mov Cap-2 Maneuver	144	-	-	-	-	-
Stage 1	437	-	-	-	-	-
Stage 2	477	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.8	1.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	892	-	287	-	-
HCM Lane V/C Ratio	0.08	-	0.338	-	-
HCM Control Delay (s)	9.4	0	23.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	1.4	-	-

Intersection	
Intersection Delay, s/veh	44.7
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	118	247	32	29	160	110	48	144	23	49	181	129
Future Vol, veh/h	118	247	32	29	160	110	48	144	23	49	181	129
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	146	305	40	36	198	136	59	178	28	60	223	159
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	2
HCM Control Delay	46.6	74.6	40.6	20
HCM LOS	E	F	E	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	22%	100%	0%	10%	100%	0%	0%
Vol Thru, %	67%	0%	89%	54%	0%	100%	0%
Vol Right, %	11%	0%	11%	37%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	215	118	279	299	49	181	129
LT Vol	48	118	0	29	49	0	0
Through Vol	144	0	247	160	0	181	0
RT Vol	23	0	32	110	0	0	129
Lane Flow Rate	265	146	344	369	60	223	159
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	0.768	0.409	0.91	0.985	0.165	0.576	0.378
Departure Headway (Hd)	10.41	10.117	9.512	9.606	9.805	9.283	8.552
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	348	355	382	377	366	389	420
Service Time	8.181	7.887	7.281	7.372	7.568	7.045	6.314
HCM Lane V/C Ratio	0.761	0.411	0.901	0.979	0.164	0.573	0.379
HCM Control Delay	40.6	19.8	57.9	74.6	14.5	24	16.5
HCM Lane LOS	E	C	F	F	B	C	C
HCM 95th-tile Q	6.1	1.9	9.4	11.4	0.6	3.5	1.7

Intersection	
Int Delay, s/veh	5.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	3	3	6	5	0
Future Vol, veh/h	9	3	3	6	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	54	54	54	54	54	54
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	6	6	11	9	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	30	12	0	0	17	0
Stage 1	12	-	-	-	-	-
Stage 2	18	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	984	1069	-	-	1600	-
Stage 1	1011	-	-	-	-	-
Stage 2	1005	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	978	1069	-	-	1600	-
Mov Cap-2 Maneuver	978	-	-	-	-	-
Stage 1	1011	-	-	-	-	-
Stage 2	999	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	999	1600	-
HCM Lane V/C Ratio	-	-	0.022	0.006	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	394	357	14	11	15
Future Vol, veh/h	23	394	357	14	11	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	415	376	15	12	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	391	0	-	0	847	196
Stage 1	-	-	-	-	384	-
Stage 2	-	-	-	-	463	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1166	-	-	-	316	813
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	633	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1166	-	-	-	309	813
Mov Cap-2 Maneuver	-	-	-	-	433	-
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	633	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1166	-	-	-	593
HCM Lane V/C Ratio	0.021	-	-	-	0.046
HCM Control Delay (s)	8.2	-	-	-	11.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Intersection Delay, s/veh	10.2
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	46	34	156	66	72	252
Future Vol, veh/h	46	34	156	66	72	252
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	51	37	171	73	79	277
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	9.1	9.3	11.1
HCM LOS	A	A	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	22%
Vol Thru, %	70%	0%	0%	78%
Vol Right, %	30%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	222	46	34	324
LT Vol	0	46	0	72
Through Vol	156	0	0	252
RT Vol	66	0	34	0
Lane Flow Rate	244	51	37	356
Geometry Grp	2	7	7	2
Degree of Util (X)	0.297	0.089	0.053	0.444
Departure Headway (Hd)	4.39	6.351	5.137	4.486
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	817	563	694	805
Service Time	2.419	4.104	2.89	2.512
HCM Lane V/C Ratio	0.299	0.091	0.053	0.442
HCM Control Delay	9.3	9.7	8.2	11.1
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	1.2	0.3	0.2	2.3

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	4	3	240	303	7
Future Vol, veh/h	4	4	3	240	303	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	5	4	289	365	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	666	187	373	0	-	0
Stage 1	369	-	-	-	-	-
Stage 2	297	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	408	824	1184	-	-	-
Stage 1	670	-	-	-	-	-
Stage 2	753	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	406	824	1184	-	-	-
Mov Cap-2 Maneuver	406	-	-	-	-	-
Stage 1	667	-	-	-	-	-
Stage 2	753	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1184	-	544	-	-
HCM Lane V/C Ratio	0.003	-	0.018	-	-
HCM Control Delay (s)	8.1	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Intersection Delay, s/veh	39.6
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	285	40	30	254	26	39	145	23	25	213	78
Future Vol, veh/h	80	285	40	30	254	26	39	145	23	25	213	78
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	92	328	46	34	292	30	45	167	26	29	245	90
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	2
HCM Control Delay	47.9	55.3	28.9	20.6
HCM LOS	E	F	D	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	19%	100%	0%	10%	100%	0%	0%
Vol Thru, %	70%	0%	88%	82%	0%	100%	0%
Vol Right, %	11%	0%	12%	8%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	207	80	325	310	25	213	78
LT Vol	39	80	0	30	25	0	0
Through Vol	145	0	285	254	0	213	0
RT Vol	23	0	40	26	0	0	78
Lane Flow Rate	238	92	374	356	29	245	90
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	0.647	0.241	0.916	0.905	0.075	0.604	0.203
Departure Headway (Hd)	9.791	9.44	8.832	9.142	9.401	8.881	8.153
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	369	382	411	399	382	406	441
Service Time	7.553	7.178	6.57	6.88	7.139	6.619	5.89
HCM Lane V/C Ratio	0.645	0.241	0.91	0.892	0.076	0.603	0.204
HCM Control Delay	28.9	15.2	56	55.3	12.9	24.3	13
HCM Lane LOS	D	C	F	F	B	C	B
HCM 95th-tile Q	4.3	0.9	9.9	9.4	0.2	3.8	0.8

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APPENDIX 3.3: EXISTING (2023) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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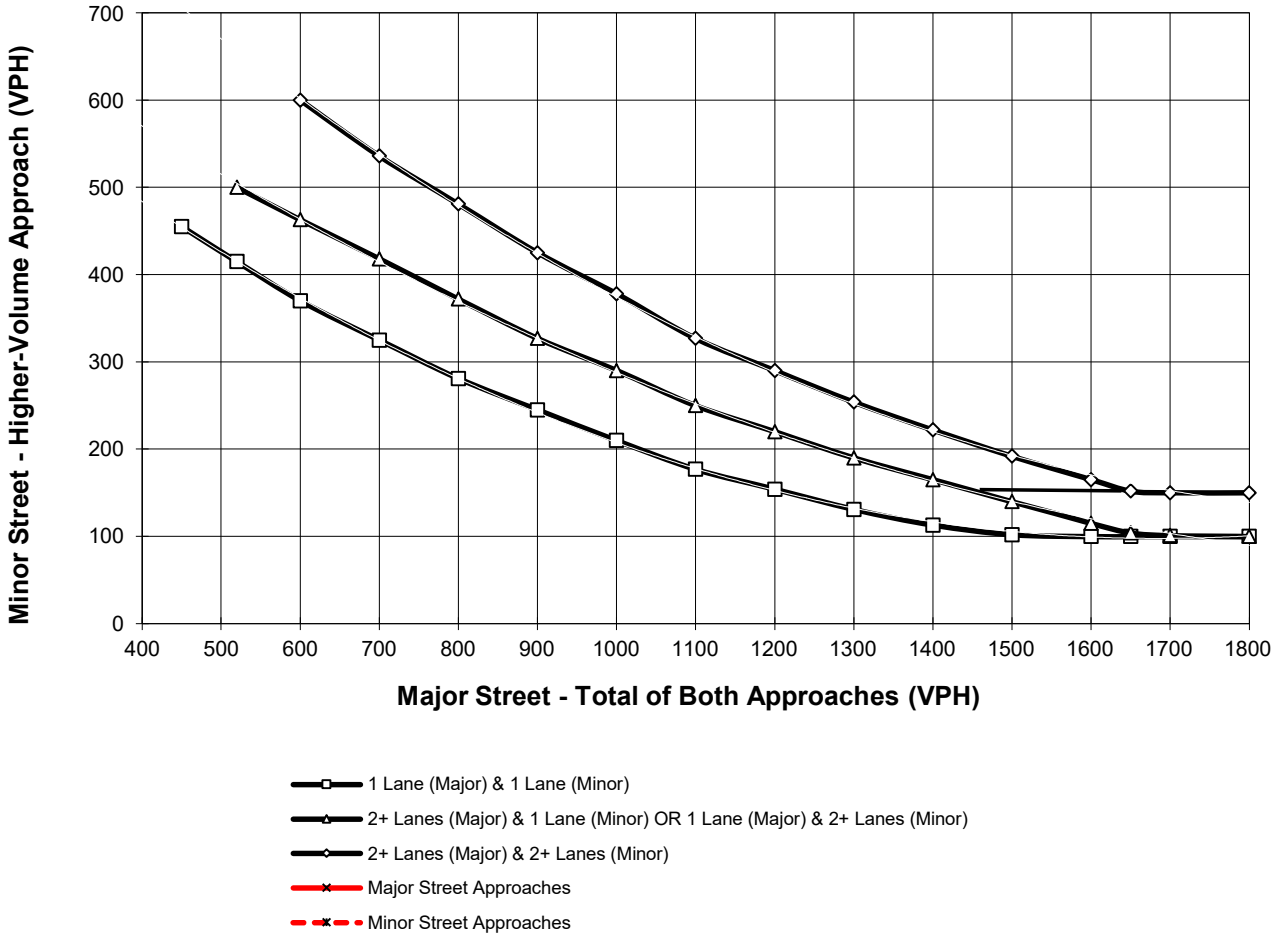
Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **Existing (2023) Conditions - Weekday MD Peak Hour**

Major Street Name = **Appaloosa Dr.**
Total of Both Approaches (VPH) = **72**
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Lipizzan Dr.**
High Volume Approach (VPH) = **58**
Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

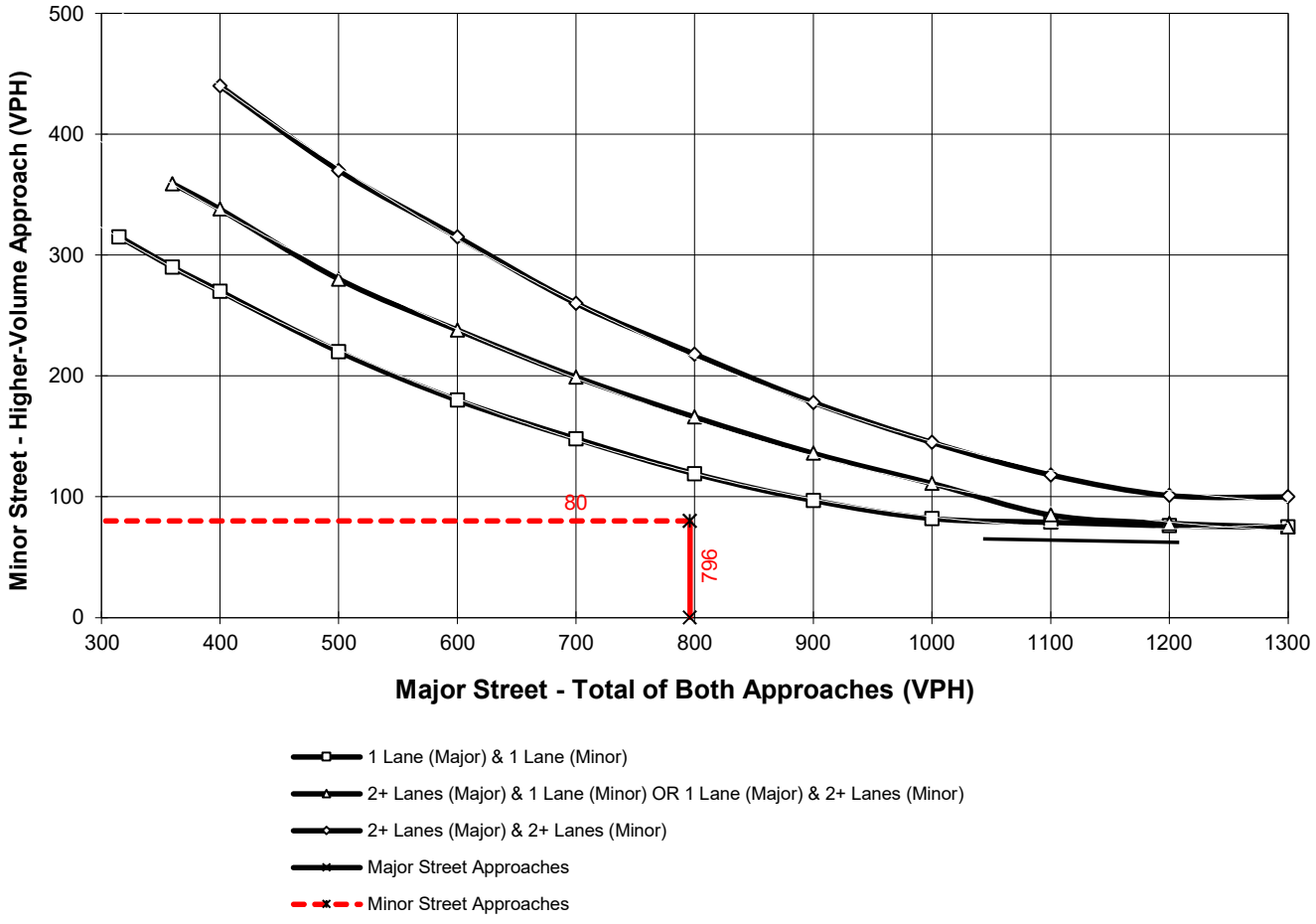
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing (2023) Conditions - Weekday MD Peak Hour**

Major Street Name = **Cottonwood Av.** Total of Both Approaches (VPH) = **796**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Lipizzan Dr.** High Volume Approach (VPH) = **80**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

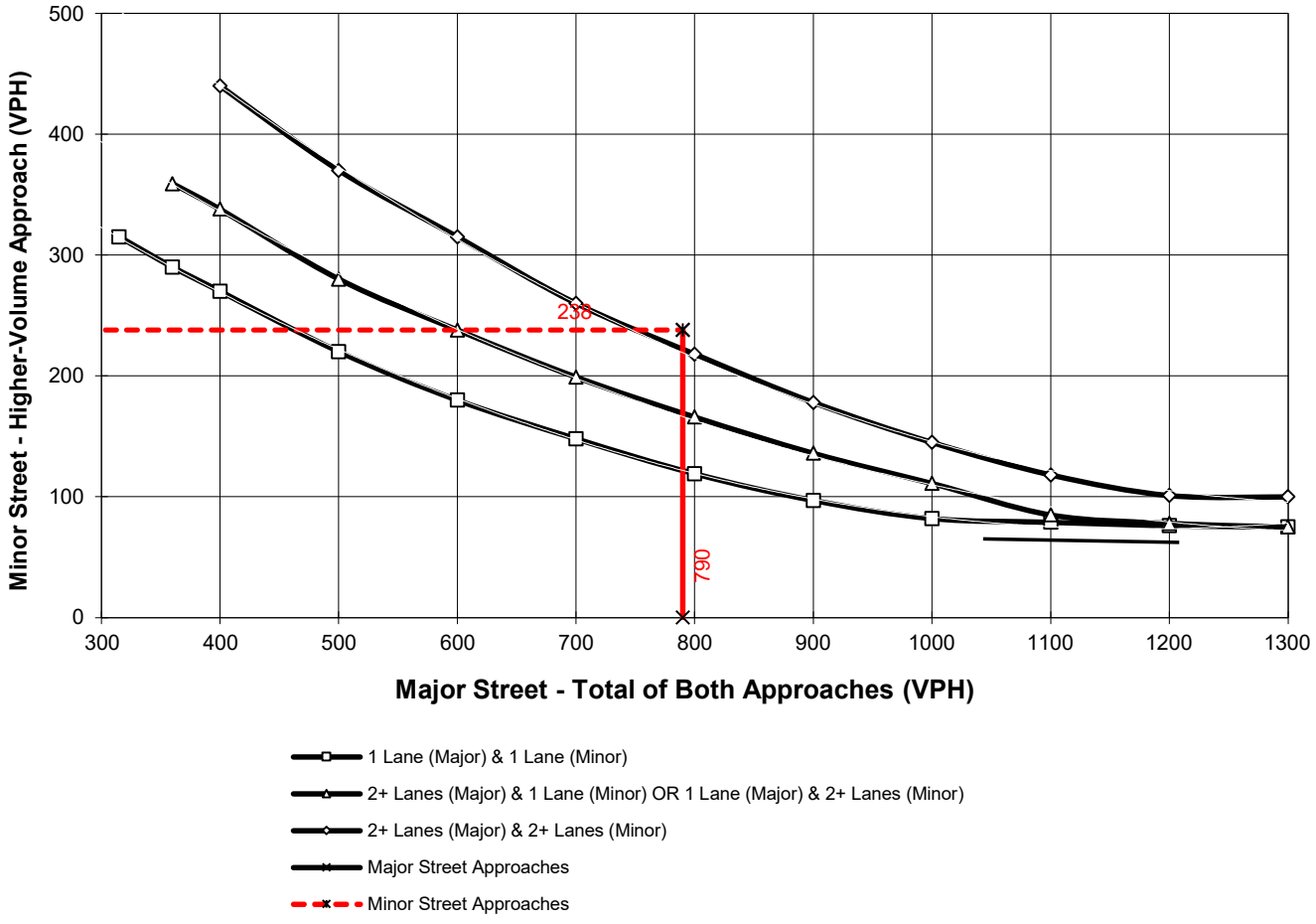
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing (2023) Conditions - Weekday AM Peak Hour**

Major Street Name = **Lyon Av.** Total of Both Approaches (VPH) = **790**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **De Anza Dr.** High Volume Approach (VPH) = **238**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

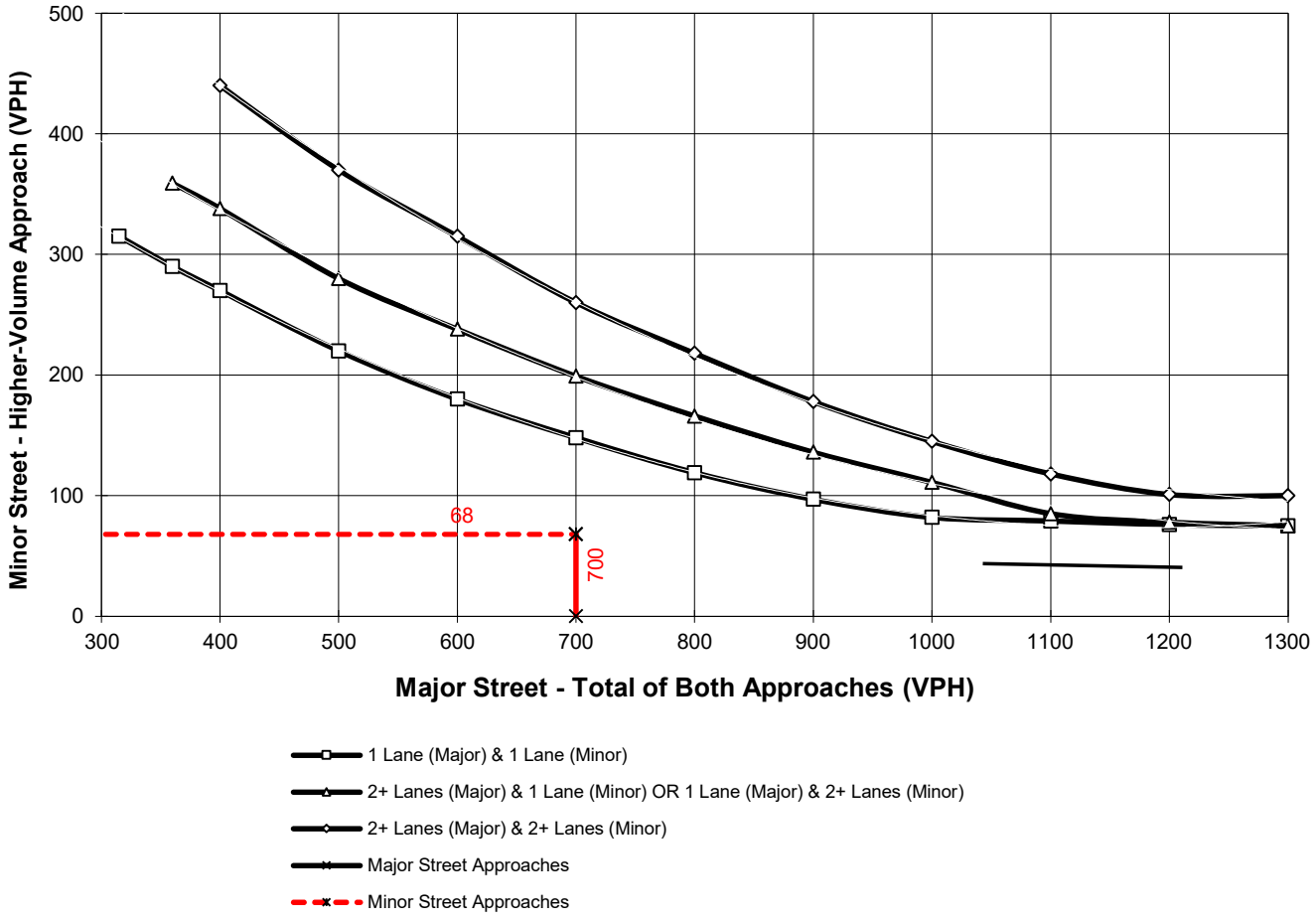
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing (2023) Conditions - Weekday MD Peak Hour**

Major Street Name = **Lyon Av.**
Total of Both Approaches (VPH) = **700**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Appaloosa Dr.**
High Volume Approach (VPH) = **68**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

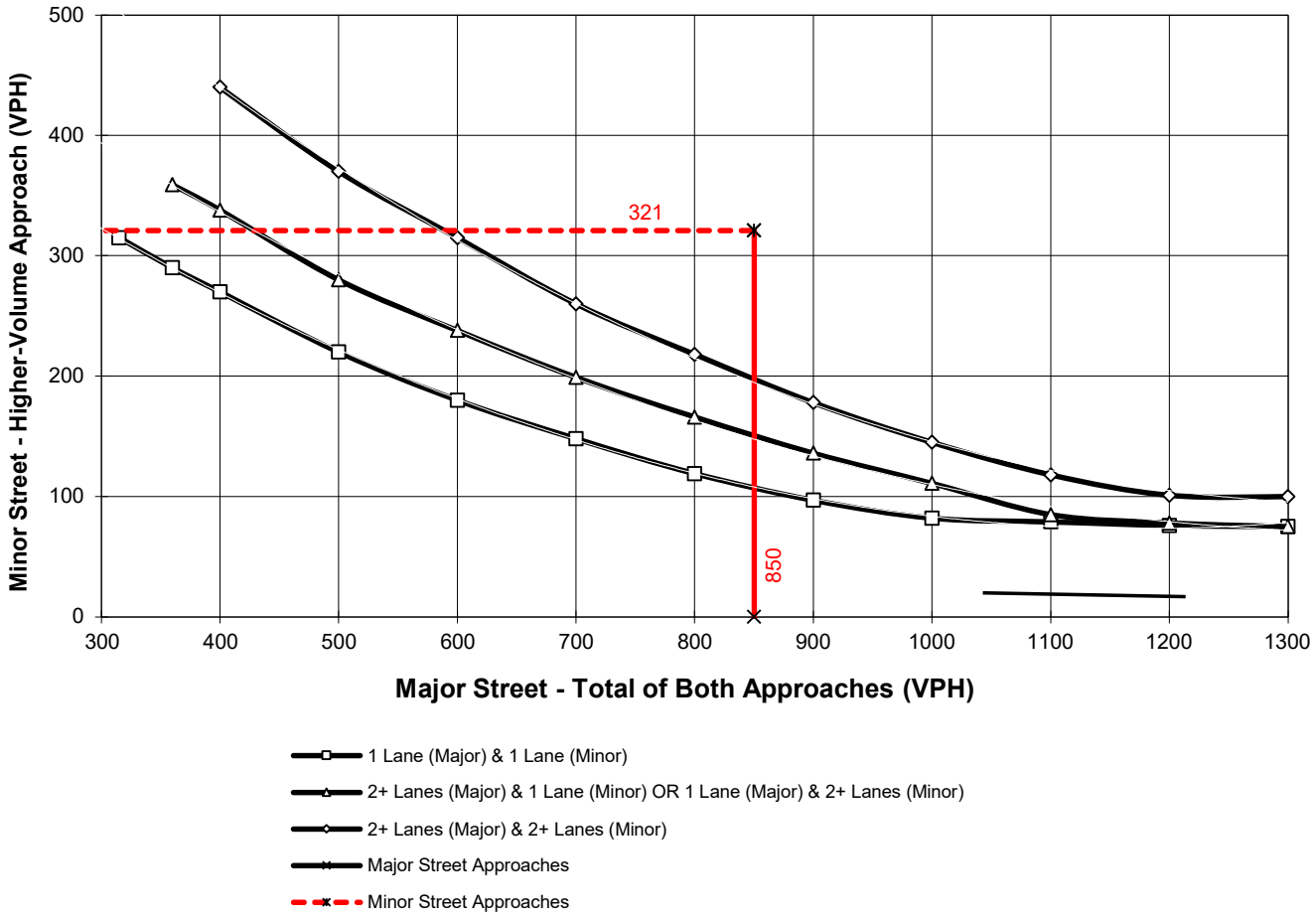
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing (2023) Conditions - Weekday AM Peak Hour**

Major Street Name = **Cottonwood Av.** Total of Both Approaches (VPH) = **850**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Lyon Av.** High Volume Approach (VPH) = **321**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

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APPENDIX 5.1: EA (2026) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	6	2	32	6	4
Future Vol, veh/h	15	6	2	32	6	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	7	2	39	7	5

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	41	22	0	0	41	0
Stage 1	22	-	-	-	-	-
Stage 2	19	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	970	1055	-	-	1568	-
Stage 1	1001	-	-	-	-	-
Stage 2	1004	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	966	1055	-	-	1568	-
Mov Cap-2 Maneuver	966	-	-	-	-	-
Stage 1	1001	-	-	-	-	-
Stage 2	1000	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	4.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	990	1568	-
HCM Lane V/C Ratio	-	-	0.026	0.005	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	29	549	322	10	14	25
Future Vol, veh/h	29	549	322	10	14	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	624	366	11	16	28

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	377	0	-	0	1062	189
Stage 1	-	-	-	-	372	-
Stage 2	-	-	-	-	690	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1180	-	-	-	233	821
Stage 1	-	-	-	-	668	-
Stage 2	-	-	-	-	497	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1180	-	-	-	226	821
Mov Cap-2 Maneuver	-	-	-	-	357	-
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	497	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1180	-	-	-	560
HCM Lane V/C Ratio	0.028	-	-	-	0.079
HCM Control Delay (s)	8.1	-	-	-	12
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	31.2
Intersection LOS	D

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	175	77	304	271	73	191
Future Vol, veh/h	175	77	304	271	73	191
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	203	90	353	315	85	222
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	14.1	46.2	15
HCM LOS	B	E	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	28%
Vol Thru, %	53%	0%	0%	72%
Vol Right, %	47%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	575	175	77	264
LT Vol	0	175	0	73
Through Vol	304	0	0	191
RT Vol	271	0	77	0
Lane Flow Rate	669	203	90	307
Geometry Grp	2	7	7	2
Degree of Util (X)	0.954	0.425	0.156	0.507
Departure Headway (Hd)	5.136	7.515	6.288	5.943
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	702	478	568	605
Service Time	3.19	5.283	4.055	4.011
HCM Lane V/C Ratio	0.953	0.425	0.158	0.507
HCM Control Delay	46.2	15.8	10.2	15
HCM Lane LOS	E	C	B	B
HCM 95th-tile Q	13.9	2.1	0.5	2.9

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	53	11	7	612	331	38
Future Vol, veh/h	53	11	7	612	331	38
Conflicting Peds, #/hr	0	1	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	14	9	785	424	49

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1254	240	475	0	-	0
Stage 1	451	-	-	-	-	-
Stage 2	803	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	176	762	1085	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	440	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	173	760	1083	-	-	-
Mov Cap-2 Maneuver	173	-	-	-	-	-
Stage 1	599	-	-	-	-	-
Stage 2	439	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	35.2	0.1	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1083	-	199	-	-
HCM Lane V/C Ratio	0.008	-	0.412	-	-
HCM Control Delay (s)	8.4	0	35.2	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0	-	1.9	-	-

Intersection	
Intersection Delay, s/veh	67.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	227	320	15	24	156	159	27	226	33	34	158	149
Future Vol, veh/h	227	320	15	24	156	159	27	226	33	34	158	149
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	264	372	17	28	181	185	31	263	38	40	184	173
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	2
HCM Control Delay	70.7	107.2	72.4	19.9
HCM LOS	F	F	F	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	9%	100%	0%	7%	100%	0%	0%
Vol Thru, %	79%	0%	96%	46%	0%	100%	0%
Vol Right, %	12%	0%	4%	47%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	286	227	335	339	34	158	149
LT Vol	27	227	0	24	34	0	0
Through Vol	226	0	320	156	0	158	0
RT Vol	33	0	15	159	0	0	149
Lane Flow Rate	333	264	390	394	40	184	173
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	0.953	0.746	1.043	1.09	0.111	0.49	0.428
Departure Headway (Hd)	10.955	10.685	10.127	10.316	10.601	10.075	9.34
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	333	341	362	355	340	360	388
Service Time	8.655	8.385	7.827	8.016	8.301	7.775	7.04
HCM Lane V/C Ratio	1	0.774	1.077	1.11	0.118	0.511	0.446
HCM Control Delay	72.4	39	92.1	107.2	14.6	22.1	18.8
HCM Lane LOS	F	E	F	F	B	C	C
HCM 95th-tile Q	9.9	5.7	12.8	14.1	0.4	2.6	2.1

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	69	7	5	56	8	3
Future Vol, veh/h	69	7	5	56	8	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	46	46	46	46	46	46
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	150	15	11	122	17	7

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	113	72	0	0	133	0
Stage 1	72	-	-	-	-	-
Stage 2	41	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	884	990	-	-	1452	-
Stage 1	951	-	-	-	-	-
Stage 2	981	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	873	990	-	-	1452	-
Mov Cap-2 Maneuver	873	-	-	-	-	-
Stage 1	951	-	-	-	-	-
Stage 2	969	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	5.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	883	1452	-
HCM Lane V/C Ratio	-	-	0.187	0.012	-
HCM Control Delay (s)	-	-	10	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	76	411	340	18	11	74
Future Vol, veh/h	76	411	340	18	11	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	99	534	442	23	14	96

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	465	0	-	0	1186	233
Stage 1	-	-	-	-	454	-
Stage 2	-	-	-	-	732	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1095	-	-	-	195	770
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	475	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1095	-	-	-	177	770
Mov Cap-2 Maneuver	-	-	-	-	313	-
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	475	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1095	-	-	-	648
HCM Lane V/C Ratio	0.09	-	-	-	0.17
HCM Control Delay (s)	8.6	-	-	-	11.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.6

Intersection	
Intersection Delay, s/veh	18.4
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	143	57	162	196	73	205
Future Vol, veh/h	143	57	162	196	73	205
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	204	81	231	280	104	293
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	13.8	21.4	17.8
HCM LOS	B	C	C

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	26%
Vol Thru, %	45%	0%	0%	74%
Vol Right, %	55%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	358	143	57	278
LT Vol	0	143	0	73
Through Vol	162	0	0	205
RT Vol	196	0	57	0
Lane Flow Rate	511	204	81	397
Geometry Grp	2	7	7	2
Degree of Util (X)	0.736	0.417	0.138	0.626
Departure Headway (Hd)	5.179	7.341	6.116	5.678
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	696	490	584	635
Service Time	3.232	5.103	3.878	3.736
HCM Lane V/C Ratio	0.734	0.416	0.139	0.625
HCM Control Delay	21.4	15.3	9.9	17.8
HCM Lane LOS	C	C	A	C
HCM 95th-tile Q	6.5	2	0.5	4.4

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	24	48	53	354	293	42
Future Vol, veh/h	24	48	53	354	293	42
Conflicting Peds, #/hr	0	1	0	0	0	116
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	69	76	506	419	60

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1223	357	595	0	-	0
Stage 1	565	-	-	-	-	-
Stage 2	658	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	184	640	979	-	-	-
Stage 1	533	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	128	569	871	-	-	-
Mov Cap-2 Maneuver	128	-	-	-	-	-
Stage 1	417	-	-	-	-	-
Stage 2	457	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.9	1.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	871	-	265	-	-
HCM Lane V/C Ratio	0.087	-	0.388	-	-
HCM Control Delay (s)	9.5	0	26.9	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.3	-	1.8	-	-

Intersection	
Intersection Delay, s/veh	56.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	125	262	34	31	170	117	51	153	24	52	192	137
Future Vol, veh/h	125	262	34	31	170	117	51	153	24	52	192	137
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	154	323	42	38	210	144	63	189	30	64	237	169
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	2
HCM Control Delay	57.1	102.9	46.6	21.7
HCM LOS	F	F	E	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	22%	100%	0%	10%	100%	0%	0%
Vol Thru, %	67%	0%	89%	53%	0%	100%	0%
Vol Right, %	11%	0%	11%	37%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	228	125	296	318	52	192	137
LT Vol	51	125	0	31	52	0	0
Through Vol	153	0	262	170	0	192	0
RT Vol	24	0	34	117	0	0	137
Lane Flow Rate	281	154	365	393	64	237	169
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	0.807	0.435	0.97	1.081	0.175	0.612	0.404
Departure Headway (Hd)	10.906	10.567	9.958	9.911	10.208	9.684	8.951
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	335	343	365	365	354	375	404
Service Time	8.606	8.267	7.658	7.671	7.908	7.384	6.651
HCM Lane V/C Ratio	0.839	0.449	1	1.077	0.181	0.632	0.418
HCM Control Delay	46.6	21.2	72.2	102.9	15.1	26.5	17.6
HCM Lane LOS	E	C	F	F	C	D	C
HCM 95th-tile Q	6.8	2.1	10.8	14.1	0.6	3.9	1.9

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	3	3	6	5	0
Future Vol, veh/h	10	3	3	6	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	54	54	54	54	54	54
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	6	6	11	9	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	30	12	0	0	17	0
Stage 1	12	-	-	-	-	-
Stage 2	18	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	984	1069	-	-	1600	-
Stage 1	1011	-	-	-	-	-
Stage 2	1005	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	978	1069	-	-	1600	-
Mov Cap-2 Maneuver	978	-	-	-	-	-
Stage 1	1011	-	-	-	-	-
Stage 2	999	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	998	1600	-
HCM Lane V/C Ratio	-	-	0.024	0.006	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	24	418	379	15	12	16
Future Vol, veh/h	24	418	379	15	12	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	440	399	16	13	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	415	0	-	0	897	208
Stage 1	-	-	-	-	407	-
Stage 2	-	-	-	-	490	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1142	-	-	-	294	799
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	615	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1142	-	-	-	288	799
Mov Cap-2 Maneuver	-	-	-	-	415	-
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	615	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1142	-	-	-	572
HCM Lane V/C Ratio	0.022	-	-	-	0.052
HCM Control Delay (s)	8.2	-	-	-	11.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	49	36	166	70	76	267
Future Vol, veh/h	49	36	166	70	76	267
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	40	182	77	84	293
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	9.2	9.5	11.6
HCM LOS	A	A	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	22%
Vol Thru, %	70%	0%	0%	78%
Vol Right, %	30%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	236	49	36	343
LT Vol	0	49	0	76
Through Vol	166	0	0	267
RT Vol	70	0	36	0
Lane Flow Rate	259	54	40	377
Geometry Grp	2	7	7	2
Degree of Util (X)	0.319	0.096	0.057	0.474
Departure Headway (Hd)	4.435	6.432	5.218	4.523
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	809	555	682	795
Service Time	2.469	4.194	2.979	2.553
HCM Lane V/C Ratio	0.32	0.097	0.059	0.474
HCM Control Delay	9.5	9.9	8.3	11.6
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	1.4	0.3	0.2	2.6

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	4	3	255	322	7
Future Vol, veh/h	4	4	3	255	322	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	5	4	307	388	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	707	198	396	0	-	0
Stage 1	392	-	-	-	-	-
Stage 2	315	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	385	811	1161	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	739	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	383	811	1161	-	-	-
Mov Cap-2 Maneuver	383	-	-	-	-	-
Stage 1	650	-	-	-	-	-
Stage 2	739	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1161	-	520	-	-
HCM Lane V/C Ratio	0.003	-	0.019	-	-
HCM Control Delay (s)	8.1	0	12.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Intersection Delay, s/veh	51.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	85	302	42	32	270	28	41	154	24	27	226	83
Future Vol, veh/h	85	302	42	32	270	28	41	154	24	27	226	83
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	98	347	48	37	310	32	47	177	28	31	260	95
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	2
HCM Control Delay	64.6	74.3	33	23.1
HCM LOS	F	F	D	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	19%	100%	0%	10%	100%	0%	0%
Vol Thru, %	70%	0%	88%	82%	0%	100%	0%
Vol Right, %	11%	0%	12%	8%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	219	85	344	330	27	226	83
LT Vol	41	85	0	32	27	0	0
Through Vol	154	0	302	270	0	226	0
RT Vol	24	0	42	28	0	0	83
Lane Flow Rate	252	98	395	379	31	260	95
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	0.701	0.264	1	0.989	0.083	0.66	0.223
Departure Headway (Hd)	10.019	9.888	9.278	9.39	9.651	9.152	8.417
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	365	365	395	391	375	400	429
Service Time	7.687	7.588	6.978	7.086	7.314	6.813	6.112
HCM Lane V/C Ratio	0.69	0.268	1	0.969	0.083	0.65	0.221
HCM Control Delay	33	16.1	76.6	74.3	13.2	27.8	13.5
HCM Lane LOS	D	C	F	F	B	D	B
HCM 95th-tile Q	5.1	1	12.1	11.7	0.3	4.6	0.8

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APPENDIX 5.2: EAP (2026) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	14	13	32	34	28
Future Vol, veh/h	15	14	13	32	34	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	17	16	39	41	34

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	152	36	0	0	55	0
Stage 1	36	-	-	-	-	-
Stage 2	116	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	840	1037	-	-	1550	-
Stage 1	986	-	-	-	-	-
Stage 2	909	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	817	1037	-	-	1550	-
Mov Cap-2 Maneuver	817	-	-	-	-	-
Stage 1	986	-	-	-	-	-
Stage 2	884	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	4.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	910	1550	-
HCM Lane V/C Ratio	-	-	0.039	0.027	-
HCM Control Delay (s)	-	-	9.1	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	36	549	322	14	18	45
Future Vol, veh/h	36	549	322	14	18	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	624	366	16	20	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	382	0	-	0	1080	191
Stage 1	-	-	-	-	374	-
Stage 2	-	-	-	-	706	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1175	-	-	-	227	819
Stage 1	-	-	-	-	667	-
Stage 2	-	-	-	-	488	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1175	-	-	-	219	819
Mov Cap-2 Maneuver	-	-	-	-	350	-
Stage 1	-	-	-	-	644	-
Stage 2	-	-	-	-	488	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1175	-	-	-	592
HCM Lane V/C Ratio	0.035	-	-	-	0.121
HCM Control Delay (s)	8.2	-	-	-	11.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Intersection Delay, s/veh	38.6
Intersection LOS	E

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	176	77	328	275	73	199
Future Vol, veh/h	176	77	328	275	73	199
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	205	90	381	320	85	231
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	14.4	59.1	15.7
HCM LOS	B	F	C

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	27%
Vol Thru, %	54%	0%	0%	73%
Vol Right, %	46%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	603	176	77	272
LT Vol	0	176	0	73
Through Vol	328	0	0	199
RT Vol	275	0	77	0
Lane Flow Rate	701	205	90	316
Geometry Grp	2	7	7	2
Degree of Util (X)	1.009	0.434	0.159	0.528
Departure Headway (Hd)	5.182	7.626	6.398	6.014
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	694	471	558	595
Service Time	3.242	5.399	4.17	4.09
HCM Lane V/C Ratio	1.01	0.435	0.161	0.531
HCM Control Delay	59.1	16.2	10.4	15.7
HCM Lane LOS	F	C	B	C
HCM 95th-tile Q	16.5	2.2	0.6	3.1

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	28	0	693	370	8
Future Vol, veh/h	0	28	0	693	370	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	30	0	753	402	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	206	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	800	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	800	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	800	-	-
HCM Lane V/C Ratio	-	0.038	-	-
HCM Control Delay (s)	-	9.7	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	81	11	14	612	359	39
Future Vol, veh/h	81	11	14	612	359	39
Conflicting Peds, #/hr	0	1	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	104	14	18	785	460	50

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1308	258	512	0	-	0
Stage 1	487	-	-	-	-	-
Stage 2	821	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	163	742	1051	-	-	-
Stage 1	584	-	-	-	-	-
Stage 2	431	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	157	740	1049	-	-	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	565	-	-	-	-	-
Stage 2	430	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	61.5	0.2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1049	-	173	-	-
HCM Lane V/C Ratio	0.017	-	0.682	-	-
HCM Control Delay (s)	8.5	0	61.5	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.1	-	4	-	-

Intersection	
Intersection Delay, s/veh	75.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	227	320	19	24	159	160	28	232	33	46	174	149
Future Vol, veh/h	227	320	19	24	159	160	28	232	33	46	174	149
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	264	372	22	28	185	186	33	270	38	53	202	173
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	2
HCM Control Delay	79.4	121.9	82.8	21.3
HCM LOS	F	F	F	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	10%	100%	0%	7%	100%	0%	0%
Vol Thru, %	79%	0%	94%	46%	0%	100%	0%
Vol Right, %	11%	0%	6%	47%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	293	227	339	343	46	174	149
LT Vol	28	227	0	24	46	0	0
Through Vol	232	0	320	159	0	174	0
RT Vol	33	0	19	160	0	0	149
Lane Flow Rate	341	264	394	399	53	202	173
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	0.991	0.763	1.08	1.131	0.151	0.545	0.433
Departure Headway (Hd)	11.242	10.997	10.429	10.598	10.781	10.256	9.519
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	324	333	351	347	335	354	381
Service Time	8.942	8.697	8.129	8.298	8.481	7.956	7.219
HCM Lane V/C Ratio	1.052	0.793	1.123	1.15	0.158	0.571	0.454
HCM Control Delay	82.8	41.7	104.6	121.9	15.4	24.6	19.3
HCM Lane LOS	F	E	F	F	C	C	C
HCM 95th-tile Q	10.7	6	13.7	15.1	0.5	3.1	2.1

Intersection	
Int Delay, s/veh	6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	69	30	35	56	31	23
Future Vol, veh/h	69	30	35	56	31	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	46	46	46	46	46	46
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	150	65	76	122	67	50

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	321	137	0	0	198	0
Stage 1	137	-	-	-	-	-
Stage 2	184	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	673	911	-	-	1375	-
Stage 1	890	-	-	-	-	-
Stage 2	848	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	639	911	-	-	1375	-
Mov Cap-2 Maneuver	639	-	-	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	806	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	4.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	703	1375	-
HCM Lane V/C Ratio	-	-	0.306	0.049	-
HCM Control Delay (s)	-	-	12.4	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.2	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	95	411	340	29	14	90
Future Vol, veh/h	95	411	340	29	14	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	123	534	442	38	18	117

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	480	0	-	0	1241	240
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	780	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1081	-	-	-	180	762
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	451	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1081	-	-	-	159	762
Mov Cap-2 Maneuver	-	-	-	-	295	-
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	451	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1081	-	-	-	628
HCM Lane V/C Ratio	0.114	-	-	-	0.215
HCM Control Delay (s)	8.8	-	-	-	12.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.8

Intersection	
Intersection Delay, s/veh	21.7
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	147	57	182	199	73	228
Future Vol, veh/h	147	57	182	199	73	228
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	210	81	260	284	104	326
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	14.4	26.3	20.9
HCM LOS	B	D	C

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	24%
Vol Thru, %	48%	0%	0%	76%
Vol Right, %	52%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	381	147	57	301
LT Vol	0	147	0	73
Through Vol	182	0	0	228
RT Vol	199	0	57	0
Lane Flow Rate	544	210	81	430
Geometry Grp	2	7	7	2
Degree of Util (X)	0.801	0.439	0.142	0.691
Departure Headway (Hd)	5.3	7.522	6.295	5.782
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	680	477	567	623
Service Time	3.364	5.296	4.068	3.85
HCM Lane V/C Ratio	0.8	0.44	0.143	0.69
HCM Control Delay	26.3	16.1	10.1	20.9
HCM Lane LOS	D	C	B	C
HCM 95th-tile Q	8.1	2.2	0.5	5.5

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	23	0	402	339	23
Future Vol, veh/h	0	23	0	402	339	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	25	0	437	368	25

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	197	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	811	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	811	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	811	-	-
HCM Lane V/C Ratio	-	0.031	-	-
HCM Control Delay (s)	-	9.6	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	48	72	354	316	46
Future Vol, veh/h	47	48	72	354	316	46
Conflicting Peds, #/hr	0	1	0	0	0	116
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	69	103	506	451	66

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1312	376	633	0	-	0
Stage 1	600	-	-	-	-	-
Stage 2	712	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	162	622	948	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	485	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	106	553	843	-	-	-
Mov Cap-2 Maneuver	106	-	-	-	-	-
Stage 1	378	-	-	-	-	-
Stage 2	432	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	69.8	1.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	843	-	179	-	-
HCM Lane V/C Ratio	0.122	-	0.758	-	-
HCM Control Delay (s)	9.9	0	69.8	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.4	-	4.9	-	-

Intersection	
Intersection Delay, s/veh	67.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	125	262	37	31	178	121	55	168	24	62	205	137
Future Vol, veh/h	125	262	37	31	178	121	55	168	24	62	205	137
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	154	323	46	38	220	149	68	207	30	77	253	169
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	2
HCM Control Delay	64.7	128.4	61.3	24.2
HCM LOS	F	F	F	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	22%	100%	0%	9%	100%	0%	0%
Vol Thru, %	68%	0%	88%	54%	0%	100%	0%
Vol Right, %	10%	0%	12%	37%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	247	125	299	330	62	205	137
LT Vol	55	125	0	31	62	0	0
Through Vol	168	0	262	178	0	205	0
RT Vol	24	0	37	121	0	0	137
Lane Flow Rate	305	154	369	407	77	253	169
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	0.893	0.444	1.003	1.153	0.211	0.664	0.411
Departure Headway (Hd)	11.256	11.038	10.421	10.347	10.578	10.053	9.317
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	323	329	351	354	341	362	389
Service Time	8.956	8.738	8.121	8.047	8.278	7.753	7.017
HCM Lane V/C Ratio	0.944	0.468	1.051	1.15	0.226	0.699	0.434
HCM Control Delay	61.3	22.3	82.4	128.4	16.1	30.5	18.4
HCM Lane LOS	F	C	F	F	C	D	C
HCM 95th-tile Q	8.4	2.2	11.5	16	0.8	4.6	2

Intersection	
Int Delay, s/veh	4.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	30	39	6	24	16
Future Vol, veh/h	10	30	39	6	24	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	54	54	54	54	54	54
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	56	72	11	44	30

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	196	78	0	0	83	0
Stage 1	78	-	-	-	-	-
Stage 2	118	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	793	983	-	-	1514	-
Stage 1	945	-	-	-	-	-
Stage 2	907	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	769	983	-	-	1514	-
Mov Cap-2 Maneuver	769	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	880	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	4.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	919	1514	-
HCM Lane V/C Ratio	-	-	0.081	0.029	-
HCM Control Delay (s)	-	-	9.3	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	47	418	379	29	15	29
Future Vol, veh/h	47	418	379	29	15	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	440	399	31	16	31

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	430	0	-	0	953	215
Stage 1	-	-	-	-	415	-
Stage 2	-	-	-	-	538	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1128	-	-	-	272	790
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	584	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1128	-	-	-	260	790
Mov Cap-2 Maneuver	-	-	-	-	391	-
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	584	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1128	-	-	-	586
HCM Lane V/C Ratio	0.044	-	-	-	0.079
HCM Control Delay (s)	8.3	-	-	-	11.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	54	36	182	73	76	294
Future Vol, veh/h	54	36	182	73	76	294
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	40	200	80	84	323
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	9.4	10	12.4
HCM LOS	A	A	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	21%
Vol Thru, %	71%	0%	0%	79%
Vol Right, %	29%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	255	54	36	370
LT Vol	0	54	0	76
Through Vol	182	0	0	294
RT Vol	73	0	36	0
Lane Flow Rate	280	59	40	407
Geometry Grp	2	7	7	2
Degree of Util (X)	0.35	0.108	0.059	0.516
Departure Headway (Hd)	4.499	6.543	5.328	4.568
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	796	545	667	789
Service Time	2.541	4.317	3.101	2.605
HCM Lane V/C Ratio	0.352	0.108	0.06	0.516
HCM Control Delay	10	10.1	8.4	12.4
HCM Lane LOS	A	B	A	B
HCM 95th-tile Q	1.6	0.4	0.2	3

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	19	0	278	334	27
Future Vol, veh/h	0	19	0	278	334	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	21	0	302	363	29

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	196	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	812	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	812	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	812	-	-
HCM Lane V/C Ratio	-	0.025	-	-
HCM Control Delay (s)	-	9.5	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	23	4	26	255	341	12
Future Vol, veh/h	23	4	26	255	341	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	5	31	307	411	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	787	213	425	0	-	0
Stage 1	418	-	-	-	-	-
Stage 2	369	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	344	793	1133	-	-	-
Stage 1	633	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	333	793	1133	-	-	-
Mov Cap-2 Maneuver	333	-	-	-	-	-
Stage 1	612	-	-	-	-	-
Stage 2	698	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.9	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1133	-	364	-	-
HCM Lane V/C Ratio	0.028	-	0.089	-	-
HCM Control Delay (s)	8.3	0	15.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Intersection Delay, s/veh	61.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	85	302	45	32	279	33	46	172	24	35	237	83
Future Vol, veh/h	85	302	45	32	279	33	46	172	24	35	237	83
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	98	347	52	37	321	38	53	198	28	40	272	95
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	2
HCM Control Delay	71.4	98.2	41.7	25.9
HCM LOS	F	F	E	D

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	19%	100%	0%	9%	100%	0%	0%
Vol Thru, %	71%	0%	87%	81%	0%	100%	0%
Vol Right, %	10%	0%	13%	10%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	242	85	347	344	35	237	83
LT Vol	46	85	0	32	35	0	0
Through Vol	172	0	302	279	0	237	0
RT Vol	24	0	45	33	0	0	83
Lane Flow Rate	278	98	399	395	40	272	95
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	0.773	0.267	1.024	1.067	0.109	0.697	0.226
Departure Headway (Hd)	10.654	10.297	9.678	9.883	10.171	9.648	8.915
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	342	351	379	372	354	376	405
Service Time	8.354	7.997	7.378	7.583	7.871	7.348	6.615
HCM Lane V/C Ratio	0.813	0.279	1.053	1.062	0.113	0.723	0.235
HCM Control Delay	41.7	16.7	84.8	98.2	14.1	31.8	14.2
HCM Lane LOS	E	C	F	F	B	D	B
HCM 95th-tile Q	6.2	1.1	12.5	13.7	0.4	5.1	0.9

APPENDIX 5.3: EA (2026) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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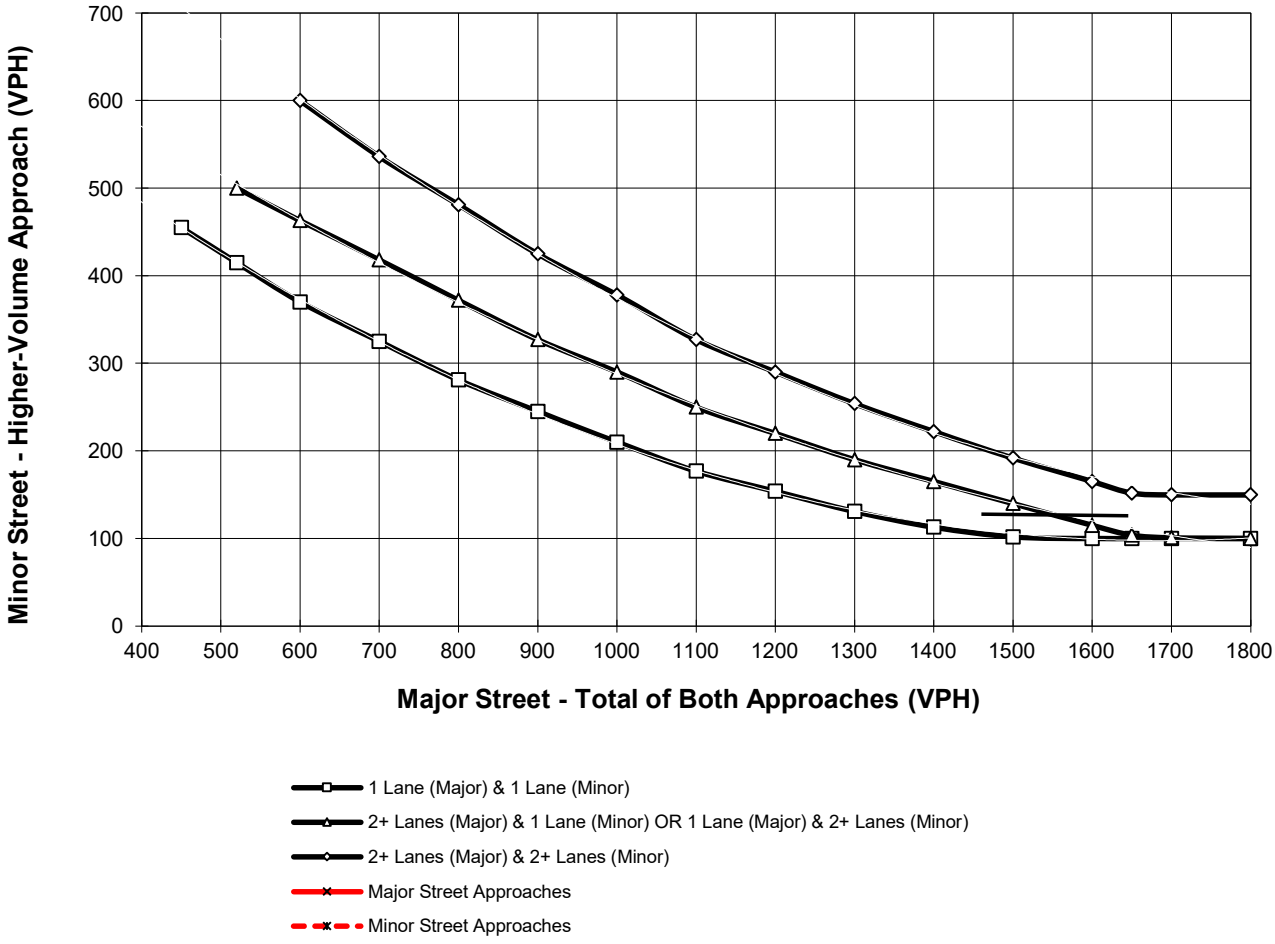
Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **EA (2026) Conditions - Weekday MD Peak Hour**

Major Street Name = **Appaloosa Dr.**
Total of Both Approaches (VPH) = **76**
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Lipizzan Dr.**
High Volume Approach (VPH) = **62**
Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

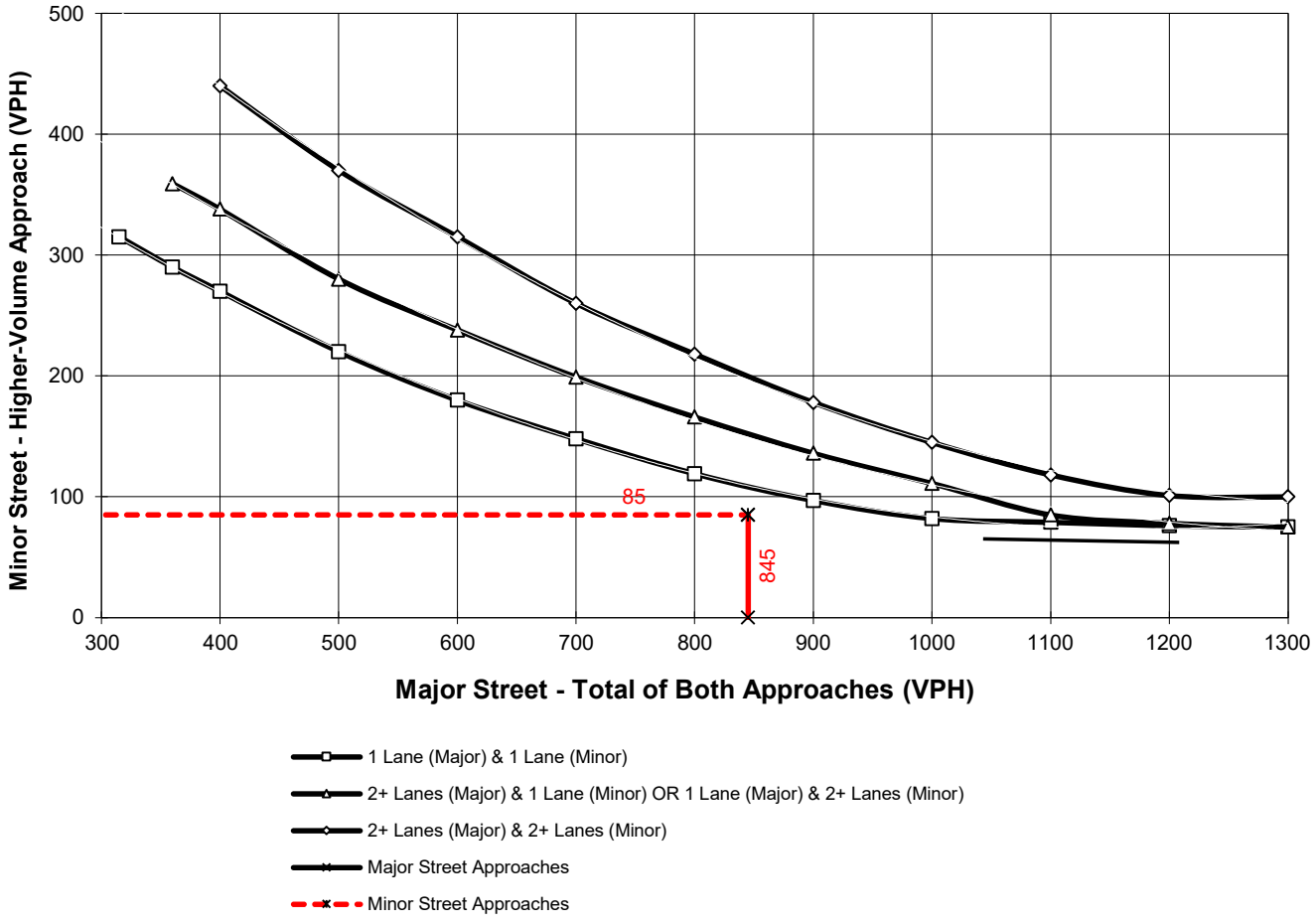
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **EA (2026) Conditions - Weekday MD Peak Hour**

Major Street Name = **Cottonwood Av.** Total of Both Approaches (VPH) = **845**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Lipizzan Dr.** High Volume Approach (VPH) = **85**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

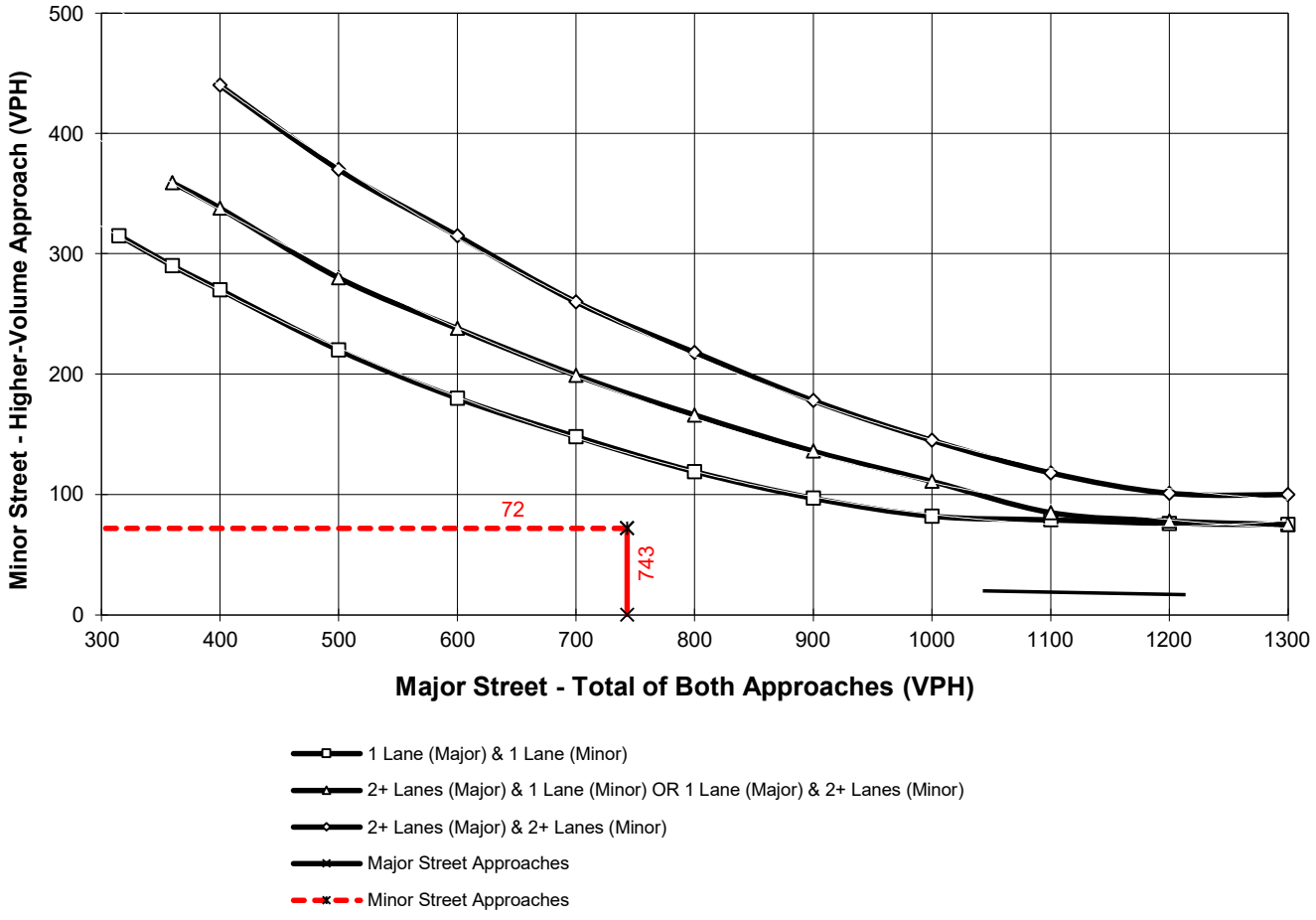
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **EA (2026) Conditions - Weekday MD Peak Hour**

Major Street Name = **Lyon Av.**
Total of Both Approaches (VPH) = **743**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Appaloosa Dr.**
High Volume Approach (VPH) = **72**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

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APPENDIX 5.4: EAP (2026) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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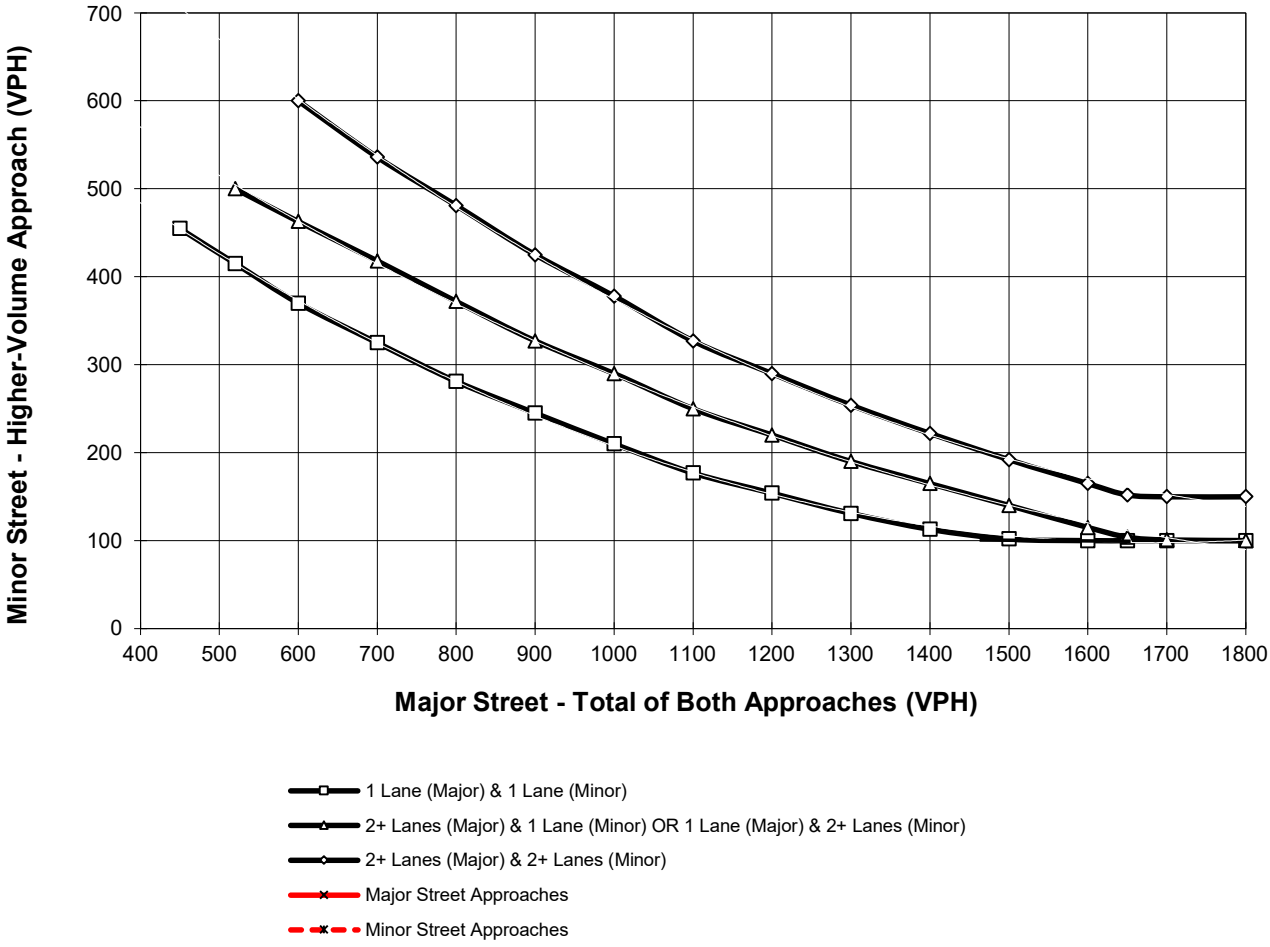
Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **EAP (2026) Conditions - Weekday MD Peak Hour**

Major Street Name = **Lipizzan Dr.**
Total of Both Approaches (VPH) = **146**
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Appaloosa Dr.**
High Volume Approach (VPH) = **99**
Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

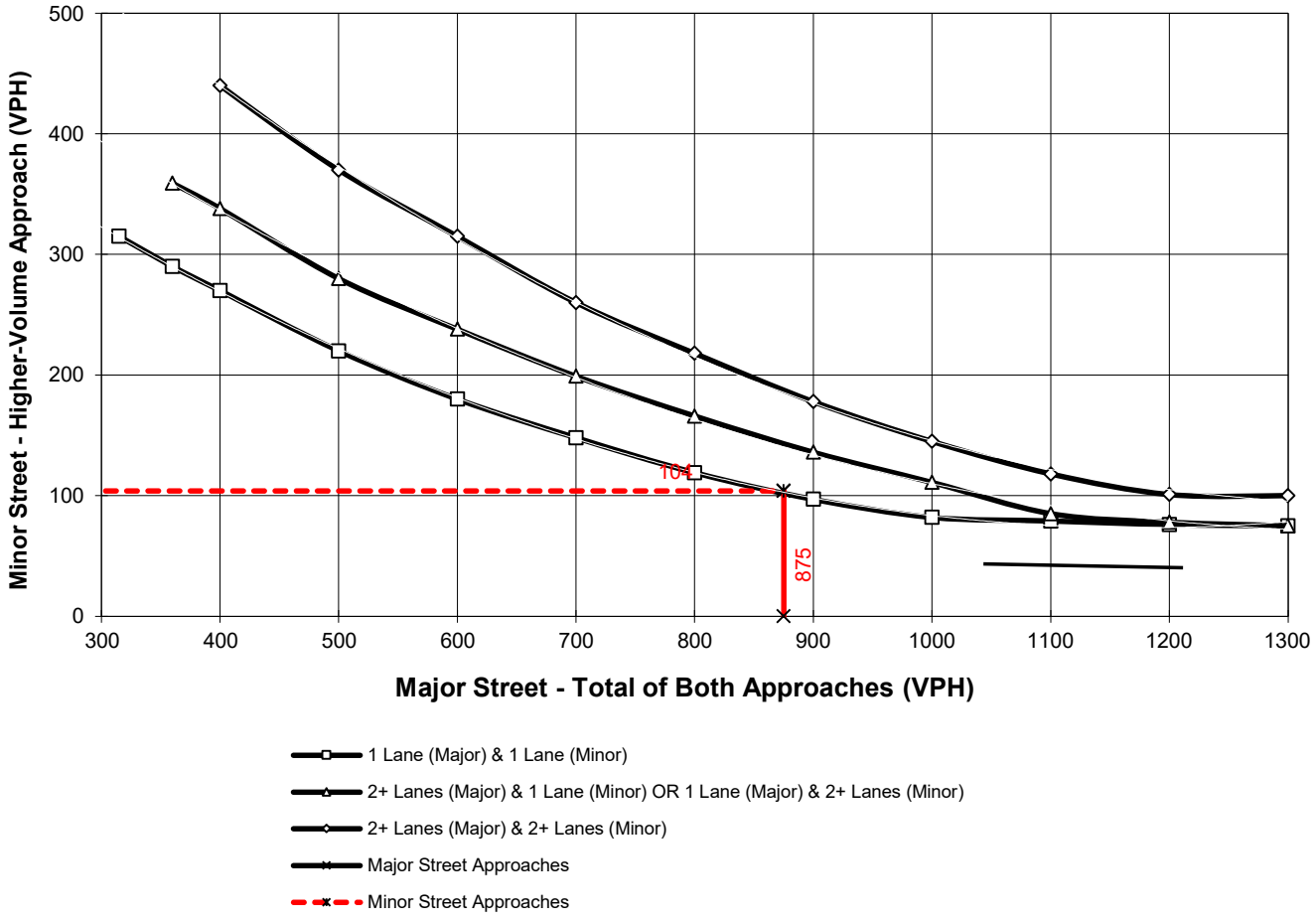
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **EAP (2026) Conditions - Weekday MD Peak Hour**

Major Street Name = **Cottonwood Av.** Total of Both Approaches (VPH) = **875**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Lipizzan Dr.** High Volume Approach (VPH) = **104**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

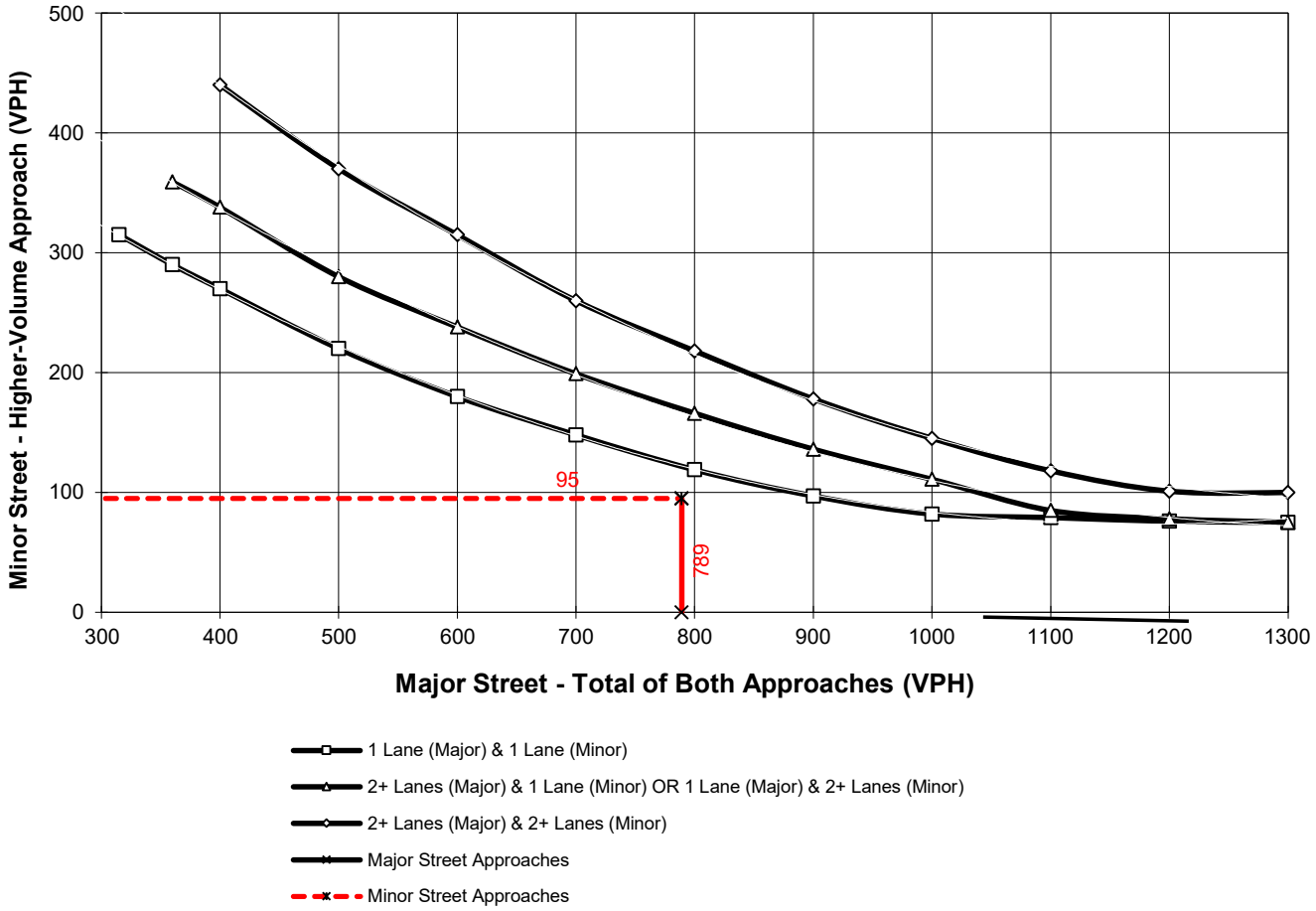
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **EAP (2026) Conditions - Weekday MD Peak Hour**

Major Street Name = **Lyon Av.**
Total of Both Approaches (VPH) = **789**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Appaloosa Dr.**
High Volume Approach (VPH) = **95**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

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APPENDIX 5.5: EAP (2026) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS WITH IMPROVEMENTS

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Intersection	
Int Delay, s/veh	5.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	176	77	328	275	73	199
Future Vol, veh/h	176	77	328	275	73	199
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	55	0	-	-	120	-
Veh in Median Storage, #	1	-	2	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	205	90	381	320	85	231

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	942	541	0	0	701	0
Stage 1	541	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	292	541	-	-	896	-
Stage 1	583	-	-	-	-	-
Stage 2	676	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	264	541	-	-	896	-
Mov Cap-2 Maneuver	393	-	-	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	612	-	-	-	-	-

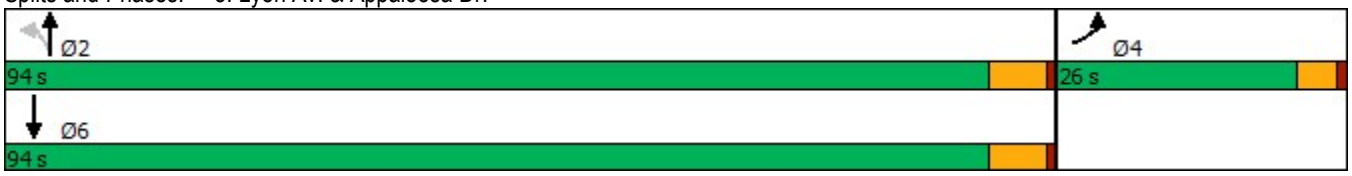
Approach	WB	NB	SB
HCM Control Delay, s	20.4	0	2.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	393	541	896	-
HCM Lane V/C Ratio	-	-	0.521	0.165	0.095	-
HCM Control Delay (s)	-	-	23.7	13	9.4	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	2.9	0.6	0.3	-

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	81	14	612	359
Future Volume (vph)	81	14	612	359
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	6
Permitted Phases		2		
Detector Phase	4	2	2	6
Switch Phase				
Minimum Initial (s)	5.0	10.0	10.0	10.0
Minimum Split (s)	22.6	24.2	24.2	24.2
Total Split (s)	26.0	94.0	94.0	94.0
Total Split (%)	21.7%	78.3%	78.3%	78.3%
Yellow Time (s)	3.6	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	6.2	6.2
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Min	Min	Min
Act Effct Green (s)	9.2	36.8	36.8	36.8
Actuated g/C Ratio	0.17	0.70	0.70	0.70
v/c Ratio	0.38	0.03	0.60	0.21
Control Delay	23.6	5.1	9.4	4.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.6	5.1	9.4	4.6
LOS	C	A	A	A
Approach Delay	23.6		9.3	4.6
Approach LOS	C		A	A

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 52.6	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 8.8	Intersection LOS: A
Intersection Capacity Utilization 46.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Lyon Av. & Appaloosa Dr.





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	81	11	14	612	359	39
Future Volume (veh/h)	81	11	14	612	359	39
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	104	14	18	785	460	50
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	159	21	658	1053	1820	197
Arrive On Green	0.10	0.10	0.56	0.56	0.56	0.56
Sat Flow, veh/h	1535	207	889	1870	3327	350
Grp Volume(v), veh/h	119	0	18	785	252	258
Grp Sat Flow(s),veh/h/ln	1756	0	889	1870	1777	1807
Q Serve(g_s), s	2.1	0.0	0.3	10.2	2.3	2.4
Cycle Q Clear(g_c), s	2.1	0.0	2.7	10.2	2.3	2.4
Prop In Lane	0.87	0.12	1.00			0.19
Lane Grp Cap(c), veh/h	182	0	658	1053	1000	1017
V/C Ratio(X)	0.65	0.00	0.03	0.75	0.25	0.25
Avail Cap(c_a), veh/h	1160	0	2568	5071	4817	4898
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.0	0.0	4.3	5.3	3.6	3.6
Incr Delay (d2), s/veh	1.5	0.0	0.0	1.1	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.5	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.5	0.0	4.3	6.4	3.7	3.7
LnGrp LOS	B	A	A	A	A	A
Approach Vol, veh/h	119			803	510	
Approach Delay, s/veh	15.5			6.4	3.7	
Approach LOS	B			A	A	

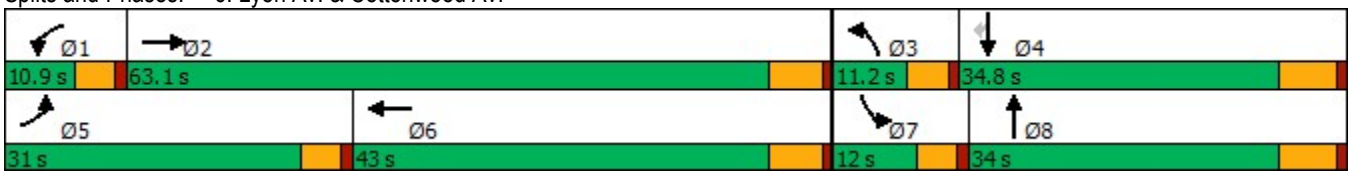
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		24.4		8.0		24.4
Change Period (Y+Rc), s		6.2		4.6		6.2
Max Green Setting (Gmax), s		87.8		21.4		87.8
Max Q Clear Time (g_c+I1), s		12.2		4.1		4.4
Green Ext Time (p_c), s		6.0		0.1		2.8

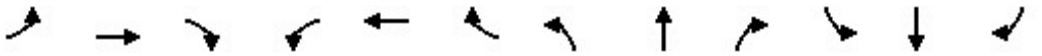
Intersection Summary	
HCM 6th Ctrl Delay	6.2
HCM 6th LOS	A

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	227	320	24	159	28	232	46	174	149
Future Volume (vph)	227	320	24	159	28	232	46	174	149
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6	3	8	7	4	
Permitted Phases									4
Detector Phase	5	2	1	6	3	8	7	4	4
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	23.8	9.6	23.8	9.6	24.2	9.6	24.2	24.2
Total Split (s)	31.0	63.1	10.9	43.0	11.2	34.0	12.0	34.8	34.8
Total Split (%)	25.8%	52.6%	9.1%	35.8%	9.3%	28.3%	10.0%	29.0%	29.0%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	4.6	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	None	None	None	None	None
Act Effct Green (s)	18.3	42.0	6.2	24.1	6.3	20.8	7.0	23.7	23.7
Actuated g/C Ratio	0.20	0.47	0.07	0.27	0.07	0.23	0.08	0.26	0.26
v/c Ratio	0.74	0.46	0.23	0.76	0.27	0.73	0.39	0.41	0.32
Control Delay	50.3	20.8	54.5	40.1	54.8	46.3	56.9	34.9	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.3	20.8	54.5	40.1	54.8	46.3	56.9	34.9	7.4
LOS	D	C	D	D	D	D	E	C	A
Approach Delay		32.6		41.1		47.2		26.5	
Approach LOS		C		D		D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 90	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 35.8	Intersection LOS: D
Intersection Capacity Utilization 67.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: Lyon Av. & Cottonwood Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	227	320	19	24	159	160	28	232	33	46	174	149
Future Volume (veh/h)	227	320	19	24	159	160	28	232	33	46	174	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	264	372	22	28	185	186	33	270	38	53	202	173
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	312	715	42	53	223	224	60	343	48	81	425	360
Arrive On Green	0.18	0.41	0.41	0.03	0.26	0.26	0.03	0.22	0.22	0.05	0.23	0.23
Sat Flow, veh/h	1781	1745	103	1781	843	848	1781	1593	224	1781	1870	1585
Grp Volume(v), veh/h	264	0	394	28	0	371	33	0	308	53	202	173
Grp Sat Flow(s),veh/h/ln	1781	0	1848	1781	0	1691	1781	0	1818	1781	1870	1585
Q Serve(g_s), s	10.2	0.0	11.3	1.1	0.0	14.6	1.3	0.0	11.3	2.1	6.6	6.7
Cycle Q Clear(g_c), s	10.2	0.0	11.3	1.1	0.0	14.6	1.3	0.0	11.3	2.1	6.6	6.7
Prop In Lane	1.00		0.06	1.00		0.50	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	312	0	757	53	0	447	60	0	391	81	425	360
V/C Ratio(X)	0.85	0.00	0.52	0.53	0.00	0.83	0.55	0.00	0.79	0.65	0.48	0.48
Avail Cap(c_a), veh/h	665	0	1496	159	0	889	166	0	714	186	756	641
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.3	0.0	15.7	33.8	0.0	24.5	33.7	0.0	26.2	33.2	23.7	23.7
Incr Delay (d2), s/veh	2.5	0.0	0.6	3.0	0.0	4.0	2.9	0.0	3.6	3.2	0.8	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	4.1	0.5	0.0	5.7	0.6	0.0	4.7	0.9	2.7	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.7	0.0	16.2	36.8	0.0	28.6	36.5	0.0	29.8	36.4	24.5	24.7
LnGrp LOS	C	A	B	D	A	C	D	A	C	D	C	C
Approach Vol, veh/h		658			399			341			428	
Approach Delay, s/veh		22.1			29.1			30.4			26.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	34.8	7.0	22.3	17.0	24.5	7.8	21.4
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	5.8	4.6	6.2
Max Green Setting (Gmax), s	6.3	57.3	6.6	28.6	26.4	37.2	7.4	27.8
Max Q Clear Time (g_c+I1), s	3.1	13.3	3.3	8.7	12.2	16.6	4.1	13.3
Green Ext Time (p_c), s	0.0	2.4	0.0	1.4	0.3	2.1	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	26.1
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	5.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	147	57	182	199	73	228
Future Vol, veh/h	147	57	182	199	73	228
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	55	0	-	-	120	-
Veh in Median Storage, #	1	-	2	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	210	81	260	284	104	326

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	936	402	0	0	544	0
Stage 1	402	-	-	-	-	-
Stage 2	534	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	294	648	-	-	1025	-
Stage 1	676	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	264	648	-	-	1025	-
Mov Cap-2 Maneuver	388	-	-	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	529	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21	0	2.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	388	648	1025	-
HCM Lane V/C Ratio	-	-	0.541	0.126	0.102	-
HCM Control Delay (s)	-	-	24.7	11.4	8.9	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	3.1	0.4	0.3	-

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	47	72	354	316
Future Volume (vph)	47	72	354	316
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	6
Permitted Phases		2		
Detector Phase	4	2	2	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	22.6	24.2	24.2	24.2
Total Split (s)	34.0	86.0	86.0	86.0
Total Split (%)	28.3%	71.7%	71.7%	71.7%
Yellow Time (s)	3.6	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	6.2	6.2
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Min	Min	Min
Act Effct Green (s)	8.5	27.1	27.1	27.1
Actuated g/C Ratio	0.20	0.64	0.64	0.64
v/c Ratio	0.37	0.19	0.43	0.24
Control Delay	13.9	7.6	8.2	5.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.9	7.6	8.2	5.7
LOS	B	A	A	A
Approach Delay	13.9		8.1	5.7
Approach LOS	B		A	A

Intersection Summary			
Cycle Length: 120			
Actuated Cycle Length: 42.4			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 7.7		Intersection LOS: A	
Intersection Capacity Utilization 39.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Lyon Av. & Appaloosa Dr.





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	47	48	72	354	316	46
Future Volume (veh/h)	47	48	72	354	316	46
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	0.95			0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	67	69	103	506	451	66
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	98	101	596	918	1493	216
Arrive On Green	0.12	0.12	0.49	0.49	0.49	0.49
Sat Flow, veh/h	820	844	838	1870	3135	440
Grp Volume(v), veh/h	137	0	103	506	261	256
Grp Sat Flow(s),veh/h/ln	1676	0	838	1870	1777	1705
Q Serve(g_s), s	2.2	0.0	2.3	5.2	2.4	2.5
Cycle Q Clear(g_c), s	2.2	0.0	4.8	5.2	2.4	2.5
Prop In Lane	0.49	0.50	1.00			0.26
Lane Grp Cap(c), veh/h	201	0	596	918	872	837
V/C Ratio(X)	0.68	0.00	0.17	0.55	0.30	0.31
Avail Cap(c_a), veh/h	1777	0	2596	5385	5115	4908
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.7	0.0	5.7	4.9	4.2	4.2
Incr Delay (d2), s/veh	1.5	0.0	0.1	0.5	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.1	0.2	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.2	0.0	5.8	5.4	4.4	4.4
LnGrp LOS	B	A	A	A	A	A
Approach Vol, veh/h	137			609	517	
Approach Delay, s/veh	13.2			5.5	4.4	
Approach LOS	B			A	A	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		19.8		7.9		19.8
Change Period (Y+Rc), s		6.2		4.6		6.2
Max Green Setting (Gmax), s		79.8		29.4		79.8
Max Q Clear Time (g_c+I1), s		7.2		4.2		4.5
Green Ext Time (p_c), s		3.8		0.2		3.0

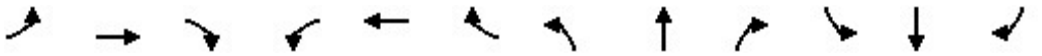
Intersection Summary	
HCM 6th Ctrl Delay	5.9
HCM 6th LOS	A

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	125	262	31	178	55	168	62	205	137
Future Volume (vph)	125	262	31	178	55	168	62	205	137
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6	3	8	7	4	
Permitted Phases									4
Detector Phase	5	2	1	6	3	8	7	4	4
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	23.8	9.6	23.8	9.6	24.2	9.6	24.2	24.2
Total Split (s)	24.0	58.4	11.6	46.0	15.0	33.0	17.0	35.0	35.0
Total Split (%)	20.0%	48.7%	9.7%	38.3%	12.5%	27.5%	14.2%	29.2%	29.2%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	4.6	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	None	None	None	None	None
Act Effct Green (s)	12.2	34.1	6.5	22.5	8.0	17.3	8.5	17.8	17.8
Actuated g/C Ratio	0.15	0.42	0.08	0.28	0.10	0.21	0.11	0.22	0.22
v/c Ratio	0.57	0.48	0.27	0.73	0.39	0.61	0.41	0.62	0.36
Control Delay	46.3	22.3	49.3	35.6	48.7	39.2	48.0	39.2	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	22.3	49.3	35.6	48.7	39.2	48.0	39.2	7.9
LOS	D	C	D	D	D	D	D	D	A
Approach Delay		29.4		36.9		41.4		29.9	
Approach LOS		C		D		D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 80.7	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 33.4	Intersection LOS: C
Intersection Capacity Utilization 58.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: Lyon Av. & Cottonwood Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	262	37	31	178	121	55	168	24	62	205	137
Future Volume (veh/h)	125	262	37	31	178	121	55	168	24	62	205	137
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.93	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	154	323	46	38	220	149	68	207	30	77	253	169
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	197	544	77	70	279	189	101	325	47	108	391	326
Arrive On Green	0.11	0.34	0.34	0.04	0.27	0.27	0.06	0.21	0.21	0.06	0.21	0.21
Sat Flow, veh/h	1781	1599	228	1781	1038	703	1781	1581	229	1781	1870	1558
Grp Volume(v), veh/h	154	0	369	38	0	369	68	0	237	77	253	169
Grp Sat Flow(s),veh/h/ln	1781	0	1827	1781	0	1741	1781	0	1810	1781	1870	1558
Q Serve(g_s), s	5.0	0.0	10.0	1.3	0.0	11.8	2.2	0.0	7.2	2.5	7.4	5.7
Cycle Q Clear(g_c), s	5.0	0.0	10.0	1.3	0.0	11.8	2.2	0.0	7.2	2.5	7.4	5.7
Prop In Lane	1.00		0.12	1.00		0.40	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	197	0	621	70	0	468	101	0	372	108	391	326
V/C Ratio(X)	0.78	0.00	0.59	0.54	0.00	0.79	0.67	0.00	0.64	0.72	0.65	0.52
Avail Cap(c_a), veh/h	578	0	1608	209	0	1171	310	0	812	370	902	751
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	0.0	16.3	28.2	0.0	20.3	27.6	0.0	21.7	27.6	21.6	21.0
Incr Delay (d2), s/veh	2.5	0.0	0.9	2.5	0.0	3.0	2.9	0.0	1.8	3.3	1.8	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	3.6	0.5	0.0	4.4	0.9	0.0	2.7	1.0	2.9	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.4	0.0	17.2	30.6	0.0	23.3	30.5	0.0	23.5	30.9	23.4	22.2
LnGrp LOS	C	A	B	C	A	C	C	A	C	C	C	C
Approach Vol, veh/h		523			407			305			499	
Approach Delay, s/veh		20.5			24.0			25.1			24.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	26.1	8.0	18.7	11.2	21.8	8.2	18.5
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	5.8	4.6	6.2
Max Green Setting (Gmax), s	7.0	52.6	10.4	28.8	19.4	40.2	12.4	26.8
Max Q Clear Time (g_c+I1), s	3.3	12.0	4.2	9.4	7.0	13.8	4.5	9.2
Green Ext Time (p_c), s	0.0	2.2	0.0	1.7	0.1	2.2	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	23.2
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	54	36	182	73	76	294
Future Vol, veh/h	54	36	182	73	76	294
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	55	0	-	-	120	-
Veh in Median Storage, #	1	-	2	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	40	200	80	84	323

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	731	240	0	0	280	0
Stage 1	240	-	-	-	-	-
Stage 2	491	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	389	799	-	-	1283	-
Stage 1	800	-	-	-	-	-
Stage 2	615	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	364	799	-	-	1283	-
Mov Cap-2 Maneuver	462	-	-	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	575	-	-	-	-	-

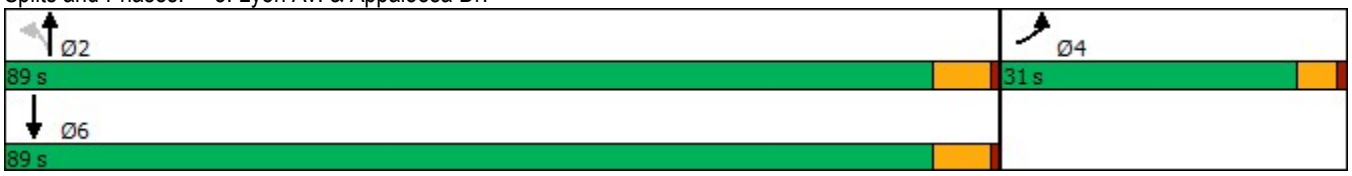
Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	1.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	462	799	1283	-
HCM Lane V/C Ratio	-	-	0.128	0.05	0.065	-
HCM Control Delay (s)	-	-	13.9	9.7	8	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.2	0.2	-

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	23	26	255	341
Future Volume (vph)	23	26	255	341
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	6
Permitted Phases		2		
Detector Phase	4	2	2	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	22.6	24.2	24.2	24.2
Total Split (s)	31.0	89.0	89.0	89.0
Total Split (%)	25.8%	74.2%	74.2%	74.2%
Yellow Time (s)	3.6	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	6.2	6.2	6.2
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Min	Min	Min
Act Effct Green (s)	7.2	31.5	31.5	31.5
Actuated g/C Ratio	0.19	0.83	0.83	0.83
v/c Ratio	0.10	0.04	0.20	0.15
Control Delay	14.3	4.8	4.3	3.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.3	4.8	4.3	3.5
LOS	B	A	A	A
Approach Delay	14.3		4.3	3.5
Approach LOS	B		A	A

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 38	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.20	
Intersection Signal Delay: 4.3	Intersection LOS: A
Intersection Capacity Utilization 32.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Lyon Av. & Appaloosa Dr.





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	23	4	26	255	341	12
Future Volume (veh/h)	23	4	26	255	341	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	5	31	307	411	14
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	63	11	656	647	1213	41
Arrive On Green	0.04	0.04	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1443	258	962	1870	3600	119
Grp Volume(v), veh/h	34	0	31	307	208	217
Grp Sat Flow(s),veh/h/ln	1752	0	962	1870	1777	1849
Q Serve(g_s), s	0.3	0.0	0.4	2.3	1.5	1.5
Cycle Q Clear(g_c), s	0.3	0.0	2.0	2.3	1.5	1.5
Prop In Lane	0.82	0.15	1.00			0.06
Lane Grp Cap(c), veh/h	76	0	656	647	614	639
V/C Ratio(X)	0.45	0.00	0.05	0.47	0.34	0.34
Avail Cap(c_a), veh/h	2615	0	4829	8757	8320	8657
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.2	0.0	5.0	4.5	4.3	4.3
Incr Delay (d2), s/veh	1.5	0.0	0.0	0.5	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.1	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.8	0.0	5.0	5.1	4.6	4.6
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h	34			338	425	
Approach Delay, s/veh	9.8			5.1	4.6	
Approach LOS	A			A	A	

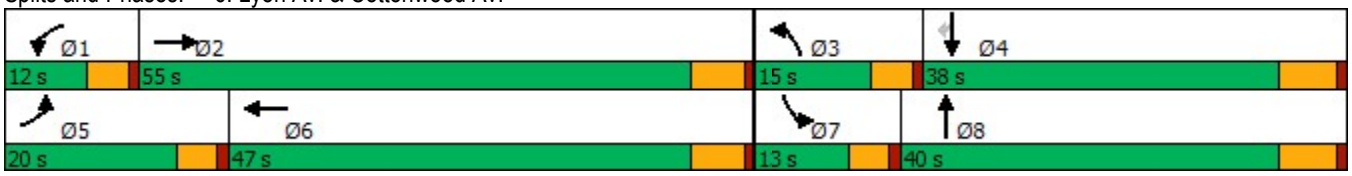
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		12.3		5.4		12.3
Change Period (Y+Rc), s		6.2		4.6		6.2
Max Green Setting (Gmax), s		82.8		26.4		82.8
Max Q Clear Time (g_c+I1), s		4.3		2.3		3.5
Green Ext Time (p_c), s		1.8		0.0		2.3

Intersection Summary	
HCM 6th Ctrl Delay	5.0
HCM 6th LOS	A

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	85	302	32	279	46	172	35	237	83
Future Volume (vph)	85	302	32	279	46	172	35	237	83
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6	3	8	7	4	
Permitted Phases									4
Detector Phase	5	2	1	6	3	8	7	4	4
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	23.8	9.6	23.8	9.6	24.2	9.6	24.2	24.2
Total Split (s)	20.0	55.0	12.0	47.0	15.0	40.0	13.0	38.0	38.0
Total Split (%)	16.7%	45.8%	10.0%	39.2%	12.5%	33.3%	10.8%	31.7%	31.7%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	4.6	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	None	None	None	None	None
Act Effct Green (s)	9.7	27.0	6.9	21.7	7.8	18.8	7.1	18.3	18.3
Actuated g/C Ratio	0.14	0.38	0.10	0.30	0.11	0.26	0.10	0.26	0.26
v/c Ratio	0.41	0.58	0.22	0.64	0.28	0.47	0.23	0.57	0.18
Control Delay	41.3	24.5	43.6	30.8	42.3	29.6	43.1	33.4	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.3	24.5	43.6	30.8	42.3	29.6	43.1	33.4	1.9
LOS	D	C	D	C	D	C	D	C	A
Approach Delay		27.8		32.0		32.0		27.0	
Approach LOS		C		C		C		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 71.4	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 29.4	Intersection LOS: C
Intersection Capacity Utilization 57.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: Lyon Av. & Cottonwood Av.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	302	45	32	279	33	46	172	24	35	237	83
Future Volume (veh/h)	85	302	45	32	279	33	46	172	24	35	237	83
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	98	347	52	37	321	38	53	198	28	40	272	95
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	464	70	71	424	50	92	344	49	75	384	325
Arrive On Green	0.07	0.29	0.29	0.04	0.26	0.26	0.05	0.21	0.21	0.04	0.21	0.21
Sat Flow, veh/h	1781	1589	238	1781	1641	194	1781	1603	227	1781	1870	1585
Grp Volume(v), veh/h	98	0	399	37	0	359	53	0	226	40	272	95
Grp Sat Flow(s),veh/h/ln	1781	0	1827	1781	0	1835	1781	0	1830	1781	1870	1585
Q Serve(g_s), s	2.8	0.0	10.2	1.0	0.0	9.3	1.5	0.0	5.7	1.1	7.0	2.6
Cycle Q Clear(g_c), s	2.8	0.0	10.2	1.0	0.0	9.3	1.5	0.0	5.7	1.1	7.0	2.6
Prop In Lane	1.00		0.13	1.00		0.11	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	130	0	533	71	0	475	92	0	393	75	384	325
V/C Ratio(X)	0.75	0.00	0.75	0.52	0.00	0.76	0.58	0.00	0.58	0.53	0.71	0.29
Avail Cap(c_a), veh/h	532	0	1745	256	0	1467	359	0	1200	290	1154	978
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	0.0	16.5	24.3	0.0	17.6	23.9	0.0	18.1	24.2	19.0	17.3
Incr Delay (d2), s/veh	3.3	0.0	2.1	2.2	0.0	2.5	2.1	0.0	1.3	2.1	2.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	3.7	0.4	0.0	3.5	0.6	0.0	2.1	0.5	2.7	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.7	0.0	18.7	26.4	0.0	20.1	26.0	0.0	19.5	26.3	21.5	17.8
LnGrp LOS	C	A	B	C	A	C	C	A	B	C	C	B
Approach Vol, veh/h		497			396			279			407	
Approach Delay, s/veh		20.2			20.7			20.7			21.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	20.8	7.3	16.8	8.4	19.1	6.8	17.3
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	5.8	4.6	6.2
Max Green Setting (Gmax), s	7.4	49.2	10.4	31.8	15.4	41.2	8.4	33.8
Max Q Clear Time (g_c+I1), s	3.0	12.2	3.5	9.0	4.8	11.3	3.1	7.7
Green Ext Time (p_c), s	0.0	2.4	0.0	1.6	0.1	2.0	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	20.7
HCM 6th LOS	C

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APPENDIX 6.1: EAC (2026) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	6	2	32	6	4
Future Vol, veh/h	15	6	2	32	6	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	7	2	39	7	5

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	41	22	0	0	41	0
Stage 1	22	-	-	-	-	-
Stage 2	19	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	970	1055	-	-	1568	-
Stage 1	1001	-	-	-	-	-
Stage 2	1004	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	966	1055	-	-	1568	-
Mov Cap-2 Maneuver	966	-	-	-	-	-
Stage 1	1001	-	-	-	-	-
Stage 2	1000	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	4.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	990	1568	-
HCM Lane V/C Ratio	-	-	0.026	0.005	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	29	721	460	10	14	25
Future Vol, veh/h	29	721	460	10	14	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	819	523	11	16	28

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	534	0	-	0	1414	267
Stage 1	-	-	-	-	529	-
Stage 2	-	-	-	-	885	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1032	-	-	-	140	732
Stage 1	-	-	-	-	556	-
Stage 2	-	-	-	-	402	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1032	-	-	-	136	732
Mov Cap-2 Maneuver	-	-	-	-	270	-
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	402	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1032	-	-	-	453
HCM Lane V/C Ratio	0.032	-	-	-	0.098
HCM Control Delay (s)	8.6	-	-	-	13.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	142.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	33	99	178	12	77	35	392	280	73	286	12
Future Vol, veh/h	33	33	99	178	12	77	35	392	280	73	286	12
Peak Hour Factor	0.92	0.92	0.92	0.86	0.92	0.86	0.92	0.86	0.86	0.86	0.86	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	36	108	207	13	90	38	456	326	85	333	13
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	18.6	19.3	269.1	42.7
HCM LOS	C	C	F	E

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	5%	20%	100%	0%	20%
Vol Thru, %	55%	20%	0%	13%	77%
Vol Right, %	40%	60%	0%	87%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	707	165	178	89	371
LT Vol	35	33	178	0	73
Through Vol	392	33	0	12	286
RT Vol	280	99	0	77	12
Lane Flow Rate	819	179	207	103	430
Geometry Grp	2	5	7	7	2
Degree of Util (X)	1.536	0.401	0.501	0.217	0.852
Departure Headway (Hd)	6.749	9.42	9.862	8.707	8.093
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	541	386	368	415	452
Service Time	4.796	7.42	7.562	6.407	6.093
HCM Lane V/C Ratio	1.514	0.464	0.563	0.248	0.951
HCM Control Delay	269.1	18.6	22.1	13.8	42.7
HCM Lane LOS	F	C	C	B	E
HCM 95th-tile Q	42.6	1.9	2.7	0.8	8.5

Intersection	
Int Delay, s/veh	12.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↕	
Traffic Vol, veh/h	53	0	11	33	0	19	7	726	12	7	521	38
Future Vol, veh/h	53	0	11	33	0	19	7	726	12	7	521	38
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	92	78	92	92	92	78	78	92	92	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	68	0	14	36	0	21	9	931	13	8	668	49

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1677	1673	362	1307	1691	938	719	0	0	944	0	0
Stage 1	711	711	-	956	956	-	-	-	-	-	-	-
Stage 2	966	962	-	351	735	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	68	95	635	127	93	320	880	-	-	725	-	-
Stage 1	391	435	-	309	336	-	-	-	-	-	-	-
Stage 2	305	333	-	639	425	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 62	91	633	120	89	320	878	-	-	725	-	-
Mov Cap-2 Maneuver	~ 62	91	-	120	89	-	-	-	-	-	-	-
Stage 1	382	426	-	302	329	-	-	-	-	-	-	-
Stage 2	279	326	-	612	416	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	242.6	40.6	0.1	0.2
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	878	-	-	73	156	725	-	-
HCM Lane V/C Ratio	0.01	-	-	1.124	0.362	0.01	-	-
HCM Control Delay (s)	9.1	0	-	242.6	40.6	10	0.1	-
HCM Lane LOS	A	A	-	F	E	B	A	-
HCM 95th %tile Q(veh)	0	-	-	6.1	1.5	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	194.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	256	462	16	26	221	168	31	314	39	59	287	217
Future Vol, veh/h	256	462	16	26	221	168	31	314	39	59	287	217
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	298	537	19	30	257	195	36	365	45	69	334	252
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	2
HCM Control Delay	245.7	266.8	234.2	47.7
HCM LOS	F	F	F	E

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	8%	100%	0%	6%	100%	0%	0%
Vol Thru, %	82%	0%	97%	53%	0%	100%	0%
Vol Right, %	10%	0%	3%	40%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	384	256	478	415	59	287	217
LT Vol	31	256	0	26	59	0	0
Through Vol	314	0	462	221	0	287	0
RT Vol	39	0	16	168	0	0	217
Lane Flow Rate	447	298	556	483	69	334	252
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	1.4	0.924	1.645	1.483	0.195	0.902	0.633
Departure Headway (Hd)	13.249	13.675	13.114	12.784	12.567	12.035	11.29
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	277	268	283	290	287	304	323
Service Time	10.949	11.375	10.814	10.484	10.267	9.735	8.99
HCM Lane V/C Ratio	1.614	1.112	1.965	1.666	0.24	1.099	0.78
HCM Control Delay	234.2	76.6	336.3	266.8	18.3	66	31.6
HCM Lane LOS	F	F	F	F	C	F	D
HCM 95th-tile Q	20.5	8.4	28.1	23.6	0.7	8.4	4.1

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	69	7	5	56	8	3
Future Vol, veh/h	69	7	5	56	8	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	46	46	46	46	46	46
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	150	15	11	122	17	7

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	113	72	0	0	133	0
Stage 1	72	-	-	-	-	-
Stage 2	41	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	884	990	-	-	1452	-
Stage 1	951	-	-	-	-	-
Stage 2	981	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	873	990	-	-	1452	-
Mov Cap-2 Maneuver	873	-	-	-	-	-
Stage 1	951	-	-	-	-	-
Stage 2	969	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	5.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	883	1452	-
HCM Lane V/C Ratio	-	-	0.187	0.012	-
HCM Control Delay (s)	-	-	10	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	76	620	564	18	11	74
Future Vol, veh/h	76	620	564	18	11	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	99	805	732	23	14	96

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	755	0	-	0	1747	378
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	1003	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	853	-	-	-	85	621
Stage 1	-	-	-	-	432	-
Stage 2	-	-	-	-	354	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	853	-	-	-	75	621
Mov Cap-2 Maneuver	-	-	-	-	202	-
Stage 1	-	-	-	-	382	-
Stage 2	-	-	-	-	354	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	14.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	853	-	-	-	490
HCM Lane V/C Ratio	0.116	-	-	-	0.225
HCM Control Delay (s)	9.8	-	-	-	14.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.9

Intersection	
Intersection Delay, s/veh	142.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	27	27	81	152	32	57	95	269	204	73	307	32
Future Vol, veh/h	27	27	81	152	32	57	95	269	204	73	307	32
Peak Hour Factor	0.92	0.92	0.92	0.70	0.92	0.70	0.92	0.70	0.70	0.70	0.70	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	29	88	217	35	81	103	384	291	104	439	35
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	18.1	20.4	244.4	106.9
HCM LOS	C	C	F	F

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	17%	20%	100%	0%	18%
Vol Thru, %	47%	20%	0%	36%	75%
Vol Right, %	36%	60%	0%	64%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	568	135	152	89	412
LT Vol	95	27	152	0	73
Through Vol	269	27	0	32	307
RT Vol	204	81	0	57	32
Lane Flow Rate	779	147	217	116	578
Geometry Grp	2	5	7	7	2
Degree of Util (X)	1.475	0.344	0.532	0.254	1.121
Departure Headway (Hd)	7.206	9.995	9.963	8.97	7.913
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	514	362	365	403	462
Service Time	5.206	7.995	7.663	6.67	5.913
HCM Lane V/C Ratio	1.516	0.406	0.595	0.288	1.251
HCM Control Delay	244.4	18.1	23.4	14.7	106.9
HCM Lane LOS	F	C	C	B	F
HCM 95th-tile Q	37.1	1.5	3	1	17.7

Intersection	
Int Delay, s/veh	12.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	24	0	48	27	0	15	53	548	32	18	467	42
Future Vol, veh/h	24	0	48	27	0	15	53	548	32	18	467	42
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	116
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	92	70	92	92	92	70	70	92	92	70	70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	34	0	69	29	0	16	76	783	35	20	667	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1814	1823	481	1328	1836	801	843	0	0	818	0	0
Stage 1	853	853	-	953	953	-	-	-	-	-	-	-
Stage 2	961	970	-	375	883	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	54	77	532	122	75	384	791	-	-	808	-	-
Stage 1	321	375	-	310	337	-	-	-	-	-	-	-
Stage 2	307	331	-	619	363	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	38	53	473	86	51	384	704	-	-	808	-	-
Mov Cap-2 Maneuver	38	53	-	86	51	-	-	-	-	-	-	-
Stage 1	229	320	-	248	270	-	-	-	-	-	-	-
Stage 2	235	265	-	507	310	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	185.1	53	0.9	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	704	-	-	98	119	808	-	-
HCM Lane V/C Ratio	0.108	-	-	1.05	0.384	0.024	-	-
HCM Control Delay (s)	10.7	0	-	185.1	53	9.6	0.2	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	6.5	1.6	0.1	-	-

Intersection	
Intersection Delay, s/veh	254.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	194	400	38	37	330	141	54	286	29	73	313	196
Future Vol, veh/h	194	400	38	37	330	141	54	286	29	73	313	196
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	240	494	47	46	407	174	67	353	36	90	386	242
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	2
HCM Control Delay	245.4	472.6	256.5	71.5
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	15%	100%	0%	7%	100%	0%	0%
Vol Thru, %	78%	0%	91%	65%	0%	100%	0%
Vol Right, %	8%	0%	9%	28%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	369	194	438	508	73	313	196
LT Vol	54	194	0	37	73	0	0
Through Vol	286	0	400	330	0	313	0
RT Vol	29	0	38	141	0	0	196
Lane Flow Rate	456	240	541	627	90	386	242
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	1.444	0.755	1.62	1.958	0.256	1.044	0.607
Departure Headway (Hd)	14.525	15.239	14.631	13.261	14.138	13.602	12.852
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	255	240	254	282	256	270	283
Service Time	12.225	12.939	12.331	10.961	11.838	11.302	10.552
HCM Lane V/C Ratio	1.788	1	2.13	2.223	0.352	1.43	0.855
HCM Control Delay	256.5	53.5	330.4	472.6	21.6	106.8	33.6
HCM Lane LOS	F	F	F	F	C	F	D
HCM 95th-tile Q	20.4	5.3	25	37.8	1	10.9	3.7

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	3	3	6	5	0
Future Vol, veh/h	10	3	3	6	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	54	54	54	54	54	54
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	6	6	11	9	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	30	12	0	0	17	0
Stage 1	12	-	-	-	-	-
Stage 2	18	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	984	1069	-	-	1600	-
Stage 1	1011	-	-	-	-	-
Stage 2	1005	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	978	1069	-	-	1600	-
Mov Cap-2 Maneuver	978	-	-	-	-	-
Stage 1	1011	-	-	-	-	-
Stage 2	999	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	998	1600	-
HCM Lane V/C Ratio	-	-	0.024	0.006	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	24	622	614	15	12	16
Future Vol, veh/h	24	622	614	15	12	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	655	646	16	13	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	662	0	-	0	1359	331
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	705	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	925	-	-	-	151	666
Stage 1	-	-	-	-	480	-
Stage 2	-	-	-	-	489	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	925	-	-	-	147	666
Mov Cap-2 Maneuver	-	-	-	-	285	-
Stage 1	-	-	-	-	467	-
Stage 2	-	-	-	-	489	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	925	-	-	-	423
HCM Lane V/C Ratio	0.027	-	-	-	0.07
HCM Control Delay (s)	9	-	-	-	14.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Intersection Delay, s/veh	28.3
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	22	66	60	38	36	113	268	76	76	377	38
Future Vol, veh/h	22	22	66	60	38	36	113	268	76	76	377	38
Peak Hour Factor	0.92	0.92	0.92	0.91	0.92	0.91	0.92	0.91	0.91	0.91	0.91	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	24	72	66	41	40	123	295	84	84	414	41
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	12.4	12	28.9	35.7
HCM LOS	B	B	D	E

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	25%	20%	100%	0%	15%
Vol Thru, %	59%	20%	0%	51%	77%
Vol Right, %	17%	60%	0%	49%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	457	110	60	74	491
LT Vol	113	22	60	0	76
Through Vol	268	22	0	38	377
RT Vol	76	66	0	36	38
Lane Flow Rate	501	120	66	81	539
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.808	0.236	0.151	0.166	0.871
Departure Headway (Hd)	5.807	7.114	8.252	7.385	5.816
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	621	503	434	484	625
Service Time	3.852	5.185	6.017	5.151	3.816
HCM Lane V/C Ratio	0.807	0.239	0.152	0.167	0.862
HCM Control Delay	28.9	12.4	12.5	11.6	35.7
HCM Lane LOS	D	B	B	B	E
HCM 95th-tile Q	8.1	0.9	0.5	0.6	10.1

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	4	22	0	13	3	464	37	21	486	7
Future Vol, veh/h	4	0	4	22	0	13	3	464	37	21	486	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	92	83	92	92	92	83	83	92	92	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	5	24	0	14	4	559	40	23	586	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1230	1243	297	926	1227	579	594	0	0	599	0	0
Stage 1	636	636	-	587	587	-	-	-	-	-	-	-
Stage 2	594	607	-	339	640	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	144	174	700	236	178	514	980	-	-	976	-	-
Stage 1	433	471	-	495	496	-	-	-	-	-	-	-
Stage 2	490	485	-	650	469	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	136	167	700	227	171	514	980	-	-	976	-	-
Mov Cap-2 Maneuver	136	167	-	227	171	-	-	-	-	-	-	-
Stage 1	430	455	-	492	493	-	-	-	-	-	-	-
Stage 2	474	482	-	623	453	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.5	19.5	0.1	0.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	980	-	-	228	286	976	-	-
HCM Lane V/C Ratio	0.004	-	-	0.042	0.133	0.023	-	-
HCM Control Delay (s)	8.7	0	-	21.5	19.5	8.8	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.5	0.1	-	-

Intersection	
Intersection Delay, s/veh	246
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	162	425	46	39	449	57	44	295	28	44	343	135
Future Vol, veh/h	162	425	46	39	449	57	44	295	28	44	343	135
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	186	489	53	45	516	66	51	339	32	51	394	155
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	2
HCM Control Delay	239	447.6	193.7	80.6
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	12%	100%	0%	7%	100%	0%	0%
Vol Thru, %	80%	0%	90%	82%	0%	100%	0%
Vol Right, %	8%	0%	10%	10%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	367	162	471	545	44	343	135
LT Vol	44	162	0	39	44	0	0
Through Vol	295	0	425	449	0	343	0
RT Vol	28	0	46	57	0	0	135
Lane Flow Rate	422	186	541	626	51	394	155
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	1.287	0.572	1.577	1.903	0.144	1.065	0.389
Departure Headway (Hd)	14.447	14.339	13.725	12.926	13.711	13.176	12.427
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	257	253	271	288	263	280	292
Service Time	12.147	12.039	11.425	10.626	11.411	10.876	10.127
HCM Lane V/C Ratio	1.642	0.735	1.996	2.174	0.194	1.407	0.531
HCM Control Delay	193.7	34.6	309.3	447.6	18.7	111.3	22.8
HCM Lane LOS	F	D	F	F	C	F	C
HCM 95th-tile Q	16.3	3.2	25.1	36.8	0.5	11.6	1.8

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APPENDIX 6.2: EAPC (2026) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	14	13	32	34	28
Future Vol, veh/h	15	14	13	32	34	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	17	16	39	41	34

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	152	36	0	0	55	0
Stage 1	36	-	-	-	-	-
Stage 2	116	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	840	1037	-	-	1550	-
Stage 1	986	-	-	-	-	-
Stage 2	909	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	817	1037	-	-	1550	-
Mov Cap-2 Maneuver	817	-	-	-	-	-
Stage 1	986	-	-	-	-	-
Stage 2	884	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	4.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	910	1550	-
HCM Lane V/C Ratio	-	-	0.039	0.027	-
HCM Control Delay (s)	-	-	9.1	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	36	721	460	14	18	45
Future Vol, veh/h	36	721	460	14	18	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	819	523	16	20	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	539	0	-	0	1432	270
Stage 1	-	-	-	-	531	-
Stage 2	-	-	-	-	901	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1027	-	-	-	136	729
Stage 1	-	-	-	-	555	-
Stage 2	-	-	-	-	395	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1027	-	-	-	131	729
Mov Cap-2 Maneuver	-	-	-	-	265	-
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	395	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1027	-	-	-	486
HCM Lane V/C Ratio	0.04	-	-	-	0.147
HCM Control Delay (s)	8.7	-	-	-	13.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection	
Intersection Delay, s/veh	160.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	33	99	179	12	77	35	416	284	73	294	12
Future Vol, veh/h	33	33	99	179	12	77	35	416	284	73	294	12
Peak Hour Factor	0.92	0.92	0.92	0.86	0.92	0.86	0.92	0.86	0.86	0.86	0.86	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	36	108	208	13	90	38	484	330	85	342	13
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	19	19.8	300.9	46.1
HCM LOS	C	C	F	E

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	5%	20%	100%	0%	19%
Vol Thru, %	57%	20%	0%	13%	78%
Vol Right, %	39%	60%	0%	87%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	735	165	179	89	379
LT Vol	35	33	179	0	73
Through Vol	416	33	0	12	294
RT Vol	284	99	0	77	12
Lane Flow Rate	852	179	208	103	440
Geometry Grp	2	5	7	7	2
Degree of Util (X)	1.609	0.404	0.506	0.218	0.872
Departure Headway (Hd)	6.8	9.632	10.022	8.865	8.227
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	537	377	362	407	444
Service Time	4.85	7.632	7.722	6.565	6.227
HCM Lane V/C Ratio	1.587	0.475	0.575	0.253	0.991
HCM Control Delay	300.9	19	22.6	14	46.1
HCM Lane LOS	F	C	C	B	E
HCM 95th-tile Q	46.8	1.9	2.7	0.8	9

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	28	0	826	567	8
Future Vol, veh/h	0	28	0	826	567	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	30	0	898	616	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	313	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	683	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	683	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	683	-	-
HCM Lane V/C Ratio	-	0.045	-	-
HCM Control Delay (s)	-	10.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	35.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	81	0	11	33	0	19	14	726	12	7	549	39
Future Vol, veh/h	81	0	11	33	0	19	14	726	12	7	549	39
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	92	78	92	92	92	78	78	92	92	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	104	0	14	36	0	21	18	931	13	8	704	50

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1731	1727	380	1343	1746	938	756	0	0	944	0	0
Stage 1	747	747	-	974	974	-	-	-	-	-	-	-
Stage 2	984	980	-	369	772	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	~ 63	88	619	119	86	320	853	-	-	725	-	-
Stage 1	372	419	-	302	329	-	-	-	-	-	-	-
Stage 2	298	327	-	624	408	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 56	82	617	111	80	320	851	-	-	725	-	-
Mov Cap-2 Maneuver	~ 56	82	-	111	80	-	-	-	-	-	-	-
Stage 1	355	410	-	288	314	-	-	-	-	-	-	-
Stage 2	266	312	-	598	399	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s$	552.8	44.4	0.2	0.2
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	851	-	-	63	146	725	-	-
HCM Lane V/C Ratio	0.021	-	-	1.872	0.387	0.01	-	-
HCM Control Delay (s)	9.3	0	-	$ 552.8	44.4	10	0.1	-
HCM Lane LOS	A	A	-	F	E	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	10.9	1.7	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	204.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	256	462	20	26	224	169	32	320	39	71	303	217
Future Vol, veh/h	256	462	20	26	224	169	32	320	39	71	303	217
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	298	537	23	30	260	197	37	372	45	83	352	252
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	2
HCM Control Delay	255.9	281.2	252.4	53.2
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	8%	100%	0%	6%	100%	0%	0%
Vol Thru, %	82%	0%	96%	53%	0%	100%	0%
Vol Right, %	10%	0%	4%	40%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	391	256	482	419	71	303	217
LT Vol	32	256	0	26	71	0	0
Through Vol	320	0	462	224	0	303	0
RT Vol	39	0	20	169	0	0	217
Lane Flow Rate	455	298	560	487	83	352	252
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	1.443	0.933	1.674	1.516	0.234	0.948	0.629
Departure Headway (Hd)	13.419	13.956	13.388	12.974	12.752	12.219	11.474
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	277	262	275	283	283	299	318
Service Time	11.119	11.656	11.088	10.674	10.452	9.919	9.174
HCM Lane V/C Ratio	1.643	1.137	2.036	1.721	0.293	1.177	0.792
HCM Control Delay	252.4	79.6	349.6	281.2	19.3	76.4	31.8
HCM Lane LOS	F	F	F	F	C	F	D
HCM 95th-tile Q	21.6	8.5	28.6	24.4	0.9	9.3	4

Intersection	
Int Delay, s/veh	6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	69	30	35	56	31	23
Future Vol, veh/h	69	30	35	56	31	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	46	46	46	46	46	46
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	150	65	76	122	67	50

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	321	137	0	0	198	0
Stage 1	137	-	-	-	-	-
Stage 2	184	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	673	911	-	-	1375	-
Stage 1	890	-	-	-	-	-
Stage 2	848	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	639	911	-	-	1375	-
Mov Cap-2 Maneuver	639	-	-	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	806	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	4.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	703	1375	-
HCM Lane V/C Ratio	-	-	0.306	0.049	-
HCM Control Delay (s)	-	-	12.4	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.2	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	95	620	564	29	14	90
Future Vol, veh/h	95	620	564	29	14	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	123	805	732	38	18	117

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	770	0	-	0	1802	385
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	1051	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	842	-	-	-	79	614
Stage 1	-	-	-	-	428	-
Stage 2	-	-	-	-	335	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	842	-	-	-	67	614
Mov Cap-2 Maneuver	-	-	-	-	190	-
Stage 1	-	-	-	-	366	-
Stage 2	-	-	-	-	335	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	15.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	842	-	-	-	472
HCM Lane V/C Ratio	0.147	-	-	-	0.286
HCM Control Delay (s)	10	-	-	-	15.7
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.5	-	-	-	1.2

Intersection	
Intersection Delay, s/veh	165.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	27	27	81	156	32	57	95	289	207	73	330	32
Future Vol, veh/h	27	27	81	156	32	57	95	289	207	73	330	32
Peak Hour Factor	0.92	0.92	0.92	0.70	0.92	0.70	0.92	0.70	0.70	0.70	0.70	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	29	88	223	35	81	103	413	296	104	471	35
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	18.7	21.2	277.1	133.7
HCM LOS	C	C	F	F

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	16%	20%	100%	0%	17%
Vol Thru, %	49%	20%	0%	36%	76%
Vol Right, %	35%	60%	0%	64%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	591	135	156	89	435
LT Vol	95	27	156	0	73
Through Vol	289	27	0	32	330
RT Vol	207	81	0	57	32
Lane Flow Rate	812	147	223	116	610
Geometry Grp	2	5	7	7	2
Degree of Util (X)	1.55	0.346	0.546	0.254	1.194
Departure Headway (Hd)	7.353	10.355	10.173	9.178	8.062
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	503	349	357	394	458
Service Time	5.353	8.355	7.873	6.878	6.062
HCM Lane V/C Ratio	1.614	0.421	0.625	0.294	1.332
HCM Control Delay	277.1	18.7	24.5	15	133.7
HCM Lane LOS	F	C	C	B	F
HCM 95th-tile Q	40.7	1.5	3.1	1	20.6

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	23	0	611	532	23
Future Vol, veh/h	0	23	0	611	532	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	25	0	664	578	25

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	302	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	694	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	694	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	694	-	-
HCM Lane V/C Ratio	-	0.036	-	-
HCM Control Delay (s)	-	10.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	58.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	47	0	48	27	0	15	72	548	32	18	490	46
Future Vol, veh/h	47	0	48	27	0	15	72	548	32	18	490	46
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	116
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	92	70	92	92	92	70	70	92	92	70	70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	67	0	69	29	0	16	103	783	35	20	700	66

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1904	1913	500	1398	1929	801	882	0	0	818	0	0
Stage 1	889	889	-	1007	1007	-	-	-	-	-	-	-
Stage 2	1015	1024	-	391	922	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	~ 47	68	517	109	66	384	765	-	-	808	-	-
Stage 1	305	361	-	289	318	-	-	-	-	-	-	-
Stage 2	286	312	-	606	348	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 30	42	459	70	40	384	680	-	-	808	-	-
Mov Cap-2 Maneuver	~ 30	42	-	70	40	-	-	-	-	-	-	-
Stage 1	195	307	-	208	229	-	-	-	-	-	-	-
Stage 2	197	225	-	492	296	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 784.1	69.3	1.3	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	680	-	-	57	99	808	-	-
HCM Lane V/C Ratio	0.151	-	-	2.381	0.461	0.024	-	-
HCM Control Delay (s)	11.2	0	-	$ 784.1	69.3	9.6	0.2	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0.5	-	-	13.6	2	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	269.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	194	400	41	37	338	145	58	301	29	83	326	196
Future Vol, veh/h	194	400	41	37	338	145	58	301	29	83	326	196
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	240	494	51	46	417	179	72	372	36	102	402	242
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	2
HCM Control Delay	251.3	496.6	290.6	79.9
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	15%	100%	0%	7%	100%	0%	0%
Vol Thru, %	78%	0%	91%	65%	0%	100%	0%
Vol Right, %	7%	0%	9%	28%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	388	194	441	520	83	326	196
LT Vol	58	194	0	37	83	0	0
Through Vol	301	0	400	338	0	326	0
RT Vol	29	0	41	145	0	0	196
Lane Flow Rate	479	240	544	642	102	402	242
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	1.525	0.756	1.634	2.011	0.291	1.088	0.607
Departure Headway (Hd)	14.71	15.693	15.079	13.519	14.558	14.021	13.269
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	254	232	245	276	249	262	276
Service Time	12.41	13.393	12.779	11.219	12.258	11.721	10.969
HCM Lane V/C Ratio	1.886	1.034	2.22	2.326	0.41	1.534	0.877
HCM Control Delay	290.6	54.9	337.7	496.6	23.1	121.7	34.5
HCM Lane LOS	F	F	F	F	C	F	D
HCM 95th-tile Q	22.3	5.3	24.8	38.8	1.2	11.7	3.6

Intersection	
Int Delay, s/veh	4.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	30	39	6	24	16
Future Vol, veh/h	10	30	39	6	24	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	54	54	54	54	54	54
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	56	72	11	44	30

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	196	78	0	0	83	0
Stage 1	78	-	-	-	-	-
Stage 2	118	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	793	983	-	-	1514	-
Stage 1	945	-	-	-	-	-
Stage 2	907	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	769	983	-	-	1514	-
Mov Cap-2 Maneuver	769	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	880	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	4.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	919	1514	-
HCM Lane V/C Ratio	-	-	0.081	0.029	-
HCM Control Delay (s)	-	-	9.3	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	47	622	614	29	15	29
Future Vol, veh/h	47	622	614	29	15	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	655	646	31	16	31

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	677	0	-	0	1415	339
Stage 1	-	-	-	-	662	-
Stage 2	-	-	-	-	753	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	913	-	-	-	139	658
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	464	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	913	-	-	-	131	658
Mov Cap-2 Maneuver	-	-	-	-	268	-
Stage 1	-	-	-	-	450	-
Stage 2	-	-	-	-	464	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	913	-	-	-	440
HCM Lane V/C Ratio	0.054	-	-	-	0.105
HCM Control Delay (s)	9.2	-	-	-	14.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	34.8
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	22	66	65	38	36	113	284	79	76	404	38
Future Vol, veh/h	22	22	66	65	38	36	113	284	79	76	404	38
Peak Hour Factor	0.92	0.92	0.92	0.91	0.92	0.91	0.92	0.91	0.91	0.91	0.91	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	24	72	71	41	40	123	312	87	84	444	41
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	12.8	12.4	34.8	45.4
HCM LOS	B	B	D	E

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	24%	20%	100%	0%	15%
Vol Thru, %	60%	20%	0%	51%	78%
Vol Right, %	17%	60%	0%	49%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	476	110	65	74	518
LT Vol	113	22	65	0	76
Through Vol	284	22	0	38	404
RT Vol	79	66	0	36	38
Lane Flow Rate	522	120	71	81	569
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.859	0.244	0.167	0.17	0.93
Departure Headway (Hd)	5.928	7.341	8.441	7.573	5.886
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	610	488	424	472	614
Service Time	3.978	5.416	6.208	5.339	3.934
HCM Lane V/C Ratio	0.856	0.246	0.167	0.172	0.927
HCM Control Delay	34.8	12.8	12.9	11.9	45.4
HCM Lane LOS	D	B	B	B	E
HCM 95th-tile Q	9.6	0.9	0.6	0.6	12.1

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	19	0	499	520	27
Future Vol, veh/h	0	19	0	499	520	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	21	0	542	565	29

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	297	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	699	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	699	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	699	-	-
HCM Lane V/C Ratio	-	0.03	-	-
HCM Control Delay (s)	-	10.3	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	23	0	4	22	0	13	26	464	37	21	505	12
Future Vol, veh/h	23	0	4	22	0	13	26	464	37	21	505	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	92	83	92	92	92	83	83	92	92	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	0	5	24	0	14	31	559	40	23	608	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1309	1322	311	991	1309	579	622	0	0	599	0	0
Stage 1	661	661	-	641	641	-	-	-	-	-	-	-
Stage 2	648	661	-	350	668	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	126	156	686	212	159	514	957	-	-	976	-	-
Stage 1	419	459	-	462	469	-	-	-	-	-	-	-
Stage 2	458	459	-	640	455	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	115	143	686	197	146	514	957	-	-	976	-	-
Mov Cap-2 Maneuver	115	143	-	197	146	-	-	-	-	-	-	-
Stage 1	398	442	-	439	446	-	-	-	-	-	-	-
Stage 2	424	437	-	613	439	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	41.3	21.5	0.4	0.4
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	957	-	-	131	256	976	-	-
HCM Lane V/C Ratio	0.033	-	-	0.248	0.149	0.023	-	-
HCM Control Delay (s)	8.9	0	-	41.3	21.5	8.8	0.1	-
HCM Lane LOS	A	A	-	E	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.5	0.1	-	-

Intersection	
Intersection Delay, s/veh	261.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	162	425	49	39	458	62	49	313	28	52	354	135
Future Vol, veh/h	162	425	49	39	458	62	49	313	28	52	354	135
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	186	489	56	45	526	71	56	360	32	60	407	155
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	2
HCM Control Delay	244.7	472.5	228.2	87.4
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	13%	100%	0%	7%	100%	0%	0%
Vol Thru, %	80%	0%	90%	82%	0%	100%	0%
Vol Right, %	7%	0%	10%	11%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	390	162	474	559	52	354	135
LT Vol	49	162	0	39	52	0	0
Through Vol	313	0	425	458	0	354	0
RT Vol	28	0	49	62	0	0	135
Lane Flow Rate	448	186	545	643	60	407	155
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	1.373	0.573	1.59	1.958	0.169	1.093	0.387
Departure Headway (Hd)	14.663	14.792	14.172	13.211	14.141	13.605	12.855
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	251	246	262	283	255	273	282
Service Time	12.363	12.492	11.872	10.911	11.841	11.305	10.555
HCM Lane V/C Ratio	1.785	0.756	2.08	2.272	0.235	1.491	0.55
HCM Control Delay	228.2	35.6	316.2	472.5	19.7	121.7	23.4
HCM Lane LOS	F	E	F	F	C	F	C
HCM 95th-tile Q	18.3	3.2	24.8	37.9	0.6	12.1	1.8

APPENDIX 6.3: EAC (2026) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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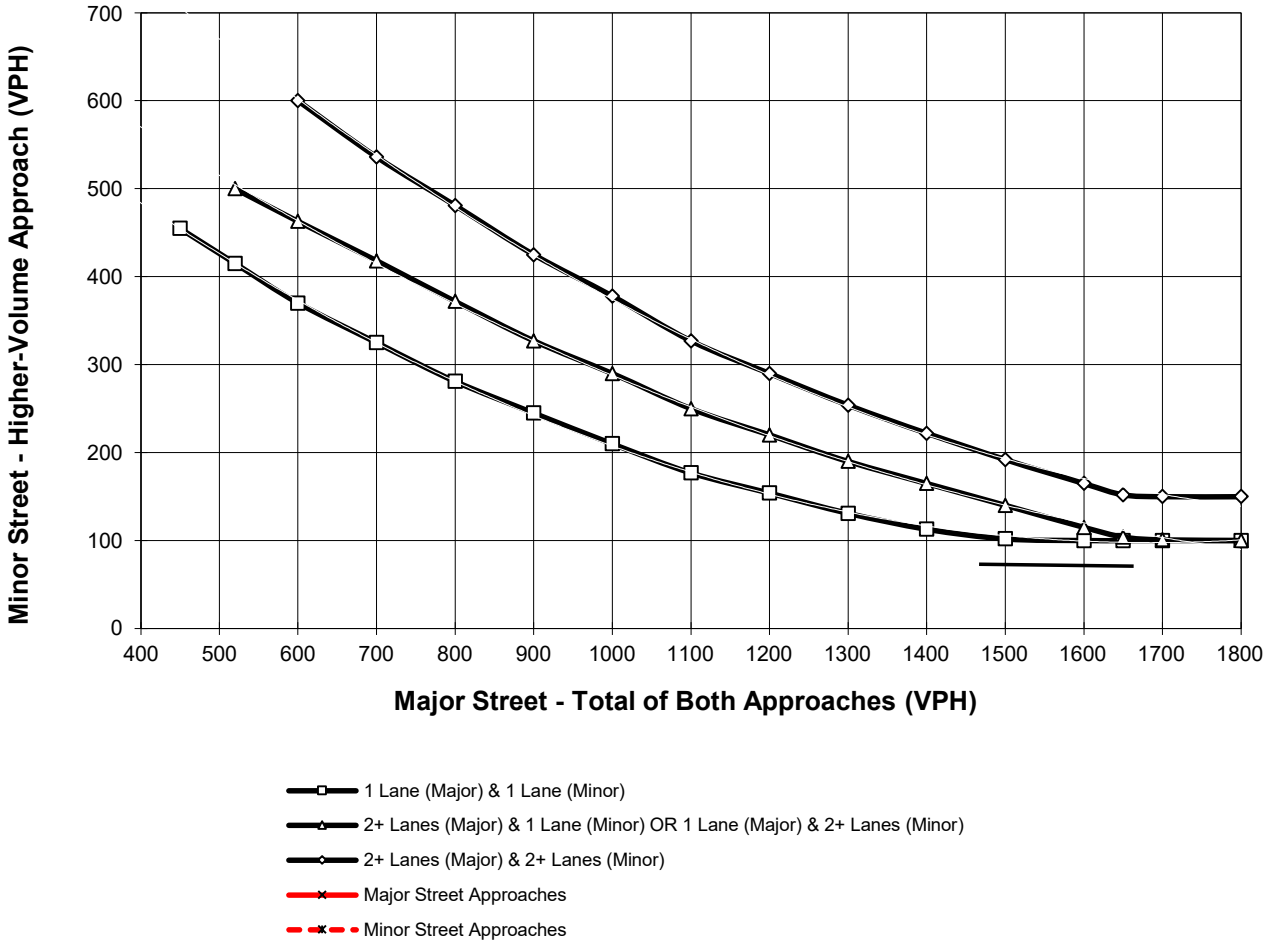
Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **EAC (2026) Conditions - Weekday MD Peak Hour**

Major Street Name = **Appaloosa Dr.**
Total of Both Approaches (VPH) = **77**
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Lipizzan Dr.**
High Volume Approach (VPH) = **62**
Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

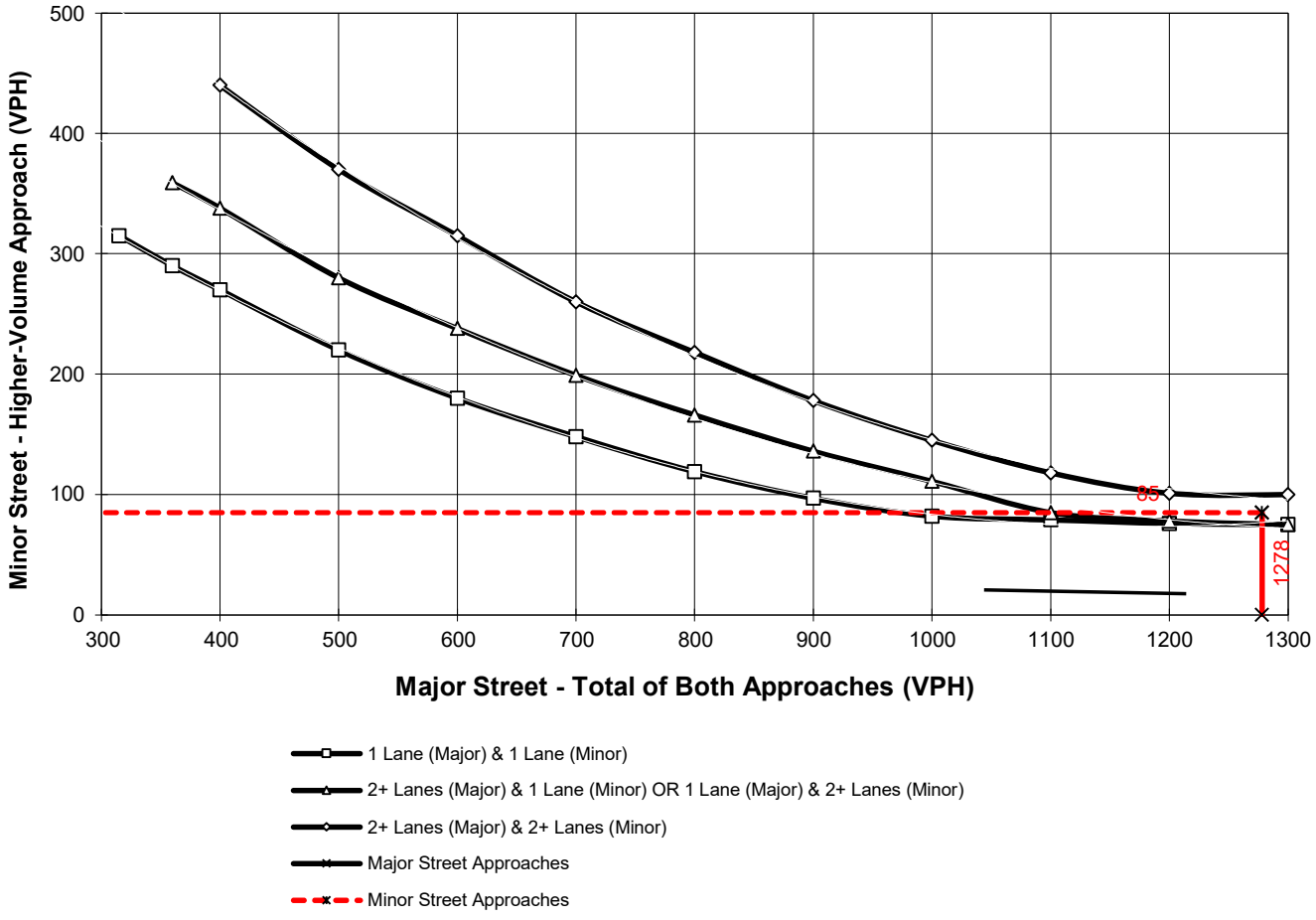
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **EAC (2026) Conditions - Weekday MD Peak Hour**

Major Street Name = **Cottonwood Av.**
Total of Both Approaches (VPH) = **1278**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Lipizzan Dr.**
High Volume Approach (VPH) = **85**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

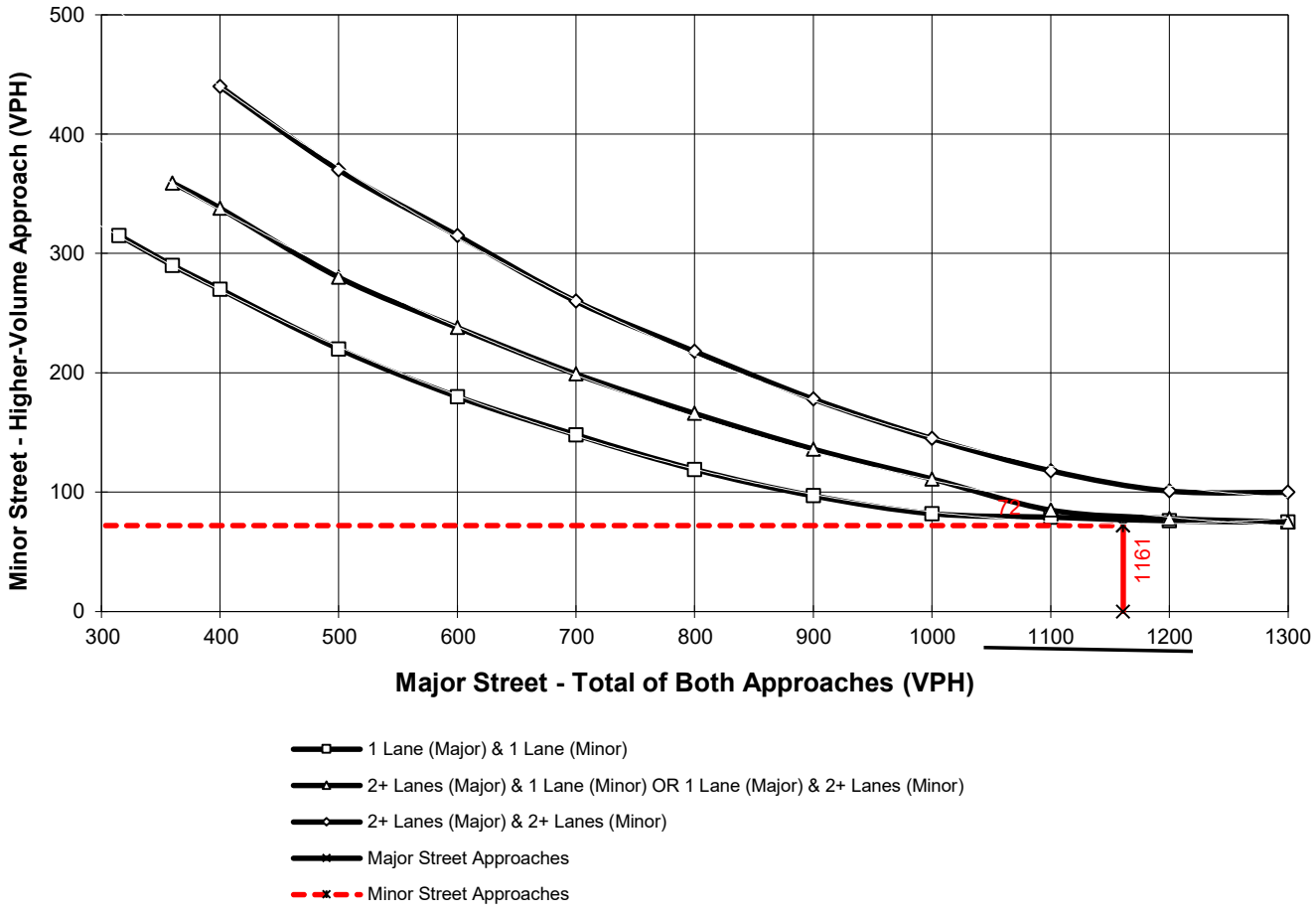
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **EAC (2026) Conditions - Weekday MD Peak Hour**

Major Street Name = **Lyon Av.**
Total of Both Approaches (VPH) = **1161**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Appaloosa Dr.**
High Volume Approach (VPH) = **72**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

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APPENDIX 6.4: EAPC (2026) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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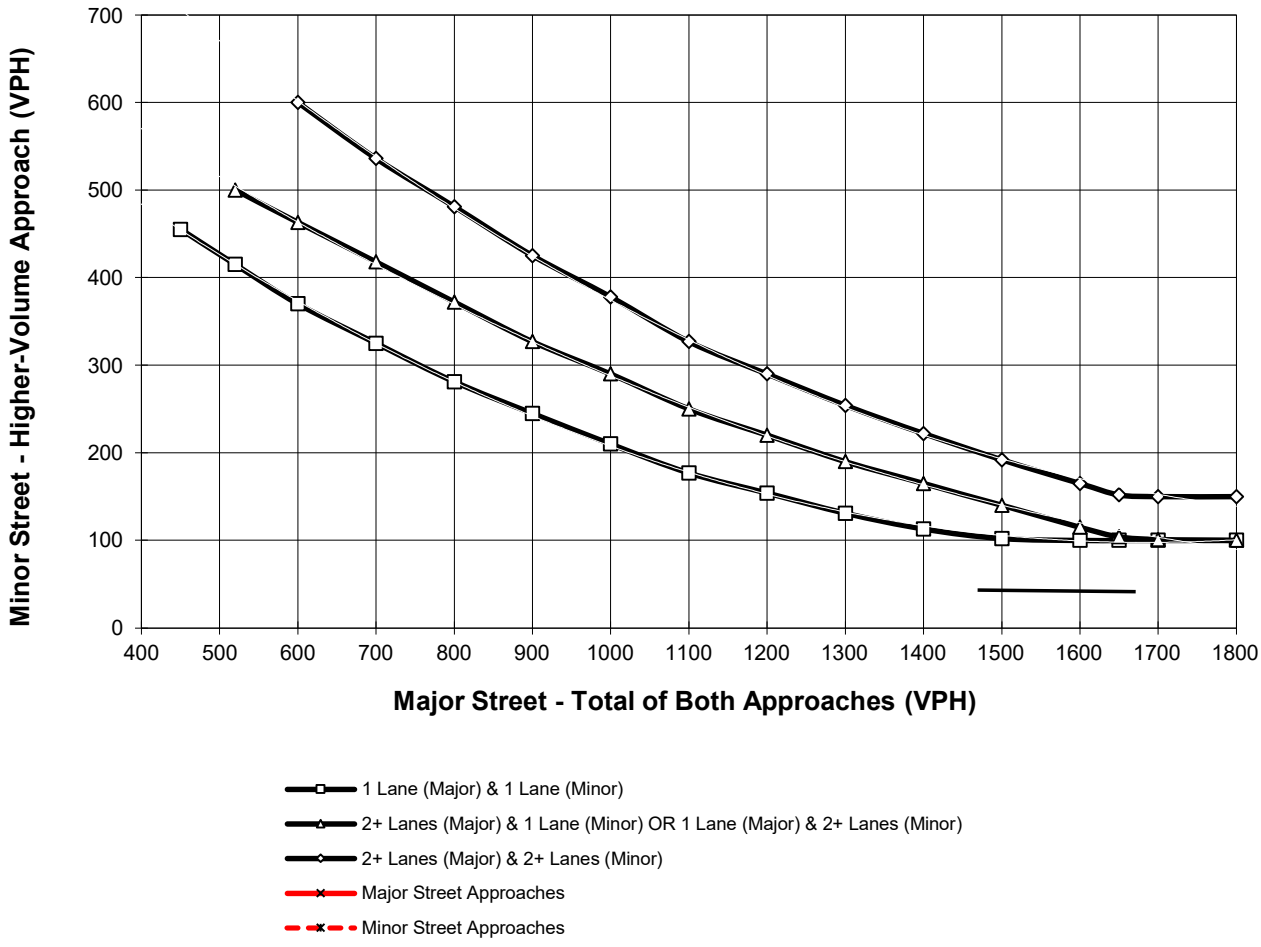
Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **EAPC (2026) Conditions - Weekday MD Peak Hour**

Major Street Name = **Lipizzan Dr.**
Total of Both Approaches (VPH) = **146**
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Appaloosa Dr.**
High Volume Approach (VPH) = **99**
Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

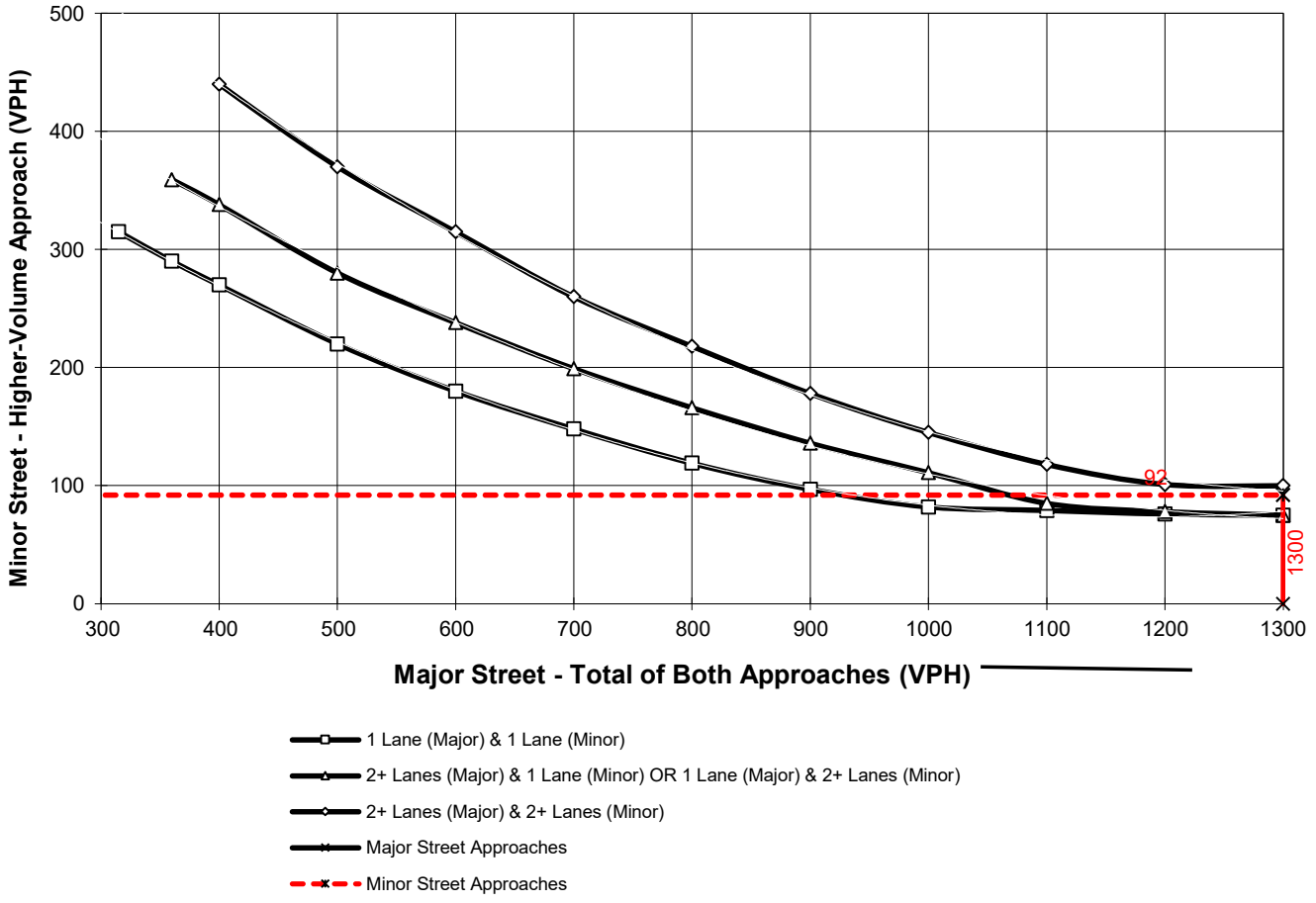
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **EAPC (2026) Conditions - Weekday AM Peak Hour**

Major Street Name = **Lyon Av.**
Total of Both Approaches (VPH) = **1347**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Appaloosa Dr.**
High Volume Approach (VPH) = **92**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

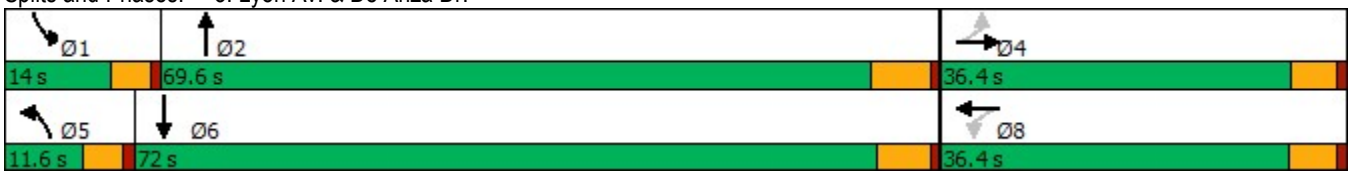
APPENDIX 6.5: EAPC (2026) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS WITH IMPROVEMENTS

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Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	33	33	179	12	35	416	73	294
Future Volume (vph)	33	33	179	12	35	416	73	294
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	23.1	23.1	23.4	23.4	9.6	24.2	9.6	23.8
Total Split (s)	36.4	36.4	36.4	36.4	11.6	69.6	14.0	72.0
Total Split (%)	30.3%	30.3%	30.3%	30.3%	9.7%	58.0%	11.7%	60.0%
Yellow Time (s)	4.1	4.1	4.4	4.4	3.6	5.2	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.4	5.4	4.6	6.2	4.6	5.8
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	None	Min
Act Effct Green (s)		25.8	25.5	25.5	7.0	51.8	9.0	56.4
Actuated g/C Ratio		0.26	0.26	0.26	0.07	0.52	0.09	0.56
v/c Ratio		0.40	0.78	0.22	0.31	0.88	0.53	0.34
Control Delay		26.0	60.0	11.0	59.5	33.9	63.8	14.1
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		26.0	60.0	11.0	59.5	33.9	63.8	14.1
LOS		C	E	B	E	C	E	B
Approach Delay		26.0		43.8		35.1		23.7
Approach LOS		C		D		D		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 100	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 32.9	Intersection LOS: C
Intersection Capacity Utilization 80.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Lyon Av. & De Anza Dr.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	33	99	179	12	77	35	416	284	73	294	12
Future Volume (veh/h)	33	33	99	179	12	77	35	416	284	73	294	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	36	36	108	208	13	90	38	484	307	85	342	13
Peak Hour Factor	0.92	0.92	0.92	0.86	0.92	0.86	0.92	0.86	0.86	0.86	0.86	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	96	209	344	44	306	65	545	346	110	957	36
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.04	0.51	0.51	0.06	0.53	0.53
Sat Flow, veh/h	199	444	965	1244	204	1412	1781	1070	679	1781	1790	68
Grp Volume(v), veh/h	180	0	0	208	0	103	38	0	791	85	0	355
Grp Sat Flow(s),veh/h/ln	1608	0	0	1244	0	1616	1781	0	1748	1781	0	1858
Q Serve(g_s), s	1.2	0.0	0.0	6.2	0.0	4.1	1.6	0.0	31.0	3.6	0.0	8.4
Cycle Q Clear(g_c), s	7.2	0.0	0.0	13.5	0.0	4.1	1.6	0.0	31.0	3.6	0.0	8.4
Prop In Lane	0.20		0.60	1.00		0.87	1.00		0.39	1.00		0.04
Lane Grp Cap(c), veh/h	405	0	0	344	0	351	65	0	890	110	0	994
V/C Ratio(X)	0.44	0.00	0.00	0.60	0.00	0.29	0.59	0.00	0.89	0.77	0.00	0.36
Avail Cap(c_a), veh/h	707	0	0	579	0	656	163	0	1451	219	0	1611
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	0.0	29.0	0.0	25.0	36.2	0.0	16.8	35.3	0.0	10.2
Incr Delay (d2), s/veh	0.8	0.0	0.0	1.7	0.0	0.5	8.3	0.0	4.3	10.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0	3.6	0.0	1.5	0.8	0.0	10.6	1.8	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.0	0.0	0.0	30.7	0.0	25.5	44.5	0.0	21.1	46.2	0.0	10.4
LnGrp LOS	C	A	A	C	A	C	D	A	C	D	A	B
Approach Vol, veh/h		180			311			829			440	
Approach Delay, s/veh		27.0			29.0			22.1			17.4	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	45.1		22.0	7.4	47.0		22.0				
Change Period (Y+Rc), s	4.6	6.2		* 5.4	4.6	* 6.2		5.4				
Max Green Setting (Gmax), s	9.4	63.4		* 31	7.0	* 66		31.0				
Max Q Clear Time (g_c+I1), s	5.6	33.0		9.2	3.6	10.4		15.5				
Green Ext Time (p_c), s	0.0	5.9		1.0	0.0	2.1		1.1				

Intersection Summary			
HCM 6th Ctrl Delay		22.6	
HCM 6th LOS		C	

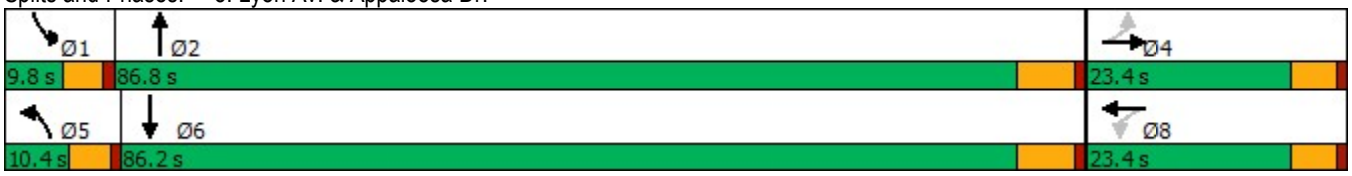
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	81	0	33	0	14	726	7	549
Future Volume (vph)	81	0	33	0	14	726	7	549
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	23.1	23.1	23.1	23.1	9.6	24.2	9.6	24.2
Total Split (s)	23.4	23.4	23.4	23.4	10.4	86.8	9.8	86.2
Total Split (%)	19.5%	19.5%	19.5%	19.5%	8.7%	72.3%	8.2%	71.8%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.6	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1		5.1	4.6	6.2	4.6	6.2
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	None	Min
Act Effct Green (s)		11.9		11.9	5.8	43.1	5.5	43.0
Actuated g/C Ratio		0.17		0.17	0.08	0.63	0.08	0.63
v/c Ratio		0.41		0.19	0.12	0.81	0.06	0.34
Control Delay		20.3		8.8	40.5	16.4	40.9	6.4
Queue Delay		0.0		0.0	0.0	0.2	0.0	0.0
Total Delay		20.3		8.8	40.5	16.6	40.9	6.4
LOS		C		A	D	B	D	A
Approach Delay		20.3		8.8		17.0		6.8
Approach LOS		C		A		B		A

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 68.5	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 12.9	Intersection LOS: B
Intersection Capacity Utilization 56.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: Lyon Av. & Appaloosa Dr.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	81	0	11	33	0	19	14	726	12	7	549	39
Future Volume (veh/h)	81	0	11	33	0	19	14	726	12	7	549	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	104	0	14	36	0	21	18	931	13	8	704	50
Peak Hour Factor	0.78	0.92	0.78	0.92	0.92	0.92	0.78	0.78	0.92	0.92	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	299	7	27	228	20	90	38	1077	15	18	1933	137
Arrive On Green	0.15	0.00	0.15	0.15	0.00	0.15	0.02	0.59	0.59	0.01	0.57	0.57
Sat Flow, veh/h	1261	45	176	885	133	594	1781	1840	26	1781	3365	239
Grp Volume(v), veh/h	118	0	0	57	0	0	18	0	944	8	372	382
Grp Sat Flow(s),veh/h/ln	1483	0	0	1613	0	0	1781	0	1866	1781	1777	1827
Q Serve(g_s), s	2.6	0.0	0.0	0.0	0.0	0.0	0.6	0.0	26.8	0.3	7.1	7.1
Cycle Q Clear(g_c), s	4.4	0.0	0.0	1.8	0.0	0.0	0.6	0.0	26.8	0.3	7.1	7.1
Prop In Lane	0.88		0.12	0.63		0.37	1.00		0.01	1.00		0.13
Lane Grp Cap(c), veh/h	333	0	0	339	0	0	38	0	1092	18	1021	1049
V/C Ratio(X)	0.35	0.00	0.00	0.17	0.00	0.00	0.47	0.00	0.86	0.43	0.36	0.36
Avail Cap(c_a), veh/h	527	0	0	540	0	0	164	0	2382	147	2252	2315
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.4	0.0	0.0	23.4	0.0	0.0	30.5	0.0	11.0	31.1	7.2	7.2
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.2	0.0	0.0	3.3	0.0	2.2	5.8	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.0	0.7	0.0	0.0	0.3	0.0	7.3	0.1	1.8	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.1	0.0	0.0	23.7	0.0	0.0	33.9	0.0	13.2	36.9	7.4	7.4
LnGrp LOS	C	A	A	C	A	A	C	A	B	D	A	A
Approach Vol, veh/h		118			57			962			762	
Approach Delay, s/veh		25.1			23.7			13.5			7.8	
Approach LOS		C			C			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	43.2		14.7	6.0	42.5		14.7				
Change Period (Y+Rc), s	4.6	6.2		5.1	4.6	6.2		5.1				
Max Green Setting (Gmax), s	5.2	80.6		18.3	5.8	80.0		18.3				
Max Q Clear Time (g_c+I1), s	2.3	28.8		6.4	2.6	9.1		3.8				
Green Ext Time (p_c), s	0.0	8.2		0.4	0.0	4.6		0.2				

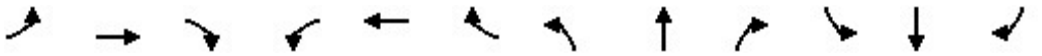
Intersection Summary			
HCM 6th Ctrl Delay		12.2	
HCM 6th LOS		B	

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	256	462	26	224	32	320	71	303	217
Future Volume (vph)	256	462	26	224	32	320	71	303	217
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6	3	8	7	4	
Permitted Phases									4
Detector Phase	5	2	1	6	3	8	7	4	4
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.6	22.6	9.6	22.6	9.6	22.6	9.6	22.6	22.6
Total Split (s)	29.0	60.0	11.0	42.0	9.7	36.0	13.0	39.3	39.3
Total Split (%)	24.2%	50.0%	9.2%	35.0%	8.1%	30.0%	10.8%	32.8%	32.8%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	None	Min	None	Min	Min
Act Effct Green (s)	22.0	52.4	6.4	31.5	5.4	28.4	8.3	32.8	32.8
Actuated g/C Ratio	0.21	0.49	0.06	0.30	0.05	0.27	0.08	0.31	0.31
v/c Ratio	0.81	0.61	0.28	0.85	0.42	0.85	0.60	0.61	0.38
Control Delay	61.1	25.5	60.9	50.2	69.5	56.1	71.7	38.8	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.1	25.5	60.9	50.2	69.5	56.1	71.7	38.8	5.8
LOS	E	C	E	D	E	E	E	D	A
Approach Delay		37.9		50.8		57.2		30.7	
Approach LOS		D		D		E		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 105.9	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 42.0	Intersection LOS: D
Intersection Capacity Utilization 75.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: Lyon Av. & Cottonwood Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	256	462	20	26	224	169	32	320	39	71	303	217
Future Volume (veh/h)	256	462	20	26	224	169	32	320	39	71	303	217
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	298	537	23	30	260	197	37	372	45	83	352	252
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	337	814	35	52	291	221	59	419	51	107	531	450
Arrive On Green	0.19	0.46	0.46	0.03	0.30	0.30	0.03	0.26	0.26	0.06	0.28	0.28
Sat Flow, veh/h	1781	1778	76	1781	980	743	1781	1629	197	1781	1870	1585
Grp Volume(v), veh/h	298	0	560	30	0	457	37	0	417	83	352	252
Grp Sat Flow(s),veh/h/ln	1781	0	1854	1781	0	1723	1781	0	1826	1781	1870	1585
Q Serve(g_s), s	15.3	0.0	22.0	1.6	0.0	23.8	1.9	0.0	20.6	4.3	15.6	12.7
Cycle Q Clear(g_c), s	15.3	0.0	22.0	1.6	0.0	23.8	1.9	0.0	20.6	4.3	15.6	12.7
Prop In Lane	1.00		0.04	1.00		0.43	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	337	0	849	52	0	512	59	0	469	107	531	450
V/C Ratio(X)	0.88	0.00	0.66	0.58	0.00	0.89	0.63	0.00	0.89	0.78	0.66	0.56
Avail Cap(c_a), veh/h	464	0	1096	122	0	688	97	0	612	160	693	587
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.0	0.0	19.7	44.9	0.0	31.5	44.7	0.0	33.5	43.4	29.6	28.6
Incr Delay (d2), s/veh	14.0	0.0	1.0	10.0	0.0	11.2	10.6	0.0	12.3	13.0	1.5	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	0.0	8.7	0.8	0.0	10.8	1.0	0.0	10.0	2.2	6.7	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.9	0.0	20.7	54.9	0.0	42.7	55.3	0.0	45.8	56.4	31.1	29.7
LnGrp LOS	D	A	C	D	A	D	E	A	D	E	C	C
Approach Vol, veh/h		858			487			454			687	
Approach Delay, s/veh		31.2			43.4			46.6			33.6	
Approach LOS		C			D			D			C	

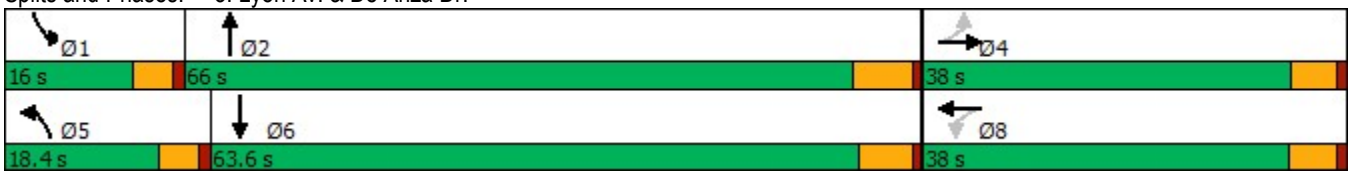
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.3	47.5	7.7	31.2	22.3	32.5	10.2	28.7
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	6.4	55.4	5.1	34.7	24.4	37.4	8.4	31.4
Max Q Clear Time (g_c+I1), s	3.6	24.0	3.9	17.6	17.3	25.8	6.3	22.6
Green Ext Time (p_c), s	0.0	3.6	0.0	2.5	0.5	2.1	0.0	1.5

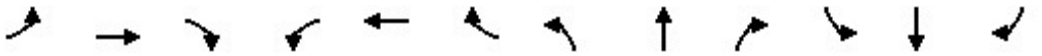
Intersection Summary	
HCM 6th Ctrl Delay	37.1
HCM 6th LOS	D

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	27	27	156	32	95	289	73	330
Future Volume (vph)	27	27	156	32	95	289	73	330
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	23.1	23.1	23.4	23.4	9.6	24.2	9.6	23.8
Total Split (s)	38.0	38.0	38.0	38.0	18.4	66.0	16.0	63.6
Total Split (%)	31.7%	31.7%	31.7%	31.7%	15.3%	55.0%	13.3%	53.0%
Yellow Time (s)	4.1	4.1	4.4	4.4	3.6	5.2	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.4	5.4	4.6	6.2	4.6	5.8
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	None	Min
Act Effct Green (s)		24.7	24.4	24.4	11.1	43.2	10.5	43.0
Actuated g/C Ratio		0.27	0.27	0.27	0.12	0.47	0.11	0.47
v/c Ratio		0.31	0.71	0.23	0.48	0.84	0.51	0.59
Control Delay		21.1	48.8	13.9	53.4	32.1	56.3	22.9
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		21.1	48.8	13.9	53.4	32.1	56.3	22.9
LOS		C	D	B	D	C	E	C
Approach Delay		21.1		36.8		34.8		28.6
Approach LOS		C		D		C		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 91.8	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 32.1	Intersection LOS: C
Intersection Capacity Utilization 60.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Lyon Av. & De Anza Dr.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	27	81	156	32	57	95	289	207	73	330	32
Future Volume (veh/h)	27	27	81	156	32	57	95	289	207	73	330	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	29	29	88	223	35	81	103	413	267	104	471	35
Peak Hour Factor	0.92	0.92	0.92	0.70	0.92	0.70	0.92	0.70	0.70	0.70	0.70	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	95	200	395	103	239	135	484	313	135	786	58
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.08	0.46	0.46	0.08	0.46	0.46
Sat Flow, veh/h	180	460	971	1275	501	1160	1781	1061	686	1781	1720	128
Grp Volume(v), veh/h	146	0	0	223	0	116	103	0	680	104	0	506
Grp Sat Flow(s),veh/h/ln	1612	0	0	1275	0	1662	1781	0	1747	1781	0	1847
Q Serve(g_s), s	0.0	0.0	0.0	4.8	0.0	3.7	3.5	0.0	21.5	3.6	0.0	12.7
Cycle Q Clear(g_c), s	4.7	0.0	0.0	9.5	0.0	3.7	3.5	0.0	21.5	3.6	0.0	12.7
Prop In Lane	0.20		0.60	1.00		0.70	1.00		0.39	1.00		0.07
Lane Grp Cap(c), veh/h	402	0	0	395	0	343	135	0	797	135	0	844
V/C Ratio(X)	0.36	0.00	0.00	0.56	0.00	0.34	0.77	0.00	0.85	0.77	0.00	0.60
Avail Cap(c_a), veh/h	908	0	0	803	0	874	397	0	1686	328	0	1723
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.4	0.0	0.0	23.1	0.0	21.0	28.1	0.0	15.0	28.1	0.0	12.6
Incr Delay (d2), s/veh	0.6	0.0	0.0	1.3	0.0	0.6	8.7	0.0	2.7	8.8	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	2.9	0.0	1.3	1.6	0.0	6.8	1.7	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	0.0	0.0	24.4	0.0	21.6	36.8	0.0	17.7	36.9	0.0	13.3
LnGrp LOS	C	A	A	C	A	C	D	A	B	D	A	B
Approach Vol, veh/h		146			339			783			610	
Approach Delay, s/veh		21.9			23.4			20.2			17.3	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	34.5		18.2	9.3	34.5		18.2				
Change Period (Y+Rc), s	4.6	6.2		* 5.4	4.6	* 6.2		5.4				
Max Green Setting (Gmax), s	11.4	59.8		* 33	13.8	* 58		32.6				
Max Q Clear Time (g_c+I1), s	5.6	23.5		6.7	5.5	14.7		11.5				
Green Ext Time (p_c), s	0.1	4.8		0.8	0.1	3.2		1.3				

Intersection Summary		
HCM 6th Ctrl Delay		20.0
HCM 6th LOS		B

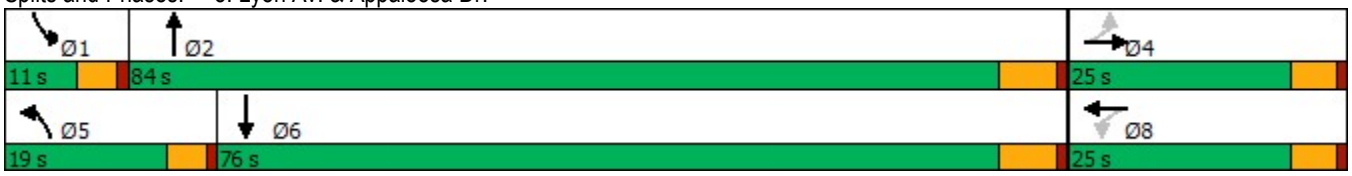
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	47	0	27	0	72	548	18	490
Future Volume (vph)	47	0	27	0	72	548	18	490
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.1	23.1	23.1	23.1	9.6	24.2	9.6	24.2
Total Split (s)	25.0	25.0	25.0	25.0	19.0	84.0	11.0	76.0
Total Split (%)	20.8%	20.8%	20.8%	20.8%	15.8%	70.0%	9.2%	63.3%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.6	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1		5.1	4.6	6.2	4.6	6.2
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	None	Min
Act Effct Green (s)		8.5		8.5	8.9	37.7	5.9	29.5
Actuated g/C Ratio		0.14		0.14	0.14	0.61	0.10	0.48
v/c Ratio		0.47		0.16	0.41	0.72	0.12	0.47
Control Delay		15.7		1.2	34.2	14.5	37.2	12.6
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		15.7		1.2	34.2	14.5	37.2	12.6
LOS		B		A	C	B	D	B
Approach Delay		15.7		1.2		16.7		13.3
Approach LOS		B		A		B		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 61.9	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 14.8	Intersection LOS: B
Intersection Capacity Utilization 54.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Lyon Av. & Appaloosa Dr.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	0	48	27	0	15	72	548	32	18	490	46
Future Volume (veh/h)	47	0	48	27	0	15	72	548	32	18	490	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	67	0	69	29	0	16	103	783	35	20	700	66
Peak Hour Factor	0.70	0.92	0.70	0.92	0.92	0.92	0.70	0.70	0.92	0.92	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	189	13	97	229	24	74	135	948	42	43	1555	146
Arrive On Green	0.13	0.00	0.13	0.13	0.00	0.13	0.08	0.53	0.53	0.02	0.48	0.48
Sat Flow, veh/h	654	101	778	884	192	594	1781	1777	79	1781	3228	304
Grp Volume(v), veh/h	136	0	0	45	0	0	103	0	818	20	385	381
Grp Sat Flow(s),veh/h/ln	1534	0	0	1669	0	0	1781	0	1856	1781	1777	1755
Q Serve(g_s), s	3.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	18.4	0.6	7.2	7.2
Cycle Q Clear(g_c), s	4.2	0.0	0.0	1.1	0.0	0.0	2.8	0.0	18.4	0.6	7.2	7.2
Prop In Lane	0.49		0.51	0.64		0.36	1.00		0.04	1.00		0.17
Lane Grp Cap(c), veh/h	299	0	0	327	0	0	135	0	990	43	856	845
V/C Ratio(X)	0.45	0.00	0.00	0.14	0.00	0.00	0.76	0.00	0.83	0.46	0.45	0.45
Avail Cap(c_a), veh/h	703	0	0	711	0	0	512	0	2881	227	2475	2444
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	0.0	0.0	19.7	0.0	0.0	22.7	0.0	9.8	24.1	8.6	8.6
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.2	0.0	0.0	3.3	0.0	1.8	2.9	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	0.4	0.0	0.0	1.1	0.0	4.5	0.2	1.8	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.0	0.0	0.0	19.9	0.0	0.0	26.0	0.0	11.6	27.0	9.0	9.0
LnGrp LOS	C	A	A	B	A	A	C	A	B	C	A	A
Approach Vol, veh/h		136			45			921			786	
Approach Delay, s/veh		22.0			19.9			13.2			9.4	
Approach LOS		C			B			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	32.9		11.4	8.4	30.3		11.4				
Change Period (Y+Rc), s	4.6	6.2		5.1	4.6	6.2		5.1				
Max Green Setting (Gmax), s	6.4	77.8		19.9	14.4	69.8		19.9				
Max Q Clear Time (g_c+I1), s	2.6	20.4		6.2	4.8	9.2		3.1				
Green Ext Time (p_c), s	0.0	6.3		0.5	0.1	4.7		0.1				

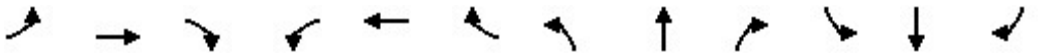
Intersection Summary			
HCM 6th Ctrl Delay		12.4	
HCM 6th LOS		B	

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	194	400	37	338	58	301	83	326	196
Future Volume (vph)	194	400	37	338	58	301	83	326	196
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6	3	8	7	4	
Permitted Phases									4
Detector Phase	5	2	1	6	3	8	7	4	4
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	23.8	9.6	23.8	9.6	24.2	9.6	24.2	24.2
Total Split (s)	23.0	58.7	13.3	49.0	11.0	35.0	13.0	37.0	37.0
Total Split (%)	19.2%	48.9%	11.1%	40.8%	9.2%	29.2%	10.8%	30.8%	30.8%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	4.6	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	None	Min	None	Min	Min
Act Effct Green (s)	17.5	53.0	7.2	40.4	6.4	27.6	8.3	29.5	29.5
Actuated g/C Ratio	0.15	0.46	0.06	0.35	0.06	0.24	0.07	0.26	0.26
v/c Ratio	0.90	0.64	0.42	0.94	0.74	0.93	0.81	0.84	0.42
Control Delay	82.9	29.1	65.5	59.5	95.7	71.8	95.9	58.3	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.9	29.1	65.5	59.5	95.7	71.8	95.9	58.3	6.8
LOS	F	C	E	E	F	E	F	E	A
Approach Delay		45.6		60.0		75.4		46.8	
Approach LOS		D		E		E		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 115.1	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 54.8	Intersection LOS: D
Intersection Capacity Utilization 77.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: Lyon Av. & Cottonwood Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	194	400	41	37	338	145	58	301	29	83	326	196
Future Volume (veh/h)	194	400	41	37	338	145	58	301	29	83	326	196
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.94	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	240	494	51	46	417	179	72	372	36	102	402	242
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	267	786	81	60	441	189	92	399	39	126	484	403
Arrive On Green	0.15	0.47	0.47	0.03	0.36	0.36	0.05	0.24	0.24	0.07	0.26	0.26
Sat Flow, veh/h	1781	1666	172	1781	1241	533	1781	1668	161	1781	1870	1559
Grp Volume(v), veh/h	240	0	545	46	0	596	72	0	408	102	402	242
Grp Sat Flow(s),veh/h/ln	1781	0	1838	1781	0	1773	1781	0	1830	1781	1870	1559
Q Serve(g_s), s	15.2	0.0	25.6	2.9	0.0	37.5	4.6	0.0	25.1	6.5	23.3	15.6
Cycle Q Clear(g_c), s	15.2	0.0	25.6	2.9	0.0	37.5	4.6	0.0	25.1	6.5	23.3	15.6
Prop In Lane	1.00		0.09	1.00		0.30	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	267	0	867	60	0	630	92	0	438	126	484	403
V/C Ratio(X)	0.90	0.00	0.63	0.77	0.00	0.95	0.78	0.00	0.93	0.81	0.83	0.60
Avail Cap(c_a), veh/h	286	0	867	135	0	667	99	0	459	130	502	418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.9	0.0	22.8	55.0	0.0	36.0	53.8	0.0	42.8	52.5	40.2	37.3
Incr Delay (d2), s/veh	26.5	0.0	1.5	7.6	0.0	22.0	27.3	0.0	25.5	27.1	11.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	0.0	10.6	1.4	0.0	19.1	2.7	0.0	13.8	3.7	11.7	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.4	0.0	24.2	62.6	0.0	58.0	81.1	0.0	68.2	79.7	51.2	39.6
LnGrp LOS	E	A	C	E	A	E	F	A	E	E	D	D
Approach Vol, veh/h		785			642			480			746	
Approach Delay, s/veh		39.6			58.3			70.2			51.3	
Approach LOS		D			E			E			D	

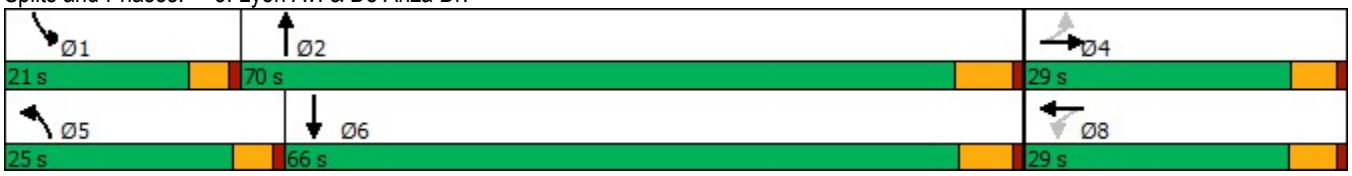
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	59.9	10.5	35.9	21.8	46.6	12.7	33.7
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	5.8	4.6	6.2
Max Green Setting (Gmax), s	8.7	52.9	6.4	30.8	18.4	43.2	8.4	28.8
Max Q Clear Time (g_c+I1), s	4.9	27.6	6.6	25.3	17.2	39.5	8.5	27.1
Green Ext Time (p_c), s	0.0	3.3	0.0	1.5	0.0	1.3	0.0	0.4

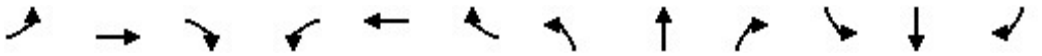
Intersection Summary	
HCM 6th Ctrl Delay	52.9
HCM 6th LOS	D

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	22	22	65	38	113	284	76	404
Future Volume (vph)	22	22	65	38	113	284	76	404
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	23.1	23.1	24.2	24.2	9.6	24.2	9.6	23.8
Total Split (s)	29.0	29.0	29.0	29.0	25.0	70.0	21.0	66.0
Total Split (%)	24.2%	24.2%	24.2%	24.2%	20.8%	58.3%	17.5%	55.0%
Yellow Time (s)	4.1	4.1	4.4	4.4	3.6	5.2	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.4	5.4	4.6	6.2	4.6	5.8
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	None	Min
Act Effct Green (s)		13.2	12.9	12.9	10.8	29.3	9.3	28.5
Actuated g/C Ratio		0.23	0.23	0.23	0.19	0.52	0.16	0.50
v/c Ratio		0.29	0.22	0.19	0.36	0.42	0.29	0.52
Control Delay		16.9	25.9	16.7	28.8	15.0	29.4	18.0
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		16.9	25.9	16.7	28.8	15.0	29.4	18.0
LOS		B	C	B	C	B	C	B
Approach Delay		16.9		21.0		18.3		19.7
Approach LOS		B		C		B		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 56.5	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.52	
Intersection Signal Delay: 19.0	Intersection LOS: B
Intersection Capacity Utilization 55.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Lyon Av. & De Anza Dr.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	22	66	65	38	36	113	284	79	76	404	38
Future Volume (veh/h)	22	22	66	65	38	36	113	284	79	76	404	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	24	24	72	71	41	40	123	312	65	84	444	41
Peak Hour Factor	0.92	0.92	0.92	0.91	0.92	0.91	0.92	0.91	0.91	0.91	0.91	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	101	206	460	183	179	164	548	114	128	581	54
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.09	0.36	0.36	0.07	0.34	0.34
Sat Flow, veh/h	170	479	974	1300	869	848	1781	1501	313	1781	1687	156
Grp Volume(v), veh/h	120	0	0	71	0	81	123	0	377	84	0	485
Grp Sat Flow(s),veh/h/ln	1624	0	0	1300	0	1718	1781	0	1814	1781	0	1842
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	1.8	3.1	0.0	7.7	2.1	0.0	10.8
Cycle Q Clear(g_c), s	2.8	0.0	0.0	1.5	0.0	1.8	3.1	0.0	7.7	2.1	0.0	10.8
Prop In Lane	0.20		0.60	1.00		0.49	1.00		0.17	1.00		0.08
Lane Grp Cap(c), veh/h	437	0	0	460	0	362	164	0	662	128	0	635
V/C Ratio(X)	0.27	0.00	0.00	0.15	0.00	0.22	0.75	0.00	0.57	0.66	0.00	0.76
Avail Cap(c_a), veh/h	922	0	0	854	0	883	791	0	2520	636	0	2415
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	0.0	14.9	0.0	15.0	20.3	0.0	11.7	20.8	0.0	13.4
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.3	6.8	0.0	0.8	5.7	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.5	0.0	0.6	1.3	0.0	2.2	0.9	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	0.0	0.0	15.0	0.0	15.3	27.1	0.0	12.5	26.5	0.0	15.3
LnGrp LOS	B	A	A	B	A	B	C	A	B	C	A	B
Approach Vol, veh/h		120			152			500			569	
Approach Delay, s/veh		15.7			15.2			16.1			17.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.9	23.0		15.1	8.8	22.0		15.1				
Change Period (Y+Rc), s	4.6	6.2		* 5.4	4.6	* 6.2		5.4				
Max Green Setting (Gmax), s	16.4	63.8		* 24	20.4	* 60		23.6				
Max Q Clear Time (g_c+I1), s	4.1	9.7		4.8	5.1	12.8		3.8				
Green Ext Time (p_c), s	0.1	2.2		0.6	0.2	3.1		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	16.3
HCM 6th LOS	B

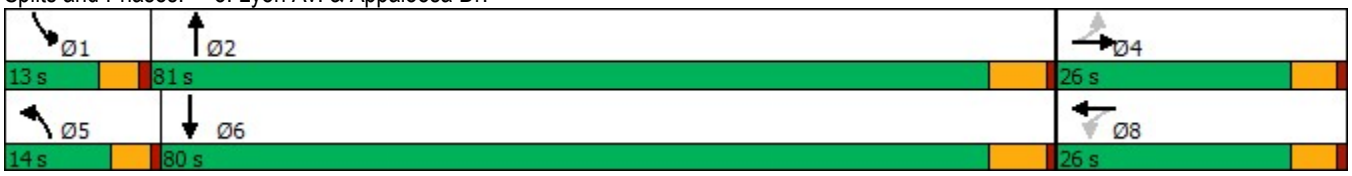
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	23	0	22	0	26	464	21	505
Future Volume (vph)	23	0	22	0	26	464	21	505
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.1	23.1	23.1	23.1	9.6	24.2	9.6	24.2
Total Split (s)	26.0	26.0	26.0	26.0	14.0	81.0	13.0	80.0
Total Split (%)	21.7%	21.7%	21.7%	21.7%	11.7%	67.5%	10.8%	66.7%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.6	5.2	3.6	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1		5.1	4.6	6.2	4.6	6.2
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	None	Min
Act Effct Green (s)		7.7		7.7	6.3	34.4	6.1	32.0
Actuated g/C Ratio		0.17		0.17	0.14	0.75	0.13	0.70
v/c Ratio		0.10		0.13	0.13	0.43	0.10	0.25
Control Delay		2.1		3.3	26.0	8.4	26.3	7.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		2.1		3.3	26.0	8.4	26.3	7.7
LOS		A		A	C	A	C	A
Approach Delay		2.1		3.3		9.2		8.3
Approach LOS		A		A		A		A

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 46	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay: 8.5	Intersection LOS: A
Intersection Capacity Utilization 40.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Lyon Av. & Appaloosa Dr.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	0	4	22	0	13	26	464	37	21	505	12
Future Volume (veh/h)	23	0	4	22	0	13	26	464	37	21	505	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	0	5	24	0	14	31	559	40	23	608	14
Peak Hour Factor	0.83	0.92	0.83	0.92	0.92	0.92	0.83	0.83	0.92	0.92	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	0	17	240	0	41	66	758	54	51	1531	35
Arrive On Green	0.07	0.00	0.07	0.07	0.00	0.07	0.04	0.44	0.44	0.03	0.43	0.43
Sat Flow, veh/h	1299	0	232	981	0	572	1781	1725	123	1781	3551	82
Grp Volume(v), veh/h	33	0	0	38	0	0	31	0	599	23	304	318
Grp Sat Flow(s),veh/h/ln	1531	0	0	1554	0	0	1781	0	1848	1781	1777	1856
Q Serve(g_s), s	0.0	0.0	0.0	0.1	0.0	0.0	0.6	0.0	9.3	0.4	4.1	4.1
Cycle Q Clear(g_c), s	0.6	0.0	0.0	0.7	0.0	0.0	0.6	0.0	9.3	0.4	4.1	4.1
Prop In Lane	0.85		0.15	0.63		0.37	1.00		0.07	1.00		0.04
Lane Grp Cap(c), veh/h	302	0	0	281	0	0	66	0	812	51	766	800
V/C Ratio(X)	0.11	0.00	0.00	0.14	0.00	0.00	0.47	0.00	0.74	0.45	0.40	0.40
Avail Cap(c_a), veh/h	1062	0	0	1066	0	0	485	0	4001	433	3796	3964
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	0.0	0.0	15.2	0.0	0.0	16.3	0.0	8.0	16.5	6.7	6.7
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.2	0.0	0.0	1.9	0.0	1.3	2.3	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.2	0.0	0.0	0.2	0.0	1.7	0.2	0.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.3	0.0	0.0	15.4	0.0	0.0	18.2	0.0	9.4	18.8	7.1	7.1
LnGrp LOS	B	A	A	B	A	A	B	A	A	B	A	A
Approach Vol, veh/h		33			38			630			645	
Approach Delay, s/veh		15.3			15.4			9.8			7.5	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.6	21.4		7.6	5.9	21.1		7.6				
Change Period (Y+Rc), s	4.6	6.2		5.1	4.6	6.2		5.1				
Max Green Setting (Gmax), s	8.4	74.8		20.9	9.4	73.8		20.9				
Max Q Clear Time (g_c+I1), s	2.4	11.3		2.6	2.6	6.1		2.7				
Green Ext Time (p_c), s	0.0	3.9		0.1	0.0	3.6		0.1				

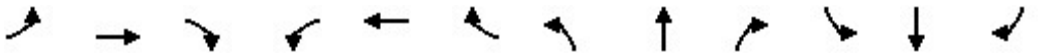
Intersection Summary			
HCM 6th Ctrl Delay		9.0	
HCM 6th LOS		A	

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	162	425	39	458	49	313	52	354	135
Future Volume (vph)	162	425	39	458	49	313	52	354	135
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6	3	8	7	4	
Permitted Phases									4
Detector Phase	5	2	1	6	3	8	7	4	4
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	23.8	9.6	23.8	9.6	24.2	9.6	24.2	24.2
Total Split (s)	20.0	59.8	13.2	53.0	10.0	36.0	11.0	37.0	37.0
Total Split (%)	16.7%	49.8%	11.0%	44.2%	8.3%	30.0%	9.2%	30.8%	30.8%
Yellow Time (s)	3.6	4.8	3.6	4.8	3.6	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	4.6	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	None	Min	None	Min	Min
Act Effct Green (s)	14.1	48.8	7.2	38.7	5.6	26.3	6.3	27.1	27.1
Actuated g/C Ratio	0.13	0.47	0.07	0.37	0.05	0.25	0.06	0.26	0.26
v/c Ratio	0.78	0.64	0.37	0.88	0.59	0.84	0.57	0.85	0.30
Control Delay	70.5	27.6	61.6	47.0	80.1	56.8	74.9	56.5	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.5	27.6	61.6	47.0	80.1	56.8	74.9	56.5	7.2
LOS	E	C	E	D	F	E	E	E	A
Approach Delay		38.5		48.0		59.7		46.0	
Approach LOS		D		D		E		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 104.8	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 46.8	Intersection LOS: D
Intersection Capacity Utilization 77.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: Lyon Av. & Cottonwood Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	162	425	49	39	458	62	49	313	28	52	354	135
Future Volume (veh/h)	162	425	49	39	458	62	49	313	28	52	354	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	186	489	56	45	526	71	56	360	32	60	407	155
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	742	85	65	586	79	72	417	37	77	466	395
Arrive On Green	0.12	0.45	0.45	0.04	0.36	0.36	0.04	0.25	0.25	0.04	0.25	0.25
Sat Flow, veh/h	1781	1648	189	1781	1613	218	1781	1693	150	1781	1870	1585
Grp Volume(v), veh/h	186	0	545	45	0	597	56	0	392	60	407	155
Grp Sat Flow(s),veh/h/ln	1781	0	1836	1781	0	1831	1781	0	1843	1781	1870	1585
Q Serve(g_s), s	9.7	0.0	22.0	2.4	0.0	29.2	3.0	0.0	19.3	3.2	19.8	7.7
Cycle Q Clear(g_c), s	9.7	0.0	22.0	2.4	0.0	29.2	3.0	0.0	19.3	3.2	19.8	7.7
Prop In Lane	1.00		0.10	1.00		0.12	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	220	0	826	65	0	665	72	0	455	77	466	395
V/C Ratio(X)	0.85	0.00	0.66	0.69	0.00	0.90	0.77	0.00	0.86	0.78	0.87	0.39
Avail Cap(c_a), veh/h	289	0	1045	161	0	911	101	0	579	120	607	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.7	0.0	20.4	45.2	0.0	28.5	45.1	0.0	34.2	44.9	34.2	29.6
Incr Delay (d2), s/veh	13.1	0.0	1.0	4.8	0.0	9.1	13.2	0.0	10.5	6.2	10.8	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.0	8.7	1.1	0.0	13.4	1.5	0.0	9.3	1.5	9.7	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.8	0.0	21.4	49.9	0.0	37.6	58.3	0.0	44.7	51.1	45.0	30.3
LnGrp LOS	D	A	C	D	A	D	E	A	D	D	D	C
Approach Vol, veh/h		731			642			448			622	
Approach Delay, s/veh		29.7			38.4			46.4			41.9	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	48.5	8.5	29.8	16.3	40.3	8.7	29.6
Change Period (Y+Rc), s	4.6	5.8	4.6	6.2	4.6	5.8	4.6	6.2
Max Green Setting (Gmax), s	8.6	54.0	5.4	30.8	15.4	47.2	6.4	29.8
Max Q Clear Time (g_c+I1), s	4.4	24.0	5.0	21.8	11.7	31.2	5.2	21.3
Green Ext Time (p_c), s	0.0	3.4	0.0	1.8	0.1	3.3	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	38.2
HCM 6th LOS	D

APPENDIX 6b

July 25, 2023

Ms. Kaitlyn Dodson-Hamilton
Tom Dodson & Associates
PO Box 2307
San Bernardino, CA 92406

LYON AVENUE TTM 38468 VEHICLE MILES TRAVELED (VMT) SCREENING EVALUATION

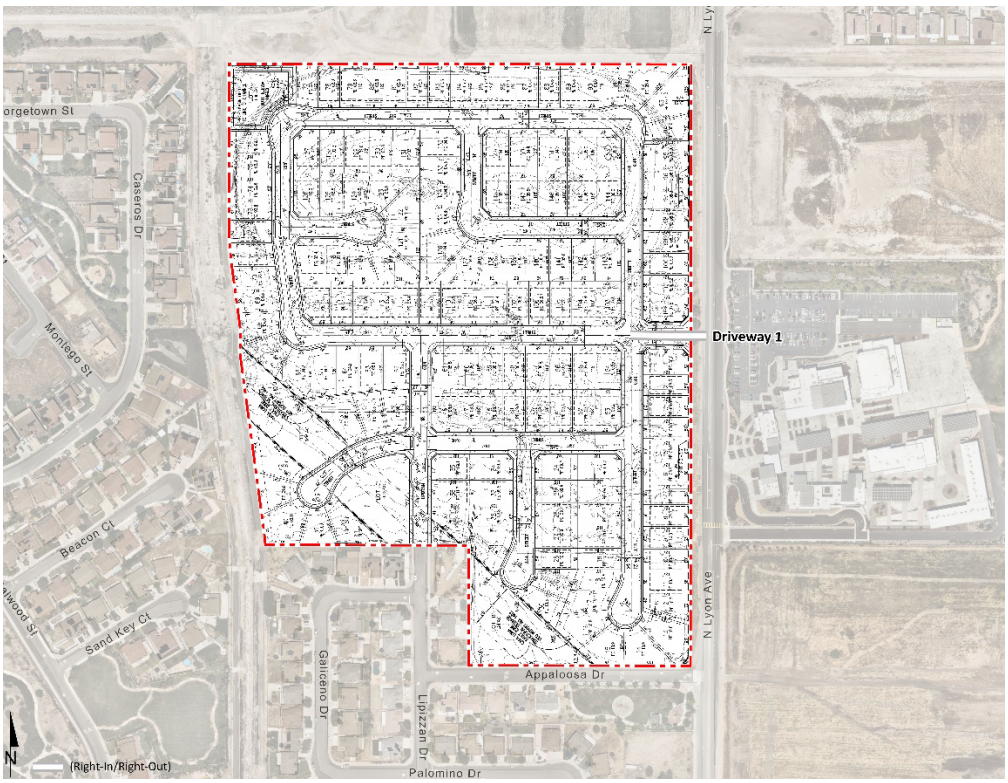
Ms. Kaitlyn Dodson-Hamilton,

Urban Crossroads, Inc. is pleased to provide the following Vehicle Miles Traveled (VMT) Screening Evaluation for the Lyon Avenue TTM 38468 development (**Project**) which is located on the west side of Lyon Avenue, approximately 137 feet north of Cottonwood Avenue (APN 436-280-006 & 007) in the City of San Jacinto.

PROJECT OVERVIEW

It is our understanding that the project is to consist of the development of 153 single family residences on approximately 42.19 gross acre site. Preliminary site plan can be found below in Exhibit 1.

EXHIBIT 1: PRELIMINARY SITE PLAN



BACKGROUND

Changes to California Environmental Quality Act (CEQA) Guidelines were adopted in December 2018, which requires all lead agencies to adopt VMT as a replacement for automobile delay-based level of service (LOS) as the new measure for identifying transportation impacts for land use projects. This statewide mandate went into effect July 1, 2020. To aid in this transition, the Governor's Office of Planning and Research (OPR) released a Technical Advisory on Evaluating Transportation Impacts in CEQA (December of 2018) (**Technical Advisory**) (1). Based on OPR's Technical Advisory, the City of San Jacinto has prepared their City of San Jacinto Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment (June 2020) (**City Guidelines**) (2). This analysis has utilized the City Guidelines for the review of applicable VMT screening criteria.

VMT SCREENING

The City's Guidelines list standardized screening methods for project level VMT analysis that can be used to identify when a proposed land use development project is anticipated to result in a less than significant impact thereby eliminating the need to conduct a full VMT analysis. It is our understanding the City of San Jacinto utilizes the Western Riverside Council of Governments (WRCOG) VMT Screening Tool (Screening Tool). The Screening Tool allows users to select an assessor's parcel number (APN) to determine if a project's location meets one or more of the screening thresholds for land use projects identified in the City Guidelines. The City of San Jacinto VMT screening types, as described within the City Guidelines, are listed below:

- Step 1: Transit Priority Area (TPA) Screening
- Step 2: Low VMT Area Screening
- Step 3: Project Type Screening

A land use project need only to meet one of the above screening thresholds to result in a less than significant impact.

STEP 1: TPA SCREENING

The Technical Advisory and City Guidelines describe those projects located within a Transit Priority Area (TPA) (i.e., within ½ mile of an existing "major transit stop"[1] or an existing stop along a "high-quality transit corridor"[2]) may be presumed to have a less than significant impact absent substantial evidence to the contrary.

However, the presumption may not be appropriate if a project:

[1] Pub. Resources Code, § 21064.3 ("'Major transit stop' means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.").
[2] Pub. Resources Code, § 21155 ("For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.").

- Has a Floor Area Ratio (FAR) of less than 0.75;
- Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking);
- Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization); or
- Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

The Screening Tool was utilized to locate the Project site and its proximity to a TPA. Results, as shown in Attachment A, identify the Project Site is not located within ½ mile of an existing major transit stop, or along a high-quality transit corridor.

TPA screening threshold is not met.

STEP 2: LOW VMT AREA SCREENING

The City Guidelines state that, "residential and office projects located within a low VMT-generating area may be presumed to have a less than significant impact absent substantial evidence to the contrary. In addition, other employment-related and mixed-use land use projects may qualify for the use of screening if the project can reasonably be expected to generate VMT per resident, per worker, or per service population that is similar to the existing land uses in the low VMT area."[3] The Screening Tool uses the sub-regional Riverside County Model (RIVCOM) to measure VMT performance within individual traffic analysis zones (TAZ's) within the WRCOG region. The Project's physical location is evaluated in the Screening Tool to determine VMT generated by the existing TAZ as compared to the City Guidelines' impact threshold of project generated VMT per service population below the WRCOG Subregional VMT per service population. The WRCOG Subregional VMT per service population was calculated using RIVCOM travel demand model resulting in a WRCOG Subregional average 34.62 VMT per service population.

The parcel containing the proposed Project was selected and the Screening Tool was run for the Origin-Destination VMT per service population measure of VMT. Based on the Screening Tool results (see Attachment A), the Project TAZ is shown to generate a VMT per service population of 23.6. The Project is located in a low VMT area below the WRCOG Subregional VMT per service population.

Low VMT Area screening criteria is met.

STEP 3: PROJECT TYPE SCREENING

The City Guidelines indicates for small projects that generate low traffic volumes (i.e., fewer than 500 daily trips) and by association low greenhouse gas (GHG) emissions are also assumed to cause a less than significant impact. Trips generated by the Project's proposed land use have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, 2021 (3). The Project is estimated to

[3] City Guidelines; page 23.

generate 1,444 vehicle trip-ends per day. The Project exceeds the 500 daily trip threshold (See Attachment B).

Also, the City Guidelines identify that local serving retail buildings with less than 50,000 square feet or other local serving essential services (e.g., day care centers, public schools, religious assembly uses, etc.) are presumed to have a less than significant impact absent substantial evidence to the contrary. The Project does not intend to develop any local serving uses.

Project Type screening criteria is not met.

CONCLUSION

In summary, the Project was evaluated consistent with the available screening criteria. The Project was found to meet the Low VMT Area screening criteria. The Proposed Project is presumed to result in a less than significant impact for VMT; no further VMT analysis required.

If you have any questions, please contact me directly at aso@urbanxroads.com.

Respectfully submitted,

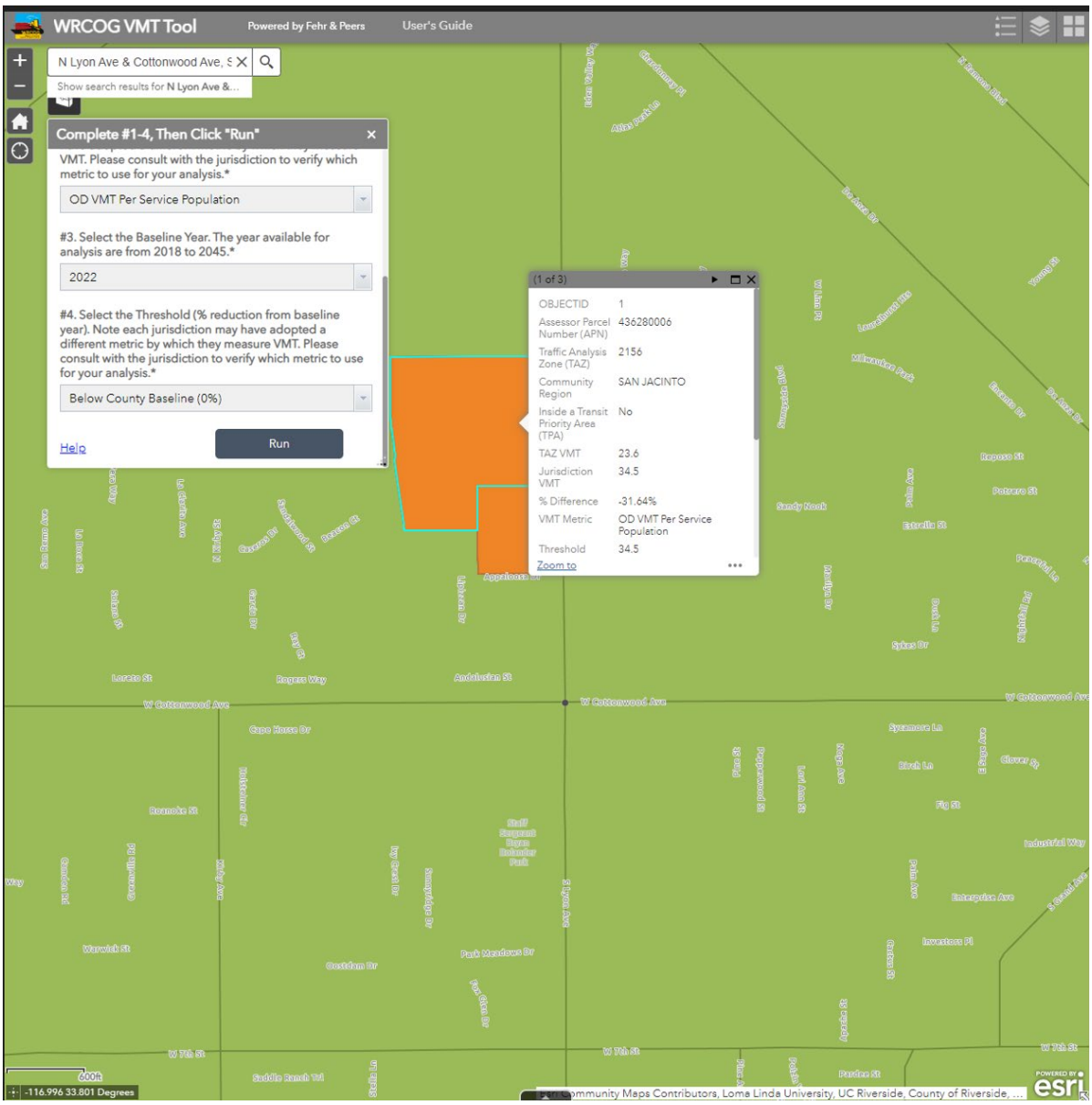
URBAN CROSSROADS, INC.

Alexander So
Senior Associate

REFERENCES

1. **Office of Planning and Research.** *Technical Advisory on Evaluating Transportation Impacts in CEQA.* State of California : s.n., December 2018.
2. **City of San Jacinto.** *City of ACity of San Jacinto Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment.* June 2020.
3. **Institute of Transportation Engineers.** *Trip Generation Manual.* 11th Edition. 2021.

ATTACHMENT A
WRCOG SCREENING TOOL


WRCOG VMT Tool
Powered by Fehr & Peers
User's Guide
N Lyon Ave & Cottonwood Ave, S
Show search results for N Lyon Ave &...
Complete #1-4, Then Click "Run"
VMT. Please consult with the jurisdiction to verify which metric to use for your analysis.*
OD VMT Per Service Population
#3. Select the Baseline Year. The year available for analysis are from 2018 to 2045.*
2022
#4. Select the Threshold (% reduction from baseline year). Note each jurisdiction may have adopted a different metric by which they measure VMT. Please consult with the jurisdiction to verify which metric to use for your analysis.*
Below County Baseline (0%)
Help
Run
(1 of 3)
OBJECTID 1
Assessor Parcel Number (APN) 436280006
Traffic Analysis Zone (TAZ) 2156
Community Region SAN JACINTO
Inside a Transit Priority Area (TPA) No
TAZ VMT 23.6
Jurisdiction VMT 34.5
% Difference -31.64%
VMT Metric OD VMT Per Service Population
Threshold 34.5
Zoom to
W Cottonwood Ave
Cape Horse Dr
Roanoke St
Sycamore Ln
Birch Ln
Fig St
Industrial Way
Enterprise Ave
Investors Pl
Park Meadows Dr
Oostdam Dr
Warwick St
W 7th St
Saddle Ranch Trl
Pontiac St
600ft
-116.996 33.801 Degrees
Community Maps Contributors, Loma Linda University, UC Riverside, County of Riverside, ...
esri

ATTACHMENT B

PROJECT TRIP GENERATION

TABLE 1: PROJECT TRIP GENERATION SUMMARY

Land Use[1]	ITE Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Single Family Detached Residential	210	DU	0.18	0.52	0.70	0.59	0.35	0.94	9.43

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

[2] DU = dwelling units

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Lyon Avenue Project (TTM No. 38468)	153	DU	28	79	107	91	53	144	1,444

[1] DU = dwelling units