COMMUNITY & ECONOMIC DEVELOPMENT DEPARTMENT

Planning Division

Draft Mitigated Negative Declaration

WARD: 2

1. Case Number: **P18-0028 (Zoning Code Map Amendment), P18-0034 (Tentative Parcel Map), P18-0031 (Conditional Use Permit), P18-0032 (Conditional Use Permit), and P18-0033 (Design Review)**

2. Project Title: Sycamore Canyon Commercial Project

3. Public Hearing Date: April 18, 2019

4. Lead Agency: City of Riverside
Community & Economic Development Department
Planning Division
3900 Main Street, 3rd Floor
Riverside, CA 92522

5. Contact Person: Matthew Taylor, Associate Planner
Phone Number: (951) 826-5944

6. Project Location: The 2.19-acre project site is located between the southbound I-215 off-ramp and Sycamore Canyon Boulevard, north of Central Avenue and adjacent to the City boundary (APN# 256-050-007-01)

7. Project Applicant/Project Sponsor's Name and Address: Dan Goalwin
Barghausen Consulting Engineers
3883 Ruffin Rd, Suite B
San Diego CA 92123

8. General Plan Designation: Commercial

9. Zoning: Proposed Zoning: CG – Commercial General Zone

10. Description of Project:

The proposed project by Mr. Allen Sipe, on behalf of Eugene Marini of KA Enterprises, is to obtain entitlements for construction of a commercial development including a fueling station with 12 gasoline pumps, a car wash, a 3,200 square-foot (sf) convenience store, and a 3,800-sf fast food restaurant with drive-thru and associated parking.

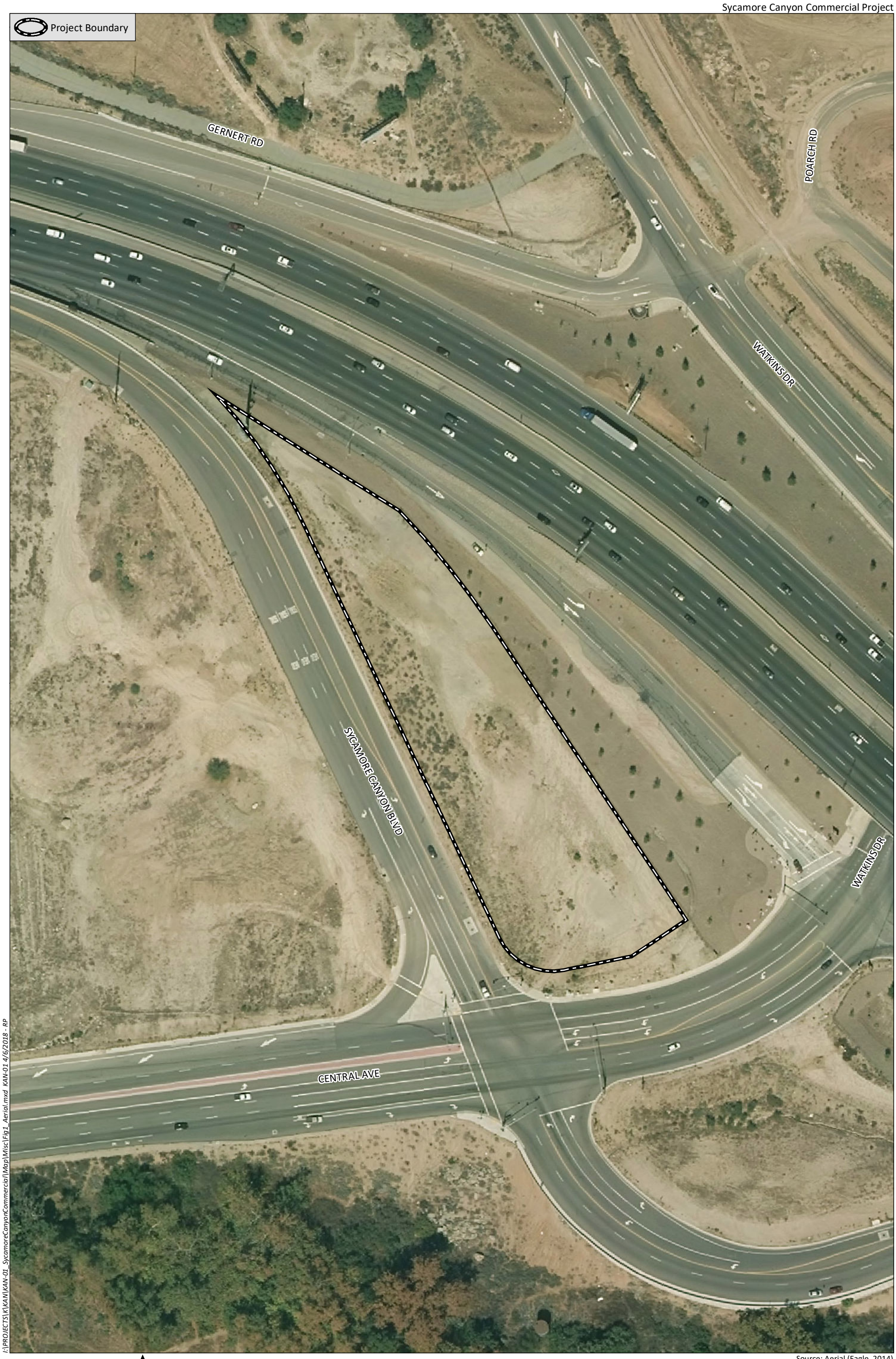
The property is an approximately 2.19-acre site adjacent to Sycamore Canyon Boulevard and the Interstate-215 (I-215) southbound off-ramps in the City of Riverside. The project site is comprised of

three parcels totaling 84,386 square feet (2.19 acres). The site is approximately 790 feet long, 170 feet wide, tapered to a wedge to the north, and a 210-foot base to the south at the corner of Central Avenue and Sycamore Canyon Boulevard. The project site is vacant and consists of bare dirt and sparse vegetation. The site is bordered to the west by Sycamore Canyon Boulevard, to the east by the Central Avenue off-ramp of I-215/SR-60, and to the south by Central Avenue. Residential development is located approximately 640 feet south and 2,200 feet west of the project site, and hillsides with low density single-family residential development are located to the east of I-215/SR-60.

The project entails the construction of a 3,200 square-foot convenience store, one fast food restaurant with a drive-thru (3,800 square feet), a carwash (1,518 square feet), a gas station with six two-sided gas pumps (for a total of 12 fueling positions), and 52 vehicle surface parking spaces for all proposed commercial uses. The carwash component dryer would be designed to not generate a noise level of greater than 84 A-weighted decibels (dBA) at a distance of 10 feet from the exit of the tunnel and includes two additional self-vacuum parking spaces. The project would also include the installation of a Healy clean air separator to hold excess gasoline vapors from the storage tanks. Product throughput for the proposed gas station is estimated at 2.4 million gallons per year (2,150,000 gallons of gasoline, and 250,000 gallons of diesel).

Project features include low-flow plumbing and energy efficient fixtures for all proposed structures and the installation of white roofing to reduce heat absorption. The project also includes the installation of five bioretention ponds along the perimeter of the project site. Primary vehicular access to the project site would be provided by two driveways located along Sycamore Canyon Boulevard. Construction would take approximately seven months.

The project will require approval of a Zoning Code Map Amendment to apply the CG – Commercial General Zone to the project site, which was not previously zoned; a Tentative Parcel Map to subdivided the subject 2.19 acres into two lots ranging in size from 1.04 to 1.15 acres; a Conditional Use Permit to permit a vehicle fuel station with the concurrent off-sale of beer and wine and a drive-thru automated vehicle wash facility; a Conditional Use Permit for a drive-thru restaurant; and Design Review of project plans including the plot plan, building elevations, conceptual grading and landscape plans. These entitlements will be considered and acted upon by the City Planning Commission and the City Council. Separately, the project requires a determination by the Riverside County Airport Land Use Commission (ALUC) that the proposed Zoning is consistent with Zone E the March Air Reserve Base/March Inland Port Land Use Compatibility Plan; ALUC issued a Director's Determination of Consistency for the proposed project on July 26, 2018 (File No. ZAP1304MA18).



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0 100 Feet

Source: Aerial (Eagle, 2014)

HELIX Environmental Planning

Project Location

Figure 1

Source: Aerial (Eagle, 2014)

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HELIX Environmental Planning

Site Plan

Figure 2

11. Surrounding land uses and setting: Briefly describe the project's surroundings:

	Existing Land Use	General Plan Designation	Zoning Designation
Project Site	Vacant	C – Commercial	N/A
North	I-215 & vacant	HR – Hillside Residential	RC – Residential Conservation; C-1/C-P – General Commercial (County of Riverside)
South	Open Space	P – Public Park	C-P-S – Scenic Highway Commercial (County of Riverside)
East	I-215 & vacant	HR – Hillside Residential	A-1-1 – Light Agriculture (County of Riverside); SP – Specific Plan (Gateway Center) (County of Riverside)
West	Vacant	C – Commercial	CG – Commercial General

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

a. South Coast Air Quality Management District (SCAQMD) – Dust Control Plan
b. Regional Water Quality Control Board (RWQCB), Santa Ana Region – National Pollutant Discharge Elimination System (NPDES) Construction General Permit
c. RWQCB, Santa Ana Region – 401 Water Quality Certification – Waste Discharge Requirement (WDR)
d. Santa Ana Regional Water Quality Control Board – Water Quality Management Plan (WQMP); and
e. Santa Ana Regional Water Quality Control Board – Storm Water Pollution Prevention Plan (SWPPP).
f. Riverside County Airport Land Use Commission (ALUC) – Major Land Use Action Review

13. Other Environmental Reviews Incorporated by Reference in this Review:

a. General Plan 2025
b. GP 2025 Final Programmatic Environmental Impact Report (FPEIR)

14. List of Appendices

a. Appendix A: Project Plans
b. Appendix B: Air Quality and Greenhouse Gas Study, Rincon Consultants, Inc. (September 2018)
c. Appendix C: Biological Technical Report, Glenn Lukos Associates, Inc. (October 2018)

d. Appendix D: Phase 1 Historical/Archaeological Resources Survey, CRM Tech, October 2018)

e. Appendix E: Geotechnical Investigation Report, Southern California Geotechnical (December 2017)

f. Appendix F: Phase I Environmental Site Assessment, Ardent Environmental Group, Inc. (August 23, 2017)

g. Appendix G: Hydrology and Hydraulics Report, Omega Engineering Consultants (January 2018)

h. Appendix H: Water Quality Management Plan, Omega Engineering Consultants (January 2018)

i. Appendix I: Noise Impact Analysis, Eilar Associates, Inc. (September 2018)

j. Appendix J: Traffic Impact Study, Darnell & Associates, Inc. (August 2018)

15. Acronyms

AB -	Assembly Bill
ARB -	Air Resources Board
AQMP -	Air Quality Management Plan
CalEEMod -	California Emissions Estimator Model
CAPCOA -	California Air Pollution Control Officer's Association
CEQA -	California Environmental Quality Act
CNEL -	Community Noise Equivalent Level
dBA -	A-Weighted Decibels
EOP -	Emergency Operations Plan
FPEIR -	GP 2025 Final Programmatic Environmental Impact Report
GIS -	Geographic Information System
GHG -	Greenhouse Gas
GP 2025 -	General Plan 2025
IS -	Initial Study
LSTs -	Localized Significance Thresholds
MARB/MIP -	March Air Reserve Base/March Inland Port
MBTA -	Migratory Bird Treaty Act
MJPA-JLUS -	March Joint Powers Authority - Joint Land Use Study
MSHCP -	Multiple-Species Habitat Conservation Plan
OEM -	Office of Emergency Services
OPR -	Office of Planning & Research, State
PEIR -	Program Environmental Impact Report
RCA -	Regional Conservation Authority
RCALUC -	Riverside County Airport Land Use Commission
RCALUCP -	Riverside County Airport Land Use Compatibility Plan
RCP -	Regional Comprehensive Plan
RMC -	Riverside Municipal Code
RPD -	Riverside Police Department
RPU -	Riverside Public Utilities
RTIP -	Regional Transportation Improvement Plan
RTP -	Regional Transportation Plan
RUSD -	Riverside Unified School District
SCAG -	Southern California Association of Governments

SCAQMD -	South Coast Air Quality Management District
SCH -	State Clearinghouse
SR-	State Route
SWPPP -	Storm Water Pollution Prevention Plan
TAC -	Toxic Air Contaminant
UCR -	University of California Riverside
UNET -	University Neighborhood Enhancement Team
USGS -	United States Geologic Survey
WDR -	Waste Discharge Requirement
WMWD -	Western Municipal Water District
WQMP -	Water Quality Management Plan

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 & Forest Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials	☐ Hydrology/Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☐ Noise
☐ Population/Housing	☐ Public Service	☐ Recreation
☐ Transportation/Traffic	☐ Tribal Resources	☐ Utilities/Service Systems
☐ Mandatory Findings of Significance		

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation which reflects the independent judgment of the City of Riverside, it is recommended that:

The City of Riverside finds that the project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared. ☐

The City of Riverside finds that although the 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 City of Riverside finds that the project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required. ☐

The City of Riverside finds that the 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. ☐

The City of Riverside finds that although the 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 project, nothing further is required. ☐

Signature _____ Date _____

Printed Name & Title Matthew Taylor, Associate Planner For City of Riverside

COMMUNITY & ECONOMIC DEVELOPMENT DEPARTMENT

Planning Division

Environmental Initial Study

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 measure 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) 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.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
1. AESTHETICS. Would the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐

1a. Response: (*Source: General Plan 2025 Figure CCM-4 – Master Plan of Roadways, General Plan 2025 FPEIR, Figure 5.1-1 – Scenic and Special Boulevards and Parkways, Table 5.1-A – Scenic and Special Boulevards, and Table 5.1-B – Scenic Parkways)*

Less Than Significant Impact: The City's General Plan 2025 policies aim at balancing development interests with broader community preservation objectives. While there are no scenic vistas within the immediate project vicinity, the nearby Box Springs Mountains to the north is partially visible from the project site. Views may be partially obscured with the development of the project; however, the project is proposed within an area designated for commercial uses and surrounding properties along I-215 are developed with or zoned for similar or compatible uses. In addition, the project site and vicinity are not designated by the City's General Plan for the preservation or uniqueness of scenic views. The project is not located within view of a scenic boulevard, parkway or special boulevard as designated by the City's General Plan 2025. While a portion of Central Avenue is considered a Scenic Boulevard, the project is not visible from that location, and therefore will not have any effect on scenic resources within a scenic roadway. Further, Sycamore Canyon Boulevard is not listed as a scenic or special boulevard by the FPEIR (Table 5.1-A). There would be less than significant impacts to scenic vistas.

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

1b. Response: *(Source: General Plan 2025 Figure CCM-4 – Master Plan of Roadways, General Plan 2025 FPEIR, Figure 5.1-1 – Scenic and Special Boulevards, Parkways, Table 5.1-A – Scenic and Special Boulevards, Table 5.1-B – Scenic Parkways, the City's Urban Forest Tree Policy Manual)*

No Impact: There are no scenic highways within the City that could potentially be impacted. The nearest scenic highway is Route 243, which is approximately 25 miles east of the project site in the San Bernardino Mountains. SR-60 is not an eligible scenic highway. The proposed project is not located within view of a scenic boulevard, parkway or special boulevard as designated by the City's General Plan 2025. While a portion of Central Avenue is considered a Scenic Boulevard, the project is not visible from that location, and therefore will not have any effect on scenic resources within a scenic roadway. Additionally, there are no significant trees, rock outcropping or historic buildings that would be impacted or removed as part of the project. Therefore, no impacts would occur.

c. Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐

1c. Response: *(Source: General Plan 2025, General Plan 2025 FPEIR, Zoning Code, Citywide Design and Sign Guidelines)*

Less Than Significant Impact: Construction of the proposed commercial buildings on the project site would alter the existing visual character of the vacant project site. However, the project site is located adjacent to an I-215 off-ramp and is in an area designated for commercial and visitor serving uses. The project would comply with all pertinent design requirements, the Zoning Code and the Citywide Design Guidelines to assure that the site design and building architecture meets City standards. The property would be modified from a vacant and unvegetated site to a commercial development with a coherent and organized site design and landscaping. Due to all these factors, direct, indirect and cumulative impacts on the visual character and quality of the area would be less than significant.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

1d. Response: ***(Source: General Plan 2025, Title 19 – Article VIII – Chapter 19.556 – Lighting, Citywide Design and Sign Guidelines)***

Less Than Significant Impact: The project site is undeveloped and there is currently limited sources of lighting or glare emanating from the project site. However, the project site receives nighttime illumination from vehicle headlights and street lights along Central Avenue, Sycamore Canyon Boulevard, and the I-215. Current sensitive receptors relative to lighting and glare include motorists and pedestrians. The proposed project will include installation of new lighting sources on the project site that will include exterior lighting for streetlights, parking lot illumination, and gas station canopy lighting. However, the City's Municipal Code lighting requirements establishes design and development standards for lighting that include height, shielding, and location requirements to ensure lighting does not impact existing uses in the project area. Additionally, the installation of outdoor lighting will be required to meet the requirements of Chapter 19.556, which will reduce the potential to generate glare from new lighting fixtures. Chapter 19.590 (Performance Standards) requires that on-site lighting be arranged as to reflect away from adjoining property or any public streets. Light shall not be directed skyward or in a manner that interferes with aircraft operation. As shown in the City's General Plan EIR Figure 5.1-2, Mt. Palomar Night Time Lighting Policy Area, the site is not within the Mount Palomar Lighting Area. The addition of new sources of permanent light and glare as a result of implementation of the project would not significantly increase ambient lighting in the project vicinity. Through compliance with the City's Municipal Code, prior to building permit issuance, impacts related to sources of light will be less than significant.

2. AGRICULTURE AND FOREST 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 the forest carbon measurement methodology provided in the 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?	☐	☐	☐	☒

2a. Response: ***(Source: California Department of Conservation, California Important Farmland Finder (http://maps.conservation.ca.gov/ciff/ciff.html) Accessed March 28, 2018; Figure OS-2 – Agricultural Suitability, General Plan 2025)***

No Impact: The Project is located within an urbanized area. A review of Figure OS-2 – Agricultural Suitability of the General Plan 2025 reveals that the project site is not designated as land classified as Prime Farmland, Unique

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land. Therefore, the project would have no impact directly, indirectly or cumulatively to agricultural uses.

b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

2b. Response: ***(Source: General Plan 2025 – Figure OS-3 - Williamson Act Preserves, General Plan 2025 FPEIR – Figure 5.2-4 – Proposed Zones Permitting Agricultural Uses, and Title 19)***

No Impact: A review of Figure 5.2-2 – Williamson Act Preserves of the General Plan 2025 FPEIR reveals that the project site is not located within an area that is affected by a Williamson Act Preserve or under a Williamson Act Contract. Moreover, the project site is not zoned for agricultural use and is not adjacent to land zoned for agricultural use; therefore, the project would have no impact directly, indirectly or cumulatively.

c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)) timberland (as defined in Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒

2c. Response: ***(Source: GIS Map – Forest Data)***

No Impact: The project site is currently surrounded by roads and is characterized as a vacant lot with some brush vegetation. The project site is has a General Plan Land Use Designation of C – Commercial and will be zoned CG – Commercial General Zone. The City of Riverside has no forest land that can support 10-percent native tree cover nor does it have any timberland. Therefore, no impacts would occur from this project directly, indirectly or cumulatively.

d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒

2d. Response: ***(Source: GIS Map – Forest Data)***

No Impact: The project site is currently surrounded by roads and is characterized as a vacant lot with some brush vegetation. The project site is has a General Plan Land Use Designation of C – Commercial and will be zoned CG – Commercial General Zone. The City of Riverside has no forest land that can support 10-percent native tree cover nor does it have any timberland. Therefore, no impacts would occur from this project directly, indirectly or cumulatively.

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?	☐	☐	☐	☒

2e. Response: (Source: General Plan – Figure OS-2 – ***Agricultural Suitability, Figure OS-3 – Williamson Act Preserves, and GIS Map – Forest Data)***

No Impact: The project is located in an urbanized area of the City designated as “Other Land" by the California Department of Conservation and does not support agricultural resources or operations. The project would not result in the conversion of designated farmland to non-agricultural uses. In addition, there are no agricultural resources or operations, including farmlands, within proximity of the subject site. The City of Riverside has no forest land that

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

can support 10-percent native tree cover. Therefore, no impacts would occur from this project directly, indirectly or cumulatively to conversion of Farmland to non-agricultural use or to the loss of forest land.

3. 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?	☐	☐	☒	☐

3a. Response: ***(Source: South Coast Air Quality Management District's 2012 Air Quality Management Plan (AQMP); Sycamore Canyon Boulevard Project Air Quality and Greenhouse Gas Study prepared by Rincon Consultants, January 2018)***

Less Than Significant Impact: A project may be inconsistent with the AQMP if it would generate population, housing, or employment growth exceeding the forecasts used in the development of the AQMP. The 2016 AQMP relies on local city general plans' and the Southern California Association of Governments (SCAG) Regional Transportation Plans' (RTP) forecasts of regional population, housing, and employment growth in its own projections for managing Basin air quality. The proposed zoning for the project is General Commercial (CG).

The project entails the construction of a 3,200 square-foot convenience store, one fast food restaurant with a drive-thru (3,800 square feet), a carwash (1,518 square feet), a gas station with six two-sided gas pumps (12 multi-product dispensers), and 52 vehicle surface parking spaces for all proposed commercial uses. The project would not provide residential units that would cause a direct increase in the City's population. While the project may provide new employment opportunities in the City of Riverside that could contribute to population growth, this contribution would be negligible. The project may employ approximately 33 persons (SCAG 2001). In its 2016 Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS), SCAG projects that Riverside's number of employees will increase to 1,175,000 by 2040; an increase of 433,000 persons relative to 2015 (SCAG 2015). Based on these estimates, project employment would constitute less than 0.01 percent of projected employment growth. Thus, the level of employment growth associated with the project was anticipated in SCAG's long-term population forecasts, on which the 2016 AQMP was based, and would not exceed official regional employment projections. The project would be consistent with the General Plan and AQMP.

In addition, emissions generated by construction and operation of the proposed project will not exceed thresholds, which are based on the AQMP and are designed to bring the Basin into attainment for the criteria pollutants for which it is in nonattainment. Therefore, because the proposed project does not exceed any of the thresholds it will not conflict with SCAQ's goal of bringing the Basin into attainment for all criteria pollutants and, as such, is consistent with the AQMP. As a result, impacts related to conflict with the AQMP from the proposed project will be less than significant.

b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐

3b. Response: ***(Source: General Plan 2025 FPEIR Table 5.3-B SCAQMD CEQA Regional Significance Thresholds, South Coast Air Quality Management District's 2012 AQMP, CalEEMod, and Sycamore Canyon Boulevard Project Air Quality and Greenhouse Gas Study prepared by Rincon Consultants, January 2018)***

Less Than Significant Impact: The SCAQMD has adopted numerical thresholds to analyze the significance of a project's construction and operational emissions. These thresholds are applicable to projects where the SCAQMD is the lead agency, but are also recommended for land use projects within the South Coast Air Basin (SCAB). These thresholds are designed such that a project consistent with the thresholds would not have an individually or

cumulatively significant impact to the SCAB's air quality. Thus, a project that does not exceed these SCAQMD thresholds would have a less than significant impact. The significance thresholds for temporary construction and long-term operational emissions in the SCAB are shown in Tables 1 and 2 respectively.

Temporary Construction Impacts

Construction

Construction activities will generate pollutant emissions from: (1) site preparation, grading, and excavation; (2) construction workers traveling to and from project site; (3) delivery and hauling of construction supplies to, and debris from, the project site; (4) fuel combustion by onsite construction equipment; (5) building construction; application of architectural coatings; and paving. The amount of emissions generated daily will vary, depending on the intensity and types of construction activities occurring.

It is mandatory for all construction projects to comply with several SCAQMD Rules, including Rule 403 for controlling fugitive dust, PM10, and PM2.5 emissions from construction activities. Rule 403 requirements include, but are not limited to, applying water in sufficient quantities to prevent the generation of visible dust plumes, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site, covering all trucks hauling soil with a fabric cover and maintaining a freeboard height of 12-inches, and maintaining effective cover over exposed areas. In addition, SCAQMD Rule 1113 requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce volatile organic compound emissions from use of coatings. Compliance with Rules 403 and 1113 was accounted for in the construction emissions modeling.

Table 1 Estimated Construction Emissions Maximum Daily (lbs/day)

	Maximum Emissions[1]				
Construction Year	**ROG**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**
2019 Maximum	7.4	48.2	30.5	5.2	2.8
SCAQMD Regional Thresholds	75	100	550	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**
Maximum On-site Emissions	2.6	18.9	15.3	1.1	1.0
Localized Significance Thresholds (LSTs) (On-site only)	N/A	379	5,136	75	23
Threshold Exceeded?	**N/A**	**No**	**No**	**No**	**No**

Notes: All calculations were made using CalEEMod. See Appendix A for model results. Site Preparation, Grading, Paving, Building Construction, and Architectural Coating totals include worker trips, soil export hauling trips, construction vehicle emissions and fugitive dust. Totals may not add up due to rounding. Emission data is pulled from "mitigated" results that include compliance with regulations and project design features that will be included in the project.

1 Grading phases incorporate anticipated emissions reductions from the conditions listed above, which are required by SCAQMD Rule 403 to reduce fugitive dust. The architectural coating phases incorporate anticipated emissions reductions from the conditions listed above, which are required by Rule 1113.

2 All emissions results in this table are from the Winter emissions results, with the exception CO emissions, which are from the Summer emissions results.

Long-Term Operational Impacts

Table 2 summarizes estimated emissions associated with operation of the project. The majority of project-related operational emissions would be due to stationary emissions and vehicle trips to and from the site. As shown below, project-generated emissions would not exceed SCAQMD regional thresholds for ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$.The majority of operational emissions generated would be due to stationary source emissions from fuel storage and dispensing, and mobile emissions from vehicle trips to and from the project site. The CalEEMod analysis was based on estimated emissions from the whole project including trip generation emissions calculated from the traffic study completed for the project, which concluded the project would generate a total of 3,248 daily trips after accounting for pass-by trip reductions (Darnell & Associates, Inc. 2017). The project includes the installation of a vapor control device, a Healy clean air separator, to hold excess gasoline vapors from the storage

tanks. As shown in Table 2, emissions generated during operation of project would not exceed SCAQMD screening level thresholds for ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$. Therefore, the project's regional air quality impacts would be less than significant.

Table 2 Project Operational Emissions (lbs/day)

Emissions Source	Estimated Emissions					
	ROG	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Area	0.3	<0.1	<0.1	<0.1	<0.1	<0.1
Stationary	9.5	<0.1	<0.1	<0.1	<0.1	<0.1
Energy	<0.1	0.3	0.3	<0.1	<0.1	<0.1
Mobile	4.4	16.9	31.9	0.1	5.8	1.6
Project Total	**14.0**	**17.2**	**32.2**	**0.1**	**5.8**	**1.6**
SCAQMD Thresholds	55	55	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Implementation of the proposed project would not result in any air quality exceedances of applicable short-term construction and long-term operational thresholds, and the project would be consistent with the AQMP. Projects that are consistent with the AQMP have been accounted for in regional, basin-wide emissions projections intended to achieve and maintain attainment with federal and State ambient air quality standards, and are typically assumed not to result in cumulatively considerable impacts to air quality. In addition, the project would not generate impacts related to localized CO hotspots, toxic air contaminants, or odors that would be significant. These impacts are localized to the project site and immediate vicinity, and are therefore not typically cumulative in nature. Therefore, no additional measures beyond those required by SCAQMD rules are needed to reduce project air quality impacts.

c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐

3c. Response: Response: ***(Source: General Plan 2025 FPEIR Table 5.3-B SCAQMD CEQA Regional Significance Thresholds, South Coast Air Quality Management District's 2012 Air Quality Management Plan)***

Less Than Significant Impact: The portion of the Basin within which the City is located is designated as a non-attainment area for ozone, PM-10 and PM-2.5 under State standards, and as a non-attainment area for ozone, carbon monoxide, PM_{10}, and $PM_{2.5}$ under Federal standards. Per the GP 2025 FPEIR, AQMP thresholds indicate future construction activities under the General Plan are projected to result in significant levels of NO_x and ROG, both ozone precursors, as well as PM_{10}, $PM_{2.5}$ and CO. Although long-term emissions are expected to decrease by 2025, all criteria pollutants remain above the SCAQMD thresholds.

In addition, SCAQMD's cumulative air quality impact methodology recommends that if an individual project results in air emissions of criteria pollutants (ROG, CO, NOx, SOx, PM_{10}, and $PM_{2.5}$) that are below the SCAQMD's recommended daily thresholds for project-specific impacts, then it will not result in a cumulatively considerable net increase of the criteria pollutant(s) for which the project region is in non-attainment under an applicable federal or state ambient air quality standard. As shown, in Tables 1 and 2, operation of the proposed project will not exceed SCAQMD's applicable thresholds.

Because the project is consistent with the General Plan 2025, cumulative impacts related to criteria pollutants as a result of the project were previously evaluated as part of the cumulative analysis of build out anticipated under the

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

General Plan 2025. As a result, the project would not result in any new significant impacts that were not previously evaluated and for which a statement of overriding considerations was adopted as part of the General Plan 2025 FPEIR. Therefore, cumulative air quality emissions impacts would be less than significant.

d. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐

3d. Response: ***(Source: General Plan 2025 FPEIR Table 5.3-B SCAQMD CEQA Regional Significance Thresholds, South Coast Air Quality Management District's 2012 AQMP, CalEEMod, and Sycamore Canyon Boulevard Project Air Quality and Greenhouse Gas Study prepared by Rincon Consultants, January 2018)***

Toxic Air Contaminants

Less Than Significant Impact: Sensitive receptors include the residences that are adjacent to the project site. The SCAQMD has developed Local Significance Thresholds (LSTs) that 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 standards, and thus will not cause or contribute to localized air quality impacts. LSTs are developed based on the ambient concentrations of NOx, CO, PM10, and PM2.5 pollutants for each of the 38 source receptor areas (SRAs) in the SCAB.

A toxic air contaminant (TAC) is defined by California law as an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health. TACs are primarily regulated through the Tanner Air Toxics Act (Assembly Bill [AB] 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). AB 1807 sets forth a formal procedure for ARB to utilize when designating substances as TACs. This procedure includes pre-designation research, public participation, and scientific peer review. Pursuant to AB 2588, existing facilities that emit air pollutants above specified levels are required to (1) prepare a TAC emissions inventory plan and report; (2) prepare a risk assessment if TAC emissions are significant; (3) notify the public of significant risk levels; and (4) if health impacts are above specified levels, prepare and implement risk reduction measures.

For purposes of CEQA, the preparation of health risk assessments (HRAs) to evaluate the human health-based consequences of TAC emissions for land use development projects may be warranted under two sets of circumstances:

- A project itself generates TACs as a result of construction and/or operational activities that may adversely impact sensitive receptors (e.g., residents), and/or
- A project is located in an area that may adversely expose sensitive receptors associated with its proposed land uses to significant concentrations of TACs from existing stationary and/or mobile sources of TACs (e.g., a fossil-fueled power plant, a high-volume freeway or roadway, a gas station, etc.).

High-volume TAC generators that are listed as potential health risk sources include the operation of commercial diesel engines and truck stops, landfills and incinerators, and chemical manufacturers (ARB 2005). The project includes the construction and operation of a gas station, which is identified in the ARB Air Quality and Land Use Handbook (2005) as a facility type that emits TACs, mainly benzene. Construction activities may also result in the generation of TACs. However, the construction period estimated for the project would be temporary and limited to approximately eight months. While gasoline-dispensing facilities account for a small part of the total benzene emissions in the City, near source exposures for large facilities, with throughputs of 3.6 million gallons per year or greater of gasoline, can be significant. The project is conservatively estimated to have a total product throughput of 2.5 million gallons per year of gasoline. Facilities with annual throughput of less than 3.6 million gallons of gasoline per year are considered typical facilities.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

The ARB recommends avoiding placing large gasoline dispensing facilities within 300 feet of sensitive land uses or typical gasoline dispensing facilities within 50 feet of sensitive land uses, since health risks are drastically reduced with increasing fenceline distance between the pollutant source and receptor (ARB 2005). The center of the proposed gas station area is approximately 640 feet from the property line of the nearest sensitive receptor, which is beyond both the ARB's recommended 300-foot distance for large facilities, and 50-foot distance for typical facilities, such as the project. Therefore, construction and operation of the proposed gas station would not expose residents in the vicinity to substantial pollutant concentrations. Furthermore, construction and operational emissions for the project would be well below the County's criteria pollutants screening level thresholds, which are designed to be protective of public health.

Mobile emissions during project operations would primarily be comprised of passenger and light-duty vehicles accessing the gas station, convenience store, fast food restaurant, and carwash. The project would not attract a large number of trips from large or heavy-duty vehicles that could generate mobile diesel emissions due to the passenger vehicle-serving nature of the proposed use. The applicant anticipates the project would generate three estimated truck trips to the site per week for delivery of convenience store and restaurant goods, and four estimated truck trips per week for the delivery of petroleum product for distribution purposes. Therefore, construction and operation of the proposed gas station and convenience store would not generate TACs that would adversely impact sensitive receptors in the vicinity of the project site.

Carbon Monoxide Hotspots

A CO hotspot is a localized concentration of CO that is above the state one-hour or eight-hour CO ambient air standards. Localized CO hotspots can occur at intersections with heavy peak hour traffic. Specifically, hotspots can be created at intersections where traffic levels are sufficiently high such that the local CO concentration exceeds the federal one-hour standard of 35.0 ppm or the state one-hour standard of 20.0 ppm, or the state and federal 8-hour average of 9.0 ppm (ARB 2016). Intersections near the project site accommodate less than 100,000 vehicles per day based on peak hour traffic volumes collected for the project traffic study (Darnell & Associates, Inc. 2017). According to the project traffic study, existing plus project LOS for studied intersections would remain the same as existing conditions and no studied intersections would be reduced in LOS.

In addition, as shown in Table 2, the project would generate maximum daily CO emissions of approximately 32 pounds, which is well below the SCAQMD threshold of 550 pounds. Based on the low background level of CO in the project area, ever-improving vehicle emissions standards for new cars in accordance with state and federal regulations, and the project's low level of operational CO emissions, the project would not result in the creation of new hotspots or contribute substantially to existing hotspots. Impacts to sensitive receptors would be less than significant.

e. Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

3e. Response: ***(Source: Sycamore Canyon Boulevard Project Air Quality and Greenhouse Gas Study prepared by Rincon Consultants, January 2018)***

Less Than Significant Impact: The 1993 SCAQMD CEQA Air Quality Handbook identifies land uses associated with odor complaints to be agriculture uses, wastewater treatment plants, chemical and food processing plants, composting, refineries, landfills, dairies, and fiberglass molding. The project would involve the temporary use of diesel-powered construction equipment, which would generate exhaust that may be noticeable for short durations at adjacent properties. However, construction activities would be temporary, sensitive receptors are at least 640 feet from the site, and emissions would not exceed SCAQMD thresholds.

The proposed operation of a convenience store, fast food restaurant, gas station, and carwash are not typically associated with objectionable odors, although odors from fast food production and gasoline product could be

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

noticeable in the immediate vicinity of the site. The project site vicinity has sparse development and is adjacent to the I-215 off-ramp and approximately 220 feet from I-215. The nearest potential sensitive receptors are 640 feet or more from the site, and it is unlikely that the odors from the project would be distinguishable from existing sources given the vehicle emissions associated with adjacent roadways in the vicinity of the project site. Furthermore, the project would include the installation of a Healy clean air separator to hold excess gasoline vapors from the underground storage tanks, which would reduce odor impacts. Therefore, the project would not generate objectionable odors that would affect a substantial number of people and a less than significant impact would occur directly, indirectly or cumulatively for this project.

4. 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 Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐

4a. Response: ***(Source: Biological Technical Report for Central and Sycamore Project, prepared by Glenn Lukos Associates, Inc. June 30, 2017)***

Less Than Significant with Mitigation Incorporated: Because there is no potential habitat for any special-status species, the project would not impact special-status plants. The project may impact one special-status species, coastal whiptail. An individual was observed during the field visit. Given the small size and location of the Project site, no more than a few individuals of this species are expected to occur on the site. No other special-status animals are expected. The removal of coastal whiptail habitat and potential mortality to a few individuals would not be potentially significant under CEQA. In addition, coastal whiptail is a fully covered species under the MSHCP, meaning that potential impacts to the species by the project would be mitigated through compliance with the MSHCP.

The Project site occurs within the MSHCP survey area for burrowing owl. Although the site lacked potential burrows, MSHCP Objective 6 for burrowing owls requires that pre-construction surveys be conducted prior to site grading. As such, measure BIO-1 is required to avoid direct impacts to burrowing owls and to ensure consistency with the MSHCP:

BIO-1 A qualified biologist shall conduct a pre-construction presence/absence survey for burrowing owls within 30 days prior to site disturbance. If burrowing owls are detected on-site, the owls shall be relocated/excluded from the site outside of the breeding season following accepted protocols, and subject to the approval of the RCA and wildlife agencies.

The Project site contains vegetation with the potential to support nesting birds. The migratory bird treaty act (MBTA) and California Fish and Game Code prohibit impacts to nesting birds. The following measure is required to avoid impacts to nesting birds:

BIO-2 Vegetation clearing shall be conducted outside of the nesting season, which is generally identified as February 1 through September 15, if feasible. If avoidance of the nesting season is not feasible, then a qualified biologist shall conduct a nesting bird survey within three days prior to any disturbance of the site, including disking, demolition activities, and grading. If active nests are identified, the biologist shall establish suitable buffers around the nests, and the buffer areas shall be avoided until the nests are no longer occupied and the juvenile birds can survive independently from the nests.

Impacts associated with sensitive and special status species would be less than significant with mitigation incorporated.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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 Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐

4b. Response: ***(Source: Biological Technical Report for Central and Sycamore Project, prepared by Glenn Lukos Associates, Inc. June 30, 2017)***

Less Than Significant Impact: The project would impact 2.1 acres of developed/disturbed land and would also permanently impact approximately 0.61 acre of revegetated Riversidean sage scrub. This vegetation occurs as a strip of vegetation on the cut slope adjacent to Sycamore Canyon Boulevard and is not expected to provide habitat for species that rely on sage scrub vegetation communities given its limited size and high level of disturbance. Because Riversidean sage scrub take is authorized by the MSHCP, the proposed permanent removal of 0.61 acre of Riversidean sage scrub would be a less than significant impact under CEQA.

c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒

4c. Response: (*Source: Biological Technical Report for Central and Sycamore Project, prepared by Glenn Lukos Associates, Inc. June 30, 2017*

No Impact: The project would not impact jurisdictional waters as none are present on or directly adjacent to the Project site. No impact would occur.

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?	☐	☐	☐	☒

4d. Response: (*Source: Biological Technical Report for Central and Sycamore Project, prepared by Glenn Lukos Associates, Inc. June 30, 2017*

No Impact: The project site lacks migratory wildlife corridors and wildlife nursery sites and does not occur within MSHCP designated Cores or Linkages. However, the project site is located within Criteria Cell 721 of Subunit 1 of the Sycamore Canyon/Box Springs Central Area Plan. All projects located within the Criteria Area are subject to the Joint Project Review (JPR) process, where the project is reviewed by the Regional Conservation Authority (RCA) to determine overall compliance/consistency with the biological requirements of the MSHCP. The project site is not connected to natural open space and has been mechanically altered such that it supports a few remnant patches of sage scrub that no longer function as a natural vegetation community. The project would not interfere or impact (1) the movement of native resident or migratory fish or wildlife species, (2) established native resident or migratory wildlife corridors, or (3) the use of native wildlife nursery sites. No impact would occur.

e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

4e. Response: ***(Source: Biological Technical Report for Central and Sycamore Project, prepared by Glenn Lukos Associates, Inc. June 30, 2017***

Less Than Significant Impact: Implementation of the project is subject to all applicable Federal, State, and local policies and regulations related to the protection of biological resources and tree preservation. In addition, the project is required to comply with Riverside Municipal Code Section 16.72.040 establishing the MSHCP mitigation fee and Section 16.40.040 establishing the Threatened and Endangered Species Fees. In addition, there are no existing trees within the project site. For these reasons, the project would have a less than significant impact directly, indirectly and cumulatively on local policies or ordinances protecting biological resources and tree preservation.

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?	☐	☐	☒	☐

4f. Response: ***(Source: Biological Technical Report for Central and Sycamore Project, prepared by Glenn Lukos Associates, Inc. June 30, 2017; RCA Joint Project Review [JPR] 18-08-07-01, December 4, 2018)***

Less Than Significant Impact: The project is not directly adjacent to existing MSHCP conservation area. Proposed Constrained Linkage 7 is south of the Project site, on the south side of Central Avenue. The project has existing roads (Sycamore Canyon Boulevard and Central Avenue) and a vacant property between it and Proposed Constrained Linkage 7. The Project is not expected to result in significant indirect impacts to special-status biological resources, with the implementation of measures pursuant to the MSHCP Urban/Wildlands Interface Guidelines (*Volume I, Section 6.1.4* of the MSHCP). These guidelines are intended to address indirect effects associated with locating projects (particularly development) in proximity to the MSHCP Conservation Area. To minimize potential edge effects, the guidelines are to be implemented in conjunction with review of individual public and private development projects in proximity to the MSHCP Conservation Area. The Project would implement measures consistent with the MSHCP guidelines to address adjacency impacts:

Mitigation Measure:

BIO-3: Drainage - projects in proximity to the MSHCP Proposed Constrained Linkage 7 and shall incorporate measures, including measures required through the National Pollutant Discharge Elimination System (NPDES) requirements, to ensure that the quantity and quality of runoff discharged to the MSHCP Proposed Constrained Linkage 7 is not altered in an adverse way when compared with existing conditions. In particular, measures shall be put in place to avoid discharge of untreated surface runoff from developed and paved areas into the MSHCP Proposed Constrained Linkage 7. Stormwater systems, as applicable, shall be designed to prevent the release of toxins, chemicals, petroleum products, exotic plant materials or other elements that might degrade or harm biological resources or ecosystem processes within the MSHCP Proposed Constrained Linkage 7. This can be accomplished using a variety of methods including natural detention basins, grass swales or mechanical trapping devices. Regular maintenance shall occur to ensure effective operations of runoff control systems. The Project's contractor shall develop a Stormwater Pollution Prevention Plan (SWPPP) to address runoff and water quality during construction such that, following the completion of construction activities, the project will not result in increased drainage to the MSHCP Proposed Constrained Linkage 7. As such, no measures would be required post-construction.

Toxics - Land uses proposed in proximity to the MSHCP Proposed Constrained Linkage 7 that use chemicals or generate bioproducts such as manure that are potentially toxic or may adversely affect wildlife species, habitat or water quality shall incorporate measures to ensure that application of such chemicals does not result in discharge to the MSHCP Proposed Constrained Linkage 7. Measures such as those employed to address drainage issues shall be implemented. As discussed above for drainage, the project shall implement a SWPPP that will address runoff during construction.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Lighting - Night lighting shall be directed away from the MSHCP Proposed Constrained Linkage 7 to protect species from direct night lighting. If night lighting is required during construction, shielding shall be incorporated to ensure ambient lighting in the MSHCP Proposed Constrained Linkage 7 is not increased.

Noise - Proposed noise generating land uses affecting MSHCP Conservation Area shall incorporate setbacks, berms or walls to minimize the effects of noise on MSHCP Conservation Area resources pursuant to applicable rules, regulations and guidelines related to land use noise standards. For planning purposes, wildlife within the MSHCP Conservation Area should not be subject to noise that would exceed residential noise standards.

Invasives – The project shall avoid the use of invasive plant species in landscaping, including invasive, nonnative plant species listed in *Volume I,* Table 6-2 of the MSHCP.

As described in RCA Joint Project Review (JPR) #18-08-07-01, the project demonstrates consistency with tge applicable Sections of the MSHCP. In addition, specific Conditions of Approval recommended by the JPR have been incorporated to control adverse effects of development adjacent to the MSHCP Conservation Area in compliance with Section 6.1.4 and Appendix C of the MSHCP. Because the project would be required to implement the MSHCP adjacency guidelines, impacts would be less than significant.

5. CULTURAL RESOURCES. Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5 of the CEQA Guidelines?	☐	☐	☐	☒

5a. Response: (Source: *Phase 1 Historical/Archaeological Resources Survey prepared by CRM Tech, September 2017)*

No Impact: A Phase 1 Historical/Archaeological Resources Survey was prepared by CRM Tech for the project site. In preparing their report, CRM Tech conducted a record search at the Eastern Information Center (EIC) and also conducted historical background research by consulting sources such as the U.S. General Land Office land survey plat maps, the U.S. Geological Survey (USGS), and historic aerial photographs.

The property is vacant and the survey found that there are no historical resources on the property. The California Office of Historic Preservation maintains a list of California Historical Resources. Records for Riverside County historical resources indicate that no historical resources have ever been located on the project site, and the chance that unknown historic resources could be encountered during grading is extremely low Therefore, no impacts would occur.

b. Cause a substantial adverse change in the significance of an archeological resource pursuant to § 15064.5 of the CEQA Guidelines?	☐	☒	☐	☐

5b. Response: *(Source: GP 2025 FPEIR Table 5.5-A Historical Districts and Neighborhood Conservation Areas, Appendix D, Title 20 of the Riverside Municipal Code, and Phase 1 Historical/Archaeological Resources Survey prepared by CRM Tech, September 2017)*

Less Than Significant with Mitigation Incorporated: A Phase 1 Historical/Archaeological Resources Survey was prepared by CRM Tech for the project site. The report indicates that a prehistoric (i.e., Native American) archaeological site consisting of a bedrock outcrop with three milling slicks, 33-006002 (CARIV- 5669), was recorded in the western portion of the project area in 1995. At the time of recordation, the site was determined not to be significant under CEQA provisions, and it was subsequently destroyed during mass grading on the property. The

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

field survey results from CRM TECH confirm that Site 33-006002 is no longer extant and reveal that the entire project area has been extensively disturbed from past grading, leaving little remnant of the original ground surface. No other potential "historical resources" or "tribal cultural resources" were identified within or adjacent to the project area throughout the course of the survey.

Based on these findings, no impacts are anticipated. In the unlikely event that buried cultural materials are discovered during earth-moving operations associated with the project, impacts would be potentially significant. Therefore, pursuant to mitigation measure CR-1, the City of Riverside shall be notified immediately, and all work in the immediate vicinity would be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. Impacts to archaeological resources would be less than significant with mitigation incorporated.

Mitigation Measure:

CR-1: Archaeological and Paleontological Monitoring: At least 30-days prior to application for a grading permit and before any grading, excavation and/or ground disturbing activities on the site take place, the Project Applicant shall retain a Secretary of Interior Standards qualified archaeological monitor to monitor all ground-disturbing activities in an effort to identify any unknown archaeological resources.

The Project Archaeologist, in consultation with interested tribes, the Developer and the City, shall develop an Archaeological Monitoring Plan to address the details, timing and responsibility of all archaeological and cultural activities that would occur on the project site. Details in the Plan shall include:

a. Project grading and development scheduling;

b. The development of a rotating or simultaneous schedule in coordination with the applicant and the Project Archeologist for designated Native American Tribal Monitors from the consulting tribes during grading, excavation and ground disturbing activities on the site: including the scheduling, safety requirements, duties, scope of work, and Native American Tribal Monitors' authority to stop and redirect grading activities in coordination with all Project archaeologists;

c. The protocols and stipulations that the Applicant, tribes and project archaeologist/paleontologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits, or nonrenewable paleontological resources that shall be subject to a cultural resources evaluation;

d. Treatment and final disposition of cultural and paleontological resources, sacred sites, and human remains if discovered on the project site;

e. The scheduling and timing of the Cultural Sensitivity Training per CR-4.

c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

5c. Response: ***(Source: General Plan 2025 Policy HP-1.3; GP 2025 FPEIR Figure 5.5-2 – Prehistoric Cultural Resources Sensitivity)***

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Less Than Significant with Mitigation Incorporated: Paleontological resources are the fossilized remains of organisms from prehistoric environments found in geologic strata. These resources are valued for the information they yield about the history of the earth and its past ecological settings. There are two types of resources: vertebrate and invertebrate paleontological resources. These resources are found in geologic strata conducive to their preservation, typically sedimentary formations. Paleontological sites are those areas that show evidence of prehuman activity. Often, they are simply small outcroppings visible on the surface or sites encountered during grading. The project area is mapped as both Quaternary older alluvium and Quaternary younger (MCC 2017), which are described below:

 Quaternary older alluvium (Qoa) is a Pleistocene-aged (1 million to 10,000 years ago) alluvial fan deposit that typically consists of river and stream derived sediments. The sediments are comprised of unsorted clay to pebble-sized clasts that are oxidized to a reddish hue, poorly indurated, and may contain reworked material from metamorphic and igneous geologic units nearby. This unit has the potential to produce significant paleontological resources, including remains of mammoth, mastodon, camel, horse, and other Pleistocene fossils (MCC 2017).

 Quaternary younger fan (Qyf) is a Holocene (10,000 years or younger) unit, characterized by generally loose and unconsolidated, well- to poorly-sorted deposits of varying grain sizes, deposited due to the action of rivers and streams. These units have a low potential to produce scientifically significant fossils (MCC 2017).

The County of Riverside paleontological resource sensitivity indicates that the project area has a 'High A' potential to produce paleontological resources during ground disturbing activities (MCC 2017). High A is based on geologic formations or mapped rock units that are known to contain (or have the correct age and depositional conditions to contain) significant paleontological resources, which could include an abundant number of vertebrate fossils, or a few significant fossils that may provide new and significant (taxonomic, phylogenetic, ecologic, and/or stratigraphic) data (MCC 2017). Because the project site is underlain by Qoa and is mapped as a high potential for paleontological resources, the project has the potential to impact paleontological resources during construction activities at depth. Therefore, Mitigation Measure **CR-1** (as described in Checklist Response 5b above) has been included to require that a qualified paleontological monitor oversee excavation activities, which will reduce potential impacts to paleontological resources to a less than significant level.

d. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

5d. Response: (*Source: GP 2025 FPEIR Figure 5.5-1 - Archaeological Sensitivity and Figure 5.5-2 – Prehistoric Cultural Resources Sensitivity)*

Less Than Significant with Mitigation Incorporated: No formal cemeteries are located in or near the project area. Most Native American human remains are found in association with prehistoric archaeological sites. With the exception of site CARIV-5669, which was located in the western portion of the project site and destroyed through previous grading activities, no prehistoric archaeological sites have been recorded within or near the project site. Therefore, the project has little potential to disturb human remains. However, General Plan Policy HP-1.3 states that the City shall protect sites of archaeological significance and shall ensure compliance with the Federal Native American Graves Protection and Repatriation Act in its planning and project review process. The site is listed as having high cultural resources sensitivity according to the GP 2025 EIR; therefore, mitigation measures CR-2 through CR-4 would be implemented in order to ensure that impacts to unknown resources or Tribal Cultural Resources would be less than significant with mitigation incorporated.

Mitigation Measure

CR-2 Prior to grading permit issuance, if there are any changes to project site design and/or proposed grades, the Applicant and the City shall contact interested tribes to provide an electronic copy of the revised plans for review. Additional consultation shall occur between the City, Applicant, and interested tribes to discuss any

proposed changes and review any new impacts and/or potential avoidance/ preservation of the cultural resources on the project site. The City and the Applicant shall make all attempts to avoid and/or preserve in place as many cultural and paleontological resources as possible that are located on the project site if the site design and/or proposed grades should be revised.

CR-3 Treatment and Disposition of Cultural Resources: In the event that Native American cultural resources are inadvertently discovered during the course of grading for this Project. The following procedures will be carried out for treatment and disposition of the discoveries:

1. Temporary Curation and Storage: During the course of construction, all discovered resources shall be temporarily curated in a secure location on-site or at the offices of the project archaeologist. The removal of any artifacts from the project site will need to be thoroughly inventoried with tribal monitor oversite of the process; and

2. Treatment and Final Disposition: The landowner(s) shall relinquish ownership of all cultural resources, including sacred items, burial goods, and all archaeological artifacts and non-human remains as part of the required mitigation for impacts to cultural resources. The applicant shall relinquish the artifacts through one or more of the following methods and provide the City of Riverside Community and Economic Development Department with evidence of same:

    a. Accommodate the process for on-site reburial of the discovered items with the consulting Native American tribes or bands. This shall include measures and provisions to protect the future reburial area from any future impacts. Reburial shall not occur until all cataloguing and basic recordation have been completed;

    b. A curation agreement with an appropriate qualified repository within Riverside County that meets federal standards per 36 CFR Part 79 and therefore would be professionally curated and made available to other archaeologists/researchers for further study. The collections and associated records shall be transferred, including title, to an appropriate curation facility within Riverside County, to be accompanied by payment of the fees necessary for permanent curation;

    c. For purposes of conflict resolution, if more than one Native American tribe or band is involved with the project and cannot come to an agreement as to the disposition of cultural materials, they shall be curated at the Western Science Center or Riverside Metropolitan Museum by default; and.

    d. At the completion of grading, excavation and ground disturbing activities on the site a Phase IV Monitoring Report shall be submitted to the City documenting monitoring activities conducted by the project Archaeologist and Native Tribal Monitors within 60 days of completion of grading. This report shall document the impacts to the known resources on the property; describe how each mitigation measure was fulfilled; document the type of cultural resources recovered and the disposition of such resources; provide evidence of the required cultural sensitivity training for the construction staff held during the required pre-grade meeting; and, in a confidential appendix, include the daily/weekly monitoring notes from the archaeologist. All reports produced will be submitted to the City of Riverside, Eastern Information Center and interested tribes.

CR-4 **Cultural Sensitivity Training:** The County of Riverside Certified Archaeologist and Native American Monitors shall attend the pre-grading meeting with the developer/permit holder's contractors to provide Cultural Sensitivity Training for all construction personnel. This shall include the procedures to be followed during ground disturbance in sensitive areas and protocols that apply in the event that unanticipated resources are discovered. Only construction personnel who have received this training can conduct construction and disturbance activities in sensitive areas. A sign in sheet for attendees of this training shall be included in the Phase IV Monitoring Report.

Impacts would be **less than significant with mitigation incorporated**.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
6. GEOLOGY AND SOILS. Would the project:				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒

6i. Response: ***(Source: General Plan 2025 Figure PS-1 – Regional Fault Zones & General Plan 2025 FPEIR, Geotechnical Investigation Report prepared by Southern California Geotechnical December 2017)***

No Impact: Seismic activity is to be expected in Southern California. In the City of Riverside, there are no Alquist-Priolo zones. The project site does not contain known fault lines and the potential for fault rupture or seismic shaking is low. The closest active fault is the Chino-Central Avenue Fault, which is located approximately 9.1 miles west-northwest of the site. Compliance with the California Building Code regulations would ensure that no impacts related to fault rupture would occur directly, indirectly and cumulatively.

ii. Strong seismic ground shaking?	☐	☐	☒	☐

6ii. Response: ***(Source: General Plan 2025 FPEIR, Geotechnical Investigation Report prepared by Southern California Geotechnical December 2017)***

Less Than Significant Impact: The site is located within a seismically active region of southern California. The principal seismic hazard that could affect the site is ground shaking resulting from an earthquake occurring along several major active or potentially active faults in southern California. The known regional active and potentially active faults that could produce the most significant ground shaking at the site include the Chino-Central Avenue, Elsinore-Glen Ivy, Whittier, San Bernardino and San Jacinto Valley sections of the San Jacinto fault zone, the Cucamonga, and the San Jose faults. The closest active fault is the Chino-Central Avenue Fault, which is located approximately 9.1 miles west-northwest of the site.

The amount of motion expected at a building site can vary from none to forceful depending upon the distance to the fault, the magnitude of the earthquake, and the local geology. Greater movement can be expected at sites located closer to an earthquake epicenter, that consist of poorly consolidated material such as alluvium, and in response to an earthquake of great magnitude. Structures built in the City are required to be built in compliance with the California Building Code (CBC [California Code of Regulations, Title 24, Part 2]) that contains provisions for earthquake safety based on factors including occupancy type, the types of soils onsite, and the probable strength of ground motion. Compliance with the CBC will include the incorporation of: 1) seismic safety features to minimize the potential for significant effects as a result of earthquakes; 2) proper building footings and foundations; and 3) construction of the building structure so that it will withstand the effects of strong ground shaking. Because the proposed project will be constructed in compliance with the CBC, the proposed project will result in a less than significant impact related to strong seismic ground shaking.

iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

6iii. Response: ***(Source: General Plan 2025 Figure PS-1 – Regional Fault Zones, Figure PS-2 – Liquefaction Zones, General Plan 2025 FPEIR Figure PS-3 – Soils with High Shrink-Swell Potential; Geotechnical Investigation Report prepared by Southern California Geotechnical December 2017)***

Less Than Significant Impact: The project site is located in an area with a low risk of liquefaction per the GP 2025 Liquefaction Zones Map – Figure PS-2. The geotechnical report prepared for the project (Southern California Geotechnical; 2016) states that subsurface conditions are not conducive to liquefaction and based on conditions encountered at the project site, liquefaction is not considered to be a design concern for the project. Incorporation of the recommended design measures of the geotechnical study/preliminary soils report for compliance with the California Building Code regulations would ensure that impacts related to seismic-related ground failure, including liquefaction, are reduced to less than significant impact levels directly, indirectly and cumulatively.

iv. Landslides?	☐	☐	☐	☒

6iv. Response: ***(Source: General Plan 2025 Figure PS-1 – Regional Fault Zones; Geotechnical Investigation Report prepared by Southern California Geotechnical December 2017)***

No Impact: Landslides are the downhill movement of masses of earth and rock and are often associated with earthquakes; but other factors, such as the slope, moisture content of the soil, composition of the subsurface geology, heavy rains, and improper grading can influence the occurrence of landslides. The project site and its surroundings have generally flat topography and are not located in an area prone to landslides per Figure 5.6-1 of the General Plan 2025 Program Final PEIR. Therefore, there would be no impact related to landslides directly, indirectly and cumulatively.

b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

6b. Response: (*Source: General Plan 2025 FPEIR Figure 5.6-1 – Areas Underlain by Steep Slope, Figure 5.6-4 – Soils, Table 5.6-B – Soil Types, Title 18 – Subdivision Code, Title 17 – Grading Code, and SWPPP)*

Less Than Significant Impact: Construction of the project has the potential to contribute to soil erosion and the loss of topsoil. Grading and excavation activities that will be required for the proposed project will expose and loosen topsoil, which could be eroded by wind or water.

The City's Municipal Code Titles 17 (Grading) and 18 (Subdivisions), Storm Water/Urban Runoff implement the requirements of the California RWQCB Order No. R8-2010-0033, NPDES Permit No. CAS618033 for the portion of the Santa Ana River watershed located within Riverside County, which includes the City. All projects in the City are required to conform to the permit requirements, which includes installation of Best Management Practices (BMPs) in compliance with the RWQCB permit, which establishes minimum stormwater management requirements and controls that are required to be implemented for the proposed project. To reduce the potential for soil erosion and the loss of topsoil, a Stormwater Pollution Prevention Plan (SWPPP) is required by the RWQCB regulations to be developed by a QSD (Qualified SWPPP Developer). The SWPPP is required to address site-specific conditions related to specific grading and construction activities. The SWPPP will identify potential sources of erosion and sedimentation loss of topsoil during construction, identify erosion control BMPs to reduce or eliminate the erosion and loss of topsoil, such as use of silt fencing, fiber rolls, or gravel bags, stabilized construction entrance/exit, hydroseeding. With compliance with the City's Municipal Code, RWQCB requirements, and the BMPs in the SWPPP that is required to be prepared to implement the project, construction impacts related to erosion and loss of topsoil will be less than significant.

Construction of the proposed project includes installation of landscaping, such that during operation of the project substantial areas of loose topsoil that could erode will not exist. In addition, as described in Section 9, Hydrology and Water Quality the onsite drainage features that will be installed by the project includes two on-site drain systems with catch basins and grate inlets that have been designed to slow, filter, and slowly discharge stormwater into the existing offsite drainage system, which will also reduce the potential for stormwater to erode topsoil during project operations. Furthermore, implementation of the project requires City approval of a Water Quality Management Plan (WQMP), which will ensure that the City's Municipal Code, RWQCB requirements, and appropriate operational BMPs will be implemented to minimize or eliminate the potential for soil erosion or loss of topsoil to occur. As a result, potential impacts related to substantial soil erosion or loss of topsoil will be less than significant.

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

6c. Response: *(Source: General Plan 2025 Figure 5.6-1 - Areas Underlain by Steep Slope, Figure 5.6-4 – Soils, Table 5.6-B – Soil Types, Geotechnical Investigation Report prepared by Southern California Geotechnical December 2017)*

Less Than Significant Impact: The project site is relatively flat and no onsite landslides will occur. In addition, the Geotechnical Investigation determined that the potential for lateral spreading is very low. The property is located on stable ground and is not expected to experience liquefaction during a seismic event. The general topography of the subject site has an average slope of 11.8%. The project's engineering and construction are required to be in compliance with the California Building Code and the City's Municipal Code, Title 17 (Grading) and the policies contained in the General Plan 2025 ensure that impacts related to geologic conditions, as listed above, are reduced to less than significant impact level, directly, indirectly and cumulatively.

d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

6d. Response: ***(Source: General Plan 2025 FPEIR Figure 5.6-4 – Soils, Figure 5.6-4 – Soils, Table 5.6-B – Soil Types, Figure 5.6-5 – Soils with High Shrink-Swell Potential, Appendix E – Geotechnical Report, and California Building Code as adopted by the City of Riverside and set out in Title 16 of the Riverside Municipal Code, and Geotechnical Investigation Report prepared by Southern California Geotechnical December 2017)***

No Impact: Expansive soils contain significant amounts of clay particles that swell considerably when wetted and shrink when dried. Structures constructed on these soils are subjected to large uplifting forces caused by the swelling. Without proper measures taken, heaving and cracking of both building foundations and slabs-on-grade could result. The geotechnical report prepared for the project states that the near-surface soils on the site are classified as low to non-expansive and therefore there would be no impact related to expansive soils directly, indirectly or cumulatively.

e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

6e. Response:

No Impact: The proposed project will tie into existing sewers and will not use septic tanks or alternative wastewater disposal systems. As a result, impacts related to septic tanks or alternative waste water disposal systems will not occur from implementation of the proposed project.

7. GREENHOUSE GAS EMISSIONS. Would the project:				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐

7a. Response*: (Source: Air Quality and Greenhouse Gas Study prepared by Rincon Consultants, Inc. (January 2018)*

Less Than Significant Impact: The analysis methodologies from SCAQMD are used in evaluating potential impacts related to GHG from implementation of the proposed project. SCAQMD does not have approved thresholds; however, does have draft thresholds that provides a tiered approach to evaluate GHG impacts, which includes:

Tier 1: determine whether or not the project qualifies for any applicable exemption under CEQA

Tier 2: determine whether the project is consistent with a greenhouse gas reduction plan, which will mean that it does not have significant greenhouse gas emissions.

Tier 3: determine if the project will be below screening values; if a project's GHG emissions are under one of the following screening thresholds, then the project is less than significant:

All land use types: 3,000 MTCO2e per year
Residential: 3,500 MTCO2e per year
Mixed use: 3,000 MTCO2e per year

In addition, SCAQMD methodology for project's construction are to average them over 30-years and then add them to the project's operational emissions to determine if the project will exceed the screening values listed above. To determine whether the project is significant, the City of Riverside uses the conservative SCAQMD Tier 3 threshold

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

of 3,000 MTCO2e per year for all land use types. The conservative threshold of 3,000 MTCO2e per year is utilized herein to determine if emissions of greenhouse gases from this project would be significant.

Construction of the project would generate temporary GHG emissions primarily as a result of operation of construction equipment on-site, as well as from vehicles transporting construction workers to and from the project site and heavy trucks to import earth materials on-site. Site preparation and grading typically generate the greatest amount of emissions due to the use of grading equipment and soil hauling.

Emissions associated with area sources, including consumer products, landscape maintenance, and architectural coating were calculated in CalEEMod. Emissions from waste generation were also calculated based on methods for quantifying GHG emissions from solid waste using the degradable organic content of waste. Emissions from water and wastewater use were based on the default electricity intensity from the California Energy Commission's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Southern California.

For mobile sources, CO_2 and CH_4 emissions from vehicle trips to and from the project site were quantified with CalEEMod and used to derive total annual project mileage.

Table 3 combines the construction, operational, and mobile GHG emissions associated with development of the project. The annual emissions would total approximately 1,694 MT of CO_2e. These emissions do not exceed SCAQMD's significance threshold of 3,000 MT per year for 2020 horizon year projects. Since GHG emissions would not exceed the SCAQMD's threshold, the project would not generate a substantial increase in GHG emissions and would be consistent with AB 32. Impacts would be considered less than significant.

Table 3 Combined Annual Emissions MT CO_2e/year

Emission Source	Project Emissions (MT CO_2e)
Construction	8.2
Operational Area Energy Solid Waste Water	 <0.1 223 34 19
Mobile CO_2 and CH_4 N_2O	 1,356 54
Total	**1,694**
Threshold	*3,000*
Exceeds Threshold?	No

b. Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

7b. Response: (*Source: Air Quality and Greenhouse Gas Study prepared by Rincon Consultants, Inc. (January 2018)*

Less Than Significant Impact: The SCAQMD supports State, Federal and international policies to reduce levels of ozone depleting gases through its Global Warming Policy and rules and has established an interim greenhouse gas (GHG) threshold. The project would comply with the City's General Plan policies and State Building Code provisions designed to reduce GHG emissions. As a user of electricity generated and sourced by Riverside Public Utilities (RPU), it is likely that the project's GHG emissions deriving from energy use would decline over the life of the project as RPU pursues its Renewable Portfolio Standard of 33 percent retail electricity sales from renewable sources by 2020 (RRG-CAP Reduction Measure SR-1). The City if Riverside has an Economic Prosperity Action Plan and Climate Action Plan that includes policies and measures that the City implements to achieve the reduction targets required by the state's AB 32 requirements and the statewide GHG reduction goals. The City has also adopted the California Building Code (Title 24), which includes the CalGreen requirements that require new development to reduce water and energy consumption and reduce solid waste. The project will comply with these regulations and does not include any feature that will require significant energy or water use, or otherwise interfere with implementation of these requirements.

In addition, the project would comply with all SCAQMD applicable rules and regulations during construction the construction phase and, as demonstrated in the GHG Analysis, would not interfere with the State's goals of reducing GHG emission to 1990 levels by the year 2020 as stated in AB 32 and an 80 percent reduction in GHG emissions below 1990 levels by 2050 as stated in Executive Order S-3-05. As concluded by the Greenhouse Gas Study, the project would not conflict with the GHG reduction strategies included in the RRG-CAP. The project would be consistent with applicable land use and zoning designations, would not conflict with State regulations intended to reduce GHG emissions statewide, and would be consistent with applicable plans and programs designed to reduce GHG emissions. Therefore, impacts would be less than significant and mitigation is not required.

8. HAZARDS & 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?	☐	☐	☒	☐

8a. Response: *(Source: General Plan 2025 Public Safety Element, GP 2025 FPEIR, California Health and Safety Code, Title 49 of the Code of Federal Regulations, California Building Code, Riverside Fire Department EOP, 2002 and Riverside Operational Area – Multi-Jurisdictional LHMP, 2004 Part 1, OEM's Strategic Plan)*

Less Than Significant Impact: A hazardous material is typically defined as any material that, due to its quantity, concentration, or physical or chemical characteristics, poses a significant potential hazard to human health and safety or the environment if released. Hazardous materials may include but are not limited to hazardous substances, hazardous wastes, and any material that will be harmful if released.

There are multiple state and local laws that regulate the storage, use, and disposal of hazardous materials. The Riverside County Department of Environmental Health Hazardous Materials Branch is the local administrative agency that coordinates the following programs that regulate hazardous materials and hazardous wastes: Underground Storage Tanks (UST), Above Ground Petroleum Storage Tanks, Hazardous Materials Disclosure Plan Business Plans, and California Accidental Release Program (CalARP).

The project involves the construction and operation of fuel dispensers and underground storage tanks. The City and the Riverside County Department of Environmental Health, as the Certified Unified Program Agency (CUPA), would review the project to ensure the fuel dispensing system is designed in accordance with Federal and State Water Resources Control Board (SWRCB) standards for leak detection. The transport of fuel and tank filling

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

operations would be conducted in compliance with applicable regulatory requirements. Other potentially hazardous materials associated with the fuel facility and/or car wash would be used and stored at the project site in accordance with regulatory requirements. Therefore, associated impacts would be less than significant.

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?	☐	☐	☒	☐

8b. Response: (*Source: General Plan 2025 Public Safety Element, GP 2025 FPEIR, California Health and Safety Code, Title 49 of the Code of Federal Regulations, California Building Code, Riverside Fire Department EOP, 2002 and Riverside Operational Area – Multi-Jurisdictional LHMP, 2004 Part 1, OEM's Strategic Plan; Phase I ESA prepared by Ardent Environmental Group, Inc. August 2017)*

Less Than Significant Impact: The Phase I environmental site assessment (ESA) prepared for the site concluded that the site has been vacant since 1966 or earlier and that, because it is vacant, there are no concerns regarding asbestos containing materials (ACM) or lead based paint (LBP); nor were any other on-or-off site environmental concerns noted during either the site visit or records search. As discussed in 8a above, the City and County of Riverside DEH would review the fuel dispensing equipment and USTs against SWRCB standards for leak detection and the transport of fuel would be performed according to regulatory requirements. Impacts associated with reasonably foreseeable accident or upset conditions would be less than significant.

c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐

8c. Response: Response*: (Source: General Plan 2025 Public Safety and Education Elements, GP 2025 FPEIR Table 5.7-D - CalARP RMP Facilities in the Project Area, Figure 5.13-3 AUSD Boundaries, Table 5.13-E AUSD Schools, Figure 5.13-4 – Other School District Boundaries, California Health and Safety Code, Title 49 of the Code of Federal Regulations, California Building Code)*

Less Than Significant Impact: The nearest school, Hyatt Elementary School (466 Mt. Vernon Avenue, Riverside, CA 92507) is located approximately 0.5 miles north of the project site. In addition, Seneca Elementary school (11615 Wordsworth Road, Moreno Valley, CA 92557), is located one mile southeast of the project site. However, all potentially hazardous materials associated with the fuel facility and/or car wash would be used and stored at the project site in accordance with regulatory requirements. The project is not located within 0.25 miles of a school and therefore impacts would be less than significant.

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?		☐	☐	☐	☒

8d. Response: (*Source: General Plan 2025 Figure PS-5 – Hazardous Waste Sites, GP 2025 FPEIR Tables 5.7-A – CERCLIS Facility Information, Figure 5.7-B – Regulated Facilities in TRI Information, 5.7-C – DTSC EnviroStor Database Listed Sites, and Phase 1 Environmental Site Assessment prepared by Ardent Environmental Group, August 2017)*

No Impact: A review of hazardous materials site lists compiled pursuant to Government Code Section 65962.5 by Ardent Environmental Group (August 2017) found that the project site is not included on any such lists. Therefore,

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

the project would have no impact with respect to creating any significant hazard to the public or environment directly, indirectly or cumulatively.

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐

8e. Response: ***(Source: General Plan 2025 Figure PS-6 – Airport Safety Zones and Influence Areas; March Air Reserve/Inland Port Airport Land Use Compatibility Plan prepared on November 2014)***

Less Than Significant Impact: The project site is more than two miles from both the Flabob Airport and Riverside Municipal Airport but is within Zone 'E – Other Airport Environs' of the March Air Reserve Base/Inland Port Airport. The March Air Reserve Land Use Compatibility Plan states that Zone E has a low impact with respect to noise, with occasional overflights being intrusive to some outdoor activities; Zone E also has a low risk level as these areas are within outer limits of or within occasionally use portions of flight corridors. The project was reviewed by the Airport Land Use Commission (ALUC) to ensure that the project is consistent with the compatibility zone as well as in compliance with the land use standards in the RCALUP. Because the project has been found to be consistent with the RCALUCP by the ALUC, impacts related to hazards from airports are less than significant impacts directly, indirectly and cumulatively.

f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

8f. Response:

No Impact: There are no private airstrips within the vicinity of the project and the project does not propose a private airstrip. No impacts are anticipated.

g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒

8g. Response: (*Source: GP 2025 FPEIR Chapter 7.5.7 – Hazards and Hazardous Materials, City of Riverside's EOP, 2002 and Riverside Operational Area – Multi-Jurisdictional LHMP, 2004 Part 1, and OEM's Strategic Plan)*

No Impact: The project would be served by existing, fully improved streets (Central Avenue and Sycamore Canyon Boulevard) and is adjacent to an off-ramp for I-215. Public streets have been constructed to the Public Works and Fire Departments' specifications. Pursuant to a conversation with the project engineer, it is anticipated that 25 truck trips per day would be required during the first two months of project construction (45 working days) in order to accomplish the export grading. Following the initial two months of grading, it is anticipated that the total number of construction trips would remain at approximately 25 trips per day; but would be comprised of personal trips by construction workers as well as construction material deliveries. At an average of 25 trips per day throughout the construction phase of the project, no significant impacts are anticipated with respect to impeding emergency access or interfering with an emergency evacuation plan.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

In addition, a traffic control plan is in place which would ensure public safety and provide for traffic circulation during the construction phase of the project. The traffic control plan addresses four specific instances where traffic control would be required on either Sycamore Canyon Boulevard or Central Avenue. These instances include:

1. Construction of the two project driveways. During this construction, the northbound lane of Sycamore Canyon Boulevard would be reduced from 20 to 12 feet. However, the road would remain open during the process.
2. Construction of the sidewalk along the east side of Sycamore Canyon Boulevard. Again, the northbound lane of Sycamore Canyon Boulevard would be reduced from 20 to 12 feet.
3. Construction of the traffic control measure (a median) in the center of Sycamore Canyon Boulevard. During this construction, there would be partial closures of both the northbound and southbound lanes from 20 to 12 feet.
4. During construction/trenching of utilities – This would require a 12" water main across all lanes of Central Avenue. In addition, both water and sewer lines would be trenched and installed across all lanes of Sycamore Canyon Boulevard. In both locations, steel trench plates would be utilized in order to avoid full road closures. Rather, portions of the road would be restricted as construction progresses.

The project would not block or otherwise impede travel on these streets. Therefore, the project would have no impact to an emergency response or evacuation plan.

h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

8h. Response: ***(Source: General Plan 2025 Figure PS-7 – Fire Hazard Areas, GIS Map Layer VHFSZ 2010, City of Riverside's EOP, 2002, Riverside Operational Area – Multi-Jurisdictional LHMP, 2004 Part 1/ Part 2 and OEM's Strategic Plan)***

Less Than Significant Impact: While the project is located in an urbanized area, the immediate vicinity is comprised primarily of open space/wildlands. Accordingly, the General Plan 2025 Fire Hazard Areas map (Figure PS-7) designates the project site and vicinity as "Very High" hazard rating. As noted on Figure 5.7-3A – Fire Responsibility Areas, of the GP 2025 FEIR, the City has three divisions for fire responsibility within the Planning Area. The project site itself is under local responsibility for fire protection; however, the area adjacent to the project site to the north/northeast, known as Box Springs Mountain Regional Reserve, falls under the responsibility of the State of California. As discussed for 8g above, the project site is accessible via fully improved roadways and the project applicant shall comply with Fire Department recommendations for drought-resistant, fire-retardant plant species on slopes/landscaped areas to reduce the risk of brush fire and soil erosion and work with the Fire Department to control hazardous vegetation. The project would follow the City of Riverside Fire Code requirements as stated in the Municipal Code Chapter 16.32. In addition, City of Riverside Fire Station 14, located at 725 Central Avenue, is only three-quarters of a mile west of the project site. Therefore, impacts would be less than significant.

9. HYDROLOGY AND WATER QUALITY. Would the project:					
a. Violate any water quality standards or waste discharge requirements?		☐	☐	☒	☐

9a. Response: ***(Source: GP 2025 FPEIR Table 5.8-A – Beneficial Uses Receiving Water; Project Specific Water Quality Management Plan prepared by Omega Engineering Consultants, January 2018)***

Less Than Significant Impact: The Santa Ana Regional Water Quality Control Board (RWQCB) administers the National Pollutant Discharge Elimination System (NPDES) permit in the region. The City is required to implement

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

all pertinent regulations of the program to control pollution discharges from new development. These regulations reduce NPS pollutant loading through the implementation of Best Management Practices (BMPs) and other control measures that minimize or eliminate pollutants from urban runoff, thereby protecting downstream water resources. BMPs implemented to address commercial pollutant sources generally involve maintenance of storm drain facilities, parking lots, vegetated areas, and educational programs. Violations of water quality standards due to urban runoff can be prevented through the continued implementation of existing regional water quality regulations. The project would not interfere with the implementation of NPDES water quality regulations and standards.

The proposed project would disturb approximately 2.19 gross acres of land and therefore will be subject to National Pollutant Discharge Elimination System (NPDES) permit requirements during construction activities in addition to standard NPDES operational requirements. The proposed project will require submittal to the local reviewing agency, the Santa Ana RWQCB, a Storm Water Pollution Prevention Plan (SWPPP) that will include BMPs protects water quality during construction activities. The project's SWQMP identifies the following pollutants of concern associated with this type of land use (gasoline outlets/commercial development/automotive): Bacterial indicators, metals, nutrients, pesticides, toxic organic compounds, sediments, trash & debris, and oil & grease. Therefore, the City will require BMPs as listed in the California Stormwater Quality Association's California Storm Water Best Management Practice Handbooks. These measures, which include owner education, activity restrictions, parking lot sweeping, basin inspection, landscaping, roof runoff controls, efficient irrigation, slope and channel protection, storm drain signage, and trash storage areas, will reduce pollutants in storm water runoff and reduce non-storm water discharges to the City's storm water drainage through controlling the discharge of pollutants. Operational BMPs will be identified in a Stormwater Runoff Management Plan that will be submitted to the City for review and approval. Impacts related to violation of water quality standards will be less than significant with implementation of these existing regulations.

b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒

9b. Response: ***(Source: General Plan 2025 Table PF-3 – Western Municipal Water District Projected Domestic Water Supply (AC-FT/YR), RPU Map of Water Supply Basins, RPU Urban Water Management Plan, WMWD Urban Water Management Plan.)***

No Impact: The project is located within the Bunker Hill Water Basin. The project is required to connect to the City's water system (the project is within the Riverside Public Utilities Service Area) and comply with all NPDES and WQMP requirements that would ensure the project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. Therefore, there would be no impact to groundwater supplies and recharge either directly, indirectly or cumulatively.

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐

9c. Response: (Source: ***Preliminary Grading Plan; Hydrology and Hydraulics Report prepared by Omega Engineering Consultants, January 2018)***

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Less Than Significant Impact: The project requires grading of the site which would affect the existing drainage patterns. However, a drainage plan has been designed by a registered civil engineer (see Appendix G) to safely retain, detain, and/or convey stormwater runoff.
The hydrology report identifies the fact that the site has been previously grading and is not in a natural state. The project would be subject to NPDES requirements; areas of one acre or more of disturbance are subject to preparing and implementing a Storm Water Pollution Prevention Plan (SWPPP) for the prevention of runoff during construction.

Erosion, siltation and other possible pollutants associated with long-term implementation of projects are addressed as part of the Water Quality Management Plan (WQMP) and grading permit process. Proposed on-site low impact development (LID) principles include the implementation of BMPs including landscaping and an infiltration basin. The Project-Specific Preliminary Water Quality Management Plan (PWQMP) (See Appendix F) identifies proposed drainage management areas and the effectiveness of proposed BMPs. Impacts would be less than significant.

d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐

9d. Response: (Source: *Preliminary Grading Plan; Hydrology and Hydraulics Report prepared by Omega Engineering Consultants, January 2018)*

Less Than Significant Impact: In the existing condition, stormwater flows overland from the northeasterly edge of the project site towards the westerly slope of the property adjacent to Sycamore Canyon Boulevard. The runoff continues draining across Sycamore Canyon Boulevards and sheet flows at the corner of Central Avenue within a gutter. It then continues to flow 2,250 feet away from the proposed development into an existing storm drain inlet.

In the proposed condition, the entire site would be graded and a drive-thru restaurant, gas station/convenience store with an attached car-wash, and associated parking and on-site circulation areas would be constructed. The proposed development footprint will be approximately 95,000 square feet. The proposed site will increase the impervious area from 0% to 65%. Onsite drainage patterns will be modified but the ultimate discharge point will remain the same. Five bioretention basins will take majority of the onsite runoff and have enough ponding depth for a high-intensity 100-year storm. Each bioretention basin will have a 4” flow control orifice and the drainage from each bioretention basin shall confluence and discharge at the southeasterly corner of the proposed site via an existing 18” reinforced concrete pipe drop inlet that runs along Central Avenue.

As analyzed in the Hydrology and Hydraulics Report, the 100-year flow for the entire site was found to be 7.0 cubic feet per second (cfs) without mitigation in the form of bioretention areas. By implementing the proposed five on-site bioretention facilities with outlet control, the flow would be reduced to 3.35 cfs. Therefore, even though the impervious surfaces of the site are increased from 0 percent to 65 percent, the project would not exceed the existing runoff peak flow during a high intensity storm event. Impacts would be less than significant.

e. 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?	☐	☐	☒	☐

9e. Response: (Source: *Preliminary Grading Plan; Hydrology and Hydraulics Report prepared by Omega Engineering Consultants, January 2018)*

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Less Than Significant Impact: The proposed development will increase the amount of impervious surface area in the City. This impervious area includes paved parking areas, sidewalks, roadways, and building rooftops; all sources of runoff that may carry pollutants and, therefore, have the potential to degrade water quality. This development has been required to prepare and implement a WQMP (Appendices G & H). Expected stormwater pollutants will be treated through the incorporation of the site design, source control and treatment control measures specified in the project specific WQMP. As was previously detailed in Response 9c, project-related stormwater flows will be directed to the proposed bioretention basins which reduces the volume and velocity of flows.

During construction, Best Management Practices (BMPs) will be implemented to prevent runoff. Therefore, as the expected pollutants will be mitigated through the project site design, source control, and treatment controls already integrated into the project design, the project will not create or contribute runoff water exceeding capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff and there will be a less than significant impact directly, indirectly or cumulatively.

f. Otherwise substantially degrade water quality?	☐	☐	☒	☐

9f. Response: (Source: *Project Specific Water Quality Management Plan prepared by Omega Engineering Consultants, January 2018)*

Less Than Significant Impact: The project is over one acre in size and is required to have coverage under the State's General Permit for Construction Activities (SWPPP). As stated in the Permit, during and after construction, best management practices (BMPs) will be implemented to reduce/eliminate adverse water quality impacts resulting from development. Furthermore, the City has ensured that the development does not cause adverse water quality impacts, pursuant to its Municipal Separate Storm System (MS4) permit through the project's WQMP (Appendices G and H).

The proposed development will increase the amount of impervious surface area in the City. This impervious area includes paved parking areas, sidewalks, roadways, and building rooftops; all sources of runoff that may carry pollutants and, therefore, has the potential to degrade water quality. This development has been required to prepare preliminary BMPs that have been reviewed and approved by the Public Works Department. Final BMPs will be required prior to grading permit issuance. The purpose of this requirement is to insure treatment BMPs are installed/constructed as part of the project so that the pollutants generated by the project will be treated in perpetuity. Therefore, impacts related to degrading water quality are less than significant directly, indirectly and cumulatively.

g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒

9g. Response: *(Source: General Plan 2025 Figure PS-4 – Flood Hazard Areas, and FEMA Flood Hazard Maps 06065C-0733G)*

No Impact: This project does not involve the construction of housing and does not lie within a flood hazard area. There would be no impact caused by this project directly, indirectly or cumulatively as it would not place housing within a 100-year flood hazard area.

h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

9h. Response: ***(Source: General Plan 2025 Figure PS-4 – Flood Hazard Areas, and FEMA Flood Hazard Maps 06065C-0733G)***

No Impact: The project site is not located within or near a 100-year flood hazard area as depicted on General Plan 2025 Program FPEIR Figure 5.8-2 – Flood Hazard Areas and the National Flood Insurance Rate Map (Map Number 06065C-0733G). Therefore, the project would not place a structure within a 100-year flood hazard area that would impede or redirect flood flows and no impact would occur directly, indirectly or cumulatively.

i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒

9i. Response: ***(Source: General Plan 2025 Figure PS-4 – Flood Hazard Areas, and FEMA Flood Hazard Maps Number 06065C-0733G)***

No Impact: The project site is not located within or near a flood hazard area as depicted on General Plan 2025 Program FPEIR Figure 5.8-2 – Flood Hazard Areas and the National Flood Insurance Rate Map (Map Number 06065C-0335G) or subject to dam inundation as depicted on General Plan 2025 Program FPEIR Figure 5.8-2 – Flood Hazard Areas. Therefore, the project would not place a structure within a flood hazard or dam inundation area that would expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam and therefore no impact directly, indirectly or cumulatively would occur.

j. Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

9j. Response: ***(Source: GP 2025 FPEIR Chapter 7.5.8 – Hydrology and Water Quality)***

No Impact: Tsunamis are large waves that occur in coastal areas; therefore, since the City is not located in a coastal area, no impacts due to tsunamis would occur directly, indirectly or cumulatively. Additionally, the project site is within an urbanized area not within proximity to Lake Mathews, Lake Evans, the Santa Ana River, Lake Hills, Norco Hills, or Box Springs Mountain Area; therefore, no impact potential for seiche or mudflow exists either directly, indirectly or cumulatively.

10. LAND USE AND PLANNING: Would the project:				
a. Physically divide an established community?	☐	☐	☐	☒

10a. Response: ***(Source: General Plan 2025 Land Use and Urban Design Element, Project site plan)***

No Impact: Physical division of an established community can occur where a new land use, a freeway or major roadway for example, creates a physical barrier causing travel within the community to become fragmented. The project site is itself, an isolated parcel located between Sycamore Canyon Boulevard and the I-215 southbound off-ramp. However, the project is intended to serve travelers and is consistent with the C – Commercial General Plan Land Use designation and the proposed CG – Commercial general Zone. Therefore, no impacts would occur with respect to dividing an established community.

b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

10b. Response: ***(Source: General Plan 2025, General Plan 2025 Figure LU-10 – Land Use Policy Map, Table LU-5 – Zoning/General Plan Consistency Matrix, Title 19 – Zoning Code)***

No Impact: The project consists of a fueling station, convenience store, car wash, and drive-thru restaurant and is intended to serve travelers of the adjacent I-215/Moreno Valley Freeway. The project site has a General Plan Land Use designation of C – Commercial and a proposed zoning designation of (CG) Commercial General Zone. Upon approval of the proposed rezone, there would be no impact with respect to conflicts with an applicable land use plan, policy, or regulation of an agency with jurisdiction of the project.

c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☒	☐

10c. Response: ***(Source: Biological Technical Report for Central and Sycamore Project, prepared by Glenn Lukos Associates, Inc. June 30, 2017)***

Less Than Significant Impact: As discussed above in 4f, the project is not directly adjacent to existing MSHCP conservation area; but proposed Constrained Linkage 7 is south of the Project site, on the south side of Central Avenue. The project has existing roads (Sycamore Canyon Boulevard and Central Avenue) and a vacant property between it and Proposed Constrained Linkage 7. Pursuant to mitigation measure **BIO-3**, the project would be required to implement measures pursuant to the MSHCP Urban/Wildlands Interface Guidelines (*Volume I, Section 6.1.4* of the MSHCP). These guidelines are intended to address indirect effects associated with locating projects (particularly development) in proximity to the MSHCP Conservation Area. To minimize potential edge effects, the guidelines are to be implemented in conjunction with review of individual public and private development projects in proximity to the MSHCP Conservation Area. Therefore, impacts (direct, indirect, and cumulative) would be less than significant with implementation of MSHCP adjacency guidelines as conditions of approval.

11. 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?	☐	☐	☒	☐

11a. Response: ***(Source: General Plan 2025 Figure – OS-1 – Mineral Resources, California Division of Mines and Geology Surface Mining and Reclamation Policies and Procedures)***

Less Than Significant Impact: The project is located in MRZ-4, which indicates that the presence or absence of mineral resources under the site is not known. The California Department of Conservation Division of Mines and Geology emphasizes that this does not necessarily mean that the presence of mineral resources at the site is unlikely; rather just that there is insufficient information available to determine presence or absence. However, mining operations in the City have not been active for decades and according to the Riverside General Plan EIR, the maximum potential for mineral extraction has occurred. Therefore, the project would not result in loss of availability of any known or unknown mineral resource more than currently occurs. A less than significant impact would occur.

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?	☐	☐	☐	☒

11b. Response: ***(Source: General Plan 2025 Figure – OS-1 – Mineral Resources)***

No Impact: The GP 2025 FPEIR determined that there are no specific areas with the City of Sphere Area which have locally-important mineral resource recovery sites and that the implementation of the General Plan 2025 would

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

not significantly preclude the ability to extract state-designated resources. The project is consistent with the General Plan 2025. Therefore, there would be no impact.

12. NOISE. Would the project result in:				
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐

12a. Response: ***(Source: General Plan Figure N-1 – 2003 Roadway Noise, Figure N-2 – 2003 Freeway Noise, Figure N-3 – 2003 Railway Noise, Figure N-5 – 2025 Roadway Noise, Figure N-6 – 2025 Freeway Noise, Figure N-7 – 2025 Railroad Noise, Figure N-10 – Noise/Land Use Noise Compatibility Criteria, FPEIR Table 5.11-I – Existing and Future Noise Contour Comparison, Table 5.11-E – Interior and Exterior Noise Standards, Appendix G – Noise Existing Conditions Report, Title 7 – Noise Code, and Noise Impact Study prepared by Eilar Associates, Inc. September 2017)***

Less Than Significant Impact: Noise levels of the proposed equipment were calculated at surrounding properties to the south and west. As there are no noise-sensitive receivers located at the sidewalk/street to the south and west, receivers have been calculated at the nearest noise-sensitive properties across Central Avenue and Sycamore Canyon Boulevard, respectively. All receivers were calculated at a height of five feet above grade, to account for the height of an average individual's ears above the ground. Calculations include the shielding that would be provided by the proposed on-site structures as well as the topography of the site and surrounding area.

In addition, appropriate duty cycles were applied to the car wash equipment operating on site. The total duration of a typical automatic car wash is approximately 5 minutes, from start to finish. Therefore, it was assumed that a maximum of 12 car washes would take place during any given hour. Typically, the dryer unit of an automatic car wash operates for one minute out of each cycle. For this reason, the dryer unit was evaluated assuming that it would be in use for one minute per car wash, for a maximum expected duty cycle of 12 minutes per hour. This scenario would also be considered representative of a 10-minute average noise level, which is the noise metric used by the City of Riverside Noise Element. These scenarios are assumed to be a worst-case estimate of usage at the car wash. Air conditioning equipment and drive-through intercom systems have been evaluated as being operational during the entire hour. Results of the analysis are shown in Table 4 below. Construction noise is exempt from the municipal code because it is considered temporary and occurs only during the daytime hours.

Table 4. Calculated Commercial Facility Noise Impact Levels

Receiver Number	Receiver Location	Noise Limit (dBA)	Equipment Noise Level (dBA)
R-1	South Residential Property	60 / 45	43.2
R-2	West Property	65	45.4

As shown in Table 4 above, with the currently anticipated on-site equipment, noise levels generated at the project site are expected to comply with the most stringent applicable noise limits of the City of Riverside and the County of Riverside at the nearest residential and recreational properties. The calculated receivers represent the highest amount of noise exposure at off-site properties, and other receivers are expected to have lesser noise impacts due to added distance attenuation. No additional project design features are necessary to attenuate noise impacts.

As this analysis was conducted using typical assumptions regarding car wash equipment, it should be noted that the car wash equipment must be selected appropriately in order to maintain compliance. Provided the car wash dryer does not generate a noise level of greater than 84 A-weighted decibels (dBA) at a distance of 10 feet from the exit of the tunnel (a condition satisfied by the Mark VII rollover car wash with AquaDri E-20 dryer), noise impacts

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

generated at off-site receivers are expected to be equal to or lesser than the noise impacts projected herein. Impacts would be less than significant.

b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐

12b. Response: ***(Source: City of Riverside Municipal Code Title 7 – Noise Control)***

Less Than Significant Impact: Construction of the project does not require rock blasting, pile driving, or the use of a jack hammer, but may require the use of a vibratory roller, and small bulldozer, and loaded trucks. These construction activities would be limited to the hours of 7:00 a.m. to 7:00 p.m. Monday through Friday, 8:00 a.m. to 5:00 p.m. on Saturdays, and are prohibited on Sundays and federal holidays. Therefore, construction-related impacts related to exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels would be less than significant.

c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐

12c. Response: (*Source: Noise Impact Study prepared by Eilar Associates, Inc. September 2017)*

Less Than Significant Impact: The primary existing noise sources in the project area are transportation facilities. Vehicular traffic along I-215 is the dominant source of ambient noise and the project site lies within the 70-decibel Community Noise Equivalent Level (CNEL) Contour according to Figure N-2 of the Noise Element (General Plan 2025). A substantial permanent increase in ambient noise levels associated with the project would occur if the project would cause noise levels to increase by 3 dBA or more. An increase or decrease in noise level of at least 5 dBA is required before any noticeable change in community response would be expected. Therefore, a clearly perceptible increase (+5 dB) in noise exposure of sensitive receptors could be considered significant (GP 2025 FPEIR).

Although individual activity associated with the project may generate additional noise, as discussed in 12a above, the noise impact analysis took into account the existing ambient noise levels. As shown in Table 4 above, noise levels would not exceed exterior noise thresholds at nearby receptors.

Calculations show that, with the currently anticipated equipment (Mark VII car wash system), exterior noise levels generated at the project site are expected to comply with the applicable City of Riverside and County of Riverside daytime and nighttime noise limits at the nearest noise-sensitive property lines. With the car wash equipment selected accordingly, noise impacts at off-site receivers would be less than significant.

d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐

12d. Response*: (Source: City of Riverside Municipal Code Title 7 – Noise Control)*

Less Than Significant Impact: As discussed in checklist response 12a, construction activities are exempt pursuant to Section 7.35.020[G] of the Noise Code. Further, operational noise that would be generated by the proposed project is evaluated previously in Responses 12.a and 12.c.

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles	☐	☐	☒	☐

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				

12e. Response: ***(Source: General Plan 2025 Figure N-8 – Riverside and Flabob Airport Noise Contours, Figure N-9 – March ARB Noise Contour, Figure N-10 – Noise/Land Use Noise Compatibility Criteria, RCALUCP)***

Less Than Significant Impact: As discussed in 8e, the project site is more than two miles from both the Flabob Airport and Riverside Municipal Airport but is within Zone 'E – Other Airport Environs' of the March Air Reserve Base (ARB)/Inland Port Airport. The March Air Reserve Land Use Compatibility Plan states that Zone E has a low impact with respect to noise, with occasional overflights being intrusive to some outdoor activities. The project site is not within a noise contour area for the March ARB; therefore, impacts related to exposure of people residing or working in an airport land use plan area to excessive noise is considered less than significant directly, indirectly and cumulatively.

f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

12f. Response: ***(Source: General Plan 2025 Figure PS-6 – Airport Safety Zones and Influence Areas, RCALUCP)***

No Impact: Per the GP 2025 Program FPEIR, there are no private airstrips within the City that would expose people working or residing in the City to excessive noise levels. Because the project is not located within proximity of a private airstrip, and does not propose a private airstrip, the project would not expose people residing or working in the City to excessive noise levels related to a private airstrip and would have no impact directly, indirectly or cumulatively.

13. 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)?	☐	☐	☐	☒

13a. Response: ***(Source: General Plan 2025 Table LU-3 – Land Use Designations)***

No Impact: The project is intended to serve travelers of the adjacent I-215/Moreno Valley Freeway and is consistent with the General Plan and proposed Zoning for the project site. The project does not propose any residential or housing units and would not directly lead to an increase in population. The project would have no impact on population growth in the area.

b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

13b. Response: ***(Source: site photographs)***

No Impact: The project site is vacant and would not necessitate the removal of housing nor the construction of replacement housing elsewhere. No impact would occur with respect to existing housing, whether directly, indirectly, or cumulatively.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

13c. Response: (*Source: site photographs)*

No Impact: The project site is vacant and would not necessitate the removal of housing nor the construction of replacement housing elsewhere. No impact would occur with respect to existing housing, whether directly, indirectly, or cumulatively.

14. 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?	☐	☐	☒	☐

14a. Response: *(Source: FPEIR Table 5.13-B – Fire Station Locations, Table 5.13-C – Riverside Fire Department Statistics and Ordinance 5948 § 1)*

Less Than Significant Impact: There are 14 fire stations strategically placed throughout the City. As discussed in 8h above, Fire Station 14 located at 725 Central Avenue is approximately 0.75 mile from the project site would serve the site. Since the project proposes commercial, not residential uses, the project site would not be continuously occupied by the maximum number of possible individuals. Therefore, the project would cause a minimal incremental increase in the need for fire protection services which, in and of itself, would not create the need for new or altered fire services. As with all development within the City, the project applicant shall pay applicable development impact fees to support the provision of fire services. In addition, with implementation of General Plan 2025 policies, compliance with existing codes and standards, and through Fire Department practices, impacts on the demand for additional fire facilities or services would be less than significant.

b. Police protection?	☐	☐	☐	☒

14b. Response: *(Source: Riverside Police Department Field Operations Division, General Plan 2025 Figure PS-8 –Neighborhood Policing Centers, Riverside Municipal Code – Section 16.36.010 to 16.36.090)*

No Impact: The project consists of a fueling station, with convenience store, car wash, and restaurant. Adequate police facilities and services are provided by the University Neighborhood Enhancement Team (UNET)/University of California-Riverside (UCR) Station located at 1201 University Avenue to serve this project. As with all development within the City, the project applicant shall pay applicable development impact fees to support the provision of police services. In addition, with implementation of General Plan 2025 policies, compliance with existing codes and standards, and through Police Department practices, there would be no impact on the demand for additional police facilities of services either directly, indirectly or cumulatively.

c. Schools?	☐	☐	☐	☒

14c. Response: *(Source: FPEIR Figure 5.13-2 – RUSD Boundaries)*

No Impact: Since the project proposes commercial rather than residential uses, no additional housing would be generated such that the number of school-aged children would increase as a result of the project. The project

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

applicant shall pay school development impact fees, as required pursuant to Senate Bill 50 and California Government Code, Section 65995. Through compliance with Senate Bill 50 and California Government Code, Section 65995, no impact to schools would occur.

d. Parks?	☐	☐	☐	☒

14d. Response: ***(Source: General Plan 2025 Figure PR-1 – Parks, Open Spaces and Trails, Table PR-4 – Park and Recreation Facilities, Parks Master Plan 2003, GP 2025 FPEIR Table 5.14-A – Park and Recreation Facility Types)***

No Impact: The project proposes a commercial, rather than a residential use, and would not involve the addition of housing units that would permanently increase the population. Additionally, the project site is not located in an area of the City identified to have a parkland shortage. Therefore, no significant increase in demand on park uses or recreational facilities would occur. In accordance with the City's Parks, Recreation, and Community Services-Park Planning Department, the applicant would make payment of all applicable Park Development Impact Fees (local, aquatic, regional/reserve, and trail fees) for privately developed areas. With the payment of applicable development impact fees, the project would have no impact on the demand for additional park facilities or services.

e. Other public facilities?	☐	☐	☐	☒

14e. Response: ***(Source: General Plan 2025 Figure LU-8 – Community Facilities, FPEIR Figure 5.13-5 – Library Facilities, Figure 5.13-6 - Community Centers, Table 5.3-F – Riverside Community Centers)***

No Impact: Adequate public facilities and services, including libraries and community centers, are provided in and around the Sycamore Canyon/Canyon Springs Neighborhood to serve this project. In addition, with implementation of General Plan 2025 policies, compliance with existing codes and standards, and through Park and Recreation and Community Services and Library practices, there would be no impact on the demand for additional public facilities or services either directly, indirectly or cumulatively.

15. 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?	☐	☐	☐	☒

15a. Response: ***(Source: General Plan 2025 Figure PR-1 – Parks, Open Spaces and Trails)***

No Impact: The project proposes a commercial rather than a residential use and would not involve the addition of housing units that would permanently increase the population. The City's adopted standard for developed park acreage of 3 acres per 1,000 residents would not be adversely affected. Additionally, the project site is not located in an area of the City identified to have a parkland shortage. Since the project does not include uses that would increase the use of existing neighborhood and regional parks such that substantial physical deterioration of the facilities would occur or be accelerated, this project would have no impact on existing neighborhood and regional parks.

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?	☐	☐	☐	☒

15b. Response: (*Source: Project Site Plans)*

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

No Impact: The project would not include new recreational facilities or require the construction or expansion of recreational facilities. Additionally, the project proposes a commercial use rather than residential and would not involve the addition of housing units that would permanently increase the population. Therefore, the construction or expansion of recreational facilities in the absence of a population increase is not necessary; there would be no impact directly, indirectly or cumulatively.

16. TRANSPORTATION/TRAFFIC. Would the project result in:				
a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐

16a. Response: (*Source: General Plan 2025 Circulation and Community Mobility Element; Traffic Impact Study prepared by Darnell & Associates, Inc. December 29th, 2017)*

Less Than Significant Impact: Consistent with the City of Riverside's traffic study guidelines, the 2010 *Highway Capacity Manual* (HCM 2010) analysis methodologies were used to determine intersection Levels of Service (LOS) for all study area intersections. The study area intersections fall under the jurisdictions of the City of Riverside and City of Moreno Valley. For projects in conformance with the City's General Plan, a significant project impact occurs at a study intersection when the peak hour LOS falls below LOS D (i.e., to LOS E or F) per Policy CCM-2.3 of the General Plan 2025, which strives to maintain LOS D or better on arterial streets wherever possible. The project is consistent with the existing General Plan Land Use Designation for the project site, as well as other applicable General Plan policies, and as such the Traffic Impact Analysis considers a reduction of peak hour LOS at study intersections below LOS D (i.e., LOS E or F) to be a significant impact.

Study intersections were selected based on discussion with City staff and where project traffic has the potential to cause a significant impact. The study area includes the following four intersections:

1. Sycamore Canyon Boulevard/Central Avenue;
2. Central Avenue/SR-60 Southbound On/Off Ramp;
3. Central Avenue/ SR-60 Northbound Off Ramp; and
4. Watkins Drive at Poarch/SR-60 Westbound On Ramp.

For purposes of this analysis, the following scenarios are included:

- **Existing Conditions** refers to that condition which exists on the ground today including existing traffic and existing lane configurations at roadway segments.
- **Opening Day 2019 Conditions** refers to those conditions which include the traffic volumes and lane configurations generated by Opening Day 2019 conditions in the absence of the proposed project.
- **Opening Day 2019 Plus Project Conditions** refers to those conditions which include the Opening Day 2019 traffic volumes and lane configurations plus the traffic generated by of the project.

The trip generation for the project was developed using rates from the ITE Trip Generation (9th Edition) Land Use (946) for the Service Station with C-Store and Carwash and Land Use (934) for the Fast Food Restaurant with drive thru window. The Service Station and Restaurant uses would typically draw trips from the traffic passing the site on an adjacent street. These trips are not "new" trips made for the sole purpose of visiting the site, but are trips made as

an intermediate stop en-route to an ultimate destination. These trips are referred to as "pass-by" trips and only affect traffic at project driveways and on streets adjacent to the project. As detailed in the traffic impact study (Appendix H) the project is expected to generate 4,332 gross daily trips; 363 AM peak hour trips and 347 PM peak hour trips. After accounting for pass-by trips, the project would generate 3,248 net new trips; 373 in the AM peak hour, and 260 net new trips in the PM peak hour.

2019 Opening Day Plus Project Roadway Segments

Table 5 summarizes the daily roadway segments level of service for Opening Day 2019 and Opening Day 2019 Plus Project conditions. As shown on Table 5, based on Opening Day 2019 conditions all of the roadway segments would operate at LOS D or better. Further review of Table 5 shows with the addition of project traffic all of the roadway segments would continue to operate at LOS D or better.

Table 5 – Opening Day 2019 Roadway Segment Level of Service

Roadway	Roadway Classification	LOS E Capacity	Opening Year 2019 ADT			Opening Year 2019 Plus Project			
			ADT	V/C	LOS	Project ADT	ADT	V/C	LOS
Central Avenue									
West of Sycamore Canyon Boulevard	4-Lane Arterial (100')	33,000	24,061	0.73	B	812	24,873	0.76	B
East of Sycamore Canyon Boulevard	4-Lane Arterial (100')	33,000	19,620	0.60	B	1,083	20,703	0.63	B
I-215 SB Ramp to I-215 NB Ramp	4-Lane Arterial (100')	33,000	19,832	0.60	B	1,147	20,979	0.64	B
Sycamore Canyon Boulevard									
North of Project	2-Lane Collector	12,500	5,618	0.45	B	866	6,484	0.51	B
North of Central Ave.	2-Lane Arterial	18,000	5,618	0.31	A	3,466	9,084	0.51	A
South of Central Ave.	4-Lane Arterial (88')	22,000	18,820	0.86	C	325	19,145	0.87	C
Watkins Drive									
Between I-215 NB Off Ramp and I-215 NB On Ramp	4-Lane Arterial (88')	22,000	19,573	0.89	D	812	19,898	0.90	D

2019 Opening Day Plus Project Intersection Analysis

Table 6 presents the results of the intersection analysis for 2019 Opening Day Plus Project. Review of Table 6 shows all of the intersections would operate at LOS D or better for Opening Day 2019 conditions and Opening Day 2019 plus Project Conditions. Further review of Table 6 shows the project driveways would each operate at LOS B under full access and the project's northerly access would operate at LOS C with the southerly access restricted to right in/out movement.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Table 6 – Opening Day 2019 Intersection Level of Service

Intersection	Traffic Control	Peak Hour	Opening Year (2019)		Opening Year (2019) Plus Project		Opening Year (2019) Plus Project (RIRO** at South Proj Dwy)	
			Delay (a)	LOS (b)	Delay (a)	LOS (b)	Delay (a)	LOS (b)
Sycamore Canyon Rd & Central Ave	Signal	AM	48.8	D	52.7	D	41.3	D
		PM	49.9	D	53.0	D	34.2	C
SR-60 EB Ramps & Central Ave	Signal	AM	9.4	A	9.8	A	9.8	A
		PM	11.4	B	14.0	B	14.0	B
SR-60 WB Off-Ramp & Watkins Dr/Central Ave	Signal	AM	16.5	B	16.8	B	16.8	B
		PM	22.6	C	23.0	C	23.0	C
Watkins Dr & Poarch Rd/SR-60 WB On-Ramp	OWSC*	AM	18.7	B	20.6	C	20.6	C
		PM	13.5	B	14.2	B	14.2	B
Sycamore Canyon Rd & North Proj Dwy	OWSC	AM	n/a		15.7	C	20.3	C
		PM			12.6	B	15.1	C
Sycamore Canyon Rd & South Proj Dwy (c)	OWSC	AM	n/a		17.1	C	13.1	B
		PM			13.6	B	10.2	B

Notes:
(a) Delays are reported as the average control delay for the entire intersection at signalized intersections and the worst movement at unsignalized intersections.
(b) LOS calculations are based on the methodology outlined in the *2010 Highway Capacity Manual* (HCM) and performed using Synchro 8.
(c) Drawing restricted to right-in/out (RIRO).
*One Way Stop Control
**Right-in, Right-out.

As shown in Tables 5 & 6, all roadway segments and intersections would perform at LOS D or better during 2019 opening day plus project conditions. Since the project is consistent with the City's General Plan and LOS D or better would be maintained under the "with the project" for the Project Opening Year 2019 and the Opening Year 2019 Plus Project scenarios, operational impacts related to conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system would be less than significant.

b. Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐

16b. Response: (*Source: General Plan 2025 Circulation and Community Mobility Element; Traffic Impact Study prepared by Darnell & Associates, Inc. December 29, 2017)*

Less Than Significant Impact: As previously described in question 16a, with the addition of project traffic, all study intersections would continue to operate at LOS D or better. Based on the City of Riverside's significance thresholds, there are no projected impacts to the study intersections from a decrease in the LOS level. The project is consistent with the Transportation Demand Management/Air Quality components of the Program. A less than significant impact would occur.

c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☒	☐

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

16c. Response: (*Source: General Plan 2025 Figure PS-6 – Airport Safety Zones and Influence Areas, RCALUCP)*

Less Than Significant Impact: The project is located in Zone E of the RCALUCP for March ARB but is not within an accident potential zone (APZ). Zone E has no maximum density or people per acre and does not require open land. In addition, there are no prohibited uses with the exception of those which may be hazardous to flight. The project would not change air traffic patterns, increase air traffic levels, or change the location of air traffic patterns. As such, this project would have a less than significant impact directly, indirectly or cumulatively on air traffic patterns.

d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐

16d. Response: *(Source: Traffic Impact Study [TIS] prepared by Darnell & Associates, Inc. December 29, 2017*

Less Than Significant Impact: The project proposes each driveway to function with full access movement at each driveway. The TIS evaluated the available corner sight distance looking north from the project's proposed northerly driveway. The TIS identified 415' feet of corner sight distance looking north from the project's northerly driveway and 415' feet of stopping sight distance for southbound Sycamore Canyon Boulevard traffic approaching the project's northerly driveway.

To accommodate full access to the project and improve safety exiting the project's driveways, the TIS recommends a channelization concept to restripe Sycamore Canyon Boulevard to provide a two-way left turn median in the vicinity of the project's northerly driveway. The project proposes to implement the restriping to provide a two-way left turn median as part of the project design. The TIS also analyzed the project's internal circulation, including the stacking for the carwash and fast food restaurant drive thru, and found the circulation to be satisfactory. There would be a less than significant impact.

e. Result in inadequate emergency access?	☐	☐	☐	☒

16e. Response: *(Source: Traffic Impact Study [TIS] prepared by Darnell & Associates, Inc. December 29, 2017*

No Impacts: As discussed for 8g and 16d above, the TIS analyzed project access and found that both access points as well as internal circulation were adequate and met minimum requirements for emergency access. There would be no impacts relative to emergency access.

f. Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☒	☐

16f. Response: *(Source: FPEIR, General Plan 2025 Land Use and Urban Design, Circulation and Community Mobility and Education Elements, Bicycle Master Plan, School Safety Program – Walk Safe! – Drive Safe!)*

Less Than Significant Impact: There is a Class 2 bikeway adjacent to the project site. The nearest public transit facility is Central + Quail Run stop of Riverside Transit Agency (RTA)'s Route 16 bus line, approximately 3,000 feet west of the Project Site on Central Avenue.. The project would not require, permanently or temporarily, the relocation or closure of any transit stops or the bikeway. The project as designed is not in conflict with adopted policies, plans, or programs supporting alternative transportation. Therefore, the project impacts related to adopted

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

policies, plans, or programs supporting alternative transportation are less than significant directly, indirectly and cumulatively.

17. 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 tripe, 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)?	☐	☐	☒	☐

17a. Response: ***(Source: Phase 1 Historical/Archaeological Resources Survey prepared by CRM Tech, September 2017)***

Less Than Significant Impact: As discussed for 5b above, the Phase 1 Historical/Archaeological Resources Survey identified a prehistoric (i.e., Native American) archaeological site consisting of a bedrock outcrop with three milling slicks, 33-006002 (CARIV- 5669), which was recorded within the project area in 1995, but was subsequently removed during mass grading on the property. No other potential "historical resources" or "tribal cultural resources" were identified within or adjacent to the project area throughout the course of the survey. Impacts would be less than significant.

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.	☐	☐	☒	☐

17b. Response: ***(Source: Phase 1 Historical/Archaeological Resources Survey prepared by CRM Tech, September 2017)***

Less Than Significant with Mitigation Incorporated: Please see the response to 17a above. With respect to tribal consultation pursuant to AB 52, eleven designated spokespersons for the tribes (as previously identified by the appropriate tribal government staff) were contacted. As of this time, four tribal representatives have responded in writing (see App. 2). Among them, Shasta Gaughen, Tribal Historic Preservation Officer for the Pala Band of Mission Indians, stated that the tribe had no objection to the proposed project and would defer to other tribes located in closer proximity. Ray Teran of the Viejas Band of Kumeyaay Indians wrote that the project location has "little cultural significance or ties" to the tribe. He also deferred to other tribes in closer proximity but requested to be informed of any cultural resource discoveries in the project area. The City received a request to consult from the Morongo, Pechanga, and Soboba tribes. Consultation from Morongo and Soboba has closed, however, consultation with Pechanga remains open at this time as they are reviewing the revised CR Report.

Chris Devers of the Pauma Band of Luiseño Indians noted that, while it was unfortunate that a known cultural resource (i.e., Site 33-006002) had been destroyed, the tribe was unaware of any additional resources on the property. The tribe recommended that, depending on the level of ground disturbances, "a monitoring team should be

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

used." Jessica Mauck, Cultural Resources Analyst for the San Manuel Band of Mission Indians, found the project vicinity to be within the ancestral territory of the tribe. She recommended "a thorough land use history, and perhaps subsurface testing" to determine the likelihood of any subsurface artifact deposits.

Therefore, as discussed in 5b, mitigation measures **CR-1** through **CR-3** would be implemented to ensure that impacts to unknown resources or Tribal Cultural Resources would be less than significant. **CR-1** requires that in the unlikely event buried cultural materials are discovered during construction, the City of Riverside would immediately be notified, and all work in the immediate vicinity would be halted or diverted until a qualified geologist can evaluate the nature and significance of the finds. While the project has little potential to disturb human remains, mitigation measures **CR-2** and **CR-3** require notification of any changes to project site design and/or proposed grades prior to the issuance of a grading permit, and if remains are found, that proper curation and disposition measures be followed. All mitigation measures are described in greater detail in section 5b. Implementation of these mitigation measures would reduce impacts to less than significant with mitigation incorporated.

18. UTILITIES AND SYSTEM SERVICES. Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐

18a. Response: ***(Source: General Plan 2025 Figure PF-2 – Sewer Facilities Map, FPEIR Figure 5.16-5 – Sewer Service Areas, Table 5.16-L - Estimated Future Wastewater Generation for the Planning Area Served by WMWD, Figure 5.8-1 – Watersheds, Wastewater Integrated Master Plan and Certified EIR)***

Less Than Significant Impact: The project is within the boundaries of the Santa Ana RWQCB and subject to the Riverside County Drainage Area Management Plan. The project would connect to existing wastewater collection and conveyance facilities owned and operated by the City via sewer laterals from the project site to the main line within Central Avenue. Wastewater from the project site and vicinity would be transported to the Riverside Regional Water Quality Control Plant. The project is consistent with projections for growth, therefore, sufficient capacity is available to service to project. If an existing sewer lateral would be utilized, video inspection prior to connection would be required in accordance with the City's Municipal Separate Storm Sewer Permit (MS4) as part of the City's Development Review Process through the Public Works Department.

All new development is required to comply with all provisions of the NPDES program and the City's MS4, as enforced by the RWQCB. Therefore, the project would not exceed applicable wastewater treatment requirements of the RWQCB with respect to discharges to the sewer system or stormwater system within the City. Because the project is required to adhere to the above regulations related to wastewater treatment the project would have a less than significant impact.

b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐

18b. Response: ***(Source: Allen Sipes, Senior Project Architect, Barghausen Consulting Engineers, Inc.)***

Less Than Significant Impact: The car wash equipment proposed for the project is the Mark VII car wash system which uses 15 gallons of water per vehicle. The applicant anticipates servicing an average of 45 vehicles per day for a total water usage of 675 gallons. The applicant is proposing to incorporate an on-site water clarification/recycling system which would allow for 6 gallons (out of 15 gallons/vehicle) to be re-used. This would, therefore, reduce total water demand to nine gallons of fresh water per vehicle or 405 total gallons of water per day. This would be consistent with General Plan projections for this type of use and a less than significant impact would occur.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐

18c. Response: ***(Source: (Source: FPEIR Figure 5.16-2 - Drainage Facilities)***

Less Than Significant Impact: The project would result in an increase of impervious surface areas. The approximately 2-acre increase in impervious surface area would generate increased storm water flows with potential to impact drainage facilities and require the provision of additional facilities. However, the Subdivision Code (Title 18, Section 18.48.020) requires drainage fees to be paid to the City for new construction. Fees are transferred into a drainage facilities fund that is maintained by Riverside County Flood Control and Water Conservation District. This Section also complies with the California Government Code (section 66483), which provides for the payment of fees for construction of drainage facilities. Fees are required to be paid as part of the conditions of approval/waiver for filing of a final map or parcel map.

General Plan 2025 Policies PF 4.1 and PF 4.3 require the City to continue to routinely monitor its storm drain system and to fund and improve those systems as identified in the City's Capital Improvement Plan. Implementation of these policies would ensure that the City is adequately served by drainage systems. The General Plan 2025 also includes policies and programs that would minimize the environmental effects of the development of such facilities. Therefore, the project would have less than significant impact on existing storm water drainage facilities and would not require the expansion of existing facilities directly, indirectly, or cumulatively.

d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐

18d. Response: ***(Source: FPEIR Figure 5.16-3 – Water Service Areas, Figure 5.16-4 – Water Facilities, Table 5.16-E– RPU Projected Domestic Water Supply (AC-FT/YR, Table 5.16-F – Projected Water Demand, Table 5.16-G – General Plan Projected Water Demand for RPU including Water Reliability for 2025)***

Less Than Significant Impact: The City's Urban Water Management Plan must be updated every five years to include the most recent population trends. Similarly, the City must consult with the Western Municipal Water District regarding development projects exceeding the thresholds noted in the CEQA Guidelines Section 15155 to ensure that sufficient water supplies are available, and this review took place. A will serve letter has been provided for the project site by the Western Municipal Water District. The site is within close proximity to existing water connections that are adequately sized to serve the site. Therefore, this project was found to have a less than significant impact on water supplies either directly, indirectly or cumulatively, after consultation with the Western Municipal Water District analysis water supply assessment.

e. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒

18e. Response: ***(Source: (Source: FPEIR Figure 5.16-5 - Sewer Service Areas, Figure 5.16-6 -Sewer Infrastructure, Table 5.16-K - Estimated Future Wastewater Generation for the City of Riverside's Sewer Service Area, and Wastewater Integrated Master Plan and Certified EIR)***

No Impact: The project would not exceed wastewater treatment requirements of the RWQCB or RPU. The project is consistent with the General Plan 2025 Typical Growth Scenario where future wastewater generation was

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

determined to be adequate (see Table 5.16-K of the General Plan 2025 FPEIR). Further, the current Wastewater Treatment Master Plan anticipates and provides for this type of project. Therefore, no impact to wastewater treatment directly, indirectly or cumulatively would occur.

f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒

18f. Response: (*Source: FPEIR Table 5.16-A – Existing Landfills and Table 5.16-M – Estimated Future Solid Waste Generation from the Planning Area)*

No Impact: The project is consistent with the General Plan 2025 Typical Build-out Project level where future landfill capacity was determined to be adequate (see Tables 5.16-A and 5.16-M of the General Plan 2025 FPEIR). Therefore, no impact to landfill capacity would occur directly, indirectly or cumulatively.

g. Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

18g. Response: (*Source: California Integrated Waste Management Board 2002 Landfill Facility Compliance Study)*

No Impact: The California Integrated Waste Management Act under the Public Resource Code requires that local jurisdictions divert at least 50 percent of all solid waste generated by January 1, 2000. The City is currently achieving a 60 percent diversion rate, well above State requirements. In addition, the California Green Building Code requires all developments to divert 50 percent of nonhazardous construction and demolition debris for all projects and 100 percent of excavated soil and land clearing debris for all nonresidential projects beginning January 1, 2011. The project must comply with the City's waste disposal requirements as well as the California Green Building Code and as such would not conflict with any Federal, State, or local regulations related to solid waste. Therefore, no impact related to solid waste statutes would occur directly, indirectly or cumulatively.

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

19a. Response: *(Source: (Source: General Plan 2025 – Figure OS-6 – Stephen's Kangaroo Rat (SKR) Core Reserve and Other Habitat Conservation Plans (HCP), Figure OS-7 – MSHCP Cores and Linkages, Figure OS-8 – MSHCP Cell Areas, General Plan 2025 FPEIR Figure 5.4-2 – MSHCP Area Plans, Figure 5.4-4 - MSHCP Criteria Cells and Subunit Areas, Figure 5.4-6 – MSHCP Narrow Endemic Plant Species Survey Area, Figure 5.4-7 – MSHCP Criteria Area Species Survey Area, Figure 5.4-8 – MSHCP Burrowing Owl Survey Area, MSHCP Section 6.1.2 - Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools, and Habitat Assessment prepared by Chambers Group in June 2006 and supplemented November 2015), FPEIR Table 5.5-A Historical Districts and Neighborhood Conservation Areas, Figure 5.5-1 - Archaeological Sensitivity, Figure 5.5-2 - Prehistoric Cultural Resources Sensitivity, Appendix D, Title 20 of the Riverside Municipal Code)*

Less Than Significant with Mitigation Incorporated: As discussed in the Biological Resources Section of this Initial Study, because there is no potential habitat for any special-status plant species, the project would not impact

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

special-status plants. The project may impact one special-status species, coastal whiptail. An individual was observed during the field visit. Given the small size and location of the Project site, no more than a few individuals of this species are expected to occur on the site. No other special-status animals are expected. The removal of coastal whiptail habitat and potential mortality to a few individuals would not be potentially significant under CEQA. In addition, coastal whiptail is a fully covered species under the MSHCP, meaning that any potential impacts to the species by the project would be mitigated by the MSHCP.

The Project site occurs within the MSHCP survey area for burrowing owl. Although the site lacked potential burrows, MSHCP Objective 6 for burrowing owls requires pre-construction surveys prior to site grading. As such, measure **BIO-1** is required to avoid direct impacts to burrowing owls and to ensure consistency with the MSHCP. In addition, the Project site contains vegetation with the potential to support nesting birds. As discussed above, the MBTA and California Fish and Game Code prohibit impacts to nesting birds. Mitigation measure **BIO-2** is required to avoid impacts to nesting birds; while implementation of the MSHCP land use adjacency guidelines are required (BIO-3) in order to minimize potential edge/ adjacency effects.

Additionally, potential impacts to cultural, archaeological and paleontological resources related to major periods of California and the City of Riverside's history or prehistory were discussed in the Cultural Resources Section of this Initial Study and were found to be less than significant with implementation of mitigation measures **CR-1** through **CR-4**.

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)?	☐	☐	☒	☐

19b. Response: ***(Source: FPEIR Section 6 – Long-Term Effects/ Cumulative Impacts for the General Plan 2025 Program)***

Less Than Significant Impact: The project has either no impact, a less than significant impact, or a less than significant impact with mitigation incorporated with respect to all environmental issues pursuant to CEQA. Due to the limited scope of direct physical impacts to the environment associated with the project, the project's impacts are primarily project-specific in nature. In addition, since the project is consistent with the General Plan 2025, no new cumulative impacts are anticipated and, therefore, cumulative impacts of the project beyond those previously considered in the GP 2025 FPEIR are less than significant.

c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

19c. Response: ***(Source: FPEIR Section 5 – Environmental Impact Analysis for the General Plan 2025 Program)***

Less Than Significant Impact: The project will not consist of a use or activities that will negatively affect persons in the vicinity. All resource topics associated with the proposed project have been analyzed in accordance with CEQA and the State CEQA Guidelines and were found to pose no impacts or less than significant impacts. Consequently, the project will not result in any environmental effects that will cause substantial adverse effects on human beings directly or indirectly. Cumulative impacts of the proposed projects are less than significant.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Note: Authority cited: Sections 21083 and 21087, Public Resources Code. Reference: Sections 21080(c), 21080.1, 21080.3, 21082.1, 21083, 21083.3, 21093, 21094, 21151, Public Resources Code; Sundstrom v. County of Mendocino, 202 Cal.App.3d 296 (1988); Leonoff v. Monterey Board of Supervisors, 222 Cal.App.3d 1337 (1990).

Staff Recommended Mitigation Measures

Impact Category	Mitigation Measures	Implementation Timing	Responsible Monitoring Party	Monitoring / Reporting Method
Biological Resources	BIO-1: A qualified biologist shall conduct a pre-construction presence/absence survey for burrowing owls within 30 days prior to site disturbance. If burrowing owls are detected on-site, the owls shall be relocated/excluded from the site outside of the breeding season following accepted protocols, and subject to the approval of the RCA and wildlife agencies.	Prior to Grading Permit	Planning Division and Public Works Department	A Preconstruction survey shall be submitted to the City Planning Division no greater than 30 days prior to the commencement of grading activities.
Biological Resources	BIO-2: As feasible, vegetation clearing should be conducted outside of the nesting season, which is generally identified as February 1 through September 15. If avoidance of the nesting season is not feasible, then a qualified biologist shall conduct a nesting bird survey within three days prior to any disturbance of the site, including disking, demolition activities, and grading. If active nests are identified, the biologist shall establish suitable buffers around the nests, and the buffer areas shall be avoided until the nests are no longer occupied and the juvenile birds can survive independently from the nests.	Prior to Grading Permit	Planning Division and Public Works Department	A Preconstruction survey shall be submitted to the City Planning Division no greater than 30 days prior to the commencement of grading activities.
Biological Resources	BIO -3: **Drainage** - projects in proximity to the MSHCP Proposed Constrained Linkage 7 and shall incorporate measures, including measures required through the National Pollutant Discharge Elimination System (NPDES) requirements, to ensure that the quantity and quality of runoff discharged to the MSHCP Proposed Constrained Linkage 7 is not altered in an adverse way when compared with existing conditions. In particular, measures shall be put in place to avoid discharge of untreated surface runoff from developed and paved areas into the MSHCP Proposed Constrained Linkage 7. Stormwater systems, as applicable, shall be designed to prevent the release of toxins, chemicals, petroleum products, exotic plant materials or other elements that might degrade or harm biological resources or ecosystem processes within the MSHCP Proposed Constrained Linkage 7. This can be accomplished using a variety of methods including natural detention basins, grass swales or mechanical trapping devices. Regular maintenance shall occur to ensure effective operations of runoff control systems. The Project's contractor shall develop a Stormwater Pollution Prevention Plan (SWPPP) to runoff and water quality during construction. However, following the completion of activities, the Project site shall not	Prior to Grading Permit	Planning Division and Public Works Department	

Impact Category	Mitigation Measures	Implementation Timing	Responsible Monitoring Party	Monitoring / Reporting Method
	contain any developed or paved areas, that will in any way result in increased drainage to the MSHCP Proposed Constrained Linkage 7. As such, no measures would be required post-construction. **Toxics** - Land uses proposed in proximity to the MSHCP Proposed Constrained Linkage 7 that use chemicals or generate bioproducts such as manure that are potentially toxic or may adversely affect wildlife species, habitat or water quality shall incorporate measures to ensure that application of such chemicals does not result in discharge to the MSHCP Proposed Constrained Linkage 7. Measures such as those employed to address drainage issues shall be implemented. The project shall implement a SWPPP that shall address runoff during construction. **Lighting** - Night lighting shall be directed away from the MSHCP Proposed Constrained Linkage 7 to protect species from direct night lighting. If night lighting is required during construction, shielding shall be incorporated to ensure ambient lighting in the MSHCP Proposed Constrained Linkage 7 is not increased. **Noise** - Proposed noise generating land uses affecting MSHCP Conservation Area shall incorporate setbacks, berms or walls to minimize the effects of noise on MSHCP Conservation Area resources pursuant to applicable rules, regulations and guidelines related to land use noise standards. For planning purposes, wildlife within the MSHCP Conservation Area should not be subject to noise that would exceed residential noise standards. **Invasives** - Projects adjacent to the MSHCP Conservation Area (including MSHCP Proposed Constrained Linkage 7) shall avoid the use of invasive plant species in landscaping, including invasive, nonnative plant species listed in Volume I, Table 6-2 of the MSHCP.			
Cultural Resources	CR-1: Archaeological and Paleontological Monitoring: At least 30 days prior to application for a grading permit and before any grading, excavation and/or ground disturbing activities on the site take place, the Project Applicant shall retain a Secretary of Interior Standards qualified archaeological monitor to monitor all ground-disturbing activities in an effort to identify any unknown	Prior to Grading Permit	Planning Division and Public Works Department	Submission of an Archaeological Monitoring Plan

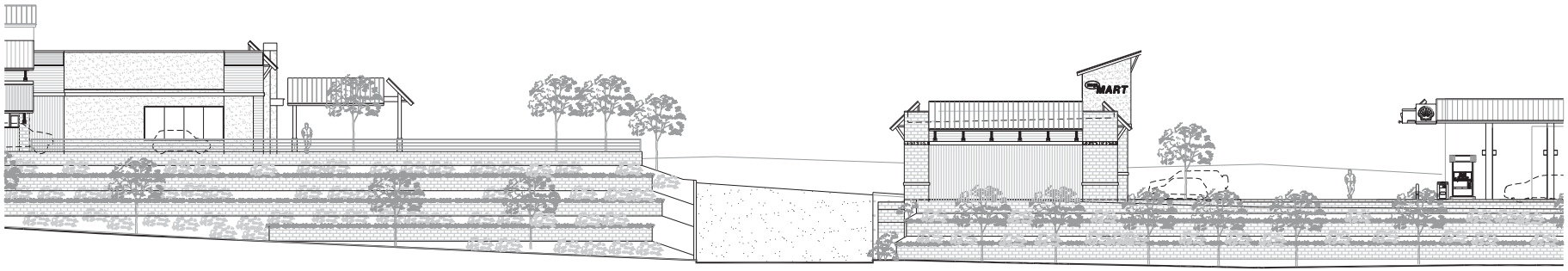
Impact Category	Mitigation Measures	Implementation Timing	Responsible Monitoring Party	Monitoring / Reporting Method
	archaeological resources. The Project Archaeologist, in consultation with interested tribes, the Developer and the City, shall develop an Archaeological Monitoring Plan to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. Details in the Plan shall include: a. Project grading and development scheduling; b. The development of a rotating or simultaneous schedule in coordination with the applicant and the Project Archeologist for designated Native American Tribal Monitors from the consulting tribes during grading, excavation and ground disturbing activities on the site: including the scheduling, safety requirements, duties, scope of work, and Native American Tribal Monitors' authority to stop and redirect grading activities in coordination with all Project archaeologists; c. The protocols and stipulations that the Applicant, tribes and project archaeologist/paleontologist shall follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits, or nonrenewable paleontological resources that shall be subject to a cultural resources evaluation; d. Treatment and final disposition of any cultural and paleontological resources, sacred sites, and human remains if discovered on the project site; e. The scheduling and timing of the Cultural Sensitivity Training per CR-4			
Cultural Resources	CR-2: Prior to grading permit issuance, if there are any changes to project site design and/or proposed grades, the Applicant and the City shall contact interested tribes to provide an electronic copy of the revised plans for review. Additional consultation shall occur between the City, Applicant, and interested tribes to discuss any proposed changes and review any new impacts and/or potential avoidance/ preservation of the cultural resources on the project site.	Prior to Grading Permit	Planning Division and Public Works Department	Submission of an Archaeological Monitoring Plan

Impact Category	Mitigation Measures	Implementation Timing	Responsible Monitoring Party	Monitoring / Reporting Method
	The City and the Applicant shall make all attempts to avoid and/or preserve in place as many cultural and paleontological resources as possible that are located on the project site if the site design and/or proposed grades should be revised.			
Cultural Resources	CR-3: Treatment and Disposition of Cultural Resources: In the event that Native American cultural resources are inadvertently discovered during the course of grading for this Project. The following procedures shall be carried out for treatment and disposition of the discoveries: 1. Temporary Curation and Storage: During the course of construction, all discovered resources shall be temporarily curated in a secure location on-site or at the offices of the project archaeologist. The removal of any artifacts from the project site shall be thoroughly inventoried with tribal monitor oversite of the process; and 2. Treatment and Final Disposition: The landowner(s) shall relinquish ownership of all cultural resources, including sacred items, burial goods, and all archaeological artifacts and non-human remains as part of the required mitigation for impacts to cultural resources. The applicant shall relinquish the artifacts through one or more of the following methods and provide the City of Riverside Community and Economic Development Department with evidence of same: a) Accommodate the process for on-site reburial of the discovered items with the consulting Native American tribes or bands. This shall include measures and provisions to protect the future reburial area from any future impacts. Reburial shall not occur until all cataloguing and basic recordation have been completed; b) A curation agreement with an appropriate qualified repository within Riverside County that meets federal standards per 36 CFR Part 79 and therefore would be professionally curated and made available to other archaeologists/researchers for further study. The collections and associated records shall be transferred, including title, to an appropriate curation facility within Riverside County,	Prior to Grading Permit	Planning Division and Public Works Department	Submission of a Monitoring Report

Impact Category	Mitigation Measures	Implementation Timing	Responsible Monitoring Party	Monitoring / Reporting Method
	to be accompanied by payment of the fees necessary for permanent curation; c) For purposes of conflict resolution, if more than one Native American tribe or band is involved with the project and cannot come to an agreement as to the disposition of cultural materials, they shall be curated at the Western Science Center or Riverside Metropolitan Museum by default; and; d) At the completion of grading, excavation and ground disturbing activities on the site a Phase IV Monitoring Report shall be submitted to the City documenting monitoring activities conducted by the project Archaeologist and Native Tribal Monitors within 60 days of completion of grading. This report shall document the impacts to the known resources on the property; describe how each mitigation measure was fulfilled; document the type of cultural resources recovered and the disposition of such resources; provide evidence of the required cultural sensitivity training for the construction staff held during the required pre-grade meeting; and, in a confidential appendix, include the daily/weekly monitoring notes from the archaeologist. All reports produced shall be submitted to the City of Riverside, Eastern Information Center and interested tribes:			
Cultural Resources	CR-4: Cultural Sensitivity Training: The County of Riverside Certified Archaeologist and Native American Monitors shall attend the pre-grading meeting with the developer/permit holder's contractors to provide Cultural Sensitivity Training for all construction personnel. This shall include the procedures to be followed during ground disturbance in sensitive areas and protocols that apply in the event that unanticipated resources are discovered. Only construction personnel who have received this training can conduct construction and disturbance activities in sensitive areas. A sign in sheet for attendees of this training shall be included in the Phase IV Monitoring Report.	Prior to Grading Permit	Planning Division and Public Works Department	Submission of a Monitoring Report

APPENDIX A
PROJECT PLANS

SYCAMORE at CENTRAL



LEGAL DESCRIPTION/ DATA

LEGAL DESCRIPTION
THAT PORTION OF THE NORTHWEST QUARTER OF SECTION 33, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

APN: 256-050-007

ZONING:
CG- COMMERCIAL GENERAL

APPROVALS

COUNTY
PLANNED DEVELOPMENT APPROVAL

PARCEL DATA

SITE AREA:		95,542 SF	2.19 ACRES
BUILDINGS:			
	C-STORE	3,200 SF	
	CANOPY	3,600 SF	
	FAST FOOD	3,800 SF	
	CAR WASH	1,200 SF	
LOT COVERAGE :		11,800/95558	12.3%
LANDSCAPE AREA:		10,762 SF	11%

PROJECT DATA

PROJECT ADDRESS: SYCAMORE CANYON RD & CENTRAL AVENUE
RIVERSIDE, CA

BUILDINGS : MEGA-MART & RETAIL STORE

CONSTRUCTION TYPE: V-B

USE GROUP: M (CONVENIENCE STORE)
ALLOWABLE AREA: 9,000 S.F.
ACTUAL GROSS AREA: 3,200 S.F.

CANOPY

CONSTRUCTION TYPE: II-B
USE GROUP: M (FUEL CANOPY)
ALLOWABLE AREA: 12,500 S.F.
ACTUAL GROSS AREA: 3,600 S.F.

BUILDINGS : CARWASH

CONSTRUCTION TYPE: V-B

USE GROUP: B (BUSINESS)
ALLOWABLE AREA: 9,000 S.F.
BUILDING FOOTPRINT: 1,200 S.F.

BUILDINGS : RETAIL-FASTFOOD

CONSTRUCTION TYPE: V-B

USE GROUP: B (BUSINESS)
ALLOWABLE AREA: 9,000 S.F.
BUILDING FOOTPRINT: 3,800 S.F.

OCCUPANCY AND EGRESS:

CONVENIENCE STORE

SALES - 1,701 S.F.(1701/30)	= 57
CASHIER - 131 S.F.(131/100)	= 2
OFFICE - 68 S.F. (68/100)	= 1
RESTROOMS - 114 S.F. (EXEMPT)	= 0
PREP/UTILITY - 405 S.F.(405/200)	= 3
COOLER/FREEZER - 533 S.F. (*EXEMPT)	= 0
TOTAL (NET): 2,952 S.F.	= 63 OCCUPANTS
TOTAL (GROSS): 3,054 S.F.	

*COOLER IS A NON OCCUPIABLE SPACE PER SECTION 202 DEFINITION OF AN OCCUPIABLE SPACE.

EXITS REQUIRED: 2
EXITS PROVIDED: 2

PLUMBING FIXTURE COUNT:

CONVENIENCE STORE:

PER CPC 422.1

50% MALE/ FEMALE = 63/ 2 = 32 OCC LOAD

MEN FIXTURES REQ = 1 WATER CLOSET, 1 LAVATORY
WOMEN FIXTURES REQ = 1 WATER CLOSET, 1 LAVATORY

PROVIDED
MEN FIXTURES PROVIDED = 1 WATER CLOSET, 1 LAV
WOMEN FIXTURES PROVIDED = 1 WATER CLOSET, 1 LAV

APPLICABLE CODES

BUILDING CODE :	2016 CALIFORNIA BUILDING CODE
GREEN CODE:	2016 CALIF GREEN BUILDING STANDARDS CODE
FIRE CODE:	2016 CALIFORNIA FIRE CODE (BASED ON IFC)
PLUMBING CODE:	2016 CALIFORNIA PLUMBING CODE (BASED ON UPC)
ELECTRICAL CODE:	2016 CALIFORNIA ELECTRICAL CODE (BASED ON NEC)
MECHANICAL CODE:	2016 CALIFORNIA MECHANICAL CODE (BASED ON UMC)
ENERGY CODE:	2016 ENERGY STANDARDS

AS AMENDED BY STATE OF CALIF, AND LOCAL JURISDICTION

PERMIT ISSUE DATES

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SOUTHERN CALIFORNIA GEOTECHNICAL
www.socalgeo.com
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YORBA LINDA, CA 92887
EMAIL:gkmitchell@socalgeo.com
(714) 685-1115 Office

INDEX OF DRAWINGS

GENERAL

T1.01	COVER SHEET

ARCHITECTURAL

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A1.02	C-STORE ROOF PLAN
A1.03	RESTAURANT FLOOR PLAN
A1.04	RESTAURANT ROOF PLAN
A1.05	CAR WASH FLOOR PLAN & ROOF PLAN
A1.06	CANOPY PLAN
A1.07	CANOPY ROOF PLAN
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A2.02	CANOPY ELEVATIONS
A2.03	RESTAURANT ELEVATIONS
A2.04	CAR WASH ELEVATIONS

LANDSCAPE

L1	PRELIMINARY LANDSCAPE PLAN
L2	PRELIMINARY LANDSCAPE PLAN
L3	NOTES AND DETAILS
L4	PRELIMINARY LANDSCAPE PLAN
L5	PRELIMINARY LANDSCAPE PLAN & IRRIGATION SCHEDULE
L6	IRRIGATION NOTES AND DETAILS

SITE VICINITY MAP

No.	Date	By	Chd.	Appr.	Revision

Title: COVER SHEET
KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA

For: KA ENTERPRISES

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Checked —
Vertical N/A
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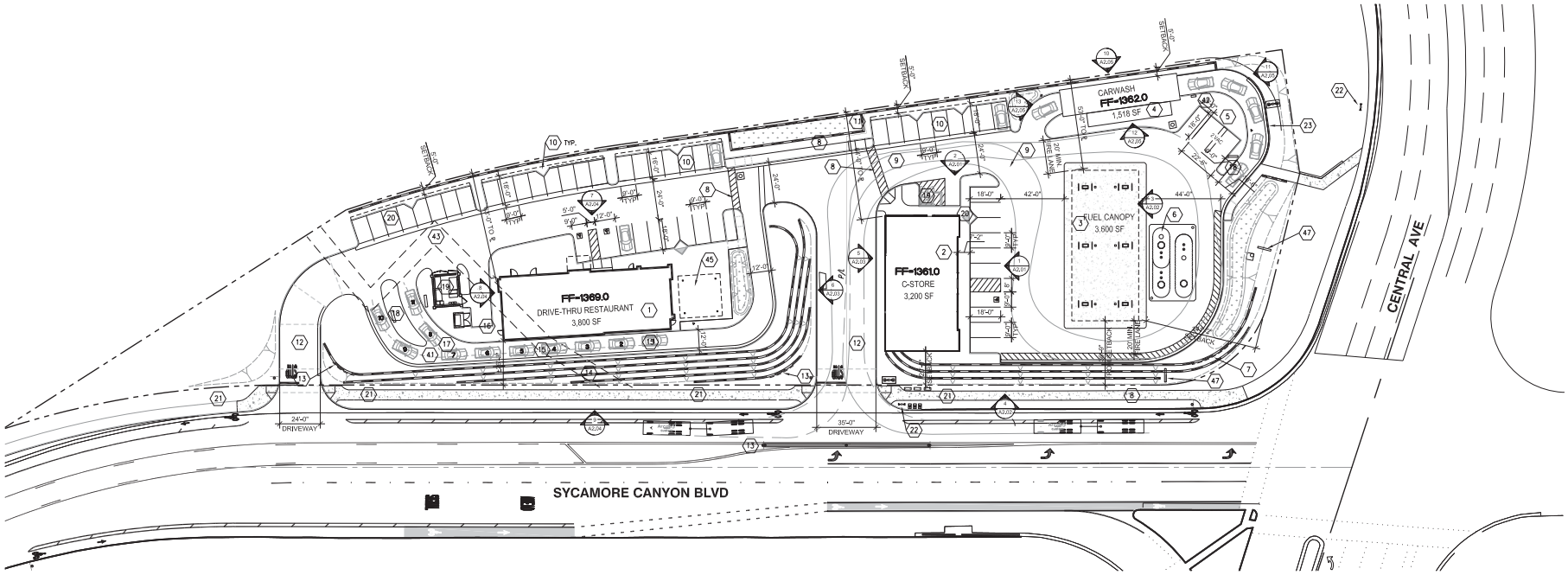
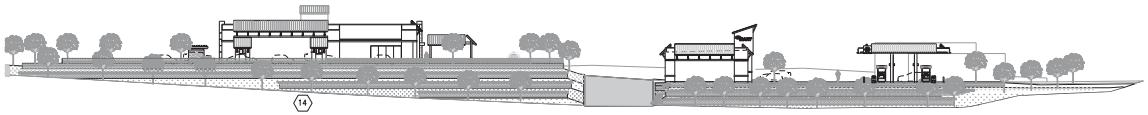
Date 10/4/18

18447 T1.01



SITE PLAN

1" = 30'-0"



SITE ELEVATION

1" = 30'-0"

DEVELOPMENT SUMMARY

LOT AREA:

AREA OF PROPOSED SUMMARY STREET VACATION	61,556 sf
AREA OF PROPOSED STREET VACATION	61,556 sf
AREA OF MELROSE, LLC LAND	33,986 sf
TOTAL LOT AREA:	95,542 sf 2.19 ACRES
MAP:	TM 37591

LOT AREA

EXISTING LOTS		PROPOSED LOTS
PARCEL A	61,556 sf	PARCEL 1 50,101.1 sf
PORTION OF APN 256-050-007	33,986 sf	PARCEL 2 45,440.6 sf

SUMMARY OF EA. BLDG AND SQ. FT

C-STORE	3,200 SF
CANOPY	3,600 SF
FAST FOOD	3,800 SF
CAR WASH	1,518 SF
TOTAL	12,118 S.F.

DEVELOPMENT STANDARDS

DEVLOPMENT STANDARD PER TABLE 19.110.030	CG (REQUIR'D)	(PROV'D)
FLOOR AREA RATIO (FAR) MAX.	0.50	.123
LOT AREA – MIN.	20,000 sf	85,542 sf
LOT WIDTH – MIN.	60 sf	VARIES
LOT DEPTH – MIN.	100 sf	VARIES
BUILDING HEIGHT – MAX.	75 sf	30 ft
FRONT YARD SETBACK (MIN.)	0 FT.	20 ft
SIDE YARD SETBACK (MIN.) INTERIOR SIDE STREET SIDE	0 ft 0 ft	± 41'-2"
REAR YARD SETBACK (MIN.)	0 ft	5 ft
LANDSCAPE SETBACK	VARIES	0 FT.
LANDSCAPE SETBACK FROM ANY FREEWAY RIGHT OF WAY	0 ft	0 FT.

LANDSCAPE ANALYSIS

SITE:	95,542 SF	2.19	ACRES
LANDSCAPE AREA:	10,762 SF		11%

PARKING ANALYSIS

PARKING SPACES REQUIREMENTS PER RIVERSIDE ZONING ORDINANCE TABLE 19-580-060:

VEHICLE FUELING STATION W/ CONVENIENCE STORE: 1 SPACE/250 SF OF RETAIL AREA INCLUDING COOLER AREAS
3,200 SF / 250 = 13 SPACES

STAND ALONE FAST FOOD DRIVE THRU:
1 SPACE/100 SF OF FLOOR AREA
3,800 SF / 100 = 38 SPACES

FULL SERVICE AUTOMATED CARWASH:
1 SPACE/2 EMPLOYEES OF LARGEST SHIFT
1,518 SF = 1 SPACES

PARKING SPACES REQUIRED: 52 SPACES
PARKING SPACES PROVIDED: 54 SPACES

DRIVE-THU STACKING – PER 19.475.040 D

MAINTAIN DRIVE-THRU LANES THAT ARE A MINIMUM OF 180 FEET IN LENGTH TO PROVIDE ON-SITE STORAGE FOR A MINIMUM OF TEN (10) VEHICLES, AS MEASURED FROM THE FORWARD MOST DRIVE-THRU WINDOW TO THE ENTRANCE TO THE QUEUING SPACE. – SEE KEY NOTE 17

KEYED NOTES

1. DRIVE-THRU RESTAURANT – 3,800 sf. ALL ROOF MNTD EQUIP SHALL BE FULLY SCREENED FROM VIEW. BLDG ELEVS HAVE WELL MODULATED PLANES & ARTICULATED FACADES, ARTICULATED ROOF LINES, AND MULTIPLE EXTERIOR MATERIALS. (TYPICAL)
2. C-STORE – 3,200 sf. ALL ROOF MNTD EQUIP SHALL BE FULLY SCREENED FROM VIEW, TOWER PROJECTIONS SHALL BE FINISHED ON ALL FOUR SIDES
3. 6 MULTI PRODUCT DISPENSERS (MPD's) W/ 90'x40' CANOPY – 3,600 sf
4. CAR WASH AND EQUIPMENT ROOM BUILDING – 1,199 sf – SELF SERVE
5. VACCUUMS – 2 SPACES
6. UNDERGROUND STORAGE TANKS –
7. CORNER ID SIGN FOR THE CENTER – INTERSECTION AS GATEWAY INTO THE CITY OF RIVERSIDE. AN ATTIRACTIVE AND DYNAMIC ENTRANCE FEATURE SHALL BE PROVIDED ALONG THE PROJECTS STREET FRONTAGES
8. PEDESTRIAN SITE ACCESS SHALL BE PROVIDED NEAR THE INTERSECTION. PEDESTRIAN CONNECTIONS SHALL BE PROVIDED BETWEEN ALL USES ON-SITE
9. 20' WIDE TRUCK TURNING TEMPLATE – FOR FUEL TRUCKS, FIRE TRUCKS AND TRASH TRUCKS
10. PARKING LOT LANDSCAPE DIAMONDS SHALL BE PROVIDED EVERY 4 PARKING SPACES. AVOID USE OF LIGHT POLES IN DIAMONDS. LANDSCAPE FINGERS BETWEEN PARKING SPACES SHALL BE PROVIDED WHERE FEASIBLE
11. LANDSCAPE SETBACK ALONG FREEWAY ROW
12. DECORATIVE PROJECT ENTRANCE PAVING
13. MONUMENT SIGN – PER RIVERSIDE ZONING ORDINANCE TABLE 19-620.
14. STREET TREES TO ENHANCE DRIVE-THRU SCREENING
15. DRIVE-THRU WINDOWS – SCREENED WITH ARCHITECTURAL ELEMENTS – SEE ELEVATIONS
16. LOADING ZONE– PER RIVERSIDE ZONING ORDINANCE 19-580.
17. DRIVE-THRU LANES – DRIVE-THRU LANES SHALL BE SCREENED FROM VIEW THRU ELEV GRADE DIFFERENCES LANDSCAPING ARBORS TRELLISES TO REDUCE VISUAL PRESENCE OF DRIVE-THRU. LENGTH A MIN. 180' PER 19.475.040 D.
18. MENU BOARDS FOR DRIVE-THRU RESTAURANT AND CAR WASH
19. TRASH ENCLOSURE
20. FREEWAY SIGN – FREEWAY SIGNAGE SHALL COMPLY WITH STDS TABLE 19.620.080.C. OF RIVERSIDE MUNICIPAL CODE
21. OFF-SITE IMPROVEMENTS WITHIN 100 FEET OF SITE
22. NEW FIRE HYDRANT
23. 3 FT. TALL SCREEN WALL
41. 180' OF VEHICULAR STACKING FROM MENU BD TO PU WINDOW
42. CAR WASH PAY STATION
43. EASEMENT TO BE VACATED – SEE CIVIL
45. COVERED OUTDOOR SEATING AREA
46. GROUND-MOUNTED UTILITY EQUIPMENT SUCH AS, BUT NOT LIMITED TO, ELECTRIC POWER TRANSFORMERS AND DISTRIBUTION FACILITIES, WATER PUMPS, CABLE TELEVISION BOXES, AND TELECOMMUNICATIONS FACILITIES (NOT INCLUDING POLE-MOUNTED EQUIPMENT) SHALL BE SCREENED FROM VIEW ON ALL SIDES WITH SOLID MASONRY WALLS OR SIMILAR PERMANENT STRUCTURES.
47. PRICE SIGN

No.	Date	By	Chk.	Appr.	Revision

Title: SITE PLAN AND SITE ELEVATION

KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA

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Scale: Horizontal — Vertical N/A

Designed —
Drawn —
Checked —
Approved —
Date 10/4/18

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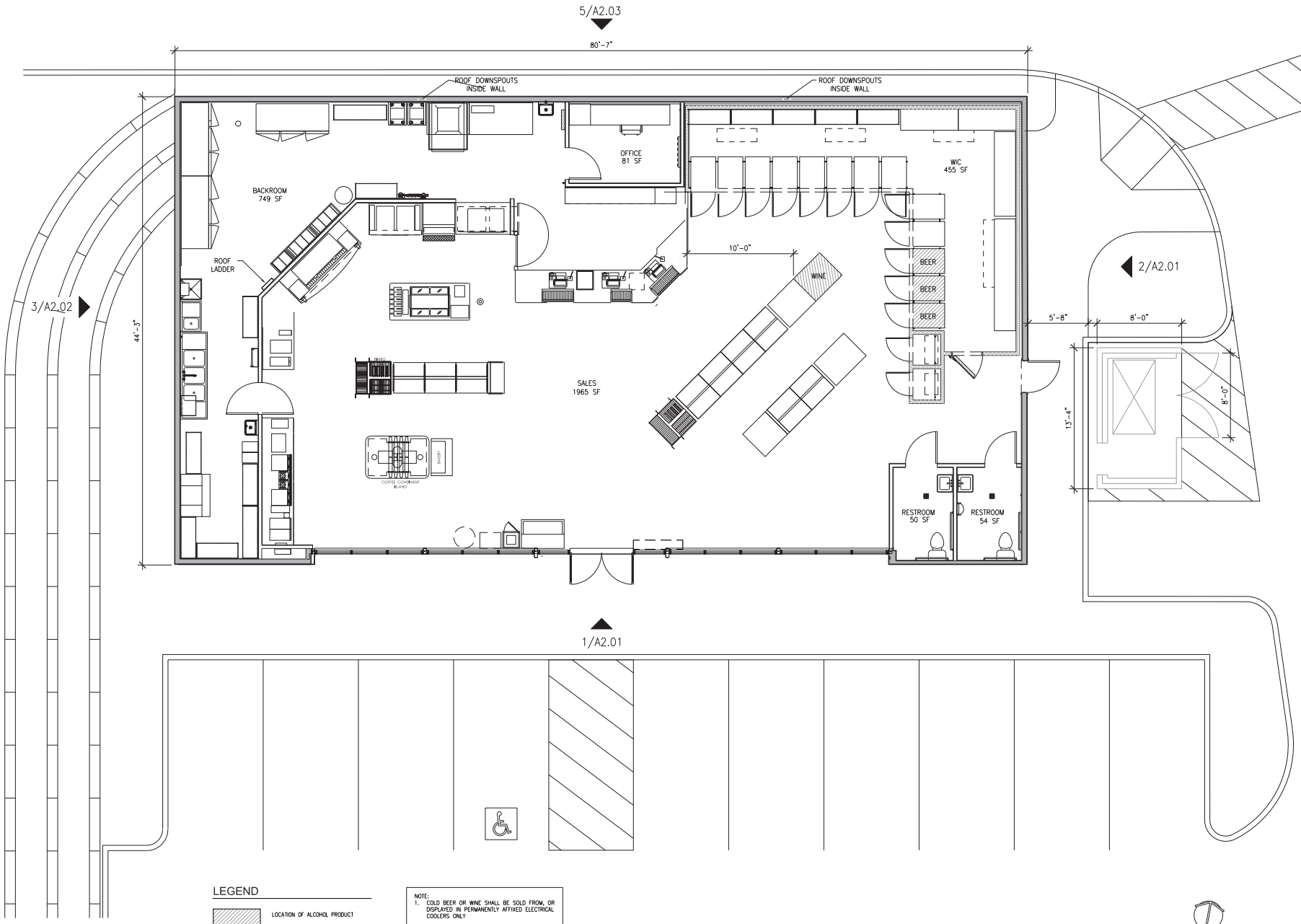

LEGEND

LOCATION OF ALCOHOL PRODUCT

NOTE:
1. COLD BEER OR WINE SHALL BE SOLD FROM, OR DISPLAYED IN PERMANENTLY AFFIXED ELECTRICAL COOLERS ONLY

1 C-STORE FLOOR PLAN - 3,200 SF
1/4" = 1'-0"

No.	Date	By	Chd.	Appr.	Revision

Title: C STORE - FLOOR PLAN

KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
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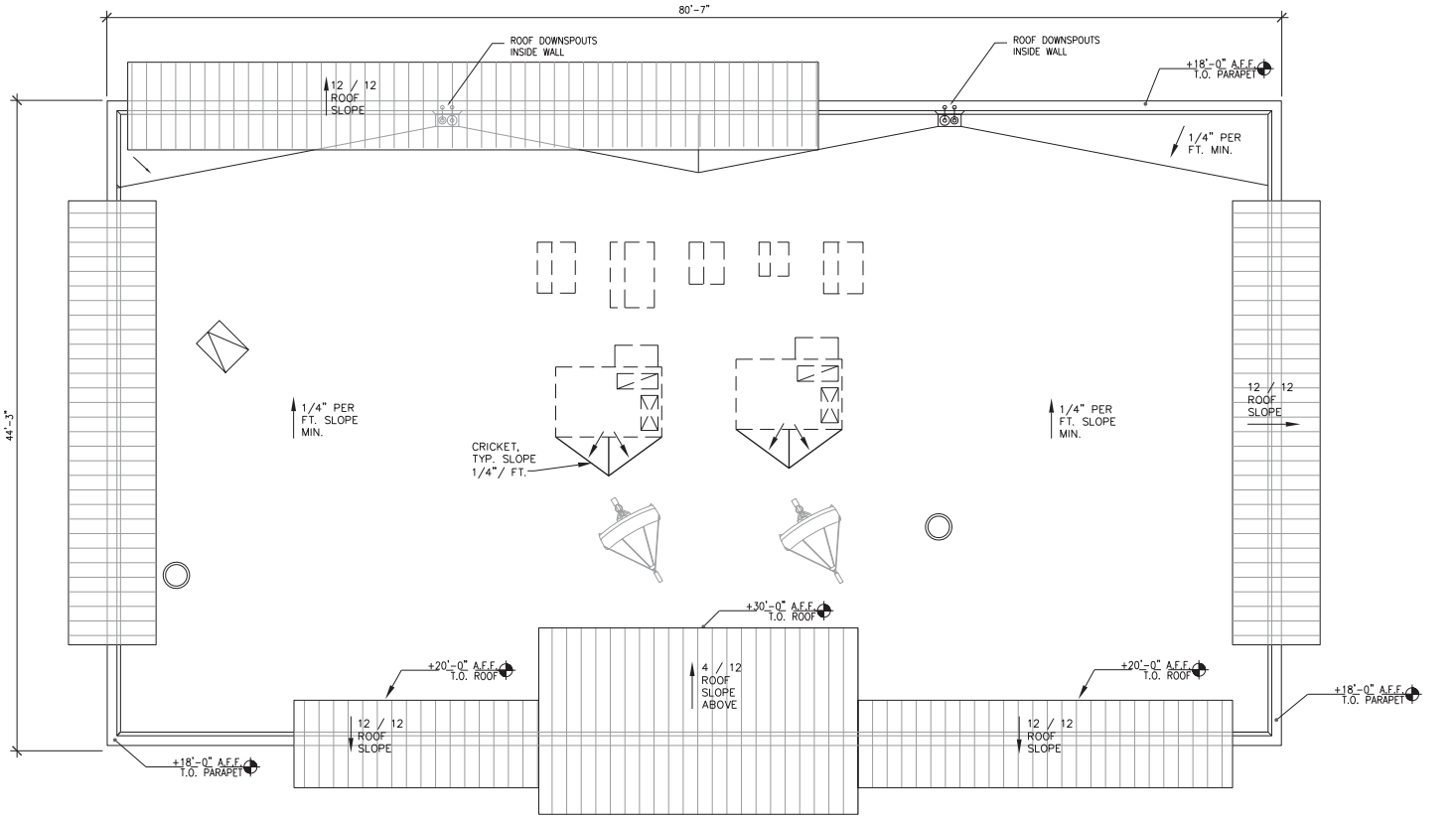

1 C-STORE ROOF PLAN
1/4" = 1'-0"

No.	Date	By	Chd.	Appr.	Revision

Title: C STORE - ROOF PLAN

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Riverside, CA

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Scale: Horizontal N/A Vertical N/A

Designed —— Drawn —— Checked —— Approved —— Date 10/4/18

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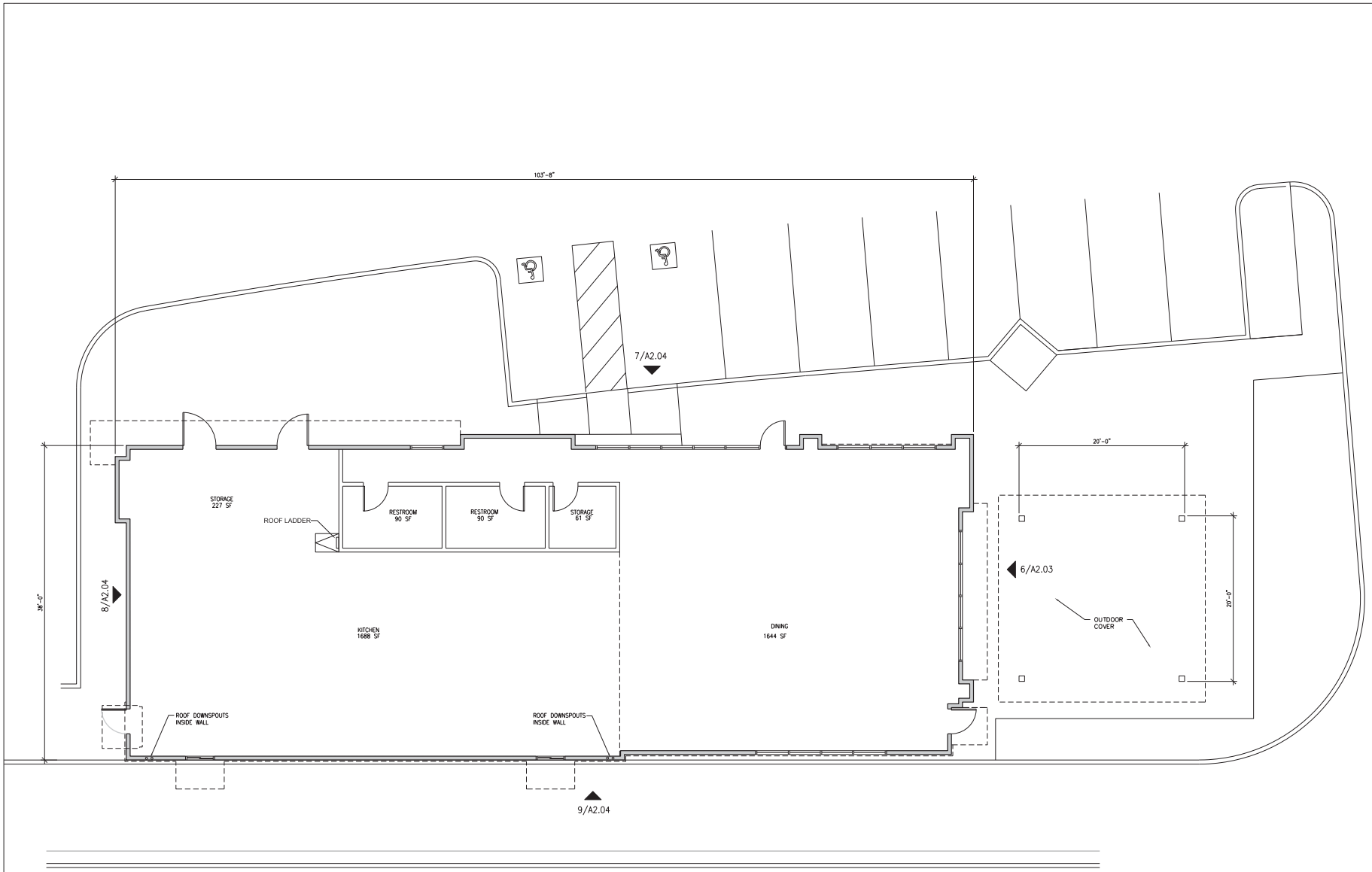

1 RESTAURANT ROOF PLAN
3/16" = 1'-0"

No.	Date	By	Chd.	Appr.	Revision

Title: RESTAURANT - ROOF PLAN

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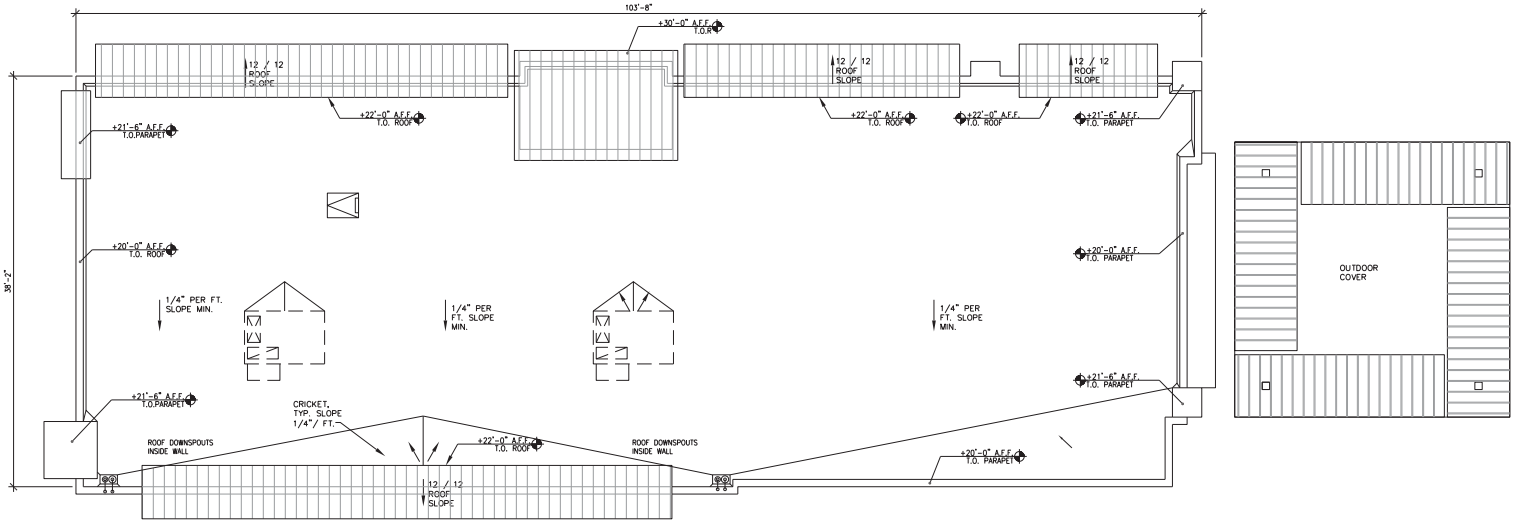

1 RESTAURANT ROOF PLAN

3/16" = 1'-0"

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18447

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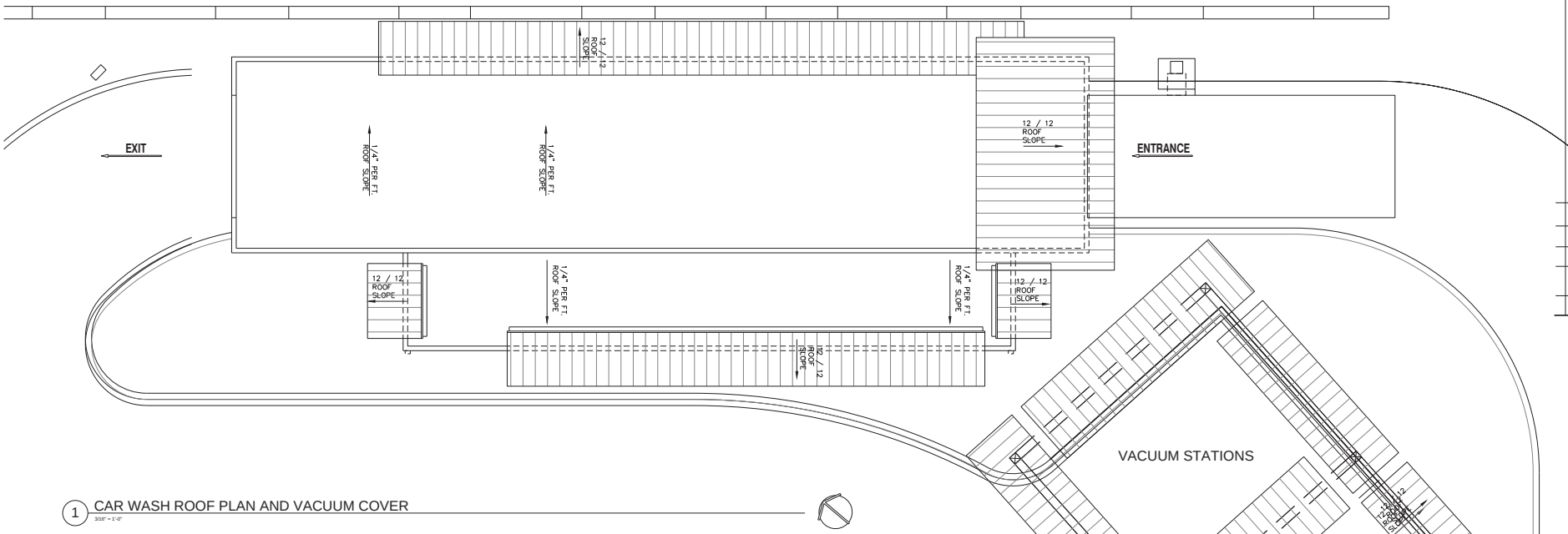
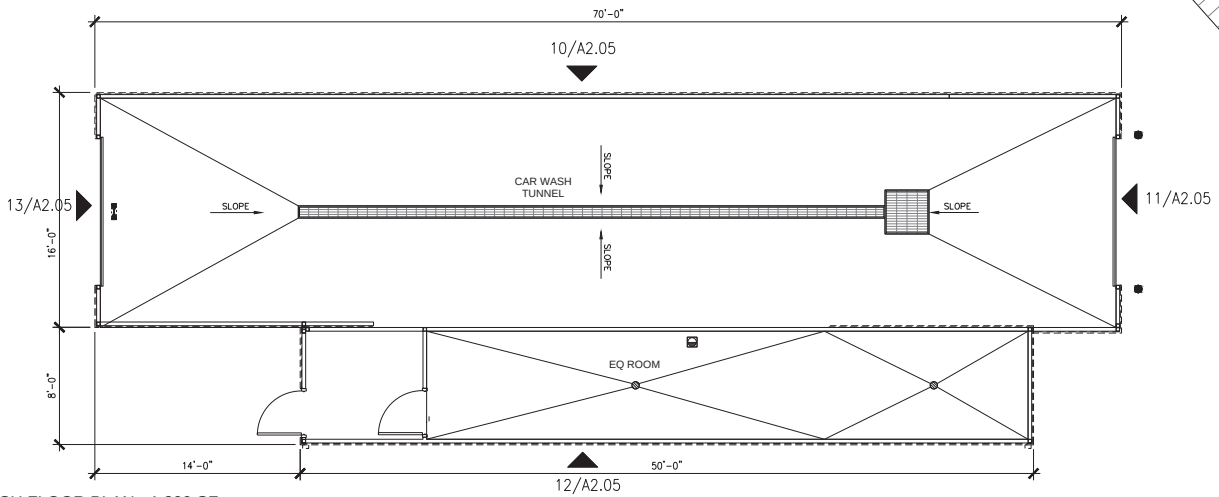


1 CAR WASH ROOF PLAN AND VACUUM COVER
3/16" = 1'-0"



2 CAR WASH FLOOR PLAN - 1,200 SF
3/16" = 1'-0"

No.	Date	By	Chd.	Appr.	Revision

Title: CARWASH - FLOOR AND ROOF PLAN

KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA

For: KA ENTERPRISES

5820 Oberlin Dr Suite 201
San Diego, CA 92121
858/404-6080
fax 858/404-6081

Scale:
Horizontal
Vertical N/A

Designed
Drawn
Checked
Approved
Date 10/4/18

BERGHAUSEN CONSULTING ENGINEERS, INC.
18215 72ND AVENUE SOUTH
KENT, WA 98032
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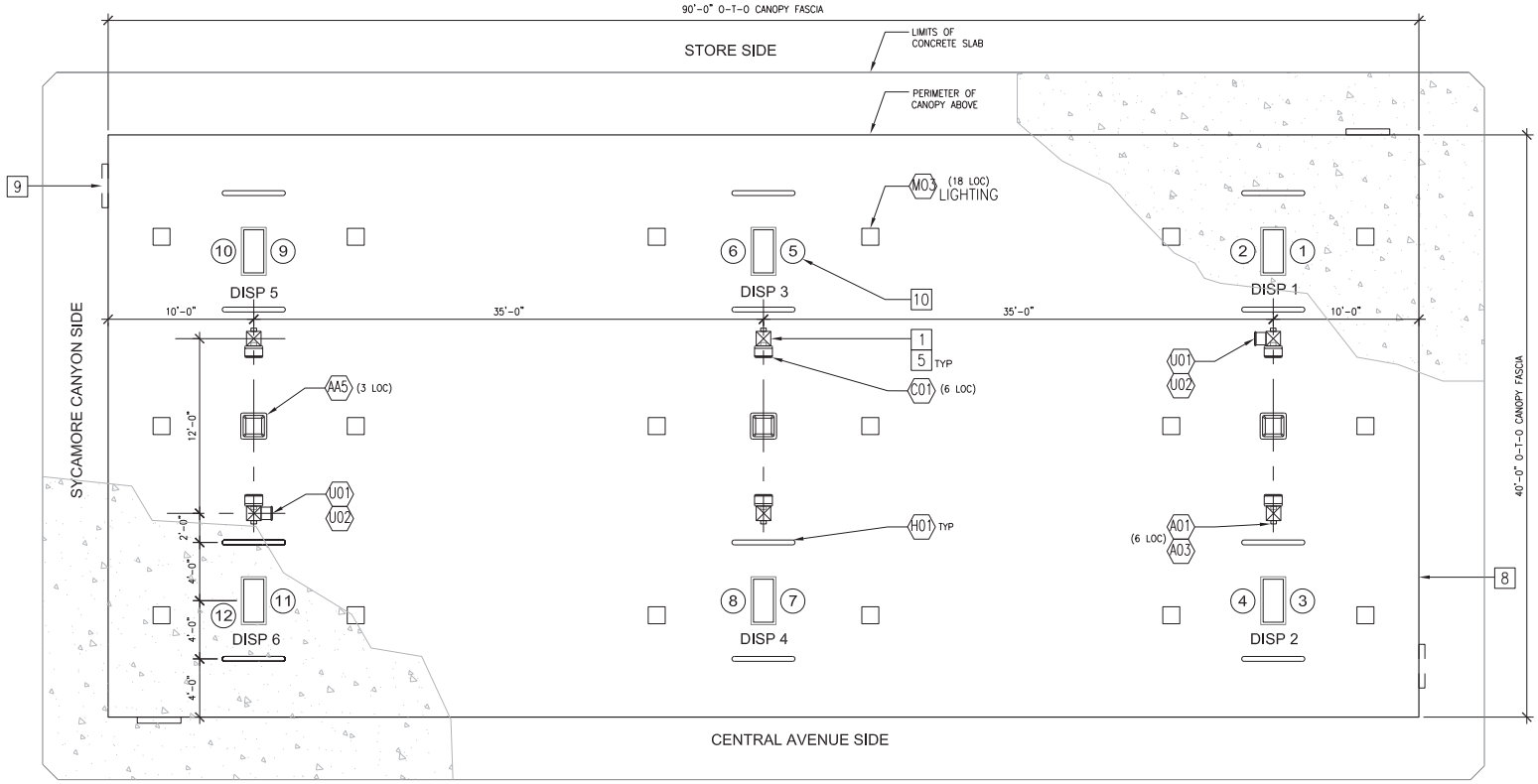
(425)251-8782 FAX
CIVIL ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES

18447 A1.05



KEY NOTES
1. CANOPY COLUMN
2. INTERCOM CALL BOX.
3. WASH BUCKET
4. FIRE EXTINGUISHER
5. DOWNSPOUT FROM CANOPY
6. OVERFLOW PROTECTION AS REQUIRED.
7. GASOLINE CANOPY
8. ACM CANOPY FASCIA.
9. ILLUMINATED LOGO SIGNS
10. FUELING POSITION NUMBER.
11. DISPENSER
12. FIRE EXTINGUISHER CABINET

1 CANOPY PLAN - 3,600 SF
1/4" = 1'-0"

No.	Date	By	Ckd.	Appr.	Revision

Title: FUEL CANOPY - FLOOR PLAN

KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA

For: KA ENTERPRISES

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Date 10/4/18

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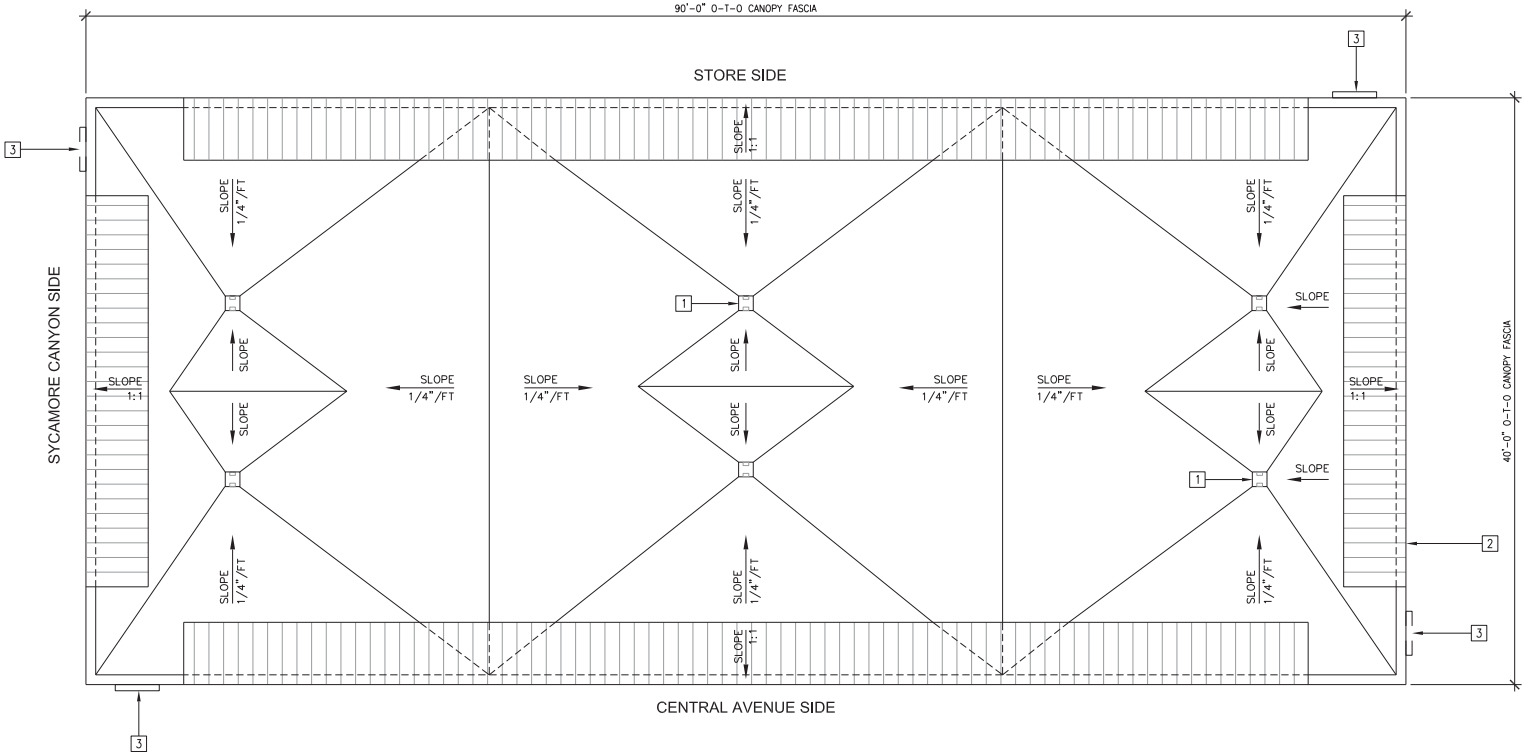
18447 A1.06



#	KEY NOTES
1.	ROOF AND OVERFLOW DRAIN DOWN COLUMNS
2.	ACM CANOPY FASCIA.
3.	SIGN LOCATION

1 CANOPY ROOF PLAN
1/4" = 1'-0"

No.	Date	By	Chd.	Appr.	Revision

Title: FUEL CANOPY - ROOF PLANN

KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA

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Designed
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Checked
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Date

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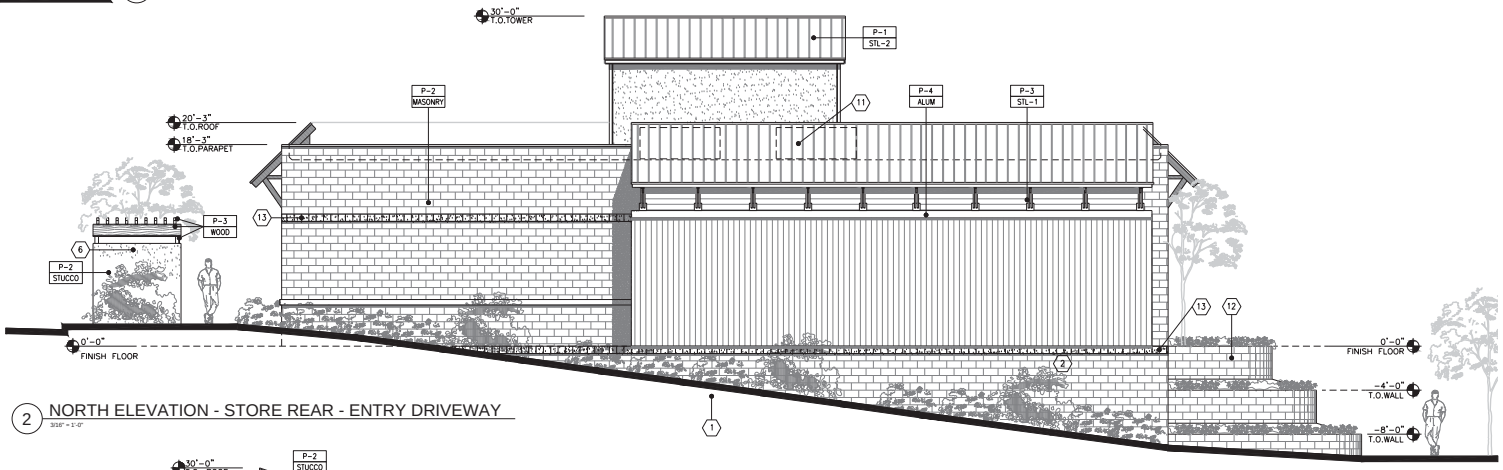
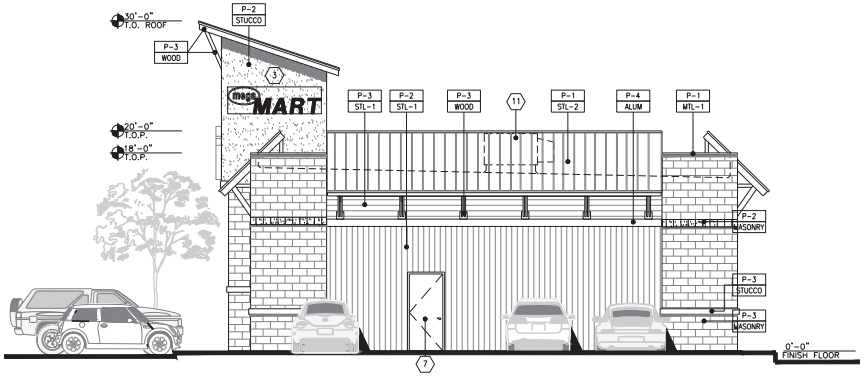
18447 A1.07

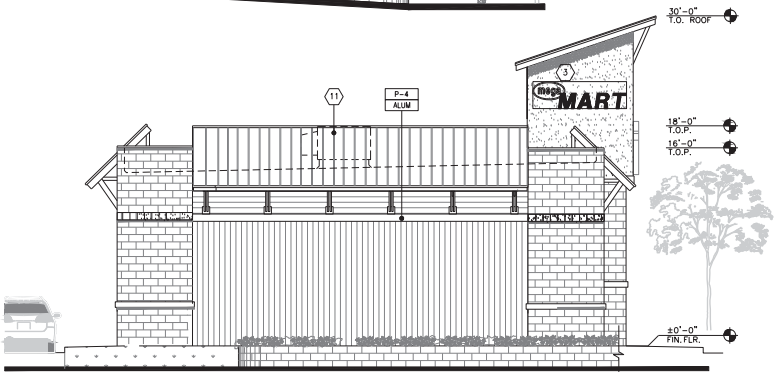
1 SOUTH ELEVATION - FRONT - FACING CENTRAL AVE
3/16" = 1'-0"



2 NORTH ELEVATION - STORE REAR - ENTRY DRIVEWAY
3/16" = 1'-0"



3 EAST ELEVATION - SIDE FACING 215 OFFRAMP
3/16" = 1'-0"



4 WEST ELEVATION - AT ENTRY DRIVE
3/16" = 1'-0"

KEYED NOTES

1. STEAM WALL - MASONRY WALL TO BE ARCHITECTURALLY INTEGRATED INTO THE OVERALL DESIGN.
2. FOUNDATION WALL, PAINT TO MATCH ADJACENT BUILDING COLOR
3. TENANT PRIMARY SIGNAGE, PER SEPARATE PERMIT
4. TENANT SECONDARY SIGNAGE, PER SEPARATE PERMIT
5. ALUMINUM STOREFRONT SYSTEM
6. TRASH ENCLOSURE - BEYOND
7. METAL DOOR - PAINT TO MATCH ADJACENT SURFACE
8. STUCCO REVEAL
9. UNDER CANOPY LIGHT FIXTURE
10. ALUMINUM CANOPY
11. NEW HVAC UNIT
12. PLANTED STEPPED RETAINING WALL
13. DECORATIVE SPLIT FACE BLOCK BAND - CONTRASTING COLOR

COLOR LEGEND

P-1	ICI #2010, "SHELL WHITE"
P-2	ICI #143, "ANTIQUE BISQUE"
P-3	ICI #327, "NUTRIA
P-4	WHITE

MATERIAL LEGEND

STUCCO	EXTERIOR CEMENT PLASTER
ALUM	ALUMINUM
STL-1	METAL WALL PANEL
STL-2	STANDING SEAM METAL ROOF
MTL-1	SHEET METAL FLASHING - PAINTED
MASONRY	MASONRY BLOCK
WOOD	EXTERIOR TREATED WOOD - PAINTED
PRE-C	PRE-CAST CONCRETE

No.	Date	By	Chd.	Appr.	Revision

Title: C - STORE ELEVATIONS

KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA

For: KA ENTERPRISES

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fax 858/404-6081

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Drawn —
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Approved —
Date 10/4/18

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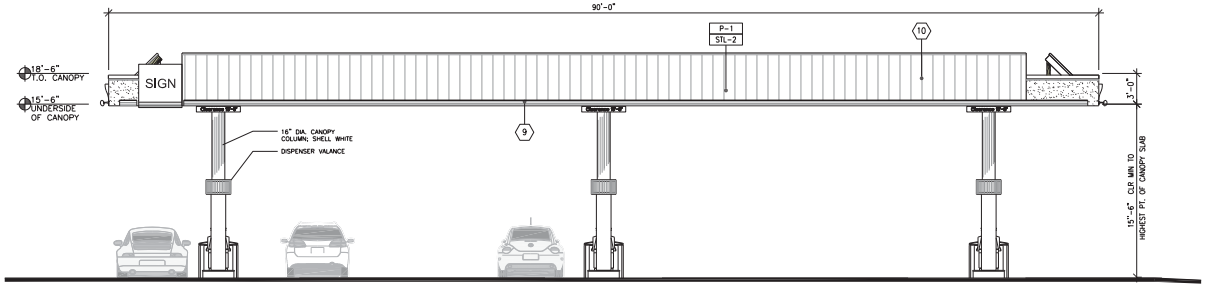
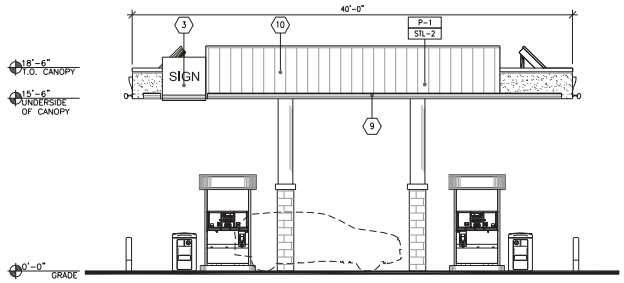
18447 A2.01



1 CANOPY NORTH ELEVATION - FACING NORTH OF ENTRY DRIVE
3/16" = 1'-0"



2 CANOPY ELEVATION - WEST FACING STORE
3/16" = 1'-0"

KEYED NOTES

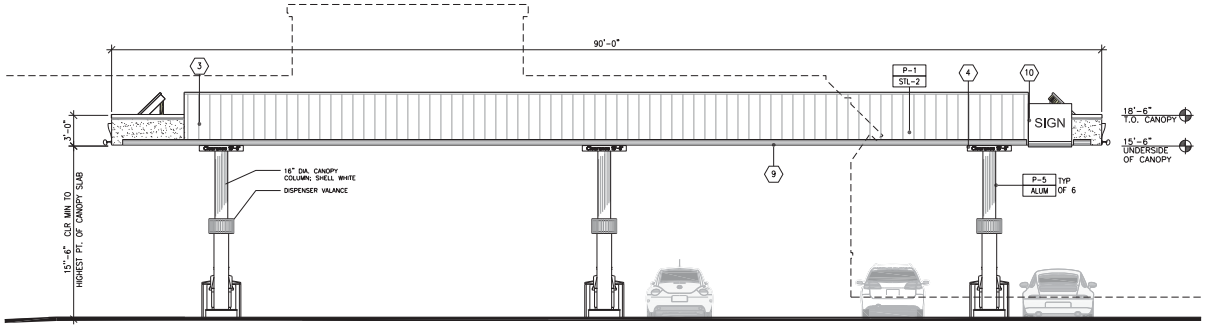
1. RETAINING MASONRY WALL, PER CIVIL
2. FOUNDATION WALL, PAINT TO MATCH ADJACENT BUILDING COLOR
3. TENANT PRIMARY SIGNAGE, PER SEPARATE PERMIT
4. TENANT SECONDARY SIGNAGE, PER SEPARATE PERMIT
5. ALUMINUM STOREFRONT SYSTEM
6. TRASH ENCLOSURE - BEYOND
7. METAL DOOR - PAINT TO MATCH ADJACENT SURFACE
8. STUCCO REVEAL
9. UNDER CANOPY LIGHT FIXTURE
10. ALUMINUM CANOPY

COLOR LEGEND

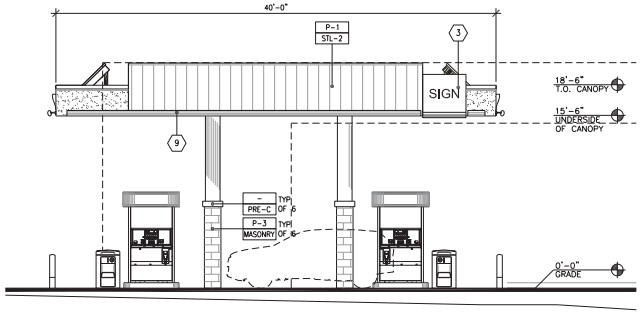
P-1	ICI #2010, "SHELL WHITE"
P-2	ICI #1143, "ANTIQUE BISQUE"
P-3	ICI #327, "NUTRIA
P-4	WHITE

MATERIAL LEGEND

STUCCO	EXTERIOR CEMENT PLASTER
ALUM	ANODIZED ALUMINUM
STL-1	METAL WALL PANEL
STL-2	STANDING SEAM METAL ROOF
MTL-1	SHEET METAL FLASHING - PAINTED
MASONRY	MASONRY BLOCK
WOOD	EXTERIOR TREATED WOOD - PAINTED
PRE-C	PRE-CAST CONCRETE



3 CANOPY ELEVATION - SOUTH FACING CENTRAL AVE
3/16" = 1'-0"



4 CANOPY ELEVATION - EAST FACING 215 OFF RAMP
3/16" = 1'-0"

No.	Date	By	Chd.	Appr.	Revision

Title: CANOPY ELEVATIONS

KA ENTERPRISES MEGA MART
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Date 10/4/18

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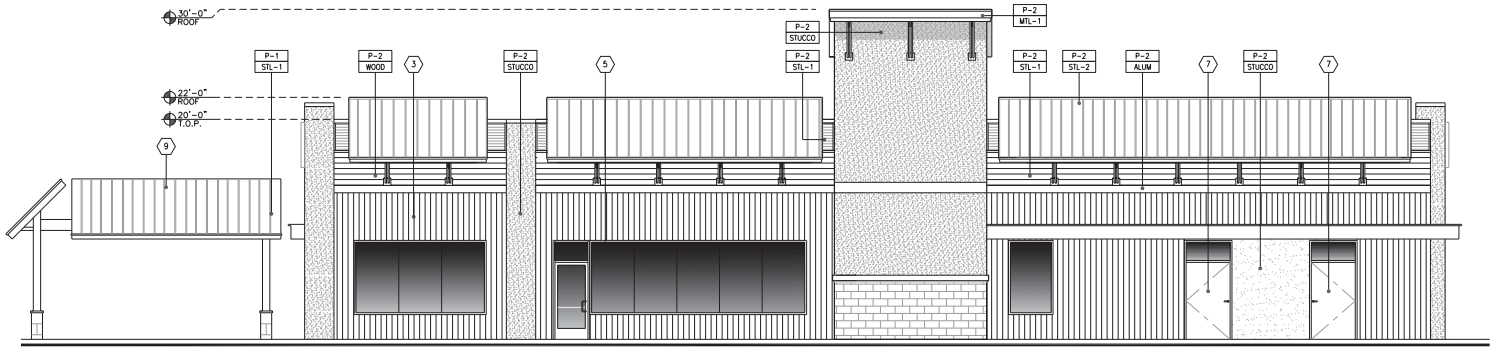
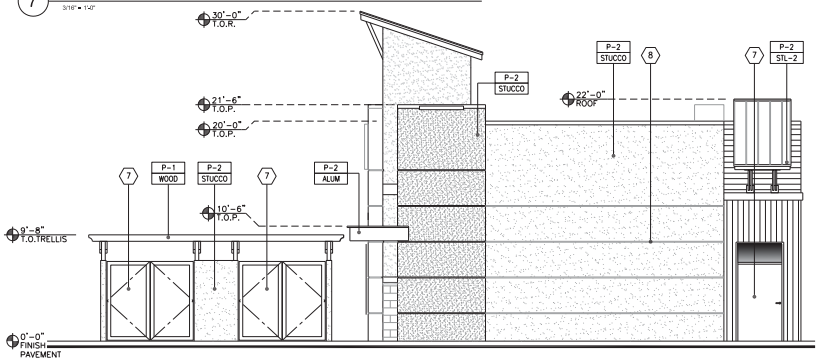
SURVEYING, ENVIRONMENTAL SERVICES

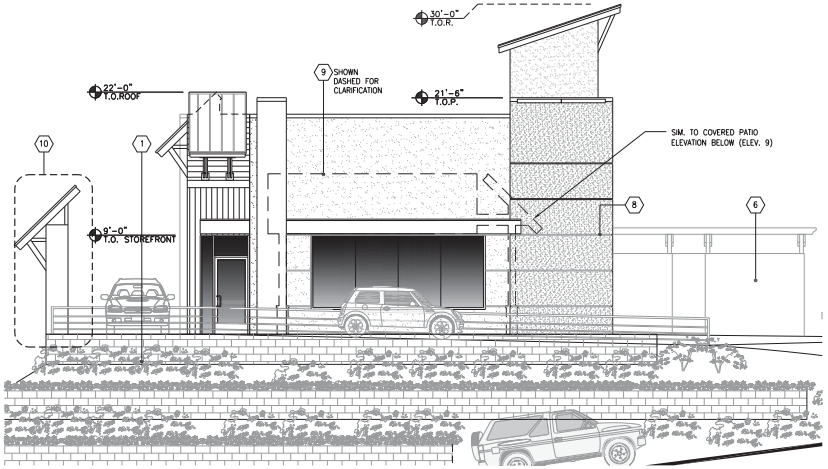
18447 A2.02



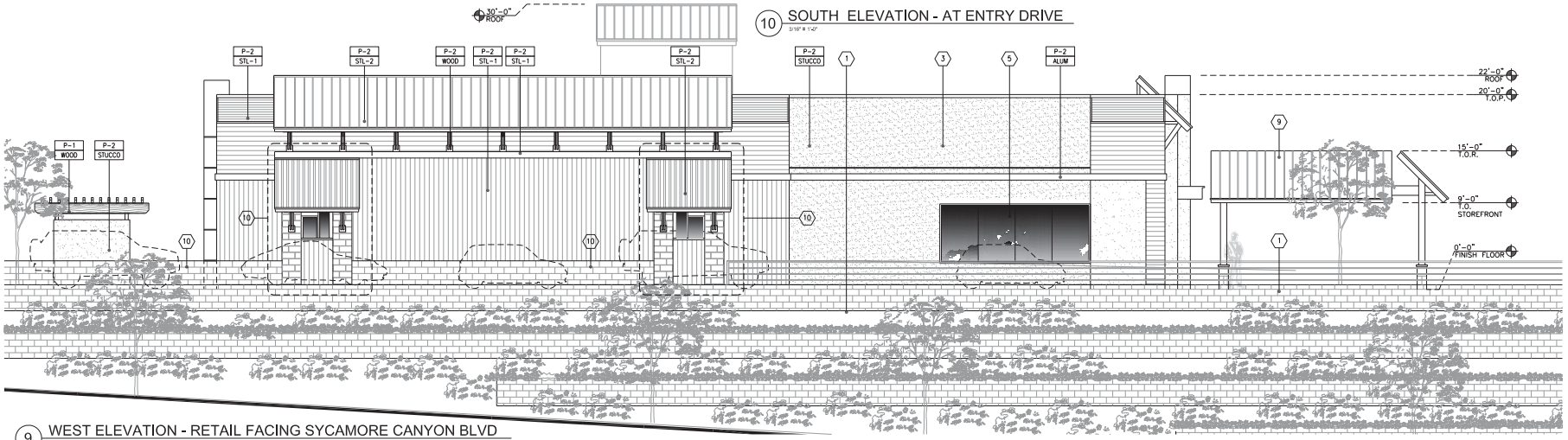
7 EAST ELEVATION - FRONT - FACING FREEWAY
3/16" = 1'-0"



8 NORTH ELEVATION - REAR
3/16" = 1'-0"



10 SOUTH ELEVATION - AT ENTRY DRIVE
3/16" = 1'-0"



9 WEST ELEVATION - RETAIL FACING SYCAMORE CANYON BLVD
3/16" = 1'-0"

KEYED NOTES

1. RETAINING MASONRY WALL, PER CIVIL
2. FOUNDATION WALL, PAINT TO MATCH ADJACENT BUILDING COLOR
3. TENANT PRIMARY SIGNAGE, PER SEPARATE PERMIT
4. TENANT SECONDARY SIGNAGE, PER SEPARATE PERMIT
5. ALUMINUM STOREFRONT SYSTEM
6. TRASH ENCLOSURE - BEYOND
7. METAL DOOR - PAINT TO MATCH ADJACENT SURFACE
8. STUCCO REVEAL
9. COVERED SEATTING AREA
10. SCREEN FOR DRIVE-THU WINDOW COMBINATION OF ARCHITECTURAL ELEMENTS AND WINDOWS, 3' SCREEN WALL AND LANDSCAPING

COLOR LEGEND

P-1	ICI #2010, "SHELL WHITE"
P-2	ICI #143, "ANTIQUE BISQUE"
P-3	ICI #327, "NUTRIA

MATERIAL LEGEND

STUCCO	EXTERIOR CEMENT PLASTER
ALUM	ANODIZED ALUMINUM
STL-1	METAL WALL PANEL
STL-2	STANDING SEAM METAL ROOF
MTL-1	SHEET METAL FLASHING - PAINTED
MASONRY	MASONRY BLOCK
WOOD	EXTERIOR TREATED WOOD - PAINTED

No.	Date	By	Chd.	Appr.	Revision

Title: RESTAURANT ELEVATIONS

KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA

For: KA ENTERPRISES

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Designed —
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Date 10/4/18

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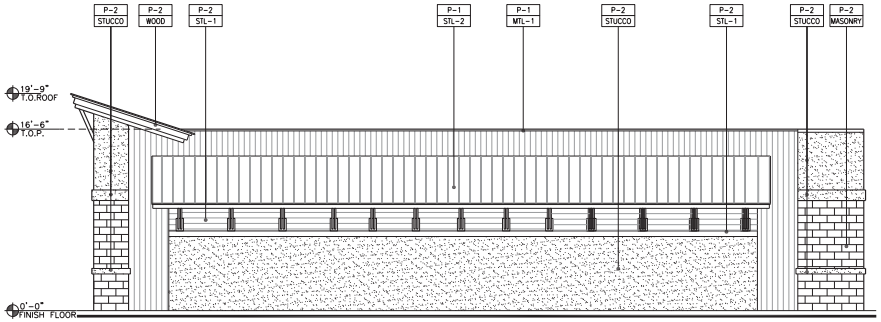
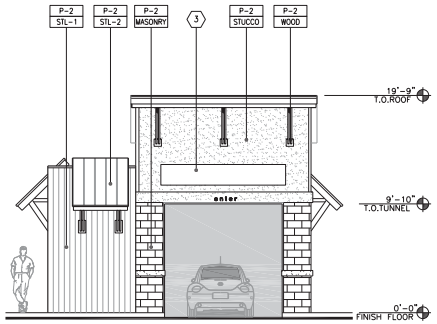


10 EAST ELEVATION - FACING HWY I-215
3/16" = 1'-0"



11 SOUTH ELEVATION - FACING CENTRAL
3/16" = 1'-0"

KEYED NOTES

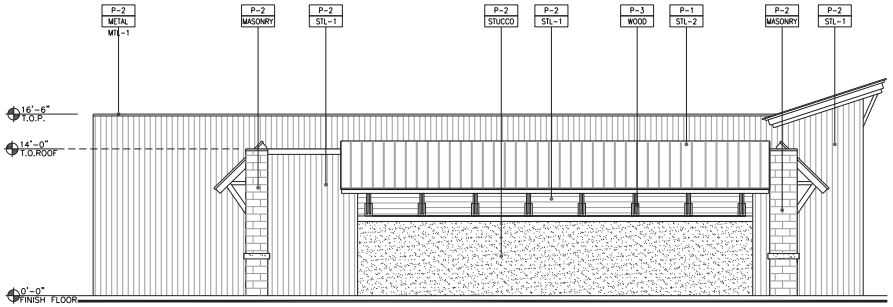
1. RETAINING MASONRY WALL, PER CIVIL
2. FOUNDATION WALL, PAINT TO MATCH ADJACENT BUILDING COLOR
3. TENANT PRIMARY SIGNAGE, PER SEPARATE PERMIT
4. TENANT SECONDARY SIGNAGE, PER SEPARATE PERMIT
5. ALUMINUM STOREFRONT SYSTEM
6. TRASH ENCLOSURE - BEYOND
7. METAL DOOR - PAINT TO MATCH ADJACENT SURFACE
8. STUCCO REVEAL
9. COVERED AREA

COLOR LEGEND

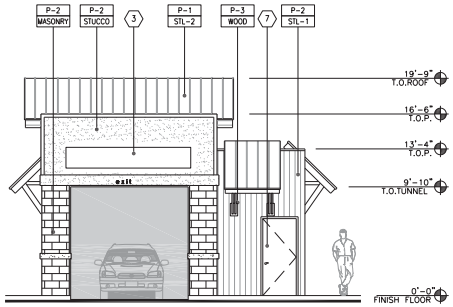
P-1	ICI #2010, "SHELL WHITE"
P-2	ICI #143, "ANTIQUE BISQUE"
P-3	ICI #327, "NUTRIA

MATERIAL LEGEND

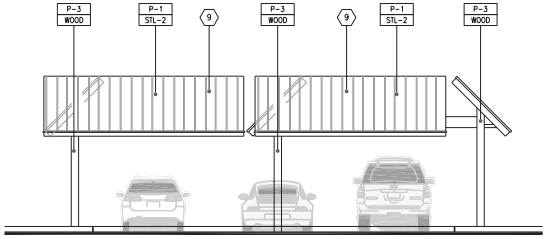
STUCCO	EXTERIOR CEMENT PLASTER
ALUM	ANODIZED ALUMINUM
STL-1	METAL WALL PANEL
STL-2	STANDING SEAM METAL ROOF
MTL-1	SHEET METAL FLASHING - PAINTED
MASONRY	MASONRY BLOCK
WOOD	EXTERIOR TREATED WOOD - PAINTED



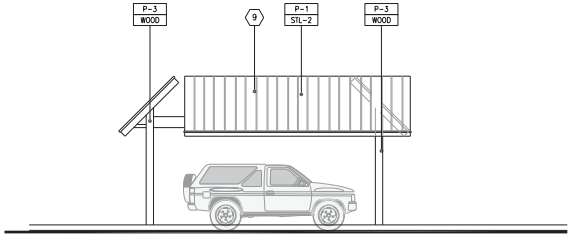
12 WEST ELEVATION - STORE & CANOPY FACING SYCAMORE CANYON BLVD
3/16" = 1'-0"



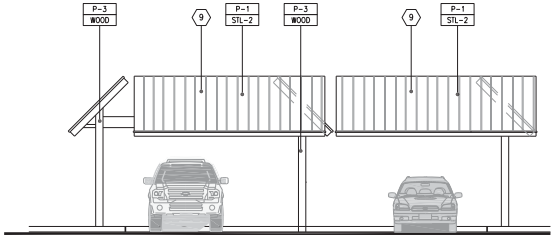
13 NORTH ELEVATION - FACING CENTRAL
3/16" = 1'-0"



14 NW ELEVATION - VACUUM CANOPY
3/16" = 1'-0"



15 SW ELEVATION - VACUUM CANOPY
3/16" = 1'-0"



16 SE ELEVATION - VACUUM CANOPY
3/16" = 1'-0"

No.	Date	By	Chd.	Appr.	Revision

Title: CARWASH ELEVATIONS
KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA

For: KA ENTERPRISES

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Vertical N/A
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Date 10/4/18

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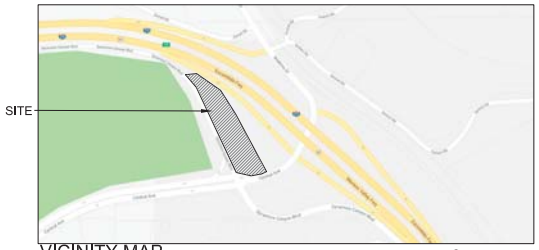
18447 A2.04

PRELIMINARY LANDSCAPE PLAN

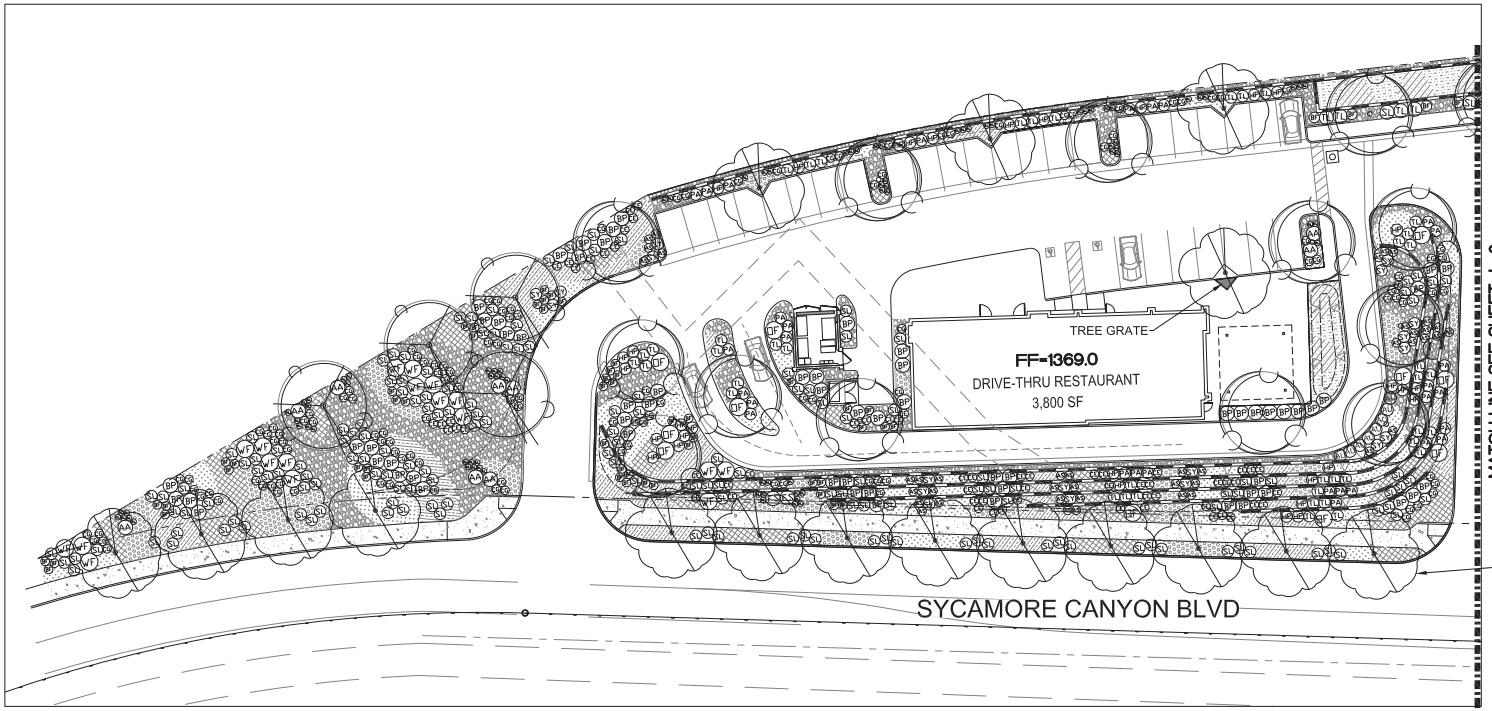
1"=20'

0 10 20 40



VICINITY MAP
NOT TO SCALE

NORTH



MATCH LINE SEE SHEET L-2

FINAL SPOTTING AND SPACING OF STREET TREES WILL BE CONDUCTED BY THE TREE INSPECTOR ONCE FINAL GRADING AND CONSTRUCTION HAS BEEN COMPLETED

PARKING LOT SHADING

TOTAL NET PARKING LOT AREA: 42,605 SQ FT
20% SHADING REQUIRED: 42,605 x 20% = 8,521 SQ FT
12,570 SQ FT PARKING LOT SHADING PROVIDED

TIBEBUIA: 482 SQ FT (50%) x 7 = 3,374 SQ FT
PROSOPIS: 354 SQ FT FT (50%) x 10 = 3,540 SQ FT
PROSOPIS: 707 SQ FT FT (100%) x 3 = 2,121 SQ FT
ACACIA: 354 SQ FT FT (50%) x 2 = 707 SQ FT
ACACIA: 707 SQ FT FT (100%) x 4 = 2,828 SQ FT

No.	Date	By	Chd.	Appr.	Revision

Title: LANDSCAPE PLAN
KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA

For: KA ENTERPRISES

5820 Oberlin Dr Suite 201
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858/404-6080
fax 858/404-6081

LICENSED LANDSCAPE ARCHITECT
JEFFREY VAN DYKE 4372
8-17-2019
Renewal Date
1-28-2019
Date
STATE OF CALIFORNIA

Scale:
Horizontal 20
Vertical N/A

Designed BLS
Drawn BLS
Checked JMV
Approved JMV
Date 8-18-18

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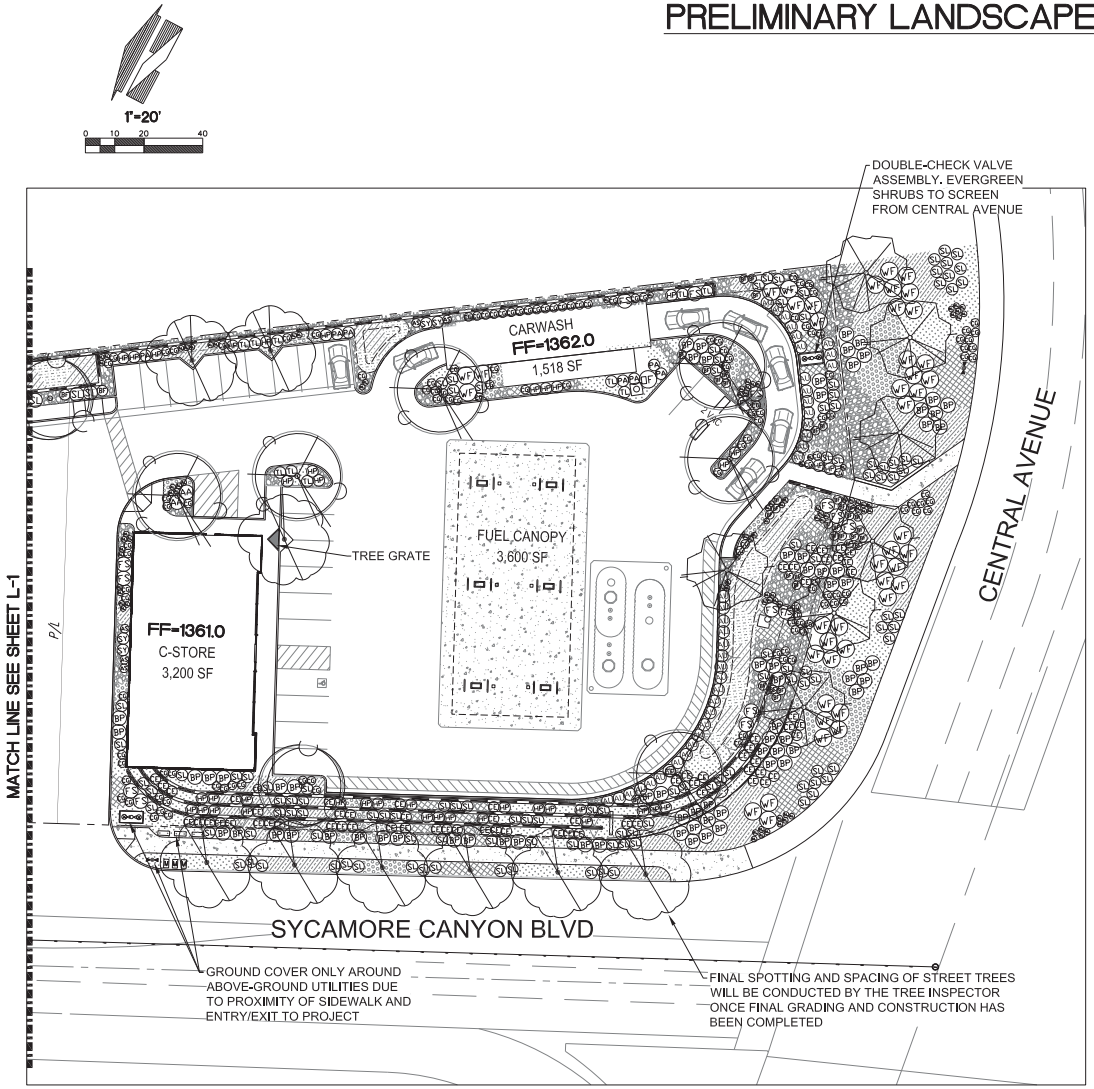
L-1 of 6

PRELIMINARY LANDSCAPE PLAN



PLANT SCHEDULE

SYMBOL	BOTANICAL/COMMON NAMES	SIZE/ COND.	SPACING	QTY	WUCOLS ZONE 4	REMARKS
	TREES:					
	PROSOPIS CHILENSIS / CHILEAN MESQUITE 30' DIAMETER MATURE WIDTH 707 SQ FT MATURE CANOPY	24" BOX	AS SHOWN	15	LOW	STAKE & GUY ONE GROWING SEASON; NURSERY GROWN, BRANCHED AT 5'
	ACACIA BAILEYANA / BAILEY ACACIA 30' DIAMETER MATURE WIDTH 707 SQ FT MATURE CANOPY	15 GALLON	AS SHOWN	10	LOW	STAKE & GUY ONE GROWING SEASON; NURSERY GROWN, BRANCHED AT 5'
	MAGNOLIA GRANDIFLORA 'RUSSET' / RUSSET MAGNOLIA 25' DIAMETER MATURE WIDTH 491 SQ FT MATURE CANOPY	36" BOX	AS SHOWN	7	MEDIUM	STAKE & GUY ONE GROWING SEASON; NURSERY GROWN, BRANCHED AT 5'
	TABEBUIA CHRYSOTRICHA / GOLDEN TRUMPET TREE 35' DIAMETER MATURE WIDTH 964 SQ FT MATURE CANOPY	15 GALLON	AS SHOWN	26	MEDIUM	STAKE & GUY ONE GROWING SEASON; NURSERY GROWN, BRANCHED AT 5'
	SHRUBS:					
WF	WESTRINGIA FRUTICOSA 'BLUE GEM' / BLUE GEM WESTRINGIA	1 GALLON	AS SHOWN	62	LOW	FULL & BUSHY
BP	CAESALPINIA GILLIESEII / YELLOW BIRD OF PARADISE	5 GALLON	AS SHOWN	137	LOW	FULL & BUSHY
PA	PEROVSKIA ATRIPLICIFOLIA / RUSSIAN SAGE	5 GALLON	AS SHOWN	37	LOW	FULL & BUSHY
SY	AGAVE GEMINIFLORA / TWIN FLOWERED AGAVE	5 GALLON	AS SHOWN	23	LOW	FULL & BUSHY
OF	OPUNTIA FICUS-INDICA / INDIAN FIG CACTUS	1 GALLON	AS SHOWN	12	LOW	FULL & BUSHY
HP	HESPERALOE PARVIFLORA / RED YUCCA	5 GALLON	AS SHOWN	71	LOW	FULL & BUSHY
TL	TRICHOSTEMA LANATUM / WOOLLY BLUE CURLS	5 GALLON	AS SHOWN	53	LOW	FULL & BUSHY
AA	AGAVE SHAWII X ATTENUATA 'BLUE FLAME' / BLUE FLAME AGAVE	5 GALLON	AS SHOWN	11	LOW	FULL & BUSHY
FS	FOUQUIERIA SPLENDENS / OCOTILLO	5 GALLON	AS SHOWN	17	LOW	FULL & BUSHY
EE	CALLIANDRA ERIOPHYLLA/ PINK FAIRY DUSTER	5 GALLON	AS SHOWN	129	LOW	FULL & BUSHY
SL	SALVIA LEUCANTHA 'MIDNIGHT' / PURPLE MEXICAN SAGE	2 GALLON	AS SHOWN	283	LOW	FULL & BUSHY
BF	BULBINE FRUTESENS 'ORANGE' / ORANGE STALKED BULBINE	1 GALLON	AS SHOWN	94	LOW	FULL & BUSHY
AS	ALOE STRIATA / CORAL ALOE	1 GALLON	AS SHOWN	47	LOW	FULL & BUSHY
CG	CISTANTHE GRANDIFLORA / ROCK PURSLANE	1 GALLON	AS SHOWN	262	LOW	FULL & BUSHY
AQ	AGAVE LOPHANTHA 'QUADRICOLOR' / QUADRICOLOR CENTURY PLANT	2 GALLON	AS SHOWN	168	LOW	FULL & BUSHY
AU	ARBUTUS UNEDO / STRAWBERRY TREE	2 GALLON	AS SHOWN	48	LOW	FULL & BUSHY
	KALANCHOE PUMILA / FLOWER DUST PLANT	1 GALLON	AS SHOWN	AS REQ'D	LOW	FULL & BUSHY
	CRASSULA CAPITELLA 'CAMPFIRE' / CAMPFIRE CRASSULA	1 GALLON	AS SHOWN	AS REQ'D	LOW	FULL & BUSHY
	TULBAGHIA VIOLACEA / SOCIETY GARLIC	1 GALLON	AS SHOWN	AS REQ'D	LOW	FULL & BUSHY
	SENECIO SERPENS / BLUE CHALKSTICKS	1 GALLON	AS SHOWN	AS REQ'D	LOW	FULL & BUSHY
	JUNCUS EFFUSUS/ SOFT RUSH	1 GALLON	AS SHOWN	AS REQ'D	MED	FULL & BUSHY
	CHONDROPETALUM TECTORUM/ CAPE REED	1 GALLON	AS SHOWN	AS REQ'D	MED	FULL & BUSHY
	ROCK MULCH					

No.	Date	By	Chd.	Appr.	Revision

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KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA

For: KA ENTERPRISES

5820 Oberlin Dr Suite 201
San Diego, CA 92121
858/404-6080
fax 858/404-6081

LICENSED LANDSCAPE ARCHITECT
JEFFREY VAN DYKE 4372
8-17-2019 Renewal Date
1-28-2019 Date
STATE OF CALIFORNIA

Scale: Horizontal 20 Vertical N/A

Designed BLS
Drawn BLS
Checked JMV
Approved JMV
Date 8-18-18

BARGHAUSEN CONSULTING ENGINEERS, INC.
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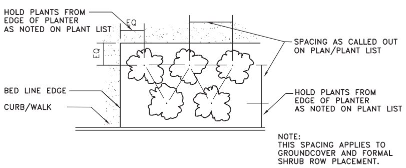
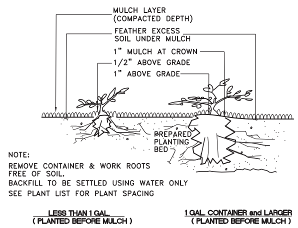
18447

L-2 of 6

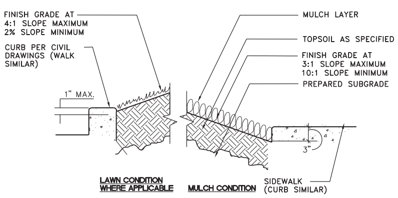
PRELIMINARY LANDSCAPE NOTES AND DETAILS



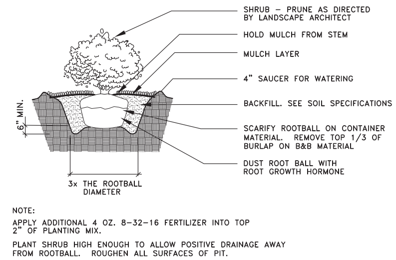
PLANT MATERIAL SPACING DETAIL
NOT TO SCALE



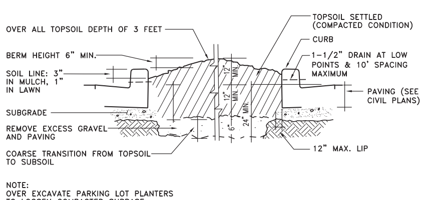
GROUNDCOVER PLANTING DETAIL
NOT TO SCALE



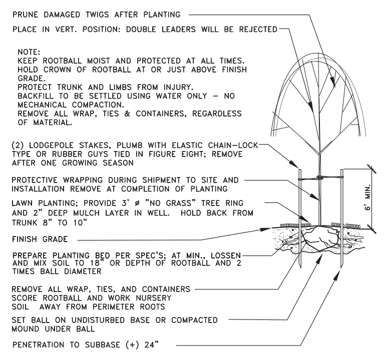
PLANTER SECTION DETAIL
NOT TO SCALE



SHRUB PLANTING DETAIL
NOT TO SCALE



GRADING • PARKING LOT PLANTERS DETAIL
NOT TO SCALE



DECIDUOUS TREE PLANTING/STAKING DETAIL
NOT TO SCALE

LANDSCAPE PLANTING NOTES AND MATERIALS

SCOPE OF WORK

FURNISH ALL MATERIALS, LABOR, EQUIPMENT AND RELATED ITEMS NECESSARY TO ACCOMPLISH THE TREATMENT AND PREPARATION OF SOIL, FINISH GRADING, PLACEMENT OF SPECIFIED PLANT MATERIALS, FERTILIZER, STAKING, MULCH, CLEAN-UP, DEBRIS REMOVAL, AND 90-DAY MAINTENANCE.

QUALIFICATIONS:
LANDSCAPE CONTRACTOR TO BE SKILLED AND KNOWLEDGEABLE IN THE FIELD OF WORK. CONTRACTOR TO BE LICENSED TO PERFORM THE WORK SPECIFIED WITHIN THE PRESIDING JURISDICTION.

JOB CONDITIONS:
IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW THE SITE AND REPORT ANY DISCREPANCIES TO THE OWNER OR THE OWNER'S REPRESENTATIVES. ALL PLANT MATERIAL AND FINISH GRADES ARE SUBJECT TO APPROVAL BY THE OWNER.

PROTECTION:
DO NOT PLANT UNTIL OTHER CONSTRUCTION OPERATIONS WHICH CONFLICT HAVE BEEN COMPLETED. AN IRRIGATION SYSTEM IS TO BE INSTALLED. DO NOT PLANT UNTIL THE SYSTEM HAS BEEN TESTED AND APPROVED. HANDLE PLANTS WITH CARE - DO NOT DAMAGE OR BREAK ROOT SYSTEM, BARK, OR BRANCHES. REPAIR AND/OR REPLACE ITEMS DAMAGED AS A RESULT OF WORK, OR WORK NOT IN COMPLIANCE WITH PLANS AND SPECIFICATIONS, AS DIRECTED BY OWNER AT NO ADDITIONAL COST.

GUARANTEE:
GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THE JOB BY OWNER.

90-DAY MAINTENANCE:
CONTRACTOR TO PROVIDE OWNER WITH A SCOPE OF WORK AT TIME OF INITIAL PROJECT BID TO PROVIDE LANDSCAPE AND IRRIGATION MAINTENANCE FOR 90 DAYS FOLLOWING COMPLETION OF PROJECT (ACCEPTANCE) OF FACILITY BY OWNER. WORK TO INCLUDE MAINTENANCE AS DESCRIBED BELOW, IN PLANTING AND IRRIGATION MAINTENANCE.

MATERIALS:

PLANT MATERIALS:
PLANT MATERIALS TO BE GRADE NO. 1, SIZED IN ACCORDANCE WITH (AAN) AMERICAN STANDARDS FOR NURSERY STOCK (ANSI Z60.1-1996). PRUNE PLANTS RECEIVED FROM THE NURSERY ONLY UPON AUTHORIZATION BY THE LANDSCAPE ARCHITECT. "B & B" INDICATES BALLED AND BURLAPPED; "CONT." INDICATES CONTAINER; "BR" INDICATES BARE ROOT; "CAL" INDICATES CALIPER AT 6" ABOVE SOIL LINE; "GAL" INDICATES GALLON.

A) SPECIFIED PLANT CANOPY SIZE OR CALIPER IS THE MINIMUM ACCEPTABLE CONTAINER OR BALL SIZE ESTABLISHES MINIMUM PLANT CONDITION TO BE PROVIDED.
B) QUALITY:
PLANT MATERIAL TO COMPLY WITH STATE AND FEDERAL LAWS FOR DISEASE INSPECTION, PLANTS TO BE FULLY LIVE, VIGOROUS, WELL FORMED, WITH WELL DEVELOPED FIBROUS ROOT SYSTEMS. ROOT BALLS OF PLANTS TO BE SOLID AND FIRMLY HELD TOGETHER, SECURELY CONTAINED AND PROTECTED FROM INJURY AND DESICCATION.
PLANTS DETERMINED BY LANDSCAPE ARCHITECT TO HAVE BEEN DAMAGED; HAVE DEFORMITIES OF STEM, BRANCHES, OR ROOTS; LACK SYMMETRY, HAVE MULTIPLE LEADERS OR "Y" CROTCHES LESS THAN 30 DEGREES IN TREES, OR DO NOT MEET SIZE OR ANSI STANDARDS WILL BE REJECTED.
PLANT MATERIAL TO BE FROM A SINGLE NURSERY SOURCE FOR EACH SPECIFIED SPECIES/HYBRID. NURSERY SOURCES TO BE THOSE LOCATED IN THE SAME REGION AS THE JOB SITE.
C) SUBSTITUTION:
NO SUBSTITUTION OF PLANT MATERIAL, SPECIES OR VARIETY, WILL BE PERMITTED UNLESS WRITTEN EVIDENCE IS SUBMITTED TO THE OWNER FROM TWO QUALIFIED PLANT BROKERAGE OFFICES. SUBSTITUTIONS WHICH ARE PERMITTED TO BE IN WRITING FROM THE OWNER AND LANDSCAPE ARCHITECT. THE SPECIFIED SIZE, SPECIES AND NEAREST VARIETY, AS APPROVED, TO BE FURNISHED.

SOIL PREPARATION:
FOLLOW RECOMMENDATIONS SPECIFIED IN SOIL REPORT INCLUDED IN THIS DRAWING SET.

A) SOIL PREPARATION
REMOVE FROM SITE ALL WEEDS AND DEBRIS WITHIN THE PROPOSED LANDSCAPE AREAS. VERIFY SUB-GRADES AT -5 INCHES BELOW FINISH ELEVATION IN ALL SHRUB AND GROUNDCOVER AREAS. DO NOT WORK SOIL WHEN MOISTURE CONTENT IS SO GREAT THAT EXCESS COMPACTION WILL OCCUR NOR WHEN IT IS SO DRY THAT DUST WILL FORM IN THE AIR OR THAT CLODS WILL NOT BREAK READILY. APPLY WATER IF NECESSARY TO PROVIDE IDEAL MOISTURE CONTENT FOR FILLING AND FOR PLANTING AS SPECIFIED. THOROUGHLY SCARIFY AND RIP ALL LANDSCAPE GRADES WHICH HAVE BECOME COMPACTED TO A DEPTH OF 12 INCHES WITH MULTIPLE PASSES, 90 DEGREES TO EACH OTHER. SCARIFY AREAS INACCESSIBLE TO MECHANIZED EQUIPMENT WITH HAND TOOLS.

REMOVE ALL SURFACE LUMPS, ROCKS, VEGETATION AND/OR DEBRIS LARGER THAN 1-INCH FROM ALL GRADES PRIOR TO ANY SOIL PREPARATION. THOROUGHLY ROTOTILL ALL LANDSCAPE AREAS TO A DEPTH OF 6 INCHES. PLACE ADDITIONAL AMENDED SOIL AS REQUIRED TO MEET FINISH ELEVATIONS. APPLY SOIL PREPARATION MATERIALS TO ALL PLANTING AREAS AND THOROUGHLY INCORPORATE INTO INTO THE TOP 6 INCHES OF SOIL.

WET SOIL THOROUGHLY AND ALLOW TO SETTLE. REPEAT THIS COMPACTING PROCEDURE UNTIL SOIL IS STABLE ENOUGH TO PERMIT AERATION AND DRAINAGE FOR PLANT MATERIAL. FINISH GRADE ALL PLANTING AREAS TO A SMOOTH, UNIFORM SURFACE DRAINING AWAY FROM BUILDINGS AND READY FOR PLANTING. FINISH GRADE TO BE 3 INCHES BELOW FINISH SURFACE OF ADJACENT PAVEMENT IN SHRUB AND GROUNDCOVER AREAS. FINISH GRADES TO BE APPROVED PRIOR TO PLACEMENT OF ANY PLANT MATERIAL. PARKING PLANTER ISLANDS SHALL BE OVER EXCAVATED. REMOVE ALL PAVING WASTE, GRAVEL BASE AND UNDERLYING SUBSOIL TO 18 INCHES BELOW TOP OF THE PAVING. SCARIFY AND OVER EXCAVATE PIT BOTTOM 12 INCHES TO MINIMIZE STRUCTURAL COMPACTION.

MULCH:
ONE-QUARTER-INCH (1/4") TO ONE HALF-INCH (1/2") SIZE FINE TEXTURED NITROLIZED BARK MULCH. SHREDDED WOOD WILL NOT BE ALLOWED.

STAKES:
2-INCH DIAMETER, BY 10-FOOT MINIMUM TREATED LODGEPOLE PINE TREE STAKE.

GUY MATERIAL:
CHAIN LOCK TREE TIES BY PRO-LOCK, OR APPROVED EQUAL. NO WIRE WILL BE ALLOWED.

HERBICIDE:
HERBICIDE IS NOT RECOMMENDED FOR THE FIRST YEAR AFTER INSTALLATION.

ANTI-DESICCANT:
"WILT-PROOF," 48 HOURS PRIOR TO SHIPMENT TO SITE FROM JUNE 1 THROUGH SEPTEMBER. THOROUGHLY ROOT WATER PLANTS PRIOR TO DELIVERY. PLANT MATERIAL DELIVERED TO SITE TO BE KEPT CONTINUALLY MOIST THROUGH INSTALLATION.

EXECUTION:

FINISH GRADES:
FINE GRADE AND REMOVE ROCKS AND FOREIGN OBJECTS OVER TWO INCHES (2") DIAMETER FROM TOP THREE INCHES (3") OF PREPARED PLANTING BED. ALL FINISH GRADES TO BE SMOOTH EVEN GRADES, LIGHTLY COMPACTED, AS SHOWN ON THE PLAN AND DETAILED. SITE CIVIL DRAWINGS IDENTIFY FINAL ELEVATIONS.

TREES:
ARRANGE TREES ON SITE IN PROPOSED LOCATIONS PER DRAWINGS. EXCAVATE PIT, PLANT AND STAKE OR GUY, AS CALLED OUT AND DETAILED. ALL TREES AND SUPPORTS TO STAND VERTICAL. TREES TO BE PLACED AS SHOWN ON THE PLANTING PLAN, LOCATED AS DETAILED AND AS CALLED OUT ON PLANT LIST. BACKFILL SHALL BE PIT SPOILS. SETTLE BACKFILL USING WATER ONLY. NO MECHANICAL COMPACTION.

SHRUBS:
INSTALL SHRUBS AS SPECIFIED FOR TREES.

GROUNDCOVERS:
EXCAVATE PITS TO A MINIMUM OF THREE INCHES (3") BELOW, AND TWICE THE ROOT BALL DIAMETER. WATER THOROUGHLY AND TAKE CARE TO ENSURE THAT ROOT CROWN IS AT PROPER GRADE, AS DETAILED.

MULCH FOR LANDSCAPE AREAS:
MULCH ALL LANDSCAPE AREAS WITH A THREE INCH (3") LAYER OF MULCH EXCEPT WHERE ROCK ROCK MULCH IS PROPOSED.

NON-VEGETATIVE MULCH:
1"-2" DIAMETER WASHED COBBLE MULCH, EARTH-TONE COLORS.

UTILITY CLEARANCES:
FIELD ADJUST PLANT LOCATIONS FOR 8-FOOT SEPARATION OF TREES/SHRUBS AND 2-FOOT SEPARATION FOR GROUNDCOVER FROM FIRE HYDRANTS AND UTILITY VAULTS.

PLANTING MAINTENANCE:
CONTRACTOR TO MAINTAIN PLANTINGS THROUGH COMPLETED INSTALLATION, AND UNTIL ACCEPTANCE OF LANDSCAPE INSTALLATION. PLANTING MAINTENANCE TO INCLUDE WATERING, WEEDING, CULTIVATING, TIGHTENING AND REPAIRING OF TREE GUYS, RESETTING PLANTS TO PROPER GRADES OR POSITION, AND RE-ESTABLISHING SETTING GRADES. HERBICIDE IS NOT RECOMMENDED FOR ONE YEAR FOLLOWING LANDSCAPE INSTALLATION. INCLUDED IS REPLACEMENT OF DEAD PLANTS AND PLANTS SHOWING LOSS OF 40 PERCENT OR MORE OF CANOPY.

FERTILIZATION FOR GROUNDCOVER AREAS: UNIFORMLY BROADCAST SULFUR COATED UREA AT THE RATE OF FIVE (5) LBS. PER 1,000 SQUARE FEET. THE FIRST APPLICATION TO OCCUR APPROXIMATELY FORTY-FIVE (45) DAYS AFTER PLANTING. IN EARLY FALL AND SPRING, SUBSTITUTE A COMPLETE FERTILIZER SUCH AS 16-6-8 OR EQUAL FOR THE SULFUR COATED UREA AT THE RATE OF SIX (6) LBS. PER 1,000 SQUARE FEET. FOLLOW EACH FERTILIZATION WITH A THOROUGH IRRIGATION APPLICATION.

IRRIGATION MAINTENANCE:
THE IRRIGATION SYSTEM TO BE MAINTAINED INCLUDING ADJUSTMENTS FOR BALANCED WATER DISTRIBUTION & PRECIPITATION. FAILED OR MALFUNCTIONING IRRIGATION EQUIPMENT SHALL BE REPLACED OR CORRECTED. PLANT AND IRRIGATION MAINTENANCE TO INCLUDE THOSE OPERATIONS NECESSARY TO THE PROPER GROWTH AND SURVIVAL OF ALL PLANT MATERIALS. CONTRACTOR TO PROVIDE THIS WORK IN ADDITION TO SPECIFIC WARRANTY/GUARANTEES.

No.	Date	By	Ckd.	Appr.	Revision

Title: LANDSCAPE NOTES AND DETAILS
KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA

For: KA ENTERPRISES
5820 Oberlin Dr Suite 201
San Diego, CA 92121
858/404-6080
fax 858/404-6081

LICENSED LANDSCAPE ARCHITECT
JEFFREY VARLEY 6172
Signature 8-31-2019
Renewal Date 1-28-2019
Date
STATE OF CALIFORNIA

Scale: Horizontal N/A Vertical N/A

Designed BLS
Drawn BLS
Checked JMV
Approved JMV
Date 6-18-18

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KENT, WA 98032
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BARGHAUSEN CONSULTING ENGINEERS, INC.

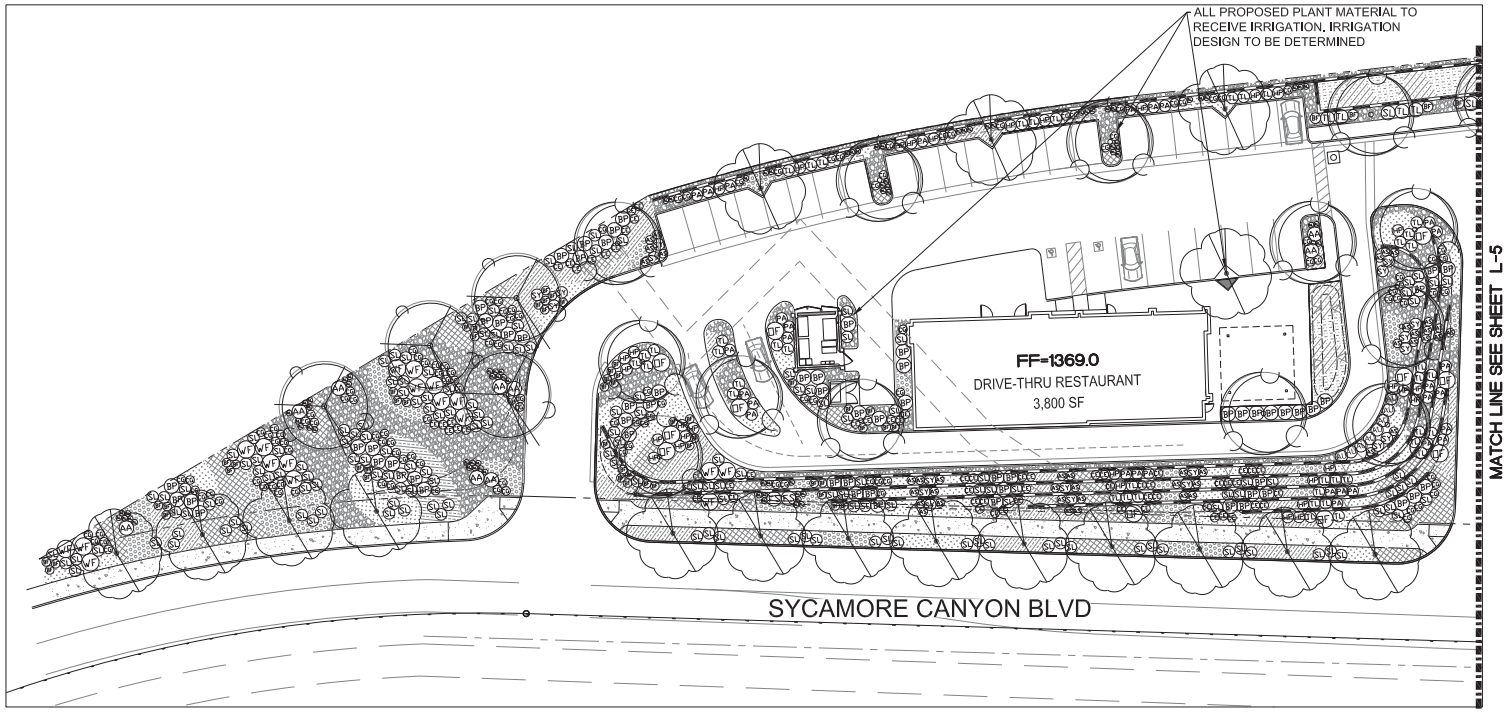
18447

L-3 of 6

PRELIMINARY LANDSCAPE PLAN

1"=20'

0 10 20 40



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KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA

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San Diego, CA 92121
858/404-6080
fax 858/404-6081

LICENSED LANDSCAPE ARCHITECT
JEFFREY VAN WYK
8-17-2019
Renewal Date
1-28-2019
Date
STATE OF CALIFORNIA

Scale:
Horizontal 20
Vertical N/A

Designed BLS
Drawn BLS
Checked MV
Approved MV
Date 8-16-18

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L-4 of 6

PRELIMINARY LANDSCAPE PLAN

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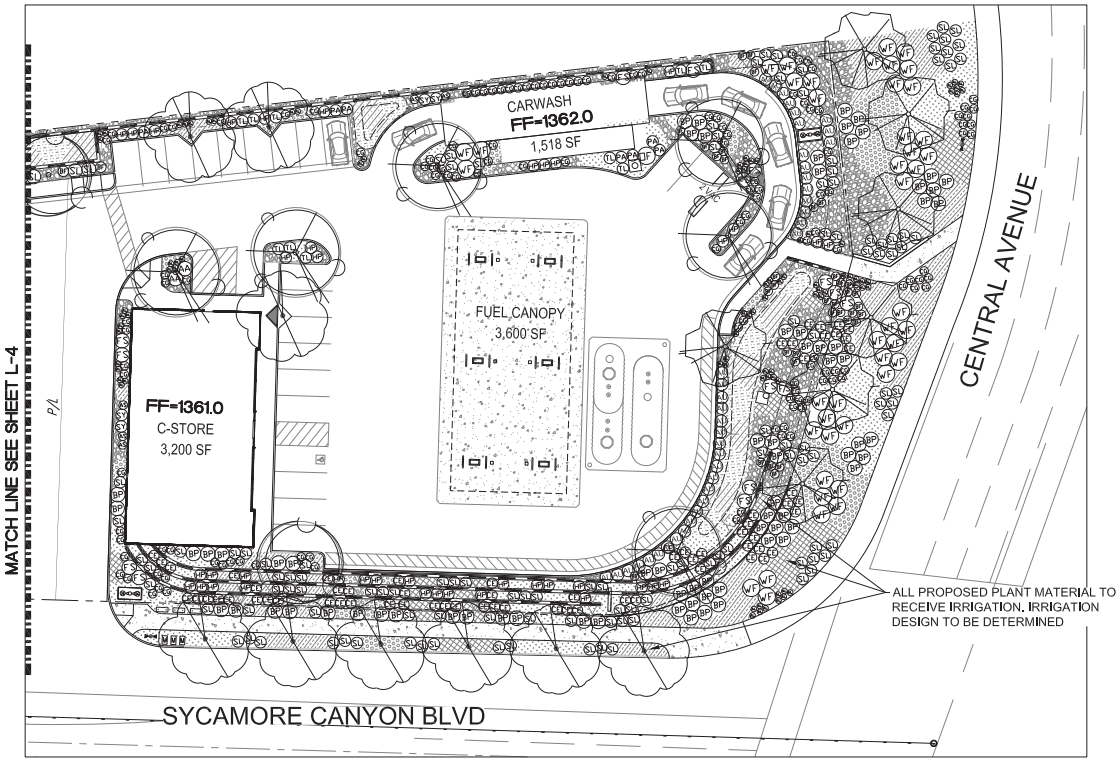


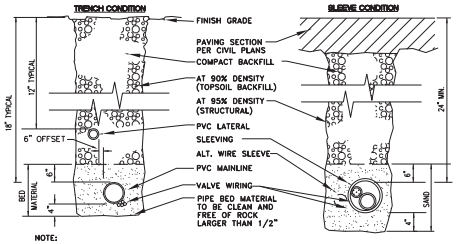
IRRIGATION SCHEDULE

SYMBOL	DESCRIPTION	MIN. PSI	EMITTER SPACING	EMITTER GPM	
	RAINBIRD RWS-B-C-1402 .36" ROOT ZONE WATERING SYSTEM 2 EMITTERS PER TREE. SEE DETAILS THIS SET	20	AS SHOWN ON PLAN	.50	
SYMBOL	DESCRIPTION	MIN. PSI	EMITTER SPACING	EMITTER GPH	MAXIMUM LINEAR FT.
	NETAFIM LANDSCAPE TECHLINE DRIPLINE COMPONENTS: TO BE USED WITH NETAFIM LT-INSERT-17MM FITTINGS TLCV26-1210 - SUB-SURFACE DRIP IRRIGATION FOR PLANTING AREAS WITH GROUNDCOVER, SHRUBS AND TREES ABOVE NOTED DRIPLINE IS DESIGNED WITH .26 GPH EMITTERS SPACED AT 12 INCHES APART AND A ROW SPACING OF 12 INCHES. THE APPLICATION RATE FOR THIS IS .42 INCHES OF WATER PER HOUR OF RUN TIME.	20	12"	.26	594 @ 45 PSI

NO SYMBOL	NETAFIM: 10-CV-01	DRIP SYSTEM OPERATION/PRESSURE INDICATOR STAKES, PROVIDE FOR EACH ZONE
NO SYMBOL	NETAFIM: TLS6	SOIL STAPLES, AT 2 FEET ON CENTER
NO SYMBOL	NETAFIM: TLSOV	DRIPLINE FLUSH VALVE: 1 PER IRRIGATION ZONE. LOCATE AT LOWEST ELEVATION WITHIN EACH ZONE, INSTALL IN 10" VALVE BOX
	NETAFIM: LVCZ-150-HF	CONTROL ZONE KIT: FLOW 11.0 - 35 GPM, 1 VALVE PER RAINBIRD VB SERIES BOX
	NETAFIM: LVCZS8010075-HF	CONTROL ZONE KIT: FLOW 4.5 - 17.6 GPM, 1 VALVE PER RAINBIRD VB SERIES BOX
	NEW VALVE FOR ROOT WATERING SYSTEM, RAINBIRD 100 AND 150 PESB, 1" AND 1-1/2" ELECTRIC REMOTE CONTROL VALVE	
C	RAINBIRD: ESP-LXMEF IRRIGATION CONTROLLER, (HARDWIRE CONNECTION); PROVIDE GROUND AND BATTERIES PER MFR. SPECS.; COORDINATE WITH OWNER AND GENERAL CONTRACTOR FOR BEST LOCATION OF IRRIGATION CONTROLLER. IF LOCATION IS TO BE OUTSIDE, COORDINATE WHETHER THE CONTROLLER IS TO BE MOUNTED ON AN EXTERIOR BUILDING WALL OR MOUNTED ON A METAL PEDESTAL WITH CONC. FOOTING.	
	RAINBIRD 33 DLRC: 3/4" QUICK COUPLING VALVE, IN VALVE BOX, PROVIDE THREE KEYS AND HOSE SWIVELS	
	BRASS GATE VALVE, 1-1/2" SIZE, IN VALVE BOX. SEE DETAIL THIS SET	
	RAINBIRD WR2-RFC: WIRELESS RAIN AND FREEZE SENSOR COMBO, MOUNT WHERE TREES OR BUILDINGS WILL NOT OBSTRUCT RAIN, WIND OR FROST FROM SENSOR.	
M	RAINBIRD EFB-CP 1" MASTER VALVE AND FS100B 1" FLOW SENSOR. SEE DETAIL THIS SET. WIRE FLOW SENSOR BACK TO CONTROLLER WITH PE-39 DATA CABLE	
PR	ZURN 34-600XL PRESSURE REDUCING VALVE. SIZE TO MATCH PIPE. INSTALL PER DETAIL THIS SET	
P.O.C.	NEW 2" WATER METER AND REDUCED PRESSURE BACKFLOW ASSEMBLY	
	MAINLINE - SCH 40 PVC (18" COVER); 1-1/2" SIZE MINIMUM	
	LATERAL - SCH 40 PVC (12" COVER); SIZE PER PLAN, 3/4" SIZE MINIMUM	
	SLEEVE - CLASS 200 PVC; 24" MINIMUM COVER AT VEHICLE CROSSINGS; TWICE THE SIZE OF INSERT PIPE AND/OR WIRES, 6" SIZE MINIMUM, COORDINATE WITH GENERAL AND PAVING CONTRACTORS	
	TYPICAL VALVE CALL-OUT	
1A	VALVE STATION NUMBER	
1" 15.5	VALVE GPM	
	VALVE SIZE	

SCH 40 PIPE SIZING CHART

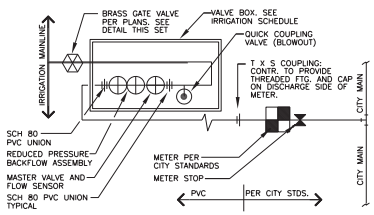
PIPE SIZE	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	GPM (MAX.)
FLOW GPM	1-8	8.1-13	13.1-23	23.1-32	32.1-53	53.1-74	



NOTE:
SLEEVING MATERIAL SHALL BE PVC CLASS 160(SDR-26).
DIMENSIONS ARE MIN. CLEARANCES.
ALL IRRIGATION SLEEVING TRENCH BACKFILL MATERIAL SHALL BE CLASS "B" OR BETTER (MAX. OF 10% PASSING NO.40 SCREEN) AND BE COMPACTED TO MIN. 95% OPTIMUM DENSITY PER ASTM D-1557-70 (MODIFIED PROCTOR)

SLEEVE/TRENCHING DETAIL

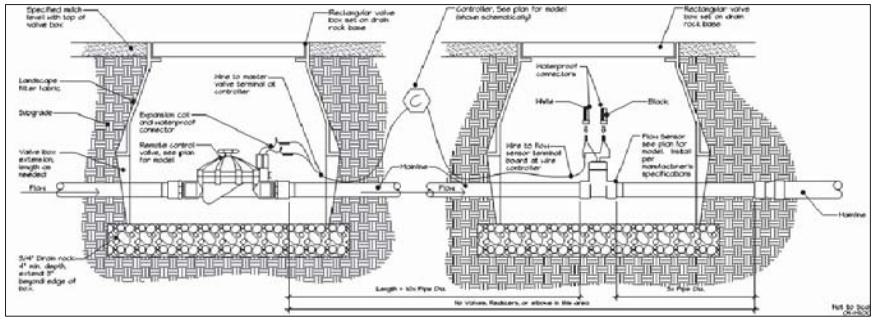
NOT TO SCALE



NOTE:
SEE CITY OF LODI STANDARD DETAIL FOR ADDITIONAL INFORMATION

POINT OF CONNECTION (P.O.C.) DETAIL

NOT TO SCALE



MASTER VALVE and FLOW SENSOR

NOT TO SCALE

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1-28-2019 Date
STATE OF CALIFORNIA

Scale: Horizontal 20 Vertical N/A

Designed BLS
Drawn BLS
Checked MV
Approved MV
Date 8-16-18

BERGHAUSEN CONSULTING ENGINEERS, INC.
18215 72ND AVENUE SOUTH
KENT, WA 98032
(425)251-6222
(425)251-8782 FAX
CIVIL ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES

18447

L-5 of 6

PRELIMINARY IRRIGATION NOTES AND DETAILS

LANDSCAPE IRRIGATION NOTES

1. GENERAL CONTRACTOR AND LANDSCAPE CONTRACTOR TO COORDINATE:

   A. INSTALLATION OF 110V ELECTRICAL SERVICE FROM ELECTRICAL SOURCE TO AUTOMATIC CONTROLLER, INCLUDING WIRE HOOK-UP INTO MOUNTED CONTROLLER. IRRIGATION CONTRACTOR WILL MOUNT CONTROLLER PER DESIGN AND COORDINATE WITH GENERAL CONTRACTOR.

   B. INSTALLATION OF IRRIGATION/SERVICE METER AND STUB TO IRRIGATION POINT OF CONNECTION, PER UTILITY PLAN(S). PROVIDE STANDARD THREADED STUB-OUT WITH THREADED CAP ON DISCHARGE SIDE OF METER. STUB-OUT TO BE INSTALLED APPROXIMATELY 18 INCHES BELOW FINISH GRADE.

   C. VERIFICATION OF STATIC WATER PRESSURE AT POINT-OF-CONNECTION (P.O.C.) CONTRACTOR SHALL NOTIFY OWNER AND BARGHAUSEN CONSULTING ENGINEERS, INC., OF ANY VARIATION IN STATIC PRESSURE OVER 5 PSI GREATER/LESS THAN DESIGN PRESSURE.

   D. INSTALLATION OF SLEEVING.

2. LANDSCAPE CONTRACTOR TO DETERMINE AVAILABLE WATER PRESSURE AND PROVIDE WRITTEN PRESSURE RESULTS TO LANDSCAPE ARCHITECT PRIOR TO BEGINNING ANY WORK.

3. ALL WORK PER LOCAL CODE. INSTALLATION PER MANUFACTURER'S WRITTEN SPECIFICATIONS.

4. ALL VALVES TO BE PLACED IN RAINBIRD VB SERIES BOXES WITH BOLT-LOCK LIDS (OR APPROVED EQUIVALENT). SET BOXES 2 INCHES HIGHER THAN FINISH GRADE IN LANDSCAPE AREAS AND FLUSH WITH FINISH GRADE IN LAWN AREAS. JUMBO BOX FOR CHECK VALVE, 10" ROUND BOX FOR GATE/QUICK COUPLER/WIRE SPLICES, AND 12" STANDARD FOR CONTROL VALVES. PROVIDE BOX EXTENSIONS AS REQUIRED.

5. MAINLINE PIPE TO BE BURIED 18 INCHES AND LATERALS 12 INCHES BELOW FINISH GRADE. NO ROCK OR DEBRIS TO BE BACKFILLED OVER PIPE.

6. IRRIGATION DESIGN SHOWN DIAGRAMATICALLY FOR PLAN CLARITY. PRIOR TO INSTALLATION OF DRIP IRRIGATION, CONTRACTOR IS REQUIRED TO CONTACT LOCAL NETAFIM REPRESENTATIVE FOR TRAINING ON THE INSTALLATION AND RUN TIME MANAGEMENT OF DRIP SYSTEM AND NOTIFY LANDSCAPE ARCHITECT THAT FACTORY TRAINING HAS OCCURRED PRIOR TO INSTALLATION. CONTACT CALIFORNIA NETAFIM LANDSCAPE & TURF REPRESENTATIVE. PLEASE GIVE REPRESENTATIVE A MINIMUM TWO WEEK NOTICE.

7. DRIP TUBING SHALL BE INSTALLED FOUR (4) INCHES BELOW FINAL GRADE. CONTRACTOR TO RUN EACH ZONE BEFORE COVERING TUBING, TO VERIFY THAT THERE ARE NO CONNECTION LEAKS. TREES TO BE INSTALLED ON A SEPARATE ZONE, USING NETAFIM TLCV .26 18, REFER TO THE TREE IRRIGATION DETAIL FOR ADDITIONAL INFORMATION.

8. PROVIDE OWNER WITH TWO (2) SETS "AS-BUILT" DRAWINGS AND (3) SETS OF OPERATOR'S MANUALS UPON COMPLETION. INSTRUCT OWNER AS TO PROPER OPERATION AND WINTERIZATION OF THE IRRIGATION SYSTEM.

9. FAMILIARIZE OWNERS FACILITY OPERATOR WITH IRRIGATION SYSTEM FUNCTION, CONTROLLER PROGRAMMING, SYSTEM OPERATION AND MAINTENANCE REQUIREMENTS.

10. ALL CONTROL WIRE SPLICES TO BE MADE AT VALVE BOXES WITH WATER TIGHT ELECTRICAL SPLICES, 3M, SCOTT'S LOCK SEAL TACK 3576-78, OR EQUIVALENT.

11. EACH VALVE BOX TO CONTAIN A MINIMUM OF TWO (2) SPARE ORANGE CONTROL WIRES FOR JACKETED WIRE. ROUTE SPARE WIRES FROM THE CONTROLLER TO THE LAST VALVE OF EACH MAINLINE BRANCH. COMMON WIRE TO BE WHITE. SINGLE STRAND WIRE TO BE A MINIMUM OF 14 GAUGE.

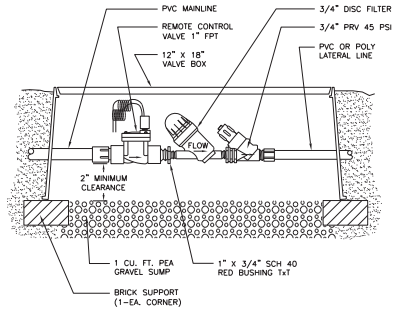
12. ALL ELECTRICAL EQUIPMENT TO BE U.L. TESTED AND APPROVED, AND BEAR THE U.L. LABEL.

13. CROSS CONNECTION PROTECTION INSPECTION REQUIRED. THE BACKFLOW DEVICE TO BE TESTED UPON THE ORIGINAL INSTALLATION. THE TESTING TO BE PERFORMED BY A PERSON HOLDING A CURRENT CERTIFICATE AS A BACKFLOW TESTER. THE TEST REPORT TO BE SUBMITTED TO THE LOCAL WATER DISTRICT, OR PURVEYOR, AND OWNER WITH A COPY TO BARGHAUSEN CONSULTING ENGINEERS, INC. CONTRACTOR TO INCLUDE TESTING IN THE SCOPE OF WORK. OWNER IS RESPONSIBLE FOR ANNUAL INSPECTIONS AFTER THE INITIAL INSPECTION.

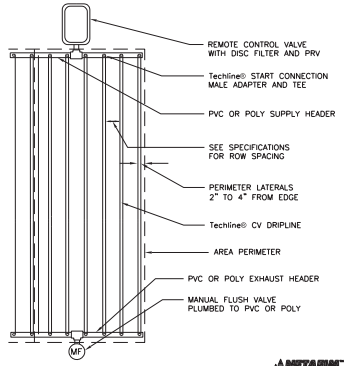
14. IRRIGATION SCHEDULING: THE IRRIGATION CONTROLLER CONTAINS A WATER BUDGET FEATURE. PERIODIC (WEEKLY) ADJUSTMENT OF THE WATER SCHEDULE IS INTENDED TO BE MADE VIA BUDGET ADJUSTMENT. RE-ADJUST WATERING DAYS AT 100 PERCENT BUDGET WHEN ADJUSTMENT EXCEEDS 30%. SET CONTROLLER FOR HIGHEST ETo WATER SCHEDULE, BASED ON PUBLISHED LOCAL EVAPOTRANSPIRATION DATA. SYSTEM HAS BEEN DESIGNED FOR 50 TO 80 PERCENT DISTRIBUTION UNIFORMITY. LAWN ZONES SHOULD BE SCHEDULED FOR 100 PERCENT REPLACEMENT FACTOR ON A TYPICAL MINIMUM 3-DAY CYCLE. SHRUB ZONES SHOULD BE PROGRAMMED AT 40 TO 70 PERCENT OF THE MONTHLY LAWN WATER REQUIREMENT ON A ONCE PER WEEK CYCLE. ALL WATERING IN EXCESS OF THE LOCAL ETo ("FIELD RECHARGE") TO BE COMPLETED DURING THE CONSTRUCTION PHASE WHILE THE CONTRACTOR IS ON THE JOB SITE. OVER WATERING OF LANDSCAPE DUE TO CONTROLLER SCHEDULING TO BE GROUNDS FOR CONTRACTOR TO REPAIR ANY RESULTANT DAMAGES AT CONTRACTOR'S OWN EXPENSE.

15. SUBSTITUTION OF IRRIGATION MATERIAL/EQUIPMENT TO BE MADE ONLY UPON WRITTEN APPROVAL OF LANDSCAPE ARCHITECT AND OWNER'S REPRESENTATIVE.

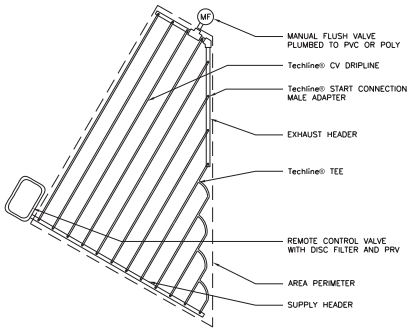
16. ALL ZONES TO PASS A MINIMUM DISTRIBUTION UNIFORMITY WATER AUDIT, AS REQUIRED BY THE STATE OF CALIFORNIA'S WATER EFFICIENT LANDSCAPE ORDINANCE, AS ADOPTED BY THE CITY COUNCIL. AN IRRIGATION ASSOCIATION CERTIFIED WATER AUDIT REPORT TO BE PROVIDED TO THE CITY.



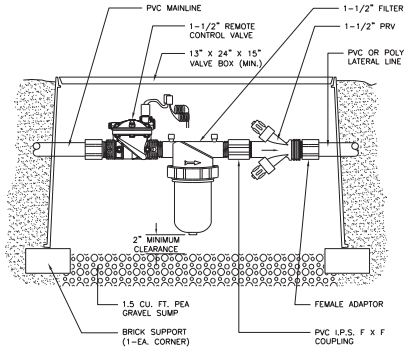
LOW-VOLUME CONTROL ZONE ASSEMBLY:
P/N LVCZS80-10075-HF 4.5 - 17.6 GPM NOT TO SCALE DETAIL - L211HF



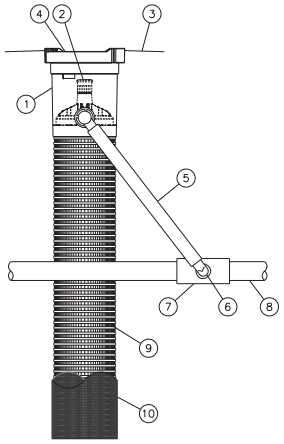
Techline® CV END FEED LAYOUT
NOT TO SCALE DETAIL - C101



Techline® CV IRREGULAR AREAS: Triangular
NOT TO SCALE DETAIL - C104



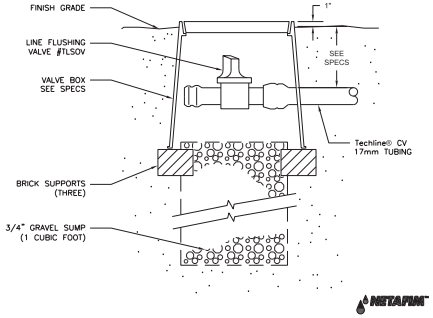
COMMERCIAL CONTROL ZONE ASSEMBLY:
P/N LVCZ-150 11 - 35 GPM NOT TO SCALE DETAIL - L223



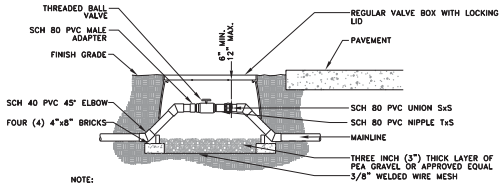
1. ROOT WATERING SYSTEM: RAIN BIRD RWS-B-C-1402 (INCLUDES RETAINER, 36" (91,4 CM) TUBE, 0.5 GPM (1,9 L/M) BUBBLER & INTEGRATED CHECK VALVE, 4" (10,2 CM) GRATE, VERSATILE SWING ASSEMBLY WITH 1/2" (1,3 CM) M NPT INLET)
2. BUBBLER: RAIN BIRD 1402 0.5 GPM (1,9 L/M) (INCLUDED)
3. FINISH GRADE/TOP OF MULCH
4. 4" (10,2 CM) LOCKING GRATE (INCLUDED)
5. 12" (30,5 CM) SWING ASSEMBLY (INCLUDED)
6. 1/2" (1,3 CM) MALE NPT INLET (INCLUDED)
7. PVC SCH 40 TEE OR EL
8. PVC OR POLYETHYLENE LATERAL PIPE
9. 4" (10,2 CM) WIDE X 36" (91,4 CM) LONG RIGID BASKET WEAVE CANISTER (INCLUDED)
10. OPTIONAL SOCK (RWS-SOCK) FOR SANDY SOILS

NOTES:
1. 4" (10,2 CM) GRATE IS ALSO AVAILABLE IN PURPLE (RWS-GRATE-P).
2. INSTALL PRODUCT SO THAT THE GRATE IS EVEN WITH FINISH GRADE OR TOP OF MULCH.
3. OPTIONAL SAND SOCK (RWS-SOCK) IS 34" (86,4 CM) IN LENGTH TO COVER MESH BASKET AREA.
4. WHEN INSTALLING IN EXTREMELY HARD OR CLAY SOILS, ADD 3/4" (1,9 CM) GRAVEL UNDER AND AROUND THE UNIT TO ALLOW FASTER WATER INFILTRATION AND ROOT PENETRATION.
5. ONCE RWS HAS BEEN INSTALLED FILL THE BASKET WITH PEA GRAVEL BEFORE LOCKING LID.

ROOT WATER SYSTEM DETAIL
NOT TO SCALE



MANUAL LINE FLUSHING VALVE TLSOV PLUMBED TO TUBING
NOT TO SCALE DETAIL - D211



NOTE:
1. LOCATE VALVE BOXES IN PLANTING AREAS.
2. WRAP VALVE BOX WITH A MINIMUM OF 3 MIL THICK PLASTIC AND SECURE IT USING DUCT TAPE OR ELECTRICAL TAPE.
3. ALL THREADED CONNECTIONS TO BE MADE USING TEFLON TAPE.
4. ALL CHANGES IN ELEVATION SHALL BE MADE USING SCH 40 PVC 45° ELBOWS.

BALL VALVE DETAIL
NOT TO SCALE

No.	Date	By	Chd.	Appr.	Revision

Title: PRELIM IRRIGATION NOTES AND DETAILS
KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA

For: KA ENTERPRISES
5820 Oberlin Dr Suite 201
San Diego, CA 92121
858/404-6080
fax 858/404-6081

LICENSED LANDSCAPE ARCHITECT JEFFREY VAN WYK 6372
8-17-2019 Renewal Date
1-28-2019 Date
STATE OF CALIFORNIA

Scale: Horizontal N/A Vertical N/A
Designed BLS
Drawn BLS
Checked MV
Approved MV
Date 8-16-18

BARGHAUSEN CONSULTING ENGINEERS, INC.
18215 72ND AVENUE SOUTH
KENT, WA 98032
(425)251-6222
(425)251-8782 FAX
CIVIL ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES

18447

L-6 of 6

CONCEPTUAL GRADING PLAN

OWNER

KA ENTERPRISES
ATTN: EUGENE MARIN
5820 OBERLIN DRIVE, SUITE 201

SITE ADDRESS

NORTHEAST CORNER OF SYCAMORE CANYON BLVD AND CENTRAL AVENUE

ASSESSOR'S PARCEL NUMBER

256-050-007

TITLE INFORMATION

TITLE INFORMATION FOR THIS SURVEY BASED ON PRELIMINARY REPORT PREPARED BY TITLE365 COMPANY AS ORDER NO. CA0410-17002342, DATED MAY 12, 2017

LEGAL DESCRIPTION

THAT PORTION OF THE NORTHWEST QUARTER OF SECTION 33, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

GRADING INFORMATION

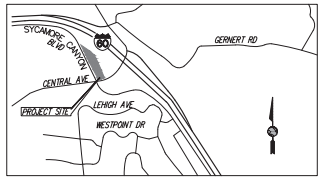
CUT (TO FINISH SURFACE):	11,901 CY
FILL (TO FINISH SURFACE):	1,106 CY
UNDERCUT BIOFILTRATION:	239 CY
UNDERCUT GAS TANKS:	838 CY
UNDERCUTS OTHERS:	1,614 CY
EXPORT (IMBALANCE):	13,485 CY

PUBLIC UTILITY EASEMENT NOTE:

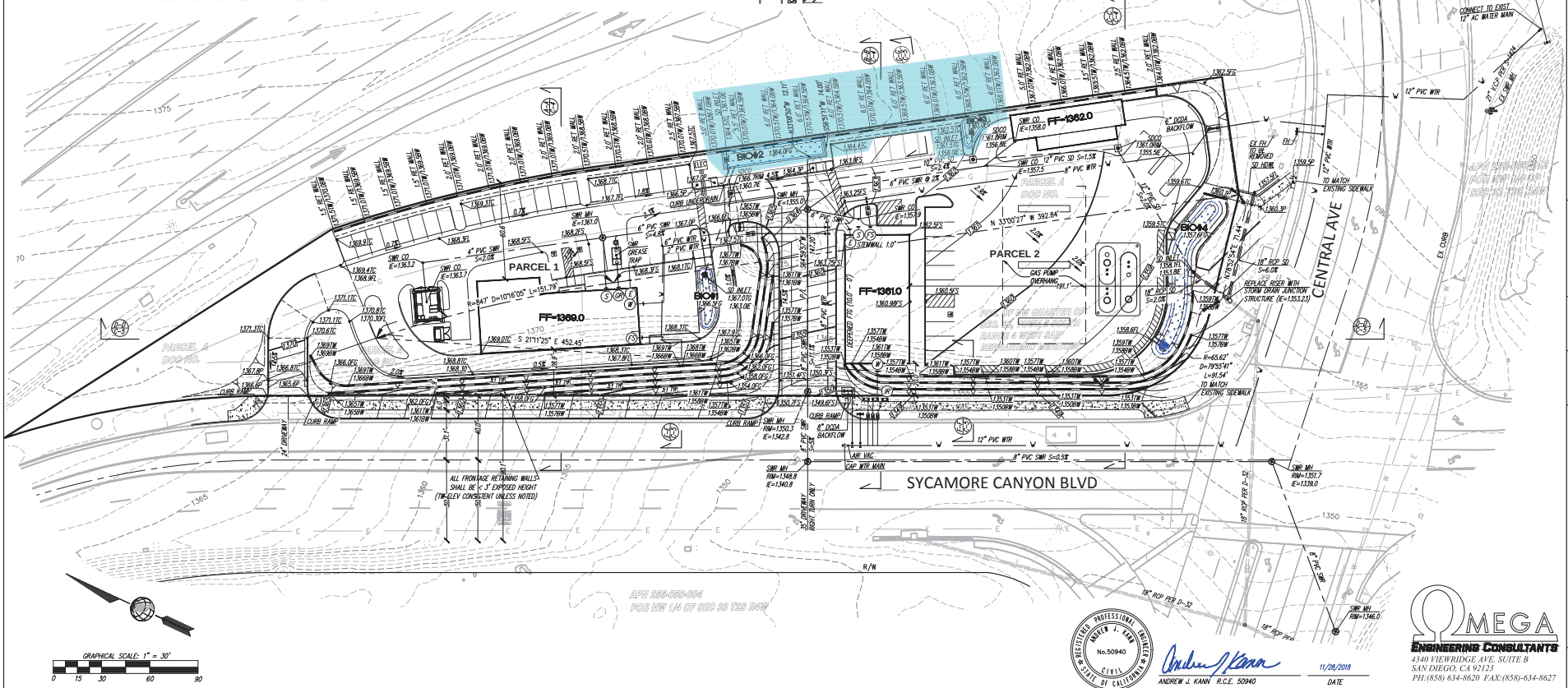
A BLANK PUBLIC UTILITY EASEMENTS WILL BE CONVEYED ON ALL PARCELS VIA THE PROPOSED PARCEL MAP

LEGEND

- EXISTING UTILITY ..... W, S, G
- EXISTING UTILITY BOX
- EXISTING CONTOUR 52
- EXISTING CURB
- PROPOSED CONTOUR 52
- PROPOSED AREA DRAIN (PVT) ..... SIZE & TYPE PER PLAN
- PROPOSED STORM DRAIN (PVT)
- PROPOSED BUILDING FOOTPRINT
- PROPOSED FINISH FLOOR ELEVATION FF-52.00
- PROPOSED TOP OF CURB ELEVATION 374.00TC
- PROPOSED PAVEMENT ELEVATION 374.00P
- PROPOSED TOP OF WALL ELEVATION 374.00TW
- PROPOSED FLOWLINE ELEVATION 374.00FL
- PROPOSED GRADIANT 1.75%
- PROPOSED CURB AND GUTTER
- BIORETENTION BASIN
- PROPOSED PCC SIDEWALK
- PROPOSED DWY
- TRASH ENCLOSURE
- PROPOSED PARKING
- PROPOSED SEWER POINT OF CONNECTION ..... S
- PROPOSED DOMESTIC WATER POINT OF CONNECTION ..... W
- PROPOSED IRRIGATION POINT OF CONNECTION ..... IR
- PROPOSED WATER SERVICE W/METER
- PROPOSED SERVICE BACKFLOW
- PROPOSED WATER LATERAL ..... W
- PROPOSED STORM DRAIN
- PROPOSED SEWER LATERAL ..... S
- PROPOSED RETAINING WALL
- PROPOSED STORM DRAIN INLET
- PROPOSED GAS TANKS
- PROPOSED SEWER MANHOLE
- PROPOSED SD CLEANOUT
- PROPOSED SEWER GREASE TRAP
- PROPOSED RIP RAP
- PROPOSED FIRE HYDRANT
- PROPOSED CURB OUTLET
- PROPOSED RIBBON GUTTER



VICINITY MAP
NO SCALE



REGISTERED PROFESSIONAL ENGINEER ANDREW J. KANN No.50940 CIVIL STATE OF CALIFORNIA

ANDREW J. KANN R.C.E. 50940 — DATE 11/28/2018

OMEGA ENGINEERING CONSULTANTS
4340 VIEWRIDGE AVE. SUITE B
SAN DIEGO, CA 92123
PH:(858) 634-8620 FAX:(858)-634-8627

No.	Date	By	Chkd.	Appr.	Revision

Title: KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA
APN: 256-050-007

For: KA ENTERPRISES
5820 Oberlin Dr Suite 201
San Diego, CA 92121
858/404-6080
fax 858/404-6081

Scale: Horizontal N/A; Vertical N/A

Designed ____ Drawn ____ Checked ____ Approved ____ Date ____

BERGHAUSEN CONSULTING ENGINEERS, INC.
18215 72ND AVENUE SOUTH
KENT, WA 98032
(425)251-6222
(425)251-8782 FAX
CIVIL ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES

SHEET
C-2

KA ENTERPRISE MEGA MART

TENTATIVE MAP

TM 37591

PROPOSED LEGEND:

ITEM	SYMBOL
CONTOUR	52
AREA DRAIN (PVT)	
STORM DRAIN (PVT)	SIZE & TYPE PER PLAN
BUILDING FOOTPRINT	
FINISH FLOOR ELEVATION	FF=52.00
TOP OF CURB ELEVATION	374.00TC
TOP OF WALL ELEVATION	374.00TW
FLOWLINE ELEVATION	374.00FL
FINISHED GRADE ELEVATION	374.00FG
GRADIANT	1.75%
CURB	
SEWER POINT OF CONNECTION	S
DOMESTIC WATER POINT OF CONNECTION	W
IRRIGATION POINT OF CONNECTION	IR
WATER SERVICE W/METER	
RIP RAP	
FIRE SERVICE BACKFLOW	
FDC/PVC	
WATER SERVICE BACKFLOW	
WATER LATERAL	W
STORM DRAIN	
SEWER LATERAL	
RETAINING WALL	
STORM DRAIN INLET	
BIORETENTION BASIN	
PCC SIDEWALK	
DRIVEWAY	
TRASH ENCLOSURE	
PARKING	
SEWER MH	
SEWER CO	
CURB & GTR	
SLOPE	
SD CO	
GREASE TRAP	
FIRE HYDRANT	

EXISTING LEGEND:

ITEM	SYMBOL
SPOT ELEVATIONS	385.00
CONTOUR	385
CENTERLINE	
DROP INLET	
ELECTRICAL VAULT	
COMMUNICATION BOX	
CURB & GUTTER	
RIGHT OF WAY	
EASEMENT	
UTILITY	W, S, E
PROPERTY LINE	

ASSESSOR'S PARCEL NUMBER

256-050-007, APNS FOR PARCEL A, B, C TO BE DETERMINED

TOPOGRAPHY:

EXISTING SITE BOUNDARY AND TOPOGRAPHIC SURVEY BY OMEGA LAND SURVEYING DATED 10-5-2017

FEMA DESIGNATION

THE PROJECT IS LOCATED IN FEMA FLOODPLAIN ZONE 'D' PER FEMA FIRMETTE NO. 06065C0733G.

PUBLIC UTILITY EASEMENT NOTE:

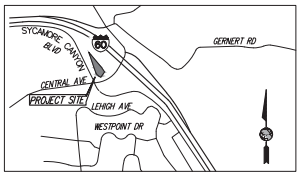
A BLANK PUBLIC UTILITY EASEMENTS WILL BE CONVEYED ON ALL PARCELS VIA THE PROPOSED PARCEL MAP.

OWNER

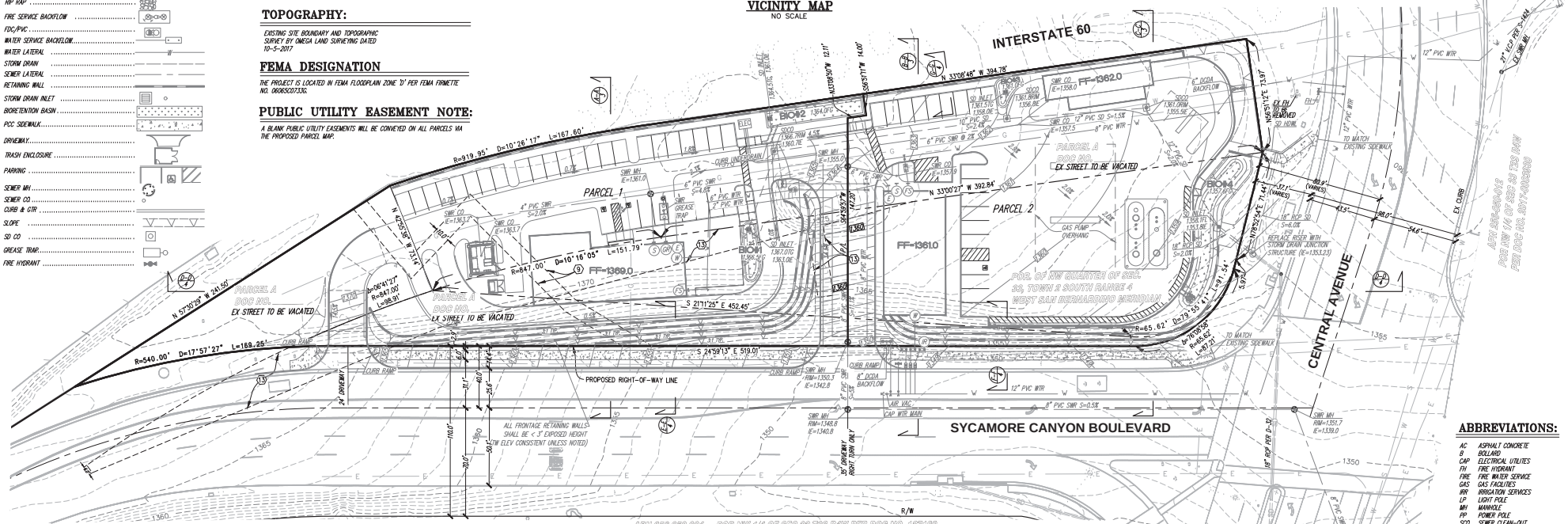
MELROSE, LLC
EUGENE MARINI
5820 OBERLIN DRIVE, SUITE 201 SAN DIEGO CA 92121

SERVICE PROVIDERS:

SEWER DISTRICT:	CITY OF RIVERSIDE
WATER DISTRICT:	WESTERN MUNICIPAL WATER DISTRICT
FIRE DEPT:	RIVERSIDE COUNTY FIRE DEPARTMENT
GAS/ELECTRIC PROVIDER:	SOCAL GAS / SOCAL EDISON
TELEPHONE PROVIDER:	–
CABLE PROVIDER:	–
SCHOOL DISTRICT:	MORENO VALLEY UNIFIED
STREET LIGHT:	–



VICINITY MAP
NO SCALE



ABBREVIATIONS:

AC	ASPHALT CONCRETE
B	BOLLARD
CAP	ELECTRICAL UTILITES
FH	FIRE HYDRANT
FIRE	FIRE WATER SERVICE
GAS	GAS FACILITES
IRR	IRRIGATION SERVICES
LP	LIGHT POLE
MH	MANHOLE
PP	POWER POLE
SCO	SEWER CLEAN-OUT
SD	STORM DRAIN UTILITES
SDMH	STORM DRAIN MANHOLE
SWR	SEWER UTILITES
TEL	TELEPHONE UTILITES
WMB	WATER METER BOX
WMH	WATER MANHOLE
WTR	WATER UTILITES
WV	WATER VALVE

EASEMENTS & EXCEPTION NOTES:

THE FOLLOWING IS A LIST OF EXCEPTIONS TO COVERAGE AS LISTED IN THE ABOVE REFERENCED PRELIMINARY REPORT. SURVEY RELATED ITEMS THAT CAN BE PLOTTED ARE SHOWN HEREON. THE EFFECT OF AGREEMENTS, ASSESSMENTS, COVENANTS & CONDITIONS & RESTRICTIONS, FINANCING STATEMENTS, LEASES, LIENS, PERMITS, RESOLUTIONS, TAXES, OR WAIVERS THAT APPEAR IN SAID REPORT THAT ARE NOT SURVEY RELATED ARE LISTED FOR REFERENCE ONLY.

8. AS EASEMENT IN FAVOR OF CALIFORNIA ELECTRIC POWER COMPANY FOR POLE LINES, CONDUITS OR UNDERGROUND FACILITES, RECORDED: FEBRUARY 3, 1942 IN BOOK 526 AND PAGE 587, OF OFFICIAL RECORDS. (DOES NOT APPEAR TO AFFECT THE SUBJECT PROPERTY)

(9) AN EASEMENT GRANTED TO SOUTHERN CALIFORNIA GAS COMPANY, A CORPORATION FOR THE PURPOSE OF PIPE LINE RECORDED: MAY 1, 1948 IN BOOK 907 AND PAGE 306, OF OFFICIAL RECORDS.

10. AN EASEMENT TO USE AND MAINTAIN THE WELL LOCATED IN THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 33, TOWNSHIP 3 SOUTH, RANGE 4 WEST, SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF, AND A TANK AND PIPE LINES, EITHER PRESENTLY LOCATED OR AS LOCATED WITHIN A RADIUS OF 100.00 FEET OF ITS LOCATION, FOR THE PURPOSE OF SERVING THE PROPERTIES SERVED BY SAID WELL, AS RESERVED BY ELEANOR L. GERNERT, ET AL, IN DEED RECORDED DECEMBER 30, 1955 IN BOOK 1841 PAGE 71 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA. THIS EASEMENT SHALL TERMINATE WHEN SUITABLE DOMESTIC WATER SUPPLY IS OTHERWISE MAD AVAILABLE. (NOT PLOTTABLE ITEM)

(13) AN EASEMENT GRANTED IN FAVOR OF: SOUTHERN CALIFORNIA EDISON COMPANY FOR THE PURPOSE: POLE LINES, CONDUITS OR UNDERGROUND FACILITES, RECORDED OCTOBER 9, 1973 AS INSTRUMENT NUMBER 132007, OF OFFICIAL RECORDS.

15. THE EFFECT OF A "INDEX MAP OF PROPOSED RELINQUISHMENT TO THE COUNTY OF RIVERSIDE REQUEST NO. 477-R" FILED JULY 16, 2015 AS DOCUMENT NO. 2015-0312282, IN BOOK 13 PAGE 28-30 OF STATE HIGHWAY MAP BOOK. SAID MAP ALSO DISCLOSES A DRAINAGE EASEMENT. (THE EXACT LOCATION OF THE EASEMENT IS NOT DISCLOSED BY THE INSTRUMENT)

16. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED RELINQUISHMENT OF HIGHWAY RIGHT OF WAY IN THE COUNTY OF RIVERSIDE, ROAD 08-RIV-215-PM 38.9/39.7 REQUEST NO. 477-R, RECORDED: DECEMBER 31, 2015 AS INSTRUMENT NUMBER 2015-0565513, OF OFFICIAL RECORDS. (NON-SURVEY ITEM)

PARKING ANALYSIS

PARKING SPACES REQUIREMENTS PER RIVERSIDE ZONING ORDINANCE TABLE 19-580-06D:

VEHICLE FUELING STATION W/ CONVENIENCE STORE:
1 SPACE/250 SF OF RETAIL AREA INCLUDING COOLER AREAS
3,200 SF / 250 = 13 SPACES
STAND ALONE FAST FOOD DRIVE THRU:
1 SPACE/100 SF OF FLOOR AREA
3,800 SF / 100 = 38 SPACES
FULL SERVICE AUTOMATED CARWASH:
1 SPACE/2 EMPLOYEES OF LARGEST SHIFT
1,518 SF = 1 SPACES

PARKING SPACES REQUIRED: 52 SPACES
PARKING SPACES PROVIDED: 54 SPACES

DRIVE-THRU STACKING – PER 19.475.040 D
MAINTAIN DRIVE-THRU LANES THAT ARE A MINIMUM OF 180 FEET IN LENGTH TO PROVIDE ON-SITE STORAGE FOR A MINIMUM OF TEN (10) VEHICLES, AS MEASURED FROM THE FORWARD MOST DRIVE-THRU WINDOW TO THE ENTRANCE TO THE QUEUING SPACE. – SEE KEY NOTE 17

DEVELOPMENT SUMMARY

LOT AREA:	
AREA OF PROPOSED SUMMARY STREET VACATION	61,556 sf
AREA OF PROPOSED STREET VACATION	61,556 sf
AREA OF MELROSE, LLC LAND	33,986 sf
TOTAL LOT AREA:	95,542 sf 2.19 ACRES
MAP:	TM 37591

LOT AREA

EXISTING LOTS		PROPOSED LOTS	
PARCEL A	61,556 sf	PARCEL 1	52,101.1 sf
PORTION OF APN 256-050-007	33,986 sf	PARCEL 2	45,440.6 sf

SUMMARY OF EA. BLDG AND SQ. FT

C-STORE	3,200 SF
CANOPY	3,600 SF
FAST FOOD	3,800 SF
CAR WASH	1,518 SF
TOTAL	12,118 S.F.

DEVELOPMENT STANDARDS

DEVELOPMENT STANDARD PER TABLE 19.110.030	CR (REQUIR'D)	CR (PROV'D)
FLOOR AREA RATIO (FAR) MAX.	0.50	.123
LOT AREA – MIN.	20,000 sf	95,542 sf
LOT WIDTH – MIN.	60 sf	VARIES
LOT DEPTH – MIN.	100 sf	VARIES
BUILDING HEIGHT – MAX.	75 sf	30 ft
FRONT YARD SETBACK (MIN.)	0 FT.	20 ft
SIDE YARD SETBACK (MIN.) INTERIOR SIDE STREET SIDE	 0 ft 0 ft	 ± 41'-2"
REAR YARD SETBACK (MIN.)	0 ft	5 ft
LANDSCAPE SETBACK	VARIES	0 FT.
LANDSCAPE SETBACK FROM ANY FREEWAY RIGHT OF WAY	0 ft	0 FT.

LANDSCAPE ANALYSIS

SITE:	95,542 SF	2.19 ACRES
LANDSCAPE AREA:	10,782 SF	11%

GRAPHICAL SCALE: 1" = 30'
0 15 30 60 90

SHEET 1 OF 4

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DRAINAGE PLAN

TM 37591

DMA DATA TABLE

DMA-NO.	AREA (SF)	AREA (AC)	IMPERVIOUS %	DESIGN DCV	TREATED BY
DMA-1	9,518	0.22	89%	–	BMP-1
DMA-2	20,417	0.47	82%	–	BMP-2
DMA-3	5,128	0.12	82%	–	BMP-3
DMA-4	36,928	0.85	76%	–	BMP-4
DMA-5	14,055	0.32	13%	–	SELF RETAINING
DMA-6	9,199	0.21	58%	–	SELF RETAINING

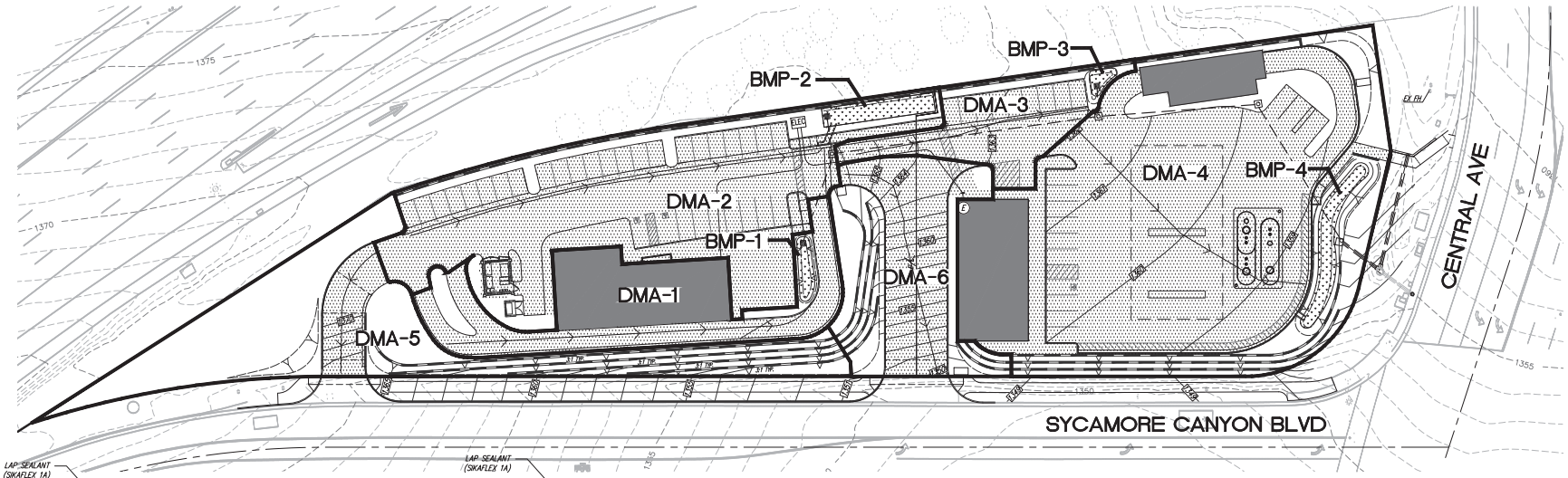
BMP DATA TABLE

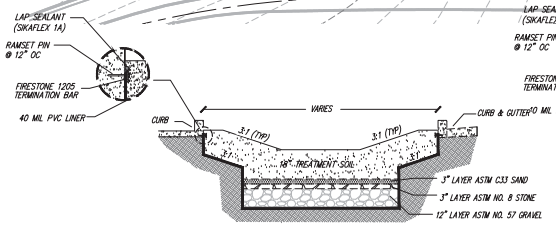
BMP-NO.	TREATING	REQ'D FOOTPRINT	PROPOSED AREA	NOTES
BMP-1	DMA-1	294 SF	295 SF	BIOFILTRATION BASIN
BMP-2	DMA-2	538 SF	754 SF	BIOFILTRATION BASIN
BMP-3	DMA-3	144 SF	150 SF	BIOFILTRATION BASIN
BMP-4	DMA-4	940 SF	969 SF	BIOFILTRATION BASIN

*BASIN DETAILS ON THIS SHEET

LEGEND:

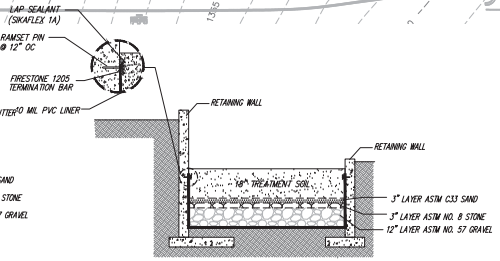
- DMA LIMITS
- DRAINAGE DIRECTION ARROW
- DRAINAGE MANAGEMENT AREA — DMA-#
- BEST MANAGEMENT PRACTICE — BMP-#
- PAVEMENT AREA
- ROOFTOP AREA
- BIOFILTRATION AREA





BMP-1, BIORETENTION FACILITY TYPICAL SECTION

NOT TO SCALE



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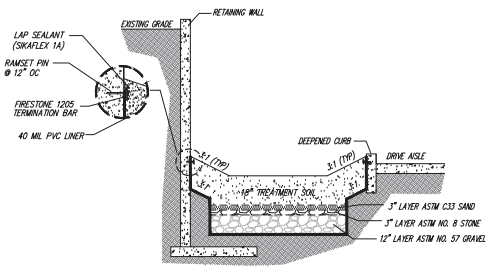

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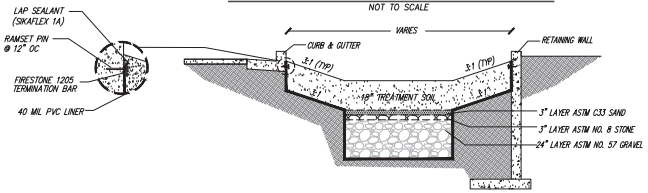

BMP-4, BIORETENTION FACILITY TYPICAL SECTION

NOT TO SCALE

GRAPHICAL SCALE: 1" = 30'

0 15 30 60 90

SHEET 2 OF 4

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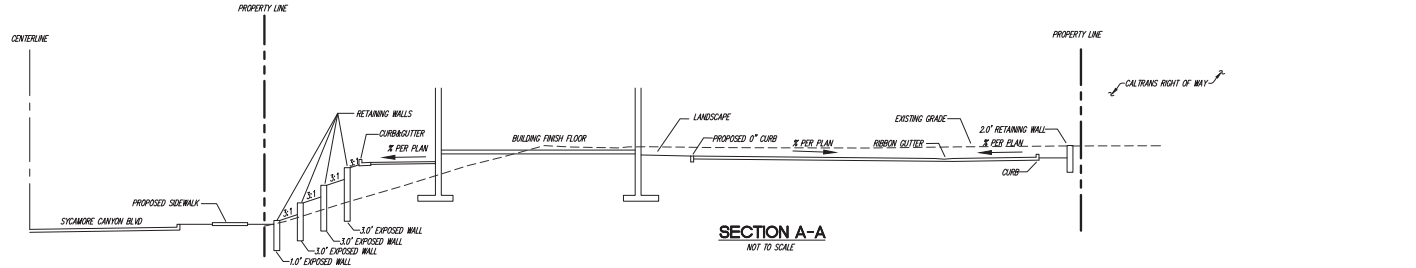
SECTIONS

TM 37591



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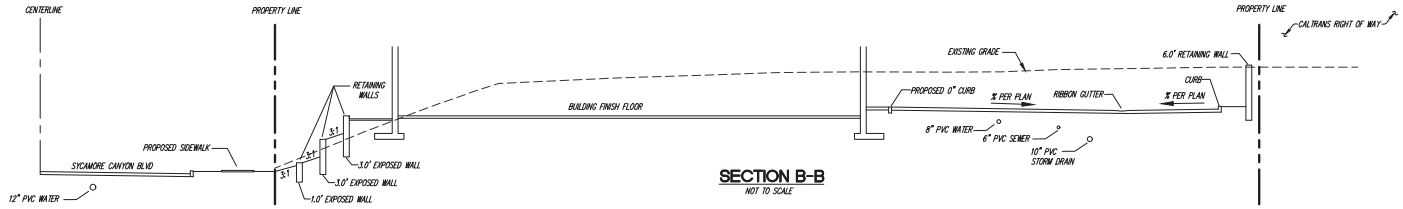

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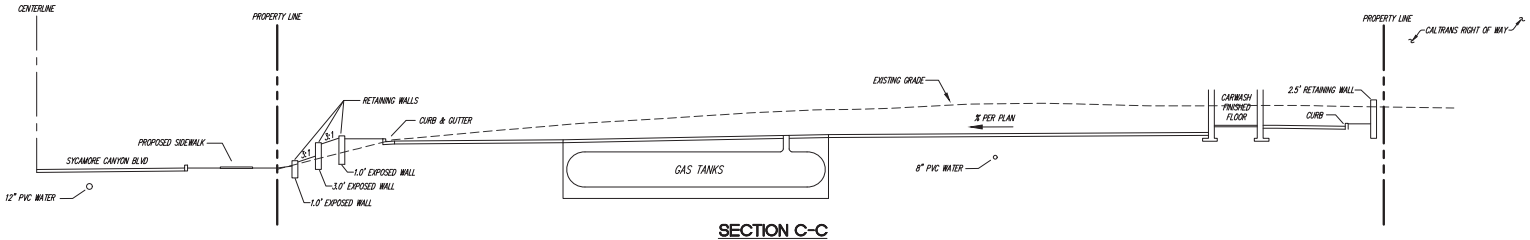

SECTION C-C
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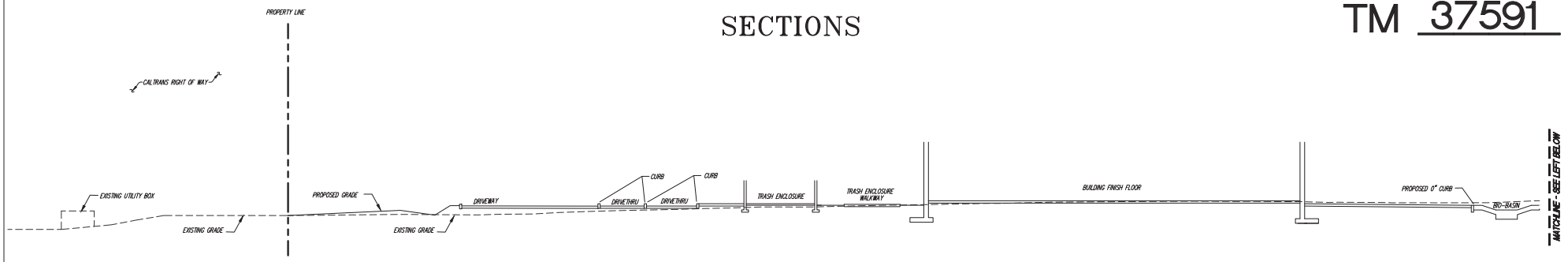

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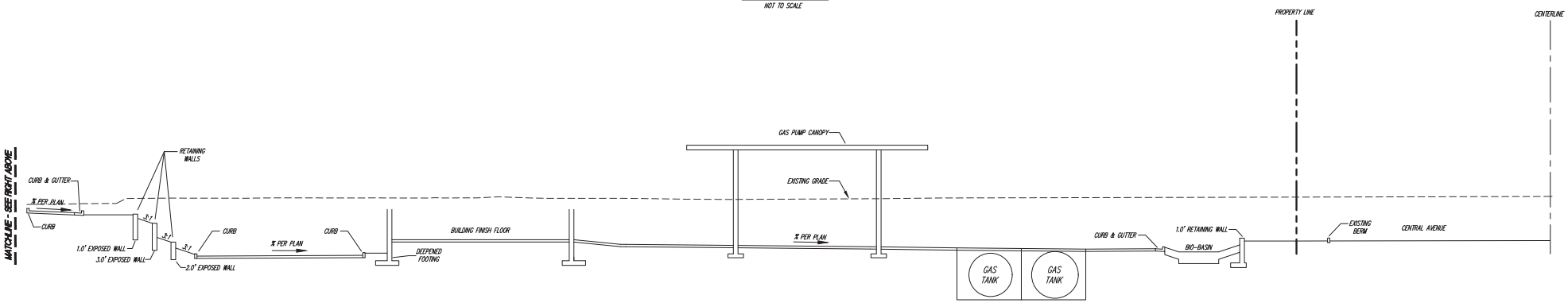

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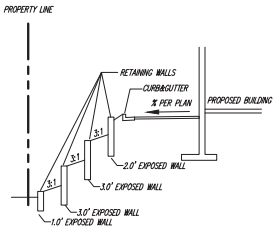

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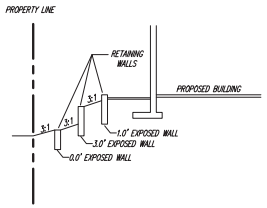

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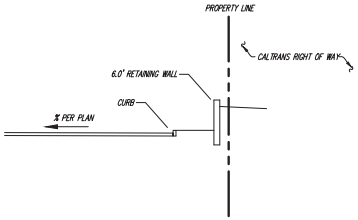

SECTION G-G

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APPENDIX B

AIR QUALITY AND GREENHOUSE GAS STUDY

Sycamore Canyon Boulevard Project

Air Quality and Greenhouse Gas Study

prepared for
KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, California 92121

prepared by
Rincon Consultants, Inc.
2215 Faraday Avenue, Suite A
Carlsbad, California 92008

September 2018

Rincon Consultants, Inc.
Environmental Scientists Planners Engineers
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1 Project Description

1.1 Introduction

This report details the analysis of potential air quality and greenhouse gas (GHG) impacts of a proposed commercial development project (project) located off the southbound exit for 30B, Central Avenue, Interstate 215 and SR 60, in the City of Riverside, Riverside County, California. The report has been prepared by Rincon Consultants, Inc. under contract to KA Enterprises for use by the City of Riverside in support of environmental documentation being prepared for the project pursuant to the California Environmental Quality Act (CEQA). The purpose of this study is to analyze the project's air quality and GHG emissions and associated impacts. The analysis considers both temporary impacts that would result from project construction and potential long-term impacts associated with operation of the project.

1.2 Project Summary

The project site is comprised of three parcels totaling2.19 acres. The site is approximately 790 feet long, 170 feet wide, tapered to a wedge to the north, and a 210-foot base to the south at the corner of Central Avenue and Sycamore Canyon Boulevard. The project site is vacant, and consists of bare dirt and sparse vegetation. The site is bordered to the west by Sycamore Canyon Boulevard, to the east by the Central Avenue off-ramp of I-215/SR-60, and to the south by Central Avenue. Residential development is located approximately 640 feet south and 2,200 feet west of the project site, and hillsides with low density single-family residential development are located to the east of I-215/SR-60. The regional location of the site and existing site conditions are shown in Figure 1 and Figure 2, respectively.

The project entails the construction of a 3,200 square-foot convenience store, one fast food restaurant with a drive-thru (3,800 square feet), a carwash (1,518 square feet), a gas station with six two-sided gas pumps (12 multi-product dispensers) , and 52 vehicle surface parking spaces for all proposed commercial uses. The carwash component includes two additional self-vacuum parking spaces. The project would also include the installation of a Healy clean air separator to hold excess gasoline vapors from the storage tanks. Product throughput for the proposed gas station is estimated at 2.4 million gallons per year (2,150,000 gallons of gasoline, and 250,000 gallons of diesel).

Project features include low-flow plumbing and energy efficient fixtures for all proposed structures per CalGreen (Title 24) standards, and the installation of white roofing to reduce heat absorption. The project also includes the installation of five bioretention ponds along the perimeter of the project site. Primary vehicular access to the project site would be provided by two driveways located along Sycamore Canyon Boulevard. Figure 3 shows the proposed site plan for the project.

Construction would take approximately seven months based on information provided by the project applicant and emissions modeling defaults (described in Section 2.2.1 of this report).

Figure 1 Regional Location

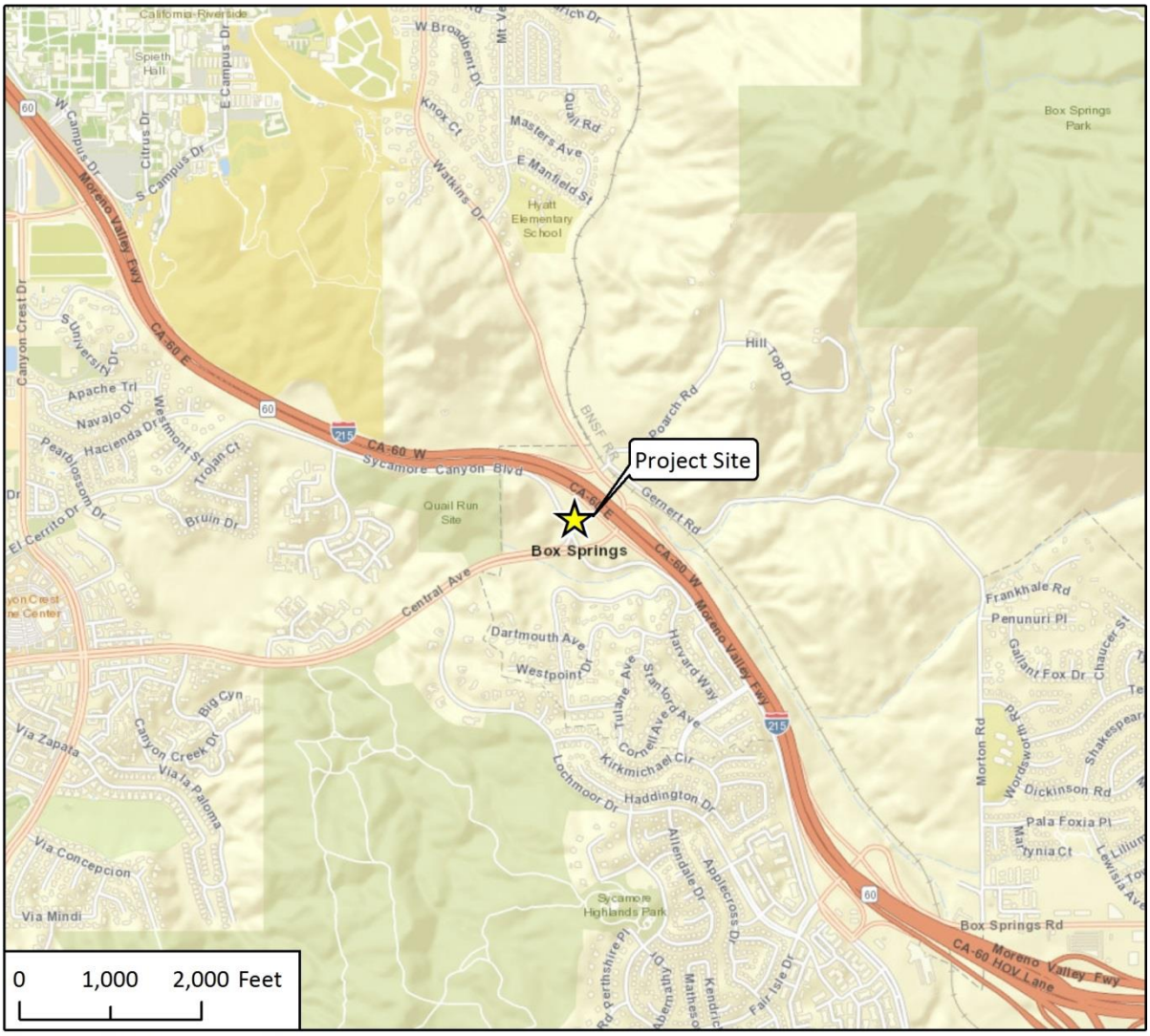

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Figure 2 Project Location

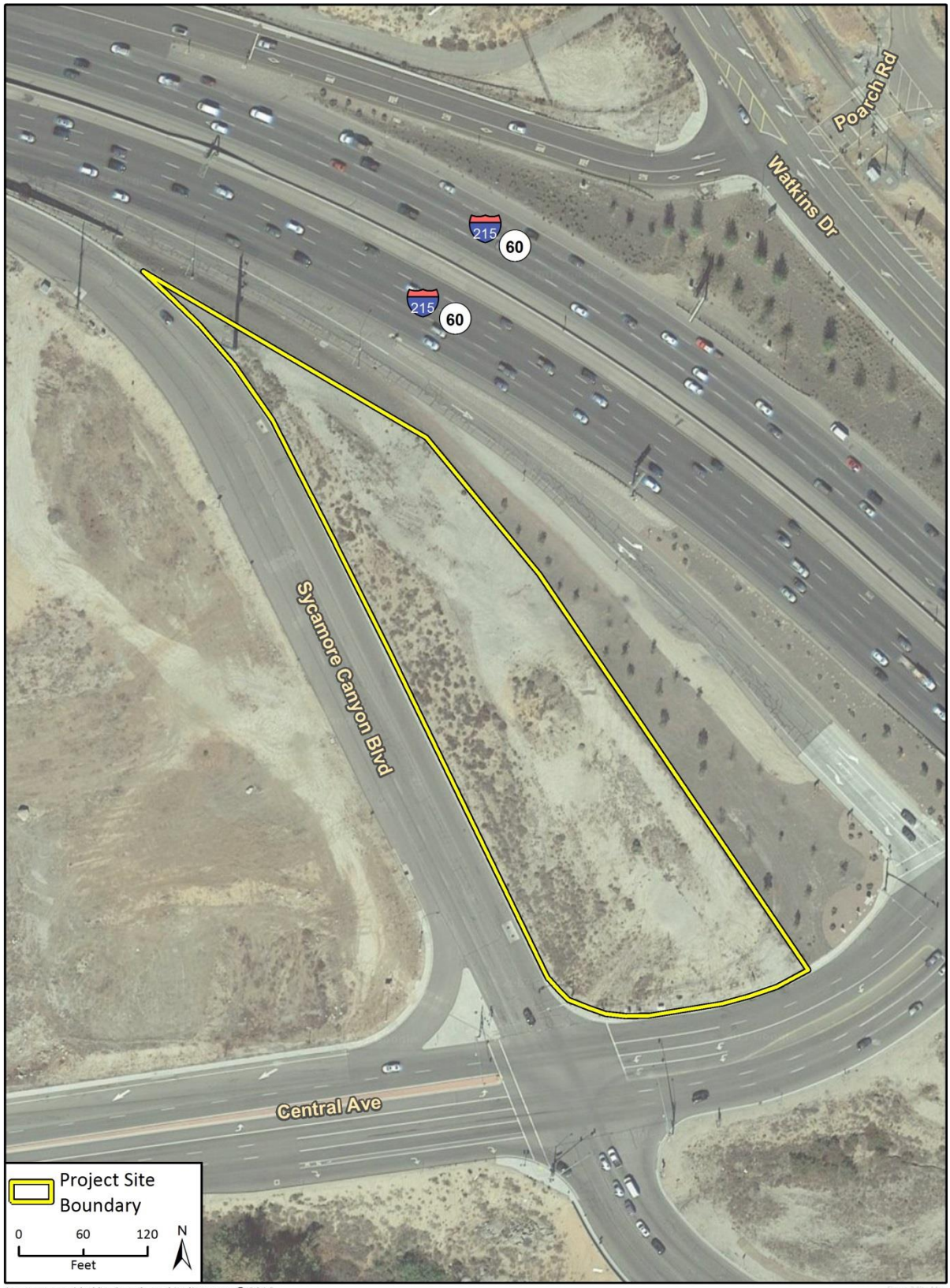

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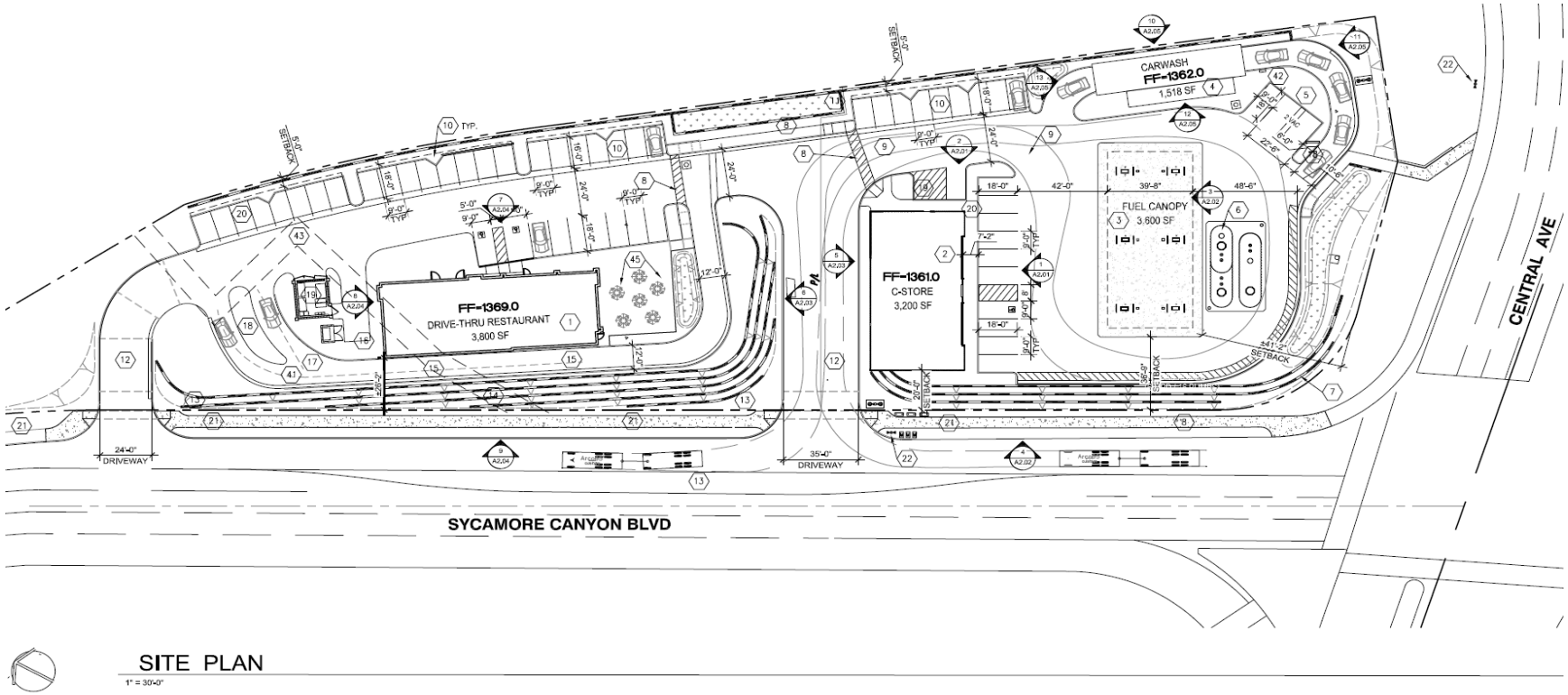
Figure 3 Proposed Site Plan



2 Air Quality

2.1 Background

2.1.1 Local Climate and Meteorology

The project site is within the South Coast Air Basin (SCAB), which is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east, and includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area in Riverside County. The regional climate within the SCAB is considered semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity. The air quality within the SCAB is primarily influenced by meteorology and a wide range of emissions sources, such as dense population centers, substantial vehicular traffic, and industry.

Air pollutant emissions within the SCAB are generated primarily by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point and area sources. Point sources occur at a specific location and are often identified by an exhaust vent or stack. Examples include boilers or combustion equipment that produce electricity or generate heat. Area sources are widely distributed and include residential and commercial water heaters, painting operations, agricultural fields, landfills, and some consumer products. Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources may be legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, and self-propelled construction equipment. Air pollutants can also be generated by the natural environment, such as when high winds suspend fine dust particles.

2.1.2 Air Quality Regulations

Federal and State Standards for Criteria Pollutants

The federal and state governments have established ambient air quality standards for the protection of public health. The United State Environmental Protection Agency (U.S. EPA) is the federal agency designated to administer air quality regulation, while the Air Resources Board (ARB) is the state equivalent in the California EPA (CalEPA). County-level Air Pollution Control Districts (APCD) provide local management of air quality. The ARB has established air quality standards and is responsible for the control of mobile emission sources, while the local APCDs are responsible for enforcing standards and regulating stationary sources. The ARB has 14 air basins, including SCAB.

Pursuant to the federal Clean Air Act (CAA) of 1970, the U.S. EPA has set primary national ambient air quality standards (NAAQS) for ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter with a diameter of up to ten microns (PM_{10}) and up to 2.5 microns ($PM_{2.5}$), and lead (Pb). Primary standards are those levels of air quality deemed necessary, with an adequate margin of safety, to protect public health. In addition, California has established health-based ambient air quality standards for these and other pollutants, some of which are more stringent than the federal standards. Figure 4 lists the current federal and state standards for regulated pollutants.

Figure 4 ARB Ambient Air Quality Standards

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[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 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	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[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 (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline 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[12,13]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National 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			

1 California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and 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 arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site 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 three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national 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 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Any equivalent measurement method 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 annual PM2.5 primary standard was lowered from 15 µg/m3 to 12.0 µg/m3. The existing national 24- hour PM2.5 standards (primary and secondary) were retained at 35 µg/m3, as was the annual secondary standard of 15 µg/m3. The existing 24-hour PM10 standards (primary and secondary) of 150 µg/m3 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 SO_2 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 SO_2 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.

12 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.

13 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.

14 The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ 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.

15 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.

The USEPA uses data collected at permanent monitoring stations to classify regions as "attainment" or "nonattainment," depending on whether the region meets the requirements stated in the primary NAAQS. Nonattainment areas are imposed with additional restrictions as required by the USEPA.

The USEPA established new national air quality standards for ground-level ozone and fine particulate matter in 1997. On May 14, 1999, the Court of Appeals for the District of Columbia Circuit issued a decision ruling that the CAA, as applied in setting the new public health standards for ozone and particulate matter, was unconstitutional and an improper delegation of legislative authority to the USEPA. On February 27, 2001, the U.S. Supreme Court upheld the way the government sets air quality standards under the CAA. The Court unanimously rejected industry arguments that the USEPA must consider financial costs as well as health benefits in writing standards. The justices also rejected arguments that the USEPA took too much lawmaking power from Congress when it set tougher standards for ozone and soot in 1997. Nevertheless, the court dismissed the USEPA's policy for implementing new ozone rules, saying that the agency ignored a section of the law that restricts its authority to enforce such rules.

In April 2003, the White House Office of Management and Budget (OMB) cleared the USEPA to implement the eight-hour ground-level O_3standard. The USEPA issued the proposed rule implementing the eight-hour O_3standard in April 2003. The USEPA completed final eight-hour nonattainment status on April 15, 2004. The USEPA revoked the 1-hour O_3 standard on June 15, 2005, and lowered the eight-hour O_3 standard from 0.08 parts per million (ppm) to 0.075 ppm on April 1, 2008. The USEPA issued the final $PM_{2.5}$ implementation rule in fall 2004. The USEPA lowered the 24-hour $PM_{2.5}$ standard from 65 to 35 micrograms per cubic meter ($\mu g/m^3$) and revoked the annual PM_{10} standard on December 17, 2006. The USEPA issued final designations for the 2006 24-hour $PM_{2.5}$ standard on December 12, 2008.

Characteristics of ozone, CO, NO_2, and suspended particulates are described below.

Ozone

Ozone (O_3) is produced by a photochemical reaction (triggered by sunlight) between nitrogen oxides (NO_X) and reactive organic gases (ROG[1]). NO_X is formed during the combustion of fuels, while reactive organic gases are formed during combustion and evaporation of organic solvents. Because O_3 requires sunlight to form, it mostly occurs in substantial concentrations between the months of April and October. Ozone is a pungent, colorless, toxic gas with direct health effects on humans including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to O_3 include children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors.

Carbon Monoxide

CO is a local pollutant that is found in high concentrations only near fuel combustion equipment and other sources of CO. The primary source of CO, a colorless, odorless, poisonous gas, is automobile

[1] Organic compound precursors of ozone are routinely described by a number of variations of three terms: hydrocarbons (HC), organic gases (OG), and organic compounds (OC). These terms are often modified by adjectives such as total, reactive, or volatile, and result in a rather confusing array of acronyms: HC, THC (total hydrocarbons), RHC (reactive hydrocarbons), TOG (total organic gases), ROG (reactive organic gases), TOC (total organic compounds), ROC (reactive organic compounds), and VOC (volatile organic compounds). While most of these differ in some significant way from a chemical perspective, from an air quality perspective two groups are important: non-photochemically reactive in the lower atmosphere, or photochemically reactive in the lower atmosphere (HC, RHC, ROG, ROC, and VOC). SCAQMD uses the term VOC to denote organic precursors.

traffic. Elevated concentrations, therefore, are usually only found near areas of high traffic volumes. CO's health effects are related to its affinity for hemoglobin in the blood. At high concentrations, CO reduces the amount of oxygen in the blood, causing heart difficulty in people with chronic diseases, reduced lung capacity, and impaired mental abilities.

Nitrogen Dioxide

NO_2 is a by-product of fuel combustion, with the primary source being motor vehicles and industrial boilers and furnaces. The principal form of nitrogen oxide produced by combustion is nitric oxide (NO), but NO reacts rapidly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. Nitrogen dioxide is an acute irritant. A relationship between NO_2 and chronic pulmonary fibrosis may exist, and an increase in bronchitis in young children at concentrations below 0.3 parts per million (ppm) may occur. NO_2 absorbs blue light and causes a reddish brown cast to the atmosphere and reduced visibility. It can also contribute to the formation of ozone/smog and acid rain.

Suspended Particulates

Atmospheric particulate matter is comprised of finely divided solids and liquids such as dust, soot, aerosols, fumes, and mists. The particulates that are of particular concern are PM_{10} (which measures no more than 10 microns in diameter) and $PM_{2.5}$, (a fine particulate measuring no more than 2.5 microns in diameter). The characteristics, sources, and potential health effects associated with the small particulates (PM_{10} and $PM_{2.5}$) and $PM_{2.5}$ can be different. Major man-made sources of PM_{10} are agricultural operations, industrial processes, combustion of fossil fuels, construction, demolition operations, and entrainment of road dust into the atmosphere. Natural sources include windblown dust, wildfire smoke, and sea spray salt. The finer $PM_{2.5}$ particulates are generally associated with combustion processes as well as being formed in the atmosphere as a secondary pollutant through chemical reactions. $PM_{2.5}$ is more likely to penetrate deeply into the lungs and poses a serious health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the small and fine particulate matter that is inhaled into the lungs remains there, which can cause permanent lung damage. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

State

In 1967, the California Legislature passed the Mulford-Carrell Act, which combined two Department of Health bureaus (the Bureau of Air Sanitation and the Motor Vehicle Pollution Control Board) to establish the CARB. The CARB coordinates and oversees both State and federal air pollution control programs in California. It also oversees activities of local air quality management agencies and maintains air quality monitoring stations throughout the State in conjunction with the USEPA and local air districts. The CARB has divided the State into 15 air basins based on meteorological and topographical factors of air pollution.

The CARB identified particulate emissions from diesel-fueled engines (diesel particulate matter, or DPM) as toxic air contaminants (TACs) in August 1998. Following the identification process, CARB was required by law to determine whether there is a need for further control. In September 2000, the CARB adopted the Diesel Risk Reduction Plan (Diesel RRP), which recommends many control measures to reduce the risks associated with DPM and to achieve the goal of 85 percent DPM reduction by 2020.

California Green Building Code

California Green Buildings Standards Code (Cal Green Code) (California Code of Regulations [CCR], Title 24, Part 11) was adopted by the California Building Standards Commission in 2016 and became effective in January 20174. Cal Green Code is comprised of Mandatory Residential and Nonresidential Measures and more stringent Voluntary Measures (TIERs I and II). The Code applies to all new constructed residential, nonresidential, commercial, mixed-use, and State-owned facilities, as well as schools and hospitals. For nonresidential additions and alterations, the Code applies to additions of 1,000 sf or greater, and/or building alterations with a permit valuation of $200,000 or greater. The City of Beverly Hills has adopted the provisions of Cal Green Code by reference in Section 9-1-1101 of the BHMC.

Mandatory Measures are required to be implemented on all new construction projects, as well as qualifying alterations and additions, and consist of a wide array of green measures concerning project site design, water use reduction, improvement of indoor air quality, and conservation of materials and resources. The Voluntary Measures of the Cal Green Building Code for nonresidential buildings, though optional, refer to Title 24, Part 6 compliance with respect to energy efficiency. They encourage 10 percent energy use reduction of outdoor lighting use, and up to a 15 percent reduction in indoor energy use below the baseline required under the California Energy Commission (CEC). These are more stringent than the nonresidential mandatory measures, which only refer to continued adoption of Title 24, Part 6 requirements, and may be used by jurisdictions to enhance their commitment towards green and sustainable design and achievement of Assembly Bill (AB) 32 and Senate Bill (SB) 32 greenhouse gas reduction goals. Other more stringent green measures are also included and encouraged regarding use of on-site renewable energy, escalator and elevator use, and energy efficient steel framing.

Local

Regional Air Quality Management Plan

The SCAQMD and the Southern California Association of Governments (SCAG) are responsible for formulating and implementing the AQMP for the Basin. The SCAB is designated a nonattainment area for the federal and state one-hour and eight-hour ozone standards, the state PM_{10} standard, the federal 24-hour $PM_{2.5}$ standard, and the state and federal annual $PM_{2.5}$ standard (SCAQMD 2016). The SCAB is designated unclassifiable or in attainment for all other federal and state standards. Every three years, the SCAQMD prepares a new AQMP, updating the previous plan and having a 20-year horizon. The SCAQMD adopted the Final 2012 AQMP on December 7, 2012 and forwarded it to the CARB for review in February 2013. The 2012 AQMP includes the new and changing federal requirements, implementation of new technology measures, and the continued development of economically sound, flexible compliance approaches.

The SCAQMD staff has adopted the 2016 AQMP, which is a comprehensive and integrated Plan primarily focused on addressing the ozone standards. The Plan is a regional and multi-agency effort (SCAQMD, CARB, SCAG, and USEPA). State and federal planning requirements include developing control strategies, attainment demonstrations, reasonable further progress, and maintenance plans. The 2016 AQMP incorporates the latest scientific and technical information and planning assumptions, including the latest applicable growth assumptions, Regional Transportation Plan/Sustainable Communities Strategy, and updated emission inventory methodologies for various source categories.

The project would be required to comply with SCAQMD Rules 403 and 1113. SCAQMD Rule 403 is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust. SCAQMD Rule 1113 requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce volatile organic compound emissions from use of coatings. Compliance with Rules 403 and 1113 was included in the CalEEMod emissions inventory.

City of Riverside General Plan 2025

The City of Riverside General Plan 2025 contains an Air Quality Element. The following policies pertaining to air quality are applicable to the proposed project:

> AQ-1.16 – Design safe and efficient vehicular access to commercial land uses from arterial streets to ensure efficient vehicular ingress and egress.
>
> AQ-3.3 – Support SCAQMD's efforts to require stationary air pollution sources, such as gasoline stations, restaurants with charbroilers and deep fat fryers, to comply with or exceed applicable SCAQMD rules and control measures.
>
> AQ-3.4 – Require projects to mitigate, to the extent feasible, anticipated emissions which exceed AQMP Guidelines.
>
> AQ-3.6 – Support "green" building codes that require air conditioning/filtration installation, upgrades or improvements for all buildings, but particular for those associated with sensitive receptors.
>
> AQ-3.7 – Require use of pollution control measures for stationary and area sources through the use of best available control activities, fuel/material substitution, cleaner fuel alternatives, product reformulation, change in work practices and of control measures identified in the latest AQMP.
>
> AQ-4.5 – Require the suspension of all grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour.

2.1.3 Current Air Quality

The SCAQMD operates a network of air quality monitoring stations throughout the SCAB. The purpose of the monitoring stations is to measure ambient concentrations of pollutants and determine whether ambient air quality meets the California and federal standards. The monitoring station located closest to the project site is the Riverside-Rubidoux station, located at 5888 Mission Boulevard in the Rubidoux Community Services District approximately 7.5 miles northwest of the project site. Table 1 indicates the number of days that each standard has been exceeded at the Riverside-Rubidoux station.

Table 1 Ambient Air Quality at the Monitoring Station

Pollutant	2014	2015	2016
8 Hour Ozone (ppm), 8-Hr Average	0.104	0.105	0.104
Number of days of Federal exceedances (>0.070)	66	55	69
Ozone (ppm), Worst Hour	0.141	0.132	0.142

Pollutant	2014	2015	2016
Number of days of State exceedances (>0.09 ppm)	29	31	33
Number of days of Federal exceedances (>0.112 ppm)	1	1	1
Nitrogen Dioxide (ppm) - Worst Hour (Federal Measurements)	59.9	57.4	73.1
Number of days of State exceedances (>.18 ppm)	0	0	0
Number of days of Federal exceedances (0.10 ppm)	0	0	0
Particulate Matter 10 microns, $\mu g/m^3$, Worst 24 Hours	100.0	69.0	84.0
Number of days above Federal standard (>150 $\mu g/m^3$)	0	0	0
Particulate Matter <2.5 microns, $\mu g/m^3$, Worst 24 Hours	48.9	54.7	51.5
Number of days above Federal standard (>35 $\mu g/m^3$)	5	9	5

Source: ARB, 2014, 2015, and 2016 Annual Air Quality Data Summaries available at http://www.arb.ca.gov/adam/topfour/topfour1.php.

2.1.4 Air Quality Management Plan

Under state law, the SCAQMD is required to prepare a plan for air quality improvement for pollutants for which the District is in non-compliance. The SCAQMD updates the plan every three years. Each version of the SCAQMD's Air Quality Management Plan (AQMP) updates the previous plan and has a 20-year horizon. The 2016 AQMP was recently adopted on March 3, 2017. The 2016 AQMP incorporates new scientific data and notable regulatory actions that have occurred since adoption of the 2012 AQMP, including the approval of the new federal 8-hour ozone standard of 0.070 ppm that was finalized in 2015.

The 2016 AQMP addresses several state and federal planning requirements and incorporates new scientific information, primarily in the form of updated emissions inventories, ambient measurements, and updated meteorological air quality models. This AQMP builds upon the approaches taken in the 2012 AQMP for the attainment of federal PM and O_3 standards and highlights the significant amount of reductions to be achieved. It emphasizes the need for interagency planning to identify additional strategies to achieve reductions within the timeframes allowed under the federal Clean Air Act, especially in the area of mobile sources. The 2016 AQMP also includes a discussion of emerging issues and opportunities, such as fugitive toxic particulate emissions, zero-emission mobile source control strategies, and the interacting dynamics among climate, energy, and air pollution. The AQMP also includes attainment demonstrations of the new federal 8-hour ozone standard of 0.070 ppm and vehicle miles travelled (VMT) emissions offsets, as per recent U.S. EPA requirements (SCAQMD 2017a).

2.1.5 Sensitive Receptors

Ambient air quality standards have been established to represent the levels of air quality considered sufficient, with a margin of safety, to protect public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress, such as children under 14, the elderly over 65, persons engaged in strenuous work or exercise, and people with

cardiovascular and chronic respiratory diseases. The majority of sensitive receptor locations are therefore schools, hospitals, and residences.

Sensitive receptors that could potentially be affected by air quality impacts associated with project construction or operation include single- and multi-family residences located approximately 640 feet south and 2,200 feet west of the project site, and hillsides with sparse single-family residential development to the east of I-215/SR-60. The nearest school, Hyatt Elementary School (466 Mt. Vernon Avenue, Riverside, CA 92507) is located approximately 0.5 miles north of the project site. In addition, Seneca Elementary school (11615 Wordsworth Road, Moreno Valley, CA 92557), is located one mile southeast of the project site.

2.2 Impact Analysis

2.2.1 Significance Thresholds and Methodology

Significance Thresholds

Pursuant to Appendix G of the CEQA Guidelines, impacts related to air quality would be significant if the project would:

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

Regional Thresholds

The SCAQMD has adopted numerical thresholds to analyze the significance of a project's construction and operational emissions. These thresholds are applicable to projects where the SCAQMD is the lead agency, but are also recommended for land use projects within the SCAB. These thresholds are designed such that a project consistent with the thresholds would not have an individually or cumulatively significant impact to the SCAB's air quality. Thus, a project that does not exceed these SCAQMD thresholds would have a less than significant impact in regard to items b and c above. These significance thresholds for temporary construction and long-term operational emissions in the SCAB are shown in Table 2.

Table 2 SCAQMD Significance Thresholds

Construction Thresholds	Operational Thresholds
75 pounds per day of ROG	55 pounds per day of ROG
100 pounds per day of NO_X	55 pounds per day of NO_X
550 pounds per day of CO	550 pounds per day of CO
150 pounds per day of PM_{10}	150 pounds per day of SO_X
55 pounds per day of $PM_{2.5}$	150 pounds per day of PM_{10}
	55 pounds per day of $PM_{2.5}$

Source: SCAQMD 2015

Localized Significance Thresholds

In addition to the above thresholds, the SCAQMD has developed Localized Significance Thresholds (LSTs) in response to the Governing Board's Environmental Justice Enhancement Initiative (1-4), which was prepared to update the *CEQA Air Quality Handbook*. LSTs were devised in response to concern regarding exposure of individuals to criteria pollutants in local communities and have been developed for NO_X, CO, PM_{10} and $PM_{2.5}$. LSTs represent the maximum emissions from a project that will not cause or contribute to an air quality exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest sensitive receptor, taking into consideration ambient concentrations in source receptor areas (SRAs) throughout the SCAB, the distance to the nearest sensitive receptor, and the area of the project site that would be under construction at any one time. LSTs have been developed for emissions within construction areas up to five acres in size. However, LSTs only apply to emissions within a fixed stationary location and are not applicable to mobile sources, such as cars on a roadway (SCAQMD 2008). As such, LSTs are typically applied only to construction emissions since the majority of operational emissions are associated with project-generated vehicle trips.

The project site is located in Source Receptor Area 23 (SRA-23), Metropolitan Riverside County (SCAQMD 2008). The project site is approximately 2.19 acres in size and grading would occur across the entire site. LSTs for construction of a two-acre site in SRA-23 are shown in Table 3. The nearest sensitive receptors to the project site are single- and multi-family residences approximately 640 feet to the south and 2,200 feet to the west of the project site. SCAQMD's publication *Final Localized Significant Thresholds (LST) Methodology* (2008) provides construction and operation thresholds for nearest receptors up located up to 1,640 feet (500 meters). The nearest school, Hyatt Elementary School is located approximately 0.5 miles north of the project site.

Air Quality Management Plan Consistency

A project may be inconsistent with the AQMP if it would generate population, housing, or employment growth exceeding forecasts used in the development of the AQMP. The 2016 AQMP relied on local city general plans' and the Southern California Association of Government's (SCAG) 2016 Regional Transportation Plans' (RTP) forecasts of regional population, housing, and employment growth in the 2016 AQMP.

Table 3 SCAQMD LSTs for Construction (SRA-23)

Pollutant	LSTs (lbs/day) for a 2-acre site in SRA-23 for a receptor 640 feet away
Gradual conversion of NO_X to NO_2	379
CO	5,136
PM_{10}	75
$PM_{2.5}$	23

Source: SCAQMD 2009

Methodology

This air quality analysis conforms to the methodologies recommended in the SCAQMD's *CEQA Air Quality Handbook* (1993) and supplementary guidance provided on SCAQMD's website. The project's construction and operational emissions were estimated using the California Emissions Estimator Model (CalEEMod), version 2016.3.2. CalEEMod uses project-specific information, including the project's land uses, square footages for different uses (e.g., residential, parking), and location, as well as, model defaults that can be tailored for a specific project to estimate a project's construction and operational emissions.

Construction emissions modeled for the 2.19-acre project site include temporary air pollutant emissions generated during the five following phases: grading, site preparation, construction of the proposed buildings, paving, and architectural coating. Construction emissions results include fugitive dust (PM_{10} and $PM_{2.5}$) and exhaust emissions from heavy construction vehicles and equipment such as backhoes and bulldozers, emissions generated by vehicle trips associated with construction, such as hauling trips and worker travel to and from the project site, and ROGs from architectural coatings.

There are three isolated areas on the project site where blasting may be necessary, though unlikely. These areas include both driveways and locations for the underground gas tanks. CalEEMod defaults have not been adjusted to include blasting activities since the need for blasting has not been definitively confirmed at this time. However, fugitive dust control measures per SCAQMD Rule 403, as discussed below in *Consistency with Applicable Regulatory Requirements*, would apply to controlling and reducing potential dust impacts from blasting activities, should blasting take place.

Operational emissions include mobile source emissions, energy emissions, and area source emissions. Mobile source emissions are generated by motor vehicle trips associated with operation of the project. Emissions attributed to energy use include electricity and natural gas consumption for the kitchen, refrigeration system, and heating and cooling systems. Area source emissions are generated by landscape maintenance equipment, use of consumer products, and painting. Stationary source emissions from fuel storage and dispensing were also calculated based on guidance for underground storage tanks provided by SCAQMD (SCAQMD 2017b). The emissions factor for ROGs/VOCs contained in that guidance were established by the ARB and include emissions from loading, storing, dispensing, and spills or leaks from all components of transfer and dispensing facilities. To determine whether a regional air quality impact would occur, the increase in total emissions is compared to the SCAQMD recommended regional thresholds for operational emissions.

Project emissions were modeled based on a 2.19-acre site with a 3,200 square-foot convenience store, a fast food restaurant with a drive-thru (3,800 square feet), a carwash (1,518 square feet), a gas station with six two-sided gas pumps (12 multi-product dispensers), a total of 52 vehicle parking spaces for all proposed commercial uses, and a product throughput of 2.4 million gallons per year (2,150,000 gallons of gasoline, and 250,000 gallons of diesel). The project is anticipated to be operational in 2020 based on information provided by the project applicant.

Consistency with Applicable Regulatory Requirements

The project would be required to comply with SCAQMD Rules 403 and 1113. SCAQMD Rule 403 is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust. SCAQMD Rule 1113 requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce volatile organic compound emissions from use of coatings. Compliance with Rules 403 and 1113 was included in the CalEEMod emissions inventory, as discussed below.

The grading phase involves the greatest amount of heavy equipment and the greatest generation of fugitive dust. For the purposes of construction emissions modeling, it was assumed that the project would comply with the SCAQMD Rule 403, which is required to be implemented at all construction sites located within the SCAB. Therefore, the following conditions, which would be required to reduce fugitive dust in compliance with SCAQMD Rule 403, were included in CalEEMod for the site preparation and grading phases of construction.

1. **Minimization of Disturbance**. Construction contractors should minimize the area disturbed by clearing, grading, earth moving, or excavation operations to prevent excessive amounts of dust.
2. **Soil Treatment**. Construction contractors should treat all graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved onsite roadways to minimize fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally safe soil stabilization materials, and/or roll compaction as appropriate. Watering shall be done as often as necessary, and at least twice daily, preferably in the late morning and after work is done for the day.
3. **Soil Stabilization**. Construction contractors should monitor all graded and/or excavated inactive areas of the construction site at least weekly for dust stabilization. Soil stabilization methods, such as water and roll compaction, and environmentally safe dust control materials, shall be applied to portions of the construction site that are inactive for over four days. In addition, a wheel shaker/wheel spreading device consisting of raised dividers (rails, pipe, or grates) at least 24 feet long and 10 feet wide, shall be utilized to remove bulk material from tires and vehicle undercarriages before vehicles exit the site. If no further grading or excavation operations are planned for the area, the area shall be seeded and watered until landscape growth is evident, or periodically treated with environmentally safe dust suppressants, to prevent excessive fugitive dust.
4. **No Grading During High Winds**. Construction contractors should stop all clearing, grading, earth moving, and excavation operations during periods of high winds (20 miles per hour or greater, as measured continuously over a one-hour period).
5. **Street Sweeping.** Construction contractors should sweep all onsite driveways and adjacent streets and roads at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads.

The architectural coating phase involves the greatest release of ROG. The emissions modeling for the project includes the use of low-VOC paint (50 grams per liter [g/L] for non-flat coatings) as required by SCAQMD Rule 1113.

2.2.2 Project Impacts

Temporary Construction Impacts

Table 4 summarizes maximum daily emissions of pollutants throughout the construction period of the project as estimated in CalEEMod. Emissions of ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ would not exceed SCAQMD regional thresholds or LSTs during project construction, assuming adherence to the conditions listed above required by SCAQMD Rules 403 and 1113. Therefore, based on the SCAQMD regional thresholds, which are designed to achieve and maintain attainment of federal and State ambient air quality standards, the project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.

Table 4 Estimated Construction Emissions Maximum Daily (lbs/day)

	Maximum Emissions[1]				
Construction Year	**ROG**	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**
2019 Maximum[2]	7.4	48.2	30.5	5.2	2.8
SCAQMD Regional Thresholds	75	100	550	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**
Maximum On-site Emissions	2.6	18.9	15.3	1.1	1.0
Localized Significance Thresholds (LSTs) (Onsite only)	N/A	379	5,136	75	23
Threshold Exceeded?	**N/A**	**No**	**No**	**No**	**No**

Notes: All calculations were made using CalEEMod. See Appendix A for model results. Site Preparation, Grading, Paving, Building Construction, and Architectural Coating totals include worker trips, soil export hauling trips, construction vehicle emissions and fugitive dust. Totals may not add up due to rounding. Emission data is pulled from "mitigated" results that include compliance with regulations and project design features that will be included in the project.

[1] Grading phases incorporate anticipated emissions reductions from the conditions listed above, which are required by SCAQMD Rule 403 to reduce fugitive dust. The architectural coating phases incorporate anticipated emissions reductions from the conditions listed above, which are required by Rule 1113.

[2] All emissions results in this table are from the Winter emissions results, with the exception CO emissions and Maximum On-site Emissions, which are from the Summer emissions results.

2.2.3 Long-Term Regional Impacts

Operational Air Pollutant Emissions

Table 5 summarizes estimated emissions associated with operation of the project. The majority of project-related operational emissions would be due to stationary emissions and vehicle trips to and from the site. As shown below, project-generated emissions would not exceed SCAQMD regional thresholds for ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$.

The majority of operational emissions generated would be due to stationary source emissions from fuel storage and dispensing, and mobile emissions from vehicle trips to and from the project site. Project trip generation included in the CalEEMod analysis was based on the traffic study completed for the project, which concluded the project would generate a total of 3,248 daily trips after accounting for pass-by trip reductions (Darnell & Associates, Inc. 2017). The project includes the installation of a vapor control device, a Healy clean air separator to hold excess gasoline vapors from the storage tanks. As shown in Table 5, emissions generated during operation of project would not exceed SCAQMD screening level thresholds for ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$. Therefore, the project's regional air quality impacts would be less than significant.

Table 5 Project Operational Emissions (lbs/day)

	Estimated Emissions[1]					
Emissions Source	**ROG**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Area	0.3	<0.1	<0.1	<0.1	<0.1	<0.1
Stationary[2]	9.5	<0.1	<0.1	<0.1	<0.1	<0.1
Energy	<0.1	0.3	0.3	<0.1	<0.1	<0.1
Mobile	4.4	16.9	31.9	0.1	5.8	1.6
Project Total	**14.0**	**17.2**	**32.2**	**0.1**	**5.8**	**1.6**
SCAQMD Thresholds	55	55	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

See Appendix A for CalEEMod output. Note: Numbers may not add up due to rounding.

[1] All emissions results in this table are from the Winter emissions results, with the exception of ROG mobile emissions, which is from the Summer emissions results.

[2] Calculated for underground storage tanks for gasoline and diesel products, based on SCAQMD's Annual Emissions Reporting Program (SCAQMD 2017b). Emissions of other air pollutants from stationary project emissions are considered negligible.

AQMP Consistency

A project may be inconsistent with the AQMP if it would generate population, housing, or employment growth exceeding the forecasts used in the development of the AQMP. The 2016 AQMP relies on local city general plans' and the Southern California Association of Government's (SCAG) Regional Transportation Plans' (RTP) forecasts of regional population, housing and employment growth in its own projections for managing Basin air quality.

The proposed project involves the construction of a gas station and convenience store with a carwash and one drive-thru fast food restaurant. The project would not provide residential units that would cause a direct increase in the City's population. While the project may provide new employment opportunities in the City of Riverside that could contribute to population growth, this contribution would be negligible. According to an employee density study prepared for SCAG in 2001, non-commercial strip retail centers with contiguous interconnected off-street parking (which is the most applicable land use type for the proposed gas station, convenience store, and carwash) employ on average 12.91 employees per acre. Restaurants have an average density of one employee per 388 square feet. Thus, the proposed project may employ a total of approximately 37

persons[2] (SCAG 2001). According to data provided by the California Department of Finance (DOF), the estimated number employed in the County of Riverside in 2015 was 742,000. In its 2016 Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS), SCAG projects that Riverside's number of employees will increase to 1,175,000 by 2040; an increase of 433,000 persons relative to 2015 (SCAG 2015). Based on these estimates, project employment would constitute less than 0.01 percent[3] of projected employment growth. Thus, the level of employment growth associated with the project was anticipated in SCAG's long-term population forecasts, on which the 2016 AQMP was based, and would not exceed official regional employment projections. The project would be consistent with the AQMP.

Carbon Monoxide Hotspot Analysis

A CO hotspot is a localized concentration of CO that is above the state one-hour or eight-hour CO ambient air standards. Localized CO hotspots can occur at intersections with heavy peak hour traffic. Specifically, hotspots can be created at intersections where traffic levels are sufficiently high such that the local CO concentration exceeds the federal one-hour standard of 35.0 ppm or the state one-hour standard of 20.0 ppm, or the state and federal 8-hour average of 9.0 ppm (ARB 2016). The four highest daily maximum 8-hour carbon monoxide averages were measured at the nearest SCAQMD monitoring station (Riverside-Rubidoux, 5888 Mission Boulevard in the Rubidoux Community Services District) in 2012. The highest 8-hour average was 1.59 ppm, substantially lower than the 9.0 ppm standard. Furthermore, the entire SCAB is in conformance with State and federal CO standards and most air quality monitoring stations no longer report CO levels.

A detailed CO analysis was conducted during the preparation of SCAQMD's 2003 AQMP. The locations selected for microscale modeling in the 2003 AQMP included high average daily traffic (ADT) intersections in the Basin, those which would be expected to experience the highest CO concentrations. The highest CO concentration observed was at the intersection of Wilshire Boulevard and Veteran Avenue on the west side of Los Angeles near the I-405 Freeway. The concentration of CO at this intersection was 4.6 ppm, which is well below the one-hour (35 ppm) CO federal standard. The Wilshire Boulevard/Veteran Avenue intersection has an ADT of approximately 100,000 vehicles per day.

Intersections near the project site accommodate less than 100,000 vehicles per day based on peak hour traffic volumes collected for the project traffic study (Darnell & Associates, Inc. 2017). The project would generate a total of 3,248 trips per day, which would not result in an exceedance of 100,000 vehicle trips for intersections in the vicinity of the project site. According to the project traffic study, existing plus project LOS for studied intersections would remain the same as existing conditions and no studied intersections would be reduced in LOS.

In addition, as shown in Table 5, the project would generate maximum daily CO emissions of approximately 32 pounds, which is well below the SCAQMD threshold of 550 pounds. Based on the low background level of CO in the project area, ever-improving vehicle emissions standards for new cars in accordance with state and federal regulations, and the project's low level of operational CO

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[2] Employees for proposed gas station, convenience store, and car wash uses: 12.91 employees/acre x 2.1 acres = 27 employees. Acres adjusted based on fast food restaurant: 2.19 total acres – 0.087 acres for fast food restaurant = 2.1 acres. Employees for proposed fast food restaurant: 3,800 square feet / 388 square feet per employee = 10 employees. Total estimated employees = 27 employees (gas station, convenience store, and car wash) + 10 employees (fast food) = 37 employees.

[3] Percentage of project employment growth: (37 total employees from project) / (433,000 projected 2040 employee increase for City of Riverside) = 0.0085%

emissions, the project would not result in the creation of new hotspots or contribute substantially to existing hotspots.

Odors

The 1993 SCAQMD *CEQA Air Quality Handbook* identifies land uses associated with odor complaints to be agriculture uses, wastewater treatment plants, chemical and food processing plants, composting, refineries, landfills, dairies, and fiberglass molding.

The project would involve the temporary use of diesel-powered construction equipment, which would generate exhaust that may be noticeable for short durations at adjacent properties. However, construction activities would be temporary, sensitive receptors are at least 640 feet from the site, and emissions would not exceed SCAQMD thresholds.

The proposed operation of a convenience store, fast food restaurant, gas station, and carwash are not typically associated with objectionable odors, although odors from fast food preparation and gasoline product could be noticeable in the immediate vicinity of the site. The project site vicinity has sparse development and is adjacent to the I-215 off-ramp and approximately 220 feet from I-215. The nearest potential sensitive receptors are 640 feet or more from the site, and it is unlikely that the odors from the project would be distinguishable from existing sources given the vehicle emissions associated with adjacent roadways in the vicinity of the project site. Furthermore, the project would include the installation of a Healy clean air separator to hold excess gasoline vapors from the underground storage tanks, which would reduce odor impacts. Therefore, the project would not generate objectionable odors that would affect a substantial number of people.

Toxic Air Contaminants (TACs)

A toxic air contaminant (TAC) is defined by California law as an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health. TACs are primarily regulated through the Tanner Air Toxics Act (Assembly Bill (AB) 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). AB 1807 sets forth a formal procedure for ARB to utilize when designating substances as TACs. This procedure includes pre-designation research, public participation, and scientific peer review. Pursuant to AB 2588, existing facilities that emit air pollutants above specified levels are required to (1) prepare a TAC emissions inventory plan and report; (2) prepare a risk assessment if TAC emissions are significant; (3) notify the public of significant risk levels; and (4) if health impacts are above specified levels, prepare and implement risk reduction measures.

For purposes of CEQA, the preparation of health risk assessments (HRAs) to evaluate the human health-based consequences of TAC emissions for land use development projects may be warranted under two sets of circumstances:

- A proposed project itself generates TACs as a result of construction and/or operational activities that may adversely impact sensitive receptors (e.g., residents), and/or
- A proposed project is located in an area that may adversely expose sensitive receptors associated with its proposed land uses to significant concentrations of TACs from existing stationary and/or mobile sources of TACs (e.g., a fossil-fueled power plant, a high-volume freeway or roadway, a gas station, etc.).

High-volume TAC generators that are listed as potential health risk sources include the operation of commercial diesel engines and truck stops, landfills and incinerators, and chemical manufacturers (ARB 2005). The proposed project includes the construction and operation of a gas station, which is

identified in the ARB *Air Quality and Land Use Handbook* (2005) as a facility type that emits TACs, mainly benzene. Construction activities may also result in the generation of TACs. However, the construction period estimated for the project would be temporary and limited to approximately seven months.

In addition, while gasoline-dispensing facilities account for a small part of the total benzene emissions in the City, near source exposures for large facilities, with throughputs of 3.6 million gallons per year or greater of gasoline, can be significant. The proposed project is estimated to have a total product throughput of 2.4 million gallons per year of gasoline. Facilities with annual throughput of less than 3.6 million gallons of gasoline per year are considered typical facilities and therefore are less than significant.

The ARB recommends avoiding placing large gasoline dispensing facilities within 300 feet of sensitive land uses or typical gasoline dispensing facilities within 50 feet of sensitive land uses, since health risks are drastically reduced with increasing fenceline distance between the pollutant source and receptor (ARB 2005). The center of the proposed gas station area is approximately 640 feet from the property line of the nearest sensitive receptor, which is beyond both the ARB's recommended 300-foot distance for large facilities, and 50-foot distance for typical facilities, such as the project. Therefore, construction and operation of the proposed gas station would not expose residents in the vicinity to substantial pollutant concentrations. Furthermore, construction and operational emissions for the project (Table 4 and Table 5) are well below the SCAQMD's criteria pollutants screening level thresholds, which are designed to be protective of public health.

Mobile emissions during project operations would primarily be comprised of passenger and light-duty vehicles accessing the gas station, convenience store, fast food restaurant, and carwash. The project would not attract a large number of trips from large or heavy-duty vehicles that could generate mobile diesel emissions due to the passenger vehicle-serving nature of the proposed use. The applicant anticipates the project would generate three estimated truck trips to the site per week for delivery of convenience store and restaurant goods, and four estimated truck trips per week for the delivery of petroleum product for distribution purposes. Therefore, construction and operation of the proposed gas station and convenience store would not generate TACs that would adversely impact sensitive receptors in the vicinity of the project site.

2.3 Conclusion

Implementation of the proposed project would not result in any air quality exceedances of applicable short-term construction and long-term operational thresholds, and the project would be consistent with the AQMP. Projects that are consistent with the AQMP have been accounted for in regional, basin-wide emissions projections intended to achieve and maintain attainment with federal and State ambient air quality standards, and are typically assumed not to result in cumulatively considerable impacts to air quality. In addition, the project would not generate impacts related to localized CO hotspots, toxic air contaminants, or odors that would be significant. These impacts are localized to the project site and immediate vicinity, and are therefore not typically cumulative in nature. Therefore, no additional measures beyond those required by SCAQMD rules are needed to reduce project air quality impacts.

3 Greenhouse Gases

3.1 Background

This section analyzes greenhouse gas (GHG) emissions associated with the project and potential impacts related to climate change.

3.1.1 Climate Change and Greenhouse Gases

Climate change is the observed increase in the average temperature of Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. The term "climate change" is often used interchangeably with the term "global warming," but "climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed acceleration in the rate of warming during the past 150 years. Per the United Nations Intergovernmental Panel on Climate Change (IPCC 2014), the understanding of anthropogenic warming and cooling influences on climate has led to a high confidence (95 percent or greater chance) that the global average net effect of human activities has been the dominant cause of warming since the mid-20th century (IPCC 2014).

Gases that absorb and re-emit infrared radiation in the atmosphere are called GHGs. The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHG because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills.

Man-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and SF_6 (California Environmental Protection Agency [CalEPA] 2006). Different types of GHGs have varying global warming potentials (GWPs). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" (CO_2e), and is the amount of a GHG emitted multiplied by its GWP. CO_2 has a 100-year GWP of one. By contrast, CH_4 has a GWP of 25, meaning its global warming effect is 25 times greater than CO_2 on a molecule per molecule basis (IPCC 2007).

3.1.2 Greenhouse Gas Emissions Inventory

Worldwide anthropogenic emissions of GHG were approximately 46,000 million metric tons (MMT, or gigatonne) of CO_2e in 2010 (IPCC 2014). CO_2 emissions from fossil fuel combustion and industrial processes contributed about 65 percent of total emissions in 2010. Of anthropogenic GHGs, CO_2 was the most abundant accounting for 76 percent of total 2010 emissions. CH_4 emissions accounted for 16 percent of the 2010 total, while N_2O and fluorinated gases account for 6 and 2 percent respectively (IPCC 2014).

Total U.S. GHG emissions were 6,586.7 million metric tons (MMT or gigatonne) of CO_2e in 2015 (U.S. EPA 2017). Total U.S. emissions have increased by 3.5 percent since 1990; emissions decreased by 2.3 percent from 2014 to 2015 (U.S. EPA 2017). The decrease from 2014 to 2015 was due to was a result of multiple factors, including: (1) substitution from coal to natural gas consumption in the electric power sector; (2) warmer winter conditions in 2015 resulting in a decreased demand for heating fuel in the residential and commercial sectors; and (3) a slight decrease in electricity demand (U.S. EPA 2017). Since 1990, U.S. emissions have increased at an average annual rate of 0.2 percent. In 2015, the industrial and transportation end-use sectors accounted for 29 percent and 27 percent of CO_2 emissions (with electricity-related emissions distributed), respectively. Meanwhile, the residential and commercial end-use sectors accounted for 16 percent and 17 percent of CO_2 emissions, respectively (U.S. EPA 2017).

Based on the ARB California Greenhouse Gas Inventory for 2000-2015, California produced 440.4 MMT of CO_2e in 2015 (ARB 2017c). The major source of GHG in California is transportation, contributing 39 percent of the State's total GHG emissions. Industrial sources are the second largest source of the State's GHG emissions, contributing 23 percent of the state's GHG emissions (ARB 2017c). California emissions are due in part to its large size and large population compared to other states. However, the state's mild climate reduces California's per capita fuel use and GHG emissions as compared to other states. The ARB has projected statewide unregulated GHG emissions for the year 2020 will be 509 MMT CO_2e (ARB 2017c). These projections represent the emissions that would be expected to occur in the absence of any GHG reduction actions.

3.1.3 Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air, land, and water temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Long-term trends have found that each of the past three decades has been warmer than all the previous decades in the instrumental record, and the decade from 2000 through 2010 has been the warmest. The global combined land and ocean temperature data show an increase of about 0.89°C (0.69°C–1.08°C) over the period 1901–2012 and about 0.72°C (0.49°C–0.89°C) over the period 1951–2012 when described by a linear trend. Several independently analyzed data records of global and regional Land-Surface Air Temperature (LSAT) obtained from station observations are in agreement that LSAT, as well as sea surface temperatures, has increased. In addition to these findings, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past two decades (IPCC 2014).

Potential impacts of climate change in California may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years

(CalEPA 2010). Below is a summary of some of the potential effects that could be experienced in California as a result of climate change.

Air Quality

Higher temperatures, which are conducive to air pollution formation, could worsen air quality in many areas of California. Climate change may increase the concentration of ground-level O_3, but the magnitude of the effect, and therefore its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thereby ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (California Energy Commission 2009).

Water Supply

Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future water supplies in California. However, the average early spring snowpack in the Sierra Nevada decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage. During the same period, sea level rose eight inches along California's coast. California's temperature has risen 1°F, mostly at night and during the winter, with higher elevations experiencing the highest increase. Many Southern California cities have experienced their lowest recorded annual precipitation twice within the past decade. In a span of only two years, Los Angeles experienced both its driest and wettest years on record (California Department of Water Resources [DWR] 2008; California Climate Change Center [CCCC] 2009).

This uncertainty complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The Sierra snowpack provides the majority of California's water supply by accumulating snow during the state's wet winters and releasing it slowly during the state's dry springs and summers. Based upon historical data and modeling DWR projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050, and 40 to 65 percent by 2100. Climate change is also anticipated to bring warmer storms that result in less snowfall at lower elevations, reducing the total snowpack (DWR 2008, 2013).

Hydrology and Sea Level Rise

As discussed above, climate change could potentially affect: the amount of snowfall, rainfall, and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. According to The Impacts of Sea-Level Rise on the California Coast, prepared by the CCCC, climate change has the potential to induce substantial sea level rise in the coming century (CCCC 2009). The rising sea level increases the likelihood and risk of flooding. The rate of increase of global mean sea levels over the 2001-2010 decade, as observed by satellites, ocean buoys and land gauges, was approximately 3.2 mm per year, which is double the observed 20th century trend of 1.6 mm per year (World Meteorological Organization [WMO] 2013).

As a result, sea levels averaged over the last decade were about 8 inches higher than those of 1880 (WMO, 2013). Sea levels are rising faster now than in the previous two millennia, and the rise is expected to accelerate, even with robust GHG emission control measures. The most recent IPCC report (2013) predicts a mean sea–level rise of 11-38 inches by 2100. This prediction is more than 50 percent higher than earlier projections of 7-23 inches, when comparing the same emissions scenarios and time periods. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply due to salt water intrusion. In addition, increased CO_2 emissions can cause oceans to acidify due to the carbonic acid it forms. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture

California has a $30 billion annual agricultural industry that produces half of the country's fruits and vegetables. Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater air pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (CCCC 2006).

Ecosystems and Wildlife

Climate change and the potential resulting changes in weather patterns could have ecological effects on the local and global levels. Increasing concentrations of GHGs are likely to accelerate the rate and severity of climate change impacts. Scientists project that the average global surface temperature could rise by 1.0-4.5°F (0.6-2.5°C) in the next 50 years, and 2.2-10°F (1.4-5.8°C) during the next century, with substantial regional variation. Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes, such as carbon cycling and storage (Parmesan 2006).

3.1.4 Regulatory Setting

The following regulations address both climate change and GHG emissions.

California Regulations

ARB is responsible for the coordination and oversight of State and local air pollution control programs in California. California has a numerous regulations aimed at reducing the state's GHG emissions. These initiatives are summarized below.

California Advanced Clean Cars Program

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars program (referred to as "Pavley"), requires ARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, U.S. EPA granted the waiver of Clean Air Act preemption to California for its greenhouse gas emission standards for motor vehicles beginning with the 2009 model year. Pavley I regulates model years from 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" regulates model years from 2017 to 2025. The Advanced Clean Cars program coordinates the goals of the Low Emissions Vehicles

(LEV), Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs, and would provide major reductions in GHG emissions. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels (ARB 2011).

Assembly Bill 32

California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the "California Global Warming Solutions Act of 2006," signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020, and requires ARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires ARB to adopt regulations to require reporting and verification of statewide GHG emissions. Based on this guidance, ARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT CO_2e. The Scoping Plan was approved by ARB on December 11, 2008, and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted since approval of the Scoping Plan.

In May 2014, ARB approved the first update to the AB 32 Scoping Plan. The 2013 Scoping Plan update defines ARB's climate change priorities for the next five years and sets the groundwork to reach post-2020 statewide goals. The update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluates how to align the State's longer-term GHG reduction strategies with other State policy priorities, such as for water, waste, natural resources, clean energy and transportation, and land use (ARB 2014).

Senate Bill 97

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in California Environmental Quality Act (CEQA) documents. In March 2010, the California Resources Agency (Resources Agency) adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG and climate change impacts.

Senate Bill 375

Senate Bill (SB) 375, signed in August 2008, enhances the State's ability to reach AB 32 goals by directing ARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles for 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations (MPO) to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). On September 23, 2010, ARB adopted final regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035.

Senate Bill 32

On September 8, 2016, the governor signed Senate Bill 32 (SB 32) into law, extending AB 32 by requiring the State to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other

provisions of AB 32 remain unchanged). The ARB recently adopted a Statewide Scoping Plan that provides a framework for achieving the 2030 greenhouse gas reduction target (ARB 2017d).

For more information on the Senate and Assembly Bills, Executive Orders, and reports discussed above, and to view reports and research referenced above, please refer to the following websites: www.climatechange.ca.gov www.climatechange.ca.gov and www.arb.ca.gov/cc/cc.htm.

California Environmental Quality Act

Pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the *State CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted *CEQA Guidelines* provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. To date, a variety of air districts have adopted quantitative significance thresholds for GHGs.

Regional Regulations

As discussed above, SB 375 requires MPOs to prepare an RTP/SCS that will achieve regional emission reductions through sustainable transportation and growth strategies. On September 23, 2010, the ARB adopted final regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. SCAG was assigned targets of an 8 percent reduction in GHGs from transportation sources by 2020 and a 13 percent reduction in GHGs from transportation sources by 2035. Most recently, SCAG adopted the 2016-2040 RTP/SCS on April 7, 2016. It includes a number of strategies and objectives to encourage transit-oriented and infill development and use of alternative transportation to minimize vehicle use.

Local Regulations

The Riverside City Council approved the Sustainable Riverside Policy Statement (SRPS) in 2005 and is committed to becoming a greener, more sustainable community. The SRPS emphasizes the implementation of cleaner, greener, and more sustainable programs. Riverside's 38 point Green Action Plan focuses on energy, greenhouse gas emissions, waste reduction, urban design, urban nature, transportation, and water.

The City of Riverside's 2025 General Plan includes policies that ensures that GHG emissions will be reduced in future City of Riverside development and operations. The relevant policies are listed below:

- Policy AQ-8.2: Support appropriate initiatives, legislation, and actions for reducing and responding to climate change.
- Policy AQ-8.3: Encourage community involvement and public-private partnerships to reduce and respond to global warming.
- Policy AQ-2.4: Monitor and strive to achieve performance goals and/or VMT reduction, which are consistent with SCAG's goals.

Additionally, the Western Riverside Council of Governments (WRCOG) completed a subregional climate action plan (CAP) that encompasses twelve cities in the subregion, including Riverside. The CAP sets forth a subregional emissions reduction target, emissions reduction measures, and action steps to reduce GHG emissions and demonstrate consistency with California's Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32). The CAP contains GHG reduction measures organized

into four primary sectors, as follows: energy, transportation and land use, solid waste, and water. If fully implemented, the CAP would exceed WRCOG's 2020 GHG emission reduction goal by 2.1 percent, achieving an overall 17.1 percent reduction in GHG emissions by 2020.

In January 2016, Riverside adopted the *Riverside Restorative Growthprint* (RRG), which combines two plans: the *Economic Prosperity Action Plan* (RRG-EPAP) and the *Climate Action Plan* (RRG-CAP). The RRG-CAP expands upon the subregional CAP and provides a path for the City to achieve reductions in GHG emissions through 2035, while the RRG-EPAP provides a framework for smart growth and low-carbon economic development. The City's baseline GHG emissions inventory (2007) is a benchmark for tracking the City's progress in achieving future reductions. The community-wide inventory identifies the quantity of GHG emissions produced by residents, businesses, and municipal government operations. The inventory reflects the emissions generated within the City that result from the operation of motor vehicles, use of electricity and natural gas, and disposal of solid waste. In 2007, the City's total community-wide emissions were estimated at 3,024,066 MT of CO_2e; while emissions resulting from municipal operations were responsible for approximately 122,525 MT of CO_2e. In 2010, the City conducted a second inventory that indicated the City's emissions had decreased by approximately 13.4 percent over the three year time period. That reduction is largely attributed to the City's actions to reduce the carbon intensity of its electricity portfolio, as supplied by municipally-owned Riverside Public Utilities (RPU). In addition, the City's energy efficiency and renewable energy incentive programs have helped reduce energy use by residential, commercial, and industrial customers; while solid waste diversion efforts have helped decrease emissions that result from landfill disposal.

Through the WRCOG subregional CAP process, the City has committed to a 2020 emissions target of 2,224,908 MT of CO_2e, which is 26.4 percent below the City's 2007 baseline and 15 percent below 2010 emissions. This represents a reduction of 779,304 MT CO_2e from the City's 2020 business-as-usual (BAU) forecast. The City is aiming for a 2035 emissions target of 1,542,274 MT of CO_2e, which is 49 percent below the 2007 baseline and represents a reduction of 2,120,931 MT of CO_2e from the 2035 BAU forecast. Through state and regional measures implemented at the subregional level, the City of Riverside anticipates significant reductions from the City's 2020 and 2035 BAU emissions forecasts (949,572 MT of CO_2e and 1,398,918 MT of CO_2e, respectively).

3.2 Impact Analysis

3.2.1 Significance Thresholds

Pursuant to Appendix G of the *State CEQA Guidelines*, impacts related to GHG emissions from the project would be significant if the project would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; and/or
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The majority of individual projects do not generate sufficient GHG emissions to directly influence climate change. However, physical changes caused by a project can contribute incrementally to cumulative effects that are significant, even if individual changes resulting from a project are limited. The issue of climate change typically involves an analysis of whether a project's contribution towards an impact would be cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the

effects of past projects, other current projects, and probable future projects (CEQA Guidelines, Section 15064[h][1]).

According to *CEQA Guidelines*, projects can tier off of a qualified GHG reduction plan, which allows for project-level evaluation of GHG emissions through the comparison of the project's consistency with the GHG reduction policies included in a qualified GHG reduction plan. This approach is considered by the Association of Environmental Professionals (AEP) in their white paper, *Beyond Newhall and 2020,* to be the most defensible approach presently available under CEQA to determine the significance of a project's GHG emissions (2016). Through the WRCOG subregional CAP process, the City of Riverside has committed to a 2020 emissions target which is 26.4 percent below the City's 2007 baseline and 15 percent below 2010 emissions, and a 2035 emissions target which is 49 percent below the 2007 baseline. However, project-specific GHG significance thresholds are not established under the WRCOG CAP and, thus, tiering off the plan is not currently feasible.

To evaluate whether a project may generate a quantity of GHG emissions that may have a significant impact on the environment, a number of operational bright-line significance thresholds have been developed by state agencies. Significance thresholds are numeric mass emissions thresholds which identify the level at which additional analysis of project GHG emissions is necessary. Projects that attain the significance target, with or without mitigation, would result in less than significant GHG emissions. Many significance thresholds have been developed to reflect a 90 percent capture rate tied to the 2020 reduction target established in AB 32. These targets have been identified by numerous lead agencies (including the WRCOG and the City of Riverside) as appropriate significance screening tools for projects with horizon years before 2020.[4]

Additionally, the AEP white paper, *Beyond Newhall and 2020*, recommends that for projects with a horizon of 2020 or earlier, a threshold based on meeting AB 32 targets should be used (AEP 2016). Thus, projects with horizon years of 2020 or earlier, and emissions below the SCAQMD threshold are not expected to require GHG mitigation for state mandates to be achieved. The project would be fully operational in 2020; therefore, its horizon year is 2020. Although not formally adopted, the SCAQMD has a recommended quantitative threshold of 10,000 MT of CO_2e per year for stationary/industrial project types (SCAQMD 2010). Although not yet adopted, the SCAQMD has recommended a quantitative threshold for projects of all land use types of 3,000 MT CO_2e /year. Note that no air district has the power to establish definitive thresholds that will completely relieve a lead agency of the obligation to determine significance on a case-by-case basis for a specific project. Therefore, the more conservative threshold of 3,000 MT of CO_2e per year is applied in the analysis of the proposed project.

Construction Emissions

The Association of Environmental Professionals (AEP) Climate Change Committee white paper stated that construction emissions can be evaluated in one of two methods (2007).

1. **Using best management practices (BMPs)**. Construction-related emissions would be less than significant if a project implements all feasible BMPs, including alternatively fueled vehicles, reduction of worker trips, and sourcing construction materials from local sources when possible (without substantial cost implications).
2. **Amortizing construction emissions over the operational lifetime**. Construction-related emissions are quantified and amortized over the lifetime of a project. The amortized construction emissions are added to the operational emissions to calculate the total annualized

[4] The horizon year should be defined by the year in which the project is fully operational.

emissions. If the annualized emissions are below quantitative thresholds, GHG emissions would be less than significant.

Option two is used as the threshold in analyzing this project, based on a 30-year amortization of construction emissions from CalEEMod results (Appendix A).

Operational Emissions

As stated above in Section 3.2.1, the AEP white paper, *Beyond Newhall and 2020*, recommends that for projects with a horizon of 2020 or earlier, a threshold based on meeting AB 32 targets should be used (AEP 2016). The SCAQMD has a recommended quantitative threshold of 10,000 MT of CO_2e per year for stationary/industrial project types (SCAQMD 2010). Although not yet adopted, the SCAQMD has recommended a quantitative threshold for projects of all land use types of 3,000 MT CO_2e /year. Note that no air district has the power to establish definitive thresholds that will completely relieve a lead agency of the obligation to determine significance on a case-by-case basis for a specific project. Therefore, the more conservative threshold of 3,000 MT of CO_2e per year is applied in the analysis of operational emissions generated by the proposed project.

3.2.2 Methodology

Calculations of CO_2, CH_4, and N_2O emissions are provided to identify the magnitude and nature of the project's potential GHG emissions and environmental effects. The analysis focuses on CO_2, CH_4, and N_2O because these make up 98.9 percent of all GHG emissions by volume (IPCC 2007) and are the GHG emissions that the project would emit in the largest quantities. Fluorinated gases, such as HFCs, PFCs, and SF_6, were also considered for the analysis. However, because the project is a gas station with convenience store, fast food with drive-thru, and carwash, the quantity of fluorinated gases would not be significant since fluorinated gases are primarily associated with industrial processes. Emissions of all GHGs are converted into their equivalent GWP in MT of CO_2e. Small amounts of other GHGs (such as chlorofluorocarbons [CFCs]) would also be emitted; however, these other GHG emissions would not substantially add to the total GHG emissions. Calculations are based on the methodologies discussed in the California Air Pollution Control Officers Association (CAPCOA) *CEQA and Climate Change* white paper (CAPCOA 2008) and included the use of the California Climate Action Registry (CCAR) General Reporting Protocol (CCAR 2009).

GHG emissions associated with the proposed project were calculated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2 (see Appendix A for calculations).

Construction Emissions

Although construction activity is addressed in this analysis, CAPCOA does not discuss whether any of the suggested threshold approaches adequately address impacts from temporary construction activity. As stated in the *CEQA and Climate Change* white paper, "more study is needed to make this assessment or to develop separate thresholds for construction activity" (CAPCOA 2008). Nevertheless, air districts such as the SCAQMD (2011) have recommended amortizing construction-related emissions over a 30-year period in conjunction with the proposed project's operational emissions.

Construction of the project would generate temporary GHG emissions primarily as a result of operation of construction equipment onsite, as well as from vehicles transporting construction workers to and from the project site and heavy trucks to import earth materials onsite. Site preparation and grading typically generate the greatest amount of emissions due to the use of grading equipment and soil hauling.

The project applicant provided the construction schedule, which states construction would commence in June 2019 and would be completed by December 2019 (approximately seven months total). Proposed construction phases and associated durations include the following:

- Site Preparation (two weeks)
- Grading (four weeks)
- Building Construction (20 weeks)
- Architectural Coating (six weeks)
- Paving (seven weeks)

As mentioned under *Methodology*, Emissions associated with the construction period were estimated using the CalEEMod v.2016.3.2 based on the projected maximum amount of equipment that would be used onsite at any given time during construction activities. Complete results from CalEEMod and assumptions can be viewed in Appendix A.

Operational Emissions

CalEEMod calculates operational emissions from the project, which include CO_2, N_2O, and CH_4. Energy-related emissions include emissions from electricity and natural gas use. The emissions factors for natural gas combustion are based on EPA's AP-42 (Compilation of Air Pollutant Emissions Factors) and CCAR. Electricity emissions are calculated by multiplying the energy use times the carbon intensity of the utility district per kilowatt hour (BREEZE Software 2016). The default electricity consumption values in CalEEMod include the CEC-sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies.

Emissions associated with area sources, including consumer products, landscape maintenance, and architectural coating were calculated in CalEEMod and utilize standard emission rates from ARB, U.S. EPA, and district supplied emission factor values (BREEZE Software 2016). Emissions from fuel storage and dispensing were not calculated in CalEEMod and assumed to be negligible based on the incorporation of the Healy clean air separator to hold excess gasoline vapors from the underground storage tanks.

Emissions from waste generation were also calculated in CalEEMod and are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste (BREEZE Software 2016). Waste disposal rates by land use and overall composition of municipal solid waste in California was primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle).

Emissions from water and wastewater use calculated in CalEEMod were based on the default electricity intensity from the California Energy Commission's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Southern California.

For mobile sources, CO_2 and CH_4 emissions from vehicle trips to and from the project site were quantified using CalEEMod. Because CalEEMod does not calculate N_2O emissions from mobile sources, N_2O emissions were quantified using the CCAR General Reporting Protocol (CCAR 2009) direct emissions factors for mobile combustion (see Appendix A for calculations). Trip rates in CalEEMod were adjusted based on trip generation numbers from the traffic study completed for the proposed project (Darnell & Associates, Inc. 2017). These trip rates were used to derive total annual project mileage in CalEEMod. Emission rates for N_2O emissions were based on vehicle mix output generated by CalEEMod and the emission factors found in the CCAR General Reporting Protocol.

3.2.3 Project Impacts

The following summarizes project emissions and compares calculated emissions to the SCAQMD's recommended GHG emissions threshold of 3,000 MT CO_2e/year.

Construction Emissions

Per information from the project applicant, it is assumed that construction activity would occur over a period of approximately seven months. As shown in Table 6, construction activity for the project would generate an estimated 245 MT CO_2e. When amortized over a 30-year period, construction of the project would generate about 8.2 MT CO_2e per year.

Table 6 Estimated Construction Emissions of Greenhouse Gases

	Annual Emissions MT CO_2e
Total	245
Amortized over 30 years	**8.2**
See Appendix A for CalEEMod results	

Combined Construction, Operational, and Mobile Source Emissions

Table 7 combines the construction, operational, and mobile GHG emissions associated with development of the project. The annual emissions would total approximately 1,694 MT of CO_2e. These emissions do not exceed SCAQMD's significance threshold of 3,000 MT per year for 2020 horizon year projects. Since GHG emissions would not exceed the SCAQMD's threshold, the project would not generate a substantial increase in GHG emissions and would be consistent with AB 32 and SB 32.

Table 7 Combined Annual Emissions MT CO_2e/year

Emission Source	Project Emissions (MT CO_2e)
Construction	8.2
Operational	
Area	<0.1
Energy	223
Solid Waste	34
Water	19
Mobile	
CO_2 and CH_4	1,356
N_2O	54
Total	**1,694**
Threshold	*3,000*
Exceeds Threshold?	No

Source: Calculations were made in CalEEMod, see Appendix A for full model output. Values have been rounded.

Consistency with GHG Reduction Plans and Policies

As discussed under *Local Regulations*, Riverside adopted the *Riverside Restorative Growthprint* (RRG), which combines two plans: the *Economic Prosperity Action Plan* (RRG-EPAP) and the *Climate Action Plan* (RRG-CAP). The RRG-CAP expands upon the subregional CAP and provides a path for the City to achieve reductions in GHG emissions through 2035, while the RRG-EPAP provides a framework for smart growth and low-carbon economic development. The CAP outlines a programmatic approach to review the potential GHG-related impacts associated with new development. Additionally, the City of Riverside's General Plan includes policies to achieve GHG emission reduction, which are summarized under Local Regulations above. The project would be consistent with the General Plan policies; Cal Green Building Standards, which includes measures to reduce emissions; and the RRG-CAP. Table 8 illustrates the project's consistency with relevant goals and strategies embodied in the RRG-CAP.

Table 8 Consistency with Applicable RRG-CAP GHG Emission Reduction Policies

Goal/Measure	Project Consistency
Energy Measures	
E-1: Traffic and Street Lights Replace traffic and street lights with high-efficiency bulbs.	**Not Applicable.** This objective is aimed at government agencies, not private developers, based on the City's strategy to contract with local installers or partner with UC Riverside or local green technology firms to achieve this measure. Nonetheless, the project would comply with applicable Title 24 energy efficiency requirements for project-related energy uses and light fixtures.
Transportation Measures	
T-1: Bicycle Infrastructure Improvements Expand on-street and off-street bicycle infrastructure, including bicycle lanes and bicycle trails.	**Consistent.** Central Avenue, which forms the southern boundary of the project site, contains a Class 2 bike lane. Bike lanes on both sides of Central Avenue are consistent with the bicycle routes shown on the Circulation/Transportation element of the City's General Plan and connect with city wide routes. The project does not include the creation of barriers to existing or additional bike lanes that may be developed in the future.

Goal/Measure	Project Consistency
T-2: Bicycle Parking Provide additional options for bicycle parking.	**Consistent.** The project would comply with Riverside Municipal Code Chapter 10.64 regarding bicycle accommodations.
T-9: Limit Parking Requirements for New Development Reduce requirements for vehicle parking in new development projects.	**Not Applicable.** This objective is aimed at government agencies, not private developers, based on the City's strategy to review parking requirements and incorporate parking reduction techniques during future specific plan and Zoning Code updates. The project would provide 52 parking spaces on site and two additional self-vacuum parking spaces for the carwash operation. The project would comply with applicable City parking requirements, per Chapter 19.580.060 of the Riverside Municipal Code.
T-11: Voluntary Transportation Demand Management Encourage employers to create TDM programs for their employees	**Not Applicable.** Pursuant to Chapter 19.88 of the Riverside Municipal Code, businesses generating one hundred or more employees shall prepare and submit a trip reduction plan to reduce work-related vehicle trips by 6.5 percent from the number of trips related to the project as indicated in the most current edition of the Trip Generation Handbook published by the Institute of Traffic Engineers (ITE). The proposed project would generate approximately 37 total new jobs, and would not be required to create a TDM.
T-19: Alternative Fuel & Vehicle Technology and Infrastructure Promote the use of alternative fueled vehicles such as those powered by electric, natural gas, biodiesel, and fuel cells by Riverside residents and workers.	**Not Applicable.** This objective is aimed at government agencies, not private developers, based on the City's implementation strategy to provide alternative fueling stations in conjunction with other City facilities. The project would go above and beyond current City-wide requirements, if electric vehicle charging stations or alternative fuels were provided.
Water Measure	
W-1: Water Conservation and Efficiency Reduce per capita water use by 20 percent by 2020.	**Consistent.** The proposed structures would be required to be consistent with CalGreen standards. As such, the project would be equipped with low-flow plumbing fixtures that reduce water use, per Title 24.
Solid Waste Measures	
SW-1: Yard Waste Collection Provide green waste collection bins community-wide.	**Consistent.** This objective is aimed at government agencies, not private developers, based on the City's continued provision of green waste collection bins for residential yard waste. Nonetheless, the project would comply with applicable solid waste requirements and ensure that waste from landscape maintenance activities are properly collected and disposed of by the landscape contractor.
SW-2: Food Scrap and Compostable Paper Diversion Divert food and paper waste from landfills by implementing commercial and residential collection program.	**Consistent.** The project would be required to participate in applicable waste diversion programs, and this measure would specifically apply to the fast food restaurant and convenience store operation.

Source: City of Riverside 2016

3.3 Conclusion

The project would increase overall GHG emissions, but the increase would not exceed the recommended SCAQMD threshold, as shown in Table 7. In addition, as shown in Table 8, the project would not conflict with the GHG reduction strategies included in the RRG-CAP. The project would be consistent with applicable land use and zoning designations, would not conflict with any State regulations intended to reduce GHG emissions statewide, would be consistent with applicable plans and programs designed to reduce GHG emissions. Therefore, mitigation is not required.

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AQ/GHG Appendix A

CalEEMod Air Quality and Greenhouse Gas Model Worksheets and N_2O Calculations

Sycamore Canyon Project

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	52.00	Space	1.95	20,800.00	0
Fast Food Restaurant with Drive Thru	3.80	1000sqft	0.09	3,800.00	0
Automobile Care Center	1.52	1000sqft	0.03	1,518.00	0
Convenience Market (24 Hour)	3.20	1000sqft	0.07	3,200.00	0
Gasoline/Service Station	16.00	Pump	0.05	2,258.80	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2020
Utility Company	Riverside Public Utilities				
CO2 Intensity (lb/MWhr)	1325.65	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Per project site plan

Construction Phase - Per client info

Grading - Per site plans

Architectural Coating - Low VOC paint rul 1113

Vehicle Trips - Per project traffic study; 3248 daily trips all together

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	3.00	10.00
tblConstructionPhase	NumDays	6.00	20.00
tblConstructionPhase	NumDays	220.00	100.00
tblConstructionPhase	NumDays	10.00	30.00
tblConstructionPhase	NumDays	10.00	35.00
tblConstructionPhase	PhaseEndDate	6/5/2019	6/14/2019
tblConstructionPhase	PhaseEndDate	6/13/2019	7/12/2019
tblConstructionPhase	PhaseEndDate	4/16/2020	11/29/2019
tblConstructionPhase	PhaseEndDate	4/30/2020	12/20/2019
tblConstructionPhase	PhaseEndDate	5/14/2020	12/27/2019
tblConstructionPhase	PhaseStartDate	6/6/2019	6/17/2019
tblConstructionPhase	PhaseStartDate	6/14/2019	7/15/2019
tblConstructionPhase	PhaseStartDate	4/17/2020	11/11/2019
tblConstructionPhase	PhaseStartDate	5/1/2020	11/11/2019
tblGrading	AcresOfGrading	10.00	3.00

tblGrading	AcresOfGrading	15.00	4.50
tblLandUse	LandUseSquareFeet	1,520.00	1,518.00
tblLandUse	LotAcreage	0.47	1.95
tblTripsAndVMT	HaulingTripNumber	0.00	1,686.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	863.10	0.00
tblVehicleTrips	ST_TR	722.03	372.11
tblVehicleTrips	ST_TR	168.56	114.63
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	758.45	0.00
tblVehicleTrips	SU_TR	542.72	372.11
tblVehicleTrips	SU_TR	168.56	114.63
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	737.99	0.00
tblVehicleTrips	WD_TR	496.12	372.11
tblVehicleTrips	WD_TR	168.56	114.63

2.0 Emissions Summary

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					
2019	0.2492	1.7940	1.2377	2.7400e-003	0.0920	0.0839	0.1759	0.0411	0.0796	0.1206	0.0000	244.2927	244.2927	0.0444	0.0000	245.4035
Maximum	**0.2492**	**1.7940**	**1.2377**	**2.7400e-003**	**0.0920**	**0.0839**	**0.1759**	**0.0411**	**0.0796**	**0.1206**	**0.0000**	**244.2927**	**244.2927**	**0.0444**	**0.0000**	**245.4035**

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					
2019	0.2492	1.7940	1.2377	2.7400e-003	0.0528	0.0839	0.1368	0.0206	0.0796	0.1002	0.0000	244.2926	244.2926	0.0444	0.0000	245.4033
Maximum	**0.2492**	**1.7940**	**1.2377**	**2.7400e-003**	**0.0528**	**0.0839**	**0.1368**	**0.0206**	**0.0796**	**0.1002**	**0.0000**	**244.2926**	**244.2926**	**0.0444**	**0.0000**	**245.4033**

	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**	**42.58**	**0.00**	**22.26**	**49.79**	**0.00**	**16.96**	**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	6-3-2019	9-2-2019	0.9666	0.9666
2	9-3-2019	9-30-2019	0.2217	0.2217
		Highest	0.9666	0.9666

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	0.0457	1.0000e-005	9.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.9000e-003	1.9000e-003	1.0000e-005	0.0000	2.0300e-003
Energy	6.3000e-003	0.0573	0.0481	3.4000e-004		4.3500e-003	4.3500e-003		4.3500e-003	4.3500e-003	0.0000	222.5965	222.5965	4.7000e-003	1.8700e-003	223.2709
Mobile	0.7306	3.1226	5.7757	0.0146	1.0157	0.0158	1.0315	0.2722	0.0148	0.2870	0.0000	1,353.4964	1,353.4964	0.0925	0.0000	1,355.8092
Waste						0.0000	0.0000		0.0000	0.0000	13.7669	0.0000	13.7669	0.8136	0.0000	34.1068
Water						0.0000	0.0000		0.0000	0.0000	0.5539	16.5883	17.1422	0.0573	1.4200e-003	18.9963
Total	**0.7825**	**3.1799**	**5.8248**	**0.0150**	**1.0157**	**0.0201**	**1.0359**	**0.2722**	**0.0191**	**0.2913**	**14.3208**	**1,592.6830**	**1,607.0038**	**0.9681**	**3.2900e-003**	**1,632.1851**

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	0.0457	1.0000e-005	9.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.9000e-003	1.9000e-003	1.0000e-005	0.0000	2.0300e-003
Energy	6.3000e-003	0.0573	0.0481	3.4000e-004		4.3500e-003	4.3500e-003		4.3500e-003	4.3500e-003	0.0000	222.5965	222.5965	4.7000e-003	1.8700e-003	223.2709
Mobile	0.7306	3.1226	5.7757	0.0146	1.0157	0.0158	1.0315	0.2722	0.0148	0.2870	0.0000	1,353.4964	1,353.4964	0.0925	0.0000	1,355.8092
Waste						0.0000	0.0000		0.0000	0.0000	13.7669	0.0000	13.7669	0.8136	0.0000	34.1068
Water						0.0000	0.0000		0.0000	0.0000	0.4855	14.8986	15.3841	0.0502	1.2400e-003	17.0097
Total	**0.7825**	**3.1799**	**5.8248**	**0.0150**	**1.0157**	**0.0201**	**1.0359**	**0.2722**	**0.0191**	**0.2913**	**14.2523**	**1,590.9934**	**1,605.2457**	**0.9610**	**3.1100e-003**	**1,630.1985**

	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**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.48**	**0.11**	**0.11**	**0.73**	**5.47**	**0.12**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/3/2019	6/14/2019	5	10	
2	Grading	Grading	6/17/2019	7/12/2019	5	20	
3	Building Construction	Building Construction	7/15/2019	11/29/2019	5	100	
4	Paving	Paving	11/11/2019	12/20/2019	5	30	
5	Architectural Coating	Architectural Coating	11/11/2019	12/27/2019	5	35	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 3

Acres of Paving: 1.95

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 16,165; Non-Residential Outdoor: 5,388; Striped Parking Area: 1,248 (Architectural Coating – sqft)

OffRoad Equipment

Sycamore Canyon Project - South Coast Air Basin, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	1	8.00	132	0.36
Site Preparation	Scrapers	1	8.00	367	0.48
Building Construction	Welders	3	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
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	1,686.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	13.00	5.00	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
Architectural Coating	1	3.00	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 Site Preparation - 2019

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					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.7800e-003	0.1077	0.0596	1.2000e-004		4.2700e-003	4.2700e-003		3.9300e-003	3.9300e-003	0.0000	11.0066	11.0066	3.4800e-003	0.0000	11.0937
Total	**8.7800e-003**	**0.1077**	**0.0596**	**1.2000e-004**	**2.3900e-003**	**4.2700e-003**	**6.6600e-003**	**2.6000e-004**	**3.9300e-003**	**4.1900e-003**	**0.0000**	**11.0066**	**11.0066**	**3.4800e-003**	**0.0000**	**11.0937**

3.2 Site Preparation - 2019

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	1.9000e-004	1.5000e-004	1.6700e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.4081	0.4081	1.0000e-005	0.0000	0.4084
Total	**1.9000e-004**	**1.5000e-004**	**1.6700e-003**	**0.0000**	**4.4000e-004**	**0.0000**	**4.4000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.4081**	**0.4081**	**1.0000e-005**	**0.0000**	**0.4084**

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					9.3000e-004	0.0000	9.3000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.7800e-003	0.1077	0.0596	1.2000e-004		4.2700e-003	4.2700e-003		3.9300e-003	3.9300e-003	0.0000	11.0066	11.0066	3.4800e-003	0.0000	11.0937
Total	**8.7800e-003**	**0.1077**	**0.0596**	**1.2000e-004**	**9.3000e-004**	**4.2700e-003**	**5.2000e-003**	**1.0000e-004**	**3.9300e-003**	**4.0300e-003**	**0.0000**	**11.0066**	**11.0066**	**3.4800e-003**	**0.0000**	**11.0937**

3.2 Site Preparation - 2019

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	1.9000e-004	1.5000e-004	1.6700e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.4081	0.4081	1.0000e-005	0.0000	0.4084
Total	**1.9000e-004**	**1.5000e-004**	**1.6700e-003**	**0.0000**	**4.4000e-004**	**0.0000**	**4.4000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.4081**	**0.4081**	**1.0000e-005**	**0.0000**	**0.4084**

3.3 Grading - 2019

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					0.0618	0.0000	0.0618	0.0333	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0203	0.2274	0.1015	2.1000e-004		0.0107	0.0107		9.8700e-003	9.8700e-003	0.0000	18.5179	18.5179	5.8600e-003	0.0000	18.6644
Total	**0.0203**	**0.2274**	**0.1015**	**2.1000e-004**	**0.0618**	**0.0107**	**0.0725**	**0.0333**	**9.8700e-003**	**0.0431**	**0.0000**	**18.5179**	**18.5179**	**5.8600e-003**	**0.0000**	**18.6644**

3.3 Grading - 2019

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	7.3400e-003	0.2593	0.0518	6.6000e-004	0.0145	9.5000e-004	0.0154	3.9800e-003	9.0000e-004	4.8800e-003	0.0000	64.6136	64.6136	4.7500e-003	0.0000	64.7324
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	4.8000e-004	3.8000e-004	4.1800e-003	1.0000e-005	1.1000e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	1.0203	1.0203	3.0000e-005	0.0000	1.0211
Total	**7.8200e-003**	**0.2597**	**0.0560**	**6.7000e-004**	**0.0156**	**9.6000e-004**	**0.0165**	**4.2700e-003**	**9.1000e-004**	**5.1800e-003**	**0.0000**	**65.6339**	**65.6339**	**4.7800e-003**	**0.0000**	**65.7534**

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					0.0241	0.0000	0.0241	0.0130	0.0000	0.0130	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0203	0.2274	0.1015	2.1000e-004		0.0107	0.0107		9.8700e-003	9.8700e-003	0.0000	18.5179	18.5179	5.8600e-003	0.0000	18.6644
Total	**0.0203**	**0.2274**	**0.1015**	**2.1000e-004**	**0.0241**	**0.0107**	**0.0348**	**0.0130**	**9.8700e-003**	**0.0229**	**0.0000**	**18.5179**	**18.5179**	**5.8600e-003**	**0.0000**	**18.6644**

3.3 Grading - 2019

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	7.3400e-003	0.2593	0.0518	6.6000e-004	0.0145	9.5000e-004	0.0154	3.9800e-003	9.0000e-004	4.8800e-003	0.0000	64.6136	64.6136	4.7500e-003	0.0000	64.7324
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	4.8000e-004	3.8000e-004	4.1800e-003	1.0000e-005	1.1000e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	1.0203	1.0203	3.0000e-005	0.0000	1.0211
Total	**7.8200e-003**	**0.2597**	**0.0560**	**6.7000e-004**	**0.0156**	**9.6000e-004**	**0.0165**	**4.2700e-003**	**9.1000e-004**	**5.1800e-003**	**0.0000**	**65.6339**	**65.6339**	**4.7800e-003**	**0.0000**	**65.7534**

3.4 Building Construction - 2019

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	0.1279	0.9455	0.7627	1.2500e-003		0.0545	0.0545		0.0523	0.0523	0.0000	104.8772	104.8772	0.0218	0.0000	105.4226
Total	**0.1279**	**0.9455**	**0.7627**	**1.2500e-003**		**0.0545**	**0.0545**		**0.0523**	**0.0523**	**0.0000**	**104.8772**	**104.8772**	**0.0218**	**0.0000**	**105.4226**

3.4 Building Construction - 2019

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	9.9000e-004	0.0293	7.4600e-003	6.0000e-005	1.5800e-003	1.9000e-004	1.7700e-003	4.5000e-004	1.8000e-004	6.4000e-004	0.0000	6.1556	6.1556	4.3000e-004	0.0000	6.1664
Worker	3.1300e-003	2.5000e-003	0.0271	7.0000e-005	7.1300e-003	6.0000e-005	7.1900e-003	1.8900e-003	5.0000e-005	1.9500e-003	0.0000	6.6316	6.6316	2.1000e-004	0.0000	6.6368
Total	**4.1200e-003**	**0.0318**	**0.0346**	**1.3000e-004**	**8.7100e-003**	**2.5000e-004**	**8.9600e-003**	**2.3400e-003**	**2.3000e-004**	**2.5900e-003**	**0.0000**	**12.7872**	**12.7872**	**6.4000e-004**	**0.0000**	**12.8032**

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	0.1279	0.9455	0.7627	1.2500e-003		0.0545	0.0545		0.0523	0.0523	0.0000	104.8770	104.8770	0.0218	0.0000	105.4225
Total	**0.1279**	**0.9455**	**0.7627**	**1.2500e-003**		**0.0545**	**0.0545**		**0.0523**	**0.0523**	**0.0000**	**104.8770**	**104.8770**	**0.0218**	**0.0000**	**105.4225**

3.4 Building Construction - 2019

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	9.9000e-004	0.0293	7.4600e-003	6.0000e-005	1.5800e-003	1.9000e-004	1.7700e-003	4.5000e-004	1.8000e-004	6.4000e-004	0.0000	6.1556	6.1556	4.3000e-004	0.0000	6.1664
Worker	3.1300e-003	2.5000e-003	0.0271	7.0000e-005	7.1300e-003	6.0000e-005	7.1900e-003	1.8900e-003	5.0000e-005	1.9500e-003	0.0000	6.6316	6.6316	2.1000e-004	0.0000	6.6368
Total	**4.1200e-003**	**0.0318**	**0.0346**	**1.3000e-004**	**8.7100e-003**	**2.5000e-004**	**8.9600e-003**	**2.3400e-003**	**2.3000e-004**	**2.5900e-003**	**0.0000**	**12.7872**	**12.7872**	**6.4000e-004**	**0.0000**	**12.8032**

3.5 Paving - 2019

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	0.0187	0.1885	0.1778	2.7000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	23.7625	23.7625	7.3700e-003	0.0000	23.9468
Paving	2.5500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0212**	**0.1885**	**0.1778**	**2.7000e-004**		**0.0110**	**0.0110**		**0.0101**	**0.0101**	**0.0000**	**23.7625**	**23.7625**	**7.3700e-003**	**0.0000**	**23.9468**

3.5 Paving - 2019

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	1.0800e-003	8.6000e-004	9.4000e-003	3.0000e-005	2.4700e-003	2.0000e-005	2.4900e-003	6.6000e-004	2.0000e-005	6.7000e-004	0.0000	2.2956	2.2956	7.0000e-005	0.0000	2.2974
Total	**1.0800e-003**	**8.6000e-004**	**9.4000e-003**	**3.0000e-005**	**2.4700e-003**	**2.0000e-005**	**2.4900e-003**	**6.6000e-004**	**2.0000e-005**	**6.7000e-004**	**0.0000**	**2.2956**	**2.2956**	**7.0000e-005**	**0.0000**	**2.2974**

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	0.0187	0.1885	0.1778	2.7000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	23.7625	23.7625	7.3700e-003	0.0000	23.9468
Paving	2.5500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0212**	**0.1885**	**0.1778**	**2.7000e-004**		**0.0110**	**0.0110**		**0.0101**	**0.0101**	**0.0000**	**23.7625**	**23.7625**	**7.3700e-003**	**0.0000**	**23.9468**

3.5 Paving - 2019

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	1.0800e-003	8.6000e-004	9.4000e-003	3.0000e-005	2.4700e-003	2.0000e-005	2.4900e-003	6.6000e-004	2.0000e-005	6.7000e-004	0.0000	2.2956	2.2956	7.0000e-005	0.0000	2.2974
Total	**1.0800e-003**	**8.6000e-004**	**9.4000e-003**	**3.0000e-005**	**2.4700e-003**	**2.0000e-005**	**2.4900e-003**	**6.6000e-004**	**2.0000e-005**	**6.7000e-004**	**0.0000**	**2.2956**	**2.2956**	**7.0000e-005**	**0.0000**	**2.2974**

3.6 Architectural Coating - 2019

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	0.0528					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6600e-003	0.0321	0.0322	5.0000e-005		2.2500e-003	2.2500e-003		2.2500e-003	2.2500e-003	0.0000	4.4682	4.4682	3.8000e-004	0.0000	4.4776
Total	**0.0575**	**0.0321**	**0.0322**	**5.0000e-005**		**2.2500e-003**	**2.2500e-003**		**2.2500e-003**	**2.2500e-003**	**0.0000**	**4.4682**	**4.4682**	**3.8000e-004**	**0.0000**	**4.4776**

3.6 Architectural Coating - 2019

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	2.5000e-004	2.0000e-004	2.1900e-003	1.0000e-005	5.8000e-004	0.0000	5.8000e-004	1.5000e-004	0.0000	1.6000e-004	0.0000	0.5356	0.5356	2.0000e-005	0.0000	0.5361
Total	**2.5000e-004**	**2.0000e-004**	**2.1900e-003**	**1.0000e-005**	**5.8000e-004**	**0.0000**	**5.8000e-004**	**1.5000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5356**	**0.5356**	**2.0000e-005**	**0.0000**	**0.5361**

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	0.0528					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6600e-003	0.0321	0.0322	5.0000e-005		2.2500e-003	2.2500e-003		2.2500e-003	2.2500e-003	0.0000	4.4682	4.4682	3.8000e-004	0.0000	4.4776
Total	**0.0575**	**0.0321**	**0.0322**	**5.0000e-005**		**2.2500e-003**	**2.2500e-003**		**2.2500e-003**	**2.2500e-003**	**0.0000**	**4.4682**	**4.4682**	**3.8000e-004**	**0.0000**	**4.4776**

3.6 Architectural Coating - 2019

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	2.5000e-004	2.0000e-004	2.1900e-003	1.0000e-005	5.8000e-004	0.0000	5.8000e-004	1.5000e-004	0.0000	1.6000e-004	0.0000	0.5356	0.5356	2.0000e-005	0.0000	0.5361
Total	**2.5000e-004**	**2.0000e-004**	**2.1900e-003**	**1.0000e-005**	**5.8000e-004**	**0.0000**	**5.8000e-004**	**1.5000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5356**	**0.5356**	**2.0000e-005**	**0.0000**	**0.5361**

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	tons/yr										MT/yr					
Mitigated	0.7306	3.1226	5.7757	0.0146	1.0157	0.0158	1.0315	0.2722	0.0148	0.2870	0.0000	1,353.4964	1,353.4964	0.0925	0.0000	1,355.8092
Unmitigated	0.7306	3.1226	5.7757	0.0146	1.0157	0.0158	1.0315	0.2722	0.0148	0.2870	0.0000	1,353.4964	1,353.4964	0.0925	0.0000	1,355.8092

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Convenience Market (24 Hour)	0.00	0.00	0.00		
Fast Food Restaurant with Drive Thru	1,414.02	1,414.02	1414.02	1,488,095	1,488,095
Gasoline/Service Station	1,834.08	1,834.08	1834.08	1,186,263	1,186,263
Parking Lot	0.00	0.00	0.00		
Total	3,248.10	3,248.10	3,248.10	2,674,357	2,674,357

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
Automobile Care Center	16.60	8.40	6.90	33.00	48.00	19.00	21	51	28
Convenience Market (24 Hour)	16.60	8.40	6.90	0.90	80.10	19.00	24	15	61
Fast Food Restaurant with Drive	16.60	8.40	6.90	2.20	78.80	19.00	29	21	50
Gasoline/Service Station	16.60	8.40	6.90	2.00	79.00	19.00	14	27	59
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955
Convenience Market (24 Hour)	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955
Fast Food Restaurant with Drive Thru	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955
Gasoline/Service Station	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955
Parking Lot	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955

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	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	160.2204	160.2204	3.5000e-003	7.3000e-004	160.5241
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	160.2204	160.2204	3.5000e-003	7.3000e-004	160.5241
NaturalGas Mitigated	6.3000e-003	0.0573	0.0481	3.4000e-004		4.3500e-003	4.3500e-003		4.3500e-003	4.3500e-003	0.0000	62.3761	62.3761	1.2000e-003	1.1400e-003	62.7468
NaturalGas Unmitigated	6.3000e-003	0.0573	0.0481	3.4000e-004		4.3500e-003	4.3500e-003		4.3500e-003	4.3500e-003	0.0000	62.3761	62.3761	1.2000e-003	1.1400e-003	62.7468

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					
Automobile Care Center	49319.8	2.7000e-004	2.4200e-003	2.0300e-003	1.0000e-005		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004	0.0000	2.6319	2.6319	5.0000e-005	5.0000e-005	2.6475
Convenience Market (24 Hour)	7104	4.0000e-005	3.5000e-004	2.9000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.3791	0.3791	1.0000e-005	1.0000e-005	0.3814
Fast Food Restaurant with Drive Thru	1.03907e+006	5.6000e-003	0.0509	0.0428	3.1000e-004		3.8700e-003	3.8700e-003		3.8700e-003	3.8700e-003	0.0000	55.4488	55.4488	1.0600e-003	1.0200e-003	55.7783
Gasoline/Service Station	73388.4	4.0000e-004	3.6000e-003	3.0200e-003	2.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004	0.0000	3.9163	3.9163	8.0000e-005	7.0000e-005	3.9396
Parking Lot	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
Total		**6.3100e-003**	**0.0573**	**0.0481**	**3.4000e-004**		**4.3500e-003**	**4.3500e-003**		**4.3500e-003**	**4.3500e-003**	**0.0000**	**62.3761**	**62.3761**	**1.2000e-003**	**1.1500e-003**	**62.7468**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	49319.8	2.7000e-004	2.4200e-003	2.0300e-003	1.0000e-005		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004	0.0000	2.6319	2.6319	5.0000e-005	5.0000e-005	2.6475
Convenience Market (24 Hour)	7104	4.0000e-005	3.5000e-004	2.9000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.3791	0.3791	1.0000e-005	1.0000e-005	0.3814
Fast Food Restaurant with Drive Thru	1.03907e+006	5.6000e-003	0.0509	0.0428	3.1000e-004		3.8700e-003	3.8700e-003		3.8700e-003	3.8700e-003	0.0000	55.4488	55.4488	1.0600e-003	1.0200e-003	55.7783
Gasoline/Service Station	73388.4	4.0000e-004	3.6000e-003	3.0200e-003	2.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004	0.0000	3.9163	3.9163	8.0000e-005	7.0000e-005	3.9396
Parking Lot	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
Total		**6.3100e-003**	**0.0573**	**0.0481**	**3.4000e-004**		**4.3500e-003**	**4.3500e-003**		**4.3500e-003**	**4.3500e-003**	**0.0000**	**62.3761**	**62.3761**	**1.2000e-003**	**1.1500e-003**	**62.7468**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	15407.7	9.2647	2.0000e-004	4.0000e-005	9.2823
Convenience Market (24 Hour)	40416	24.3023	5.3000e-004	1.1000e-004	24.3484
Fast Food Restaurant with Drive Thru	180424	108.4898	2.3700e-003	4.9000e-004	108.6955
Gasoline/Service Station	22926.8	13.7860	3.0000e-004	6.0000e-005	13.8121
Parking Lot	7280	4.3775	1.0000e-004	2.0000e-005	4.3858
Total		**160.2204**	**3.5000e-003**	**7.2000e-004**	**160.5241**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	15407.7	9.2647	2.0000e-004	4.0000e-005	9.2823
Convenience Market (24 Hour)	40416	24.3023	5.3000e-004	1.1000e-004	24.3484
Fast Food Restaurant with Drive Thru	180424	108.4898	2.3700e-003	4.9000e-004	108.6955
Gasoline/Service Station	22926.8	13.7860	3.0000e-004	6.0000e-005	13.8121
Parking Lot	7280	4.3775	1.0000e-004	2.0000e-005	4.3858
Total		**160.2204**	**3.5000e-003**	**7.2000e-004**	**160.5241**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	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	0.0457	1.0000e-005	9.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.9000e-003	1.9000e-003	1.0000e-005	0.0000	2.0300e-003
Unmitigated	0.0457	1.0000e-005	9.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.9000e-003	1.9000e-003	1.0000e-005	0.0000	2.0300e-003

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	5.2800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0403					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.9000e-003	1.9000e-003	1.0000e-005	0.0000	2.0300e-003
Total	**0.0457**	**1.0000e-005**	**9.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.9000e-003**	**1.9000e-003**	**1.0000e-005**	**0.0000**	**2.0300e-003**

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	5.2800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0403					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.9000e-003	1.9000e-003	1.0000e-005	0.0000	2.0300e-003
Total	**0.0457**	**1.0000e-005**	**9.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.9000e-003**	**1.9000e-003**	**1.0000e-005**	**0.0000**	**2.0300e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Toilet

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	15.3841	0.0502	1.2400e-003	17.0097
Unmitigated	17.1422	0.0573	1.4200e-003	18.9963

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	0.143003 / 0.0876472	1.7506	4.7000e-003	1.2000e-004	1.9031
Convenience Market (24 Hour)	0.237032 / 0.145278	2.9016	7.7900e-003	2.0000e-004	3.1544
Fast Food Restaurant with Drive Thru	1.15343 / 0.0736231	9.8886	0.0378	9.3000e-004	11.1108
Gasoline/Service Station	0.21251 / 0.130248	2.6014	6.9800e-003	1.7000e-004	2.8281
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**17.1422**	**0.0573**	**1.4200e-003**	**18.9963**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	0.125328 / 0.0876472	1.6066	4.1200e-003	1.0000e-004	1.7404
Convenience Market (24 Hour)	0.207735 / 0.145278	2.6629	6.8300e-003	1.7000e-004	2.8847
Fast Food Restaurant with Drive Thru	1.01086 / 0.0736231	8.7272	0.0331	8.2000e-004	9.7984
Gasoline/Service Station	0.186244 / 0.130248	2.3874	6.1200e-003	1.5000e-004	2.5863
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**15.3841**	**0.0502**	**1.2400e-003**	**17.0097**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	13.7669	0.8136	0.0000	34.1068
Unmitigated	13.7669	0.8136	0.0000	34.1068

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	5.81	1.1794	0.0697	0.0000	2.9219
Convenience Market (24 Hour)	9.62	1.9528	0.1154	0.0000	4.8379
Fast Food Restaurant with Drive Thru	43.77	8.8849	0.5251	0.0000	22.0120
Gasoline/Service Station	8.62	1.7498	0.1034	0.0000	4.3350
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**13.7668**	**0.8136**	**0.0000**	**34.1068**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	5.81	1.1794	0.0697	0.0000	2.9219
Convenience Market (24 Hour)	9.62	1.9528	0.1154	0.0000	4.8379
Fast Food Restaurant with Drive Thru	43.77	8.8849	0.5251	0.0000	22.0120
Gasoline/Service Station	8.62	1.7498	0.1034	0.0000	4.3350
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**13.7668**	**0.8136**	**0.0000**	**34.1068**

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

Sycamore Canyon Project

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	52.00	Space	1.95	20,800.00	0
Fast Food Restaurant with Drive Thru	3.80	1000sqft	0.09	3,800.00	0
Automobile Care Center	1.52	1000sqft	0.03	1,518.00	0
Convenience Market (24 Hour)	3.20	1000sqft	0.07	3,200.00	0
Gasoline/Service Station	16.00	Pump	0.05	2,258.80	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2020
Utility Company	Riverside Public Utilities				
CO2 Intensity (lb/MWhr)	1325.65	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Sycamore Canyon Project - South Coast Air Basin, Summer

Project Characteristics -

Land Use - Per project site plan

Construction Phase - Per client info

Grading - Per site plans

Architectural Coating - Low VOC paint rul 1113

Vehicle Trips - Per project traffic study; 3248 daily trips all together

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	3.00	10.00
tblConstructionPhase	NumDays	6.00	20.00
tblConstructionPhase	NumDays	220.00	100.00
tblConstructionPhase	NumDays	10.00	30.00
tblConstructionPhase	NumDays	10.00	35.00
tblConstructionPhase	PhaseEndDate	6/5/2019	6/14/2019
tblConstructionPhase	PhaseEndDate	6/13/2019	7/12/2019
tblConstructionPhase	PhaseEndDate	4/16/2020	11/29/2019
tblConstructionPhase	PhaseEndDate	4/30/2020	12/20/2019
tblConstructionPhase	PhaseEndDate	5/14/2020	12/27/2019
tblConstructionPhase	PhaseStartDate	6/6/2019	6/17/2019
tblConstructionPhase	PhaseStartDate	6/14/2019	7/15/2019
tblConstructionPhase	PhaseStartDate	4/17/2020	11/11/2019
tblConstructionPhase	PhaseStartDate	5/1/2020	11/11/2019
tblGrading	AcresOfGrading	10.00	3.00

tblGrading	AcresOfGrading	15.00	4.50
tblLandUse	LandUseSquareFeet	1,520.00	1,518.00
tblLandUse	LotAcreage	0.47	1.95
tblTripsAndVMT	HaulingTripNumber	0.00	1,686.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	863.10	0.00
tblVehicleTrips	ST_TR	722.03	372.11
tblVehicleTrips	ST_TR	168.56	114.63
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	758.45	0.00
tblVehicleTrips	SU_TR	542.72	372.11
tblVehicleTrips	SU_TR	168.56	114.63
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	737.99	0.00
tblVehicleTrips	WD_TR	496.12	372.11
tblVehicleTrips	WD_TR	168.56	114.63

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	7.4296	47.8783	30.4767	0.0880	7.7654	1.9555	8.9330	3.7605	1.8526	4.8382	0.0000	9,332.3746	9,332.3746	1.1640	0.0000	9,361.4742
Maximum	**7.4296**	**47.8783**	**30.4767**	**0.0880**	**7.7654**	**1.9555**	**8.9330**	**3.7605**	**1.8526**	**4.8382**	**0.0000**	**9,332.3746**	**9,332.3746**	**1.1640**	**0.0000**	**9,361.4742**

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					
2019	7.4296	47.8783	30.4767	0.0880	3.9949	1.9555	5.1625	1.7308	1.8526	2.8085	0.0000	9,332.3746	9,332.3746	1.1640	0.0000	9,361.4742
Maximum	**7.4296**	**47.8783**	**30.4767**	**0.0880**	**3.9949**	**1.9555**	**5.1625**	**1.7308**	**1.8526**	**2.8085**	**0.0000**	**9,332.3746**	**9,332.3746**	**1.1640**	**0.0000**	**9,361.4742**

	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**	**48.56**	**0.00**	**42.21**	**53.97**	**0.00**	**41.95**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2504	7.0000e-005	7.8600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0168	0.0168	4.0000e-005		0.0179
Energy	0.0345	0.3140	0.2637	1.8800e-003		0.0239	0.0239		0.0239	0.0239		376.7556	376.7556	7.2200e-003	6.9100e-003	378.9945
Mobile	4.3670	16.8834	31.1597	0.0837	5.6840	0.0863	5.7702	1.5208	0.0808	1.6015		8,527.6628	8,527.6628	0.5501		8,541.4143
Total	**4.6520**	**17.1974**	**31.4313**	**0.0856**	**5.6840**	**0.1102**	**5.7941**	**1.5208**	**0.1047**	**1.6254**		**8,904.4352**	**8,904.4352**	**0.5573**	**6.9100e-003**	**8,920.4266**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2504	7.0000e-005	7.8600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0168	0.0168	4.0000e-005		0.0179
Energy	0.0345	0.3140	0.2637	1.8800e-003		0.0239	0.0239		0.0239	0.0239		376.7556	376.7556	7.2200e-003	6.9100e-003	378.9945
Mobile	4.3670	16.8834	31.1597	0.0837	5.6840	0.0863	5.7702	1.5208	0.0808	1.6015		8,527.6628	8,527.6628	0.5501		8,541.4143
Total	**4.6520**	**17.1974**	**31.4313**	**0.0856**	**5.6840**	**0.1102**	**5.7941**	**1.5208**	**0.1047**	**1.6254**		**8,904.4352**	**8,904.4352**	**0.5573**	**6.9100e-003**	**8,920.4266**

	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/3/2019	6/14/2019	5	10	
2	Grading	Grading	6/17/2019	7/12/2019	5	20	
3	Building Construction	Building Construction	7/15/2019	11/29/2019	5	100	
4	Paving	Paving	11/11/2019	12/20/2019	5	30	
5	Architectural Coating	Architectural Coating	11/11/2019	12/27/2019	5	35	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 3

Acres of Paving: 1.95

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 16,165; Non-Residential Outdoor: 5,388; Striped Parking Area: 1,248 (Architectural Coating – sqft)

OffRoad Equipment

Sycamore Canyon Project - South Coast Air Basin, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	1	8.00	132	0.36
Site Preparation	Scrapers	1	8.00	367	0.48
Building Construction	Welders	3	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
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	1,686.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	13.00	5.00	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
Architectural Coating	1	3.00	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 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4772	0.0000	0.4772	0.0515	0.0000	0.0515			0.0000			0.0000
Off-Road	1.7557	21.5386	11.9143	0.0245		0.8537	0.8537		0.7854	0.7854		2,426.5408	2,426.5408	0.7677		2,445.7341
Total	**1.7557**	**21.5386**	**11.9143**	**0.0245**	**0.4772**	**0.8537**	**1.3309**	**0.0515**	**0.7854**	**0.8369**		**2,426.5408**	**2,426.5408**	**0.7677**		**2,445.7341**

3.2 Site Preparation - 2019

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
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
Worker	0.0388	0.0272	0.3584	9.5000e-004	0.0894	7.0000e-004	0.0901	0.0237	6.4000e-004	0.0244		94.4289	94.4289	2.9600e-003		94.5029
Total	**0.0388**	**0.0272**	**0.3584**	**9.5000e-004**	**0.0894**	**7.0000e-004**	**0.0901**	**0.0237**	**6.4000e-004**	**0.0244**		**94.4289**	**94.4289**	**2.9600e-003**		**94.5029**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1861	0.0000	0.1861	0.0201	0.0000	0.0201			0.0000			0.0000
Off-Road	1.7557	21.5386	11.9143	0.0245		0.8537	0.8537		0.7854	0.7854	0.0000	2,426.5408	2,426.5408	0.7677		2,445.7341
Total	**1.7557**	**21.5386**	**11.9143**	**0.0245**	**0.1861**	**0.8537**	**1.0398**	**0.0201**	**0.7854**	**0.8055**	**0.0000**	**2,426.5408**	**2,426.5408**	**0.7677**		**2,445.7341**

3.2 Site Preparation - 2019

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
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
Worker	0.0388	0.0272	0.3584	9.5000e-004	0.0894	7.0000e-004	0.0901	0.0237	6.4000e-004	0.0244		94.4289	94.4289	2.9600e-003		94.5029
Total	**0.0388**	**0.0272**	**0.3584**	**9.5000e-004**	**0.0894**	**7.0000e-004**	**0.0901**	**0.0237**	**6.4000e-004**	**0.0244**		**94.4289**	**94.4289**	**2.9600e-003**		**94.5029**

3.3 Grading - 2019

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					6.1812	0.0000	6.1812	3.3274	0.0000	3.3274			0.0000			0.0000
Off-Road	2.0287	22.7444	10.1518	0.0206		1.0730	1.0730		0.9871	0.9871		2,041.2539	2,041.2539	0.6458		2,057.3997
Total	**2.0287**	**22.7444**	**10.1518**	**0.0206**	**6.1812**	**1.0730**	**7.2541**	**3.3274**	**0.9871**	**4.3145**		**2,041.2539**	**2,041.2539**	**0.6458**		**2,057.3997**

3.3 Grading - 2019

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	0.7259	25.0999	5.0211	0.0662	1.4724	0.0938	1.5662	0.4035	0.0898	0.4932		7,173.0846	7,173.0846	0.5145		7,185.9459
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
Worker	0.0486	0.0340	0.4479	1.1900e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305		118.0362	118.0362	3.7000e-003		118.1286
Total	**0.7744**	**25.1339**	**5.4691**	**0.0674**	**1.5842**	**0.0947**	**1.6789**	**0.4331**	**0.0906**	**0.5237**		**7,291.1207**	**7,291.1207**	**0.5182**		**7,304.0745**

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					2.4107	0.0000	2.4107	1.2977	0.0000	1.2977			0.0000			0.0000
Off-Road	2.0287	22.7444	10.1518	0.0206		1.0730	1.0730		0.9871	0.9871	0.0000	2,041.2539	2,041.2539	0.6458		2,057.3997
Total	**2.0287**	**22.7444**	**10.1518**	**0.0206**	**2.4107**	**1.0730**	**3.4836**	**1.2977**	**0.9871**	**2.2848**	**0.0000**	**2,041.2539**	**2,041.2539**	**0.6458**		**2,057.3997**

3.3 Grading - 2019

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	0.7259	25.0999	5.0211	0.0662	1.4724	0.0938	1.5662	0.4035	0.0898	0.4932		7,173.0846	7,173.0846	0.5145		7,185.9459
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
Worker	0.0486	0.0340	0.4479	1.1900e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305		118.0362	118.0362	3.7000e-003		118.1286
Total	**0.7744**	**25.1339**	**5.4691**	**0.0674**	**1.5842**	**0.0947**	**1.6789**	**0.4331**	**0.0906**	**0.5237**		**7,291.1207**	**7,291.1207**	**0.5182**		**7,304.0745**

3.4 Building Construction - 2019

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	2.5581	18.9103	15.2545	0.0250		1.0901	1.0901		1.0449	1.0449		2,312.1454	2,312.1454	0.4810		2,324.1705
Total	**2.5581**	**18.9103**	**15.2545**	**0.0250**		**1.0901**	**1.0901**		**1.0449**	**1.0449**		**2,312.1454**	**2,312.1454**	**0.4810**		**2,324.1705**

3.4 Building Construction - 2019

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
Vendor	0.0195	0.5740	0.1415	1.2800e-003	0.0320	3.8000e-003	0.0358	9.2100e-003	3.6400e-003	0.0129		137.2561	137.2561	9.2400e-003		137.4870
Worker	0.0631	0.0442	0.5823	1.5400e-003	0.1453	1.1400e-003	0.1465	0.0385	1.0500e-003	0.0396		153.4470	153.4470	4.8100e-003		153.5672
Total	**0.0826**	**0.6181**	**0.7238**	**2.8200e-003**	**0.1773**	**4.9400e-003**	**0.1823**	**0.0478**	**4.6900e-003**	**0.0524**		**290.7031**	**290.7031**	**0.0141**		**291.0542**

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	2.5581	18.9103	15.2545	0.0250		1.0901	1.0901		1.0449	1.0449	0.0000	2,312.1454	2,312.1454	0.4810		2,324.1705
Total	**2.5581**	**18.9103**	**15.2545**	**0.0250**		**1.0901**	**1.0901**		**1.0449**	**1.0449**	**0.0000**	**2,312.1454**	**2,312.1454**	**0.4810**		**2,324.1705**

3.4 Building Construction - 2019

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
Vendor	0.0195	0.5740	0.1415	1.2800e-003	0.0320	3.8000e-003	0.0358	9.2100e-003	3.6400e-003	0.0129		137.2561	137.2561	9.2400e-003		137.4870
Worker	0.0631	0.0442	0.5823	1.5400e-003	0.1453	1.1400e-003	0.1465	0.0385	1.0500e-003	0.0396		153.4470	153.4470	4.8100e-003		153.5672
Total	**0.0826**	**0.6181**	**0.7238**	**2.8200e-003**	**0.1773**	**4.9400e-003**	**0.1823**	**0.0478**	**4.6900e-003**	**0.0524**		**290.7031**	**290.7031**	**0.0141**		**291.0542**

3.5 Paving - 2019

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	1.2453	12.5685	11.8507	0.0178		0.7301	0.7301		0.6728	0.6728		1,746.2432	1,746.2432	0.5418		1,759.7870
Paving	0.1703					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4156**	**12.5685**	**11.8507**	**0.0178**		**0.7301**	**0.7301**		**0.6728**	**0.6728**		**1,746.2432**	**1,746.2432**	**0.5418**		**1,759.7870**

3.5 Paving - 2019

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
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
Worker	0.0728	0.0510	0.6719	1.7800e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		177.0542	177.0542	5.5500e-003		177.1930
Total	**0.0728**	**0.0510**	**0.6719**	**1.7800e-003**	**0.1677**	**1.3100e-003**	**0.1690**	**0.0445**	**1.2100e-003**	**0.0457**		**177.0542**	**177.0542**	**5.5500e-003**		**177.1930**

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	1.2453	12.5685	11.8507	0.0178		0.7301	0.7301		0.6728	0.6728	0.0000	1,746.2432	1,746.2432	0.5418		1,759.7870
Paving	0.1703					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4156**	**12.5685**	**11.8507**	**0.0178**		**0.7301**	**0.7301**		**0.6728**	**0.6728**	**0.0000**	**1,746.2432**	**1,746.2432**	**0.5418**		**1,759.7870**

3.5 Paving - 2019

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
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
Worker	0.0728	0.0510	0.6719	1.7800e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		177.0542	177.0542	5.5500e-003		177.1930
Total	**0.0728**	**0.0510**	**0.6719**	**1.7800e-003**	**0.1677**	**1.3100e-003**	**0.1690**	**0.0445**	**1.2100e-003**	**0.0457**		**177.0542**	**177.0542**	**5.5500e-003**		**177.1930**

3.6 Architectural Coating - 2019

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	3.0195					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423
Total	**3.2859**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**		**281.4481**	**281.4481**	**0.0238**		**282.0423**

3.6 Architectural Coating - 2019

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
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
Worker	0.0146	0.0102	0.1344	3.6000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.4000e-004	9.1300e-003		35.4108	35.4108	1.1100e-003		35.4386
Total	**0.0146**	**0.0102**	**0.1344**	**3.6000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.4000e-004**	**9.1300e-003**		**35.4108**	**35.4108**	**1.1100e-003**		**35.4386**

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	3.0195					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		282.0423
Total	**3.2859**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**	**0.0000**	**281.4481**	**281.4481**	**0.0238**		**282.0423**

3.6 Architectural Coating - 2019

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
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
Worker	0.0146	0.0102	0.1344	3.6000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.4000e-004	9.1300e-003		35.4108	35.4108	1.1100e-003		35.4386
Total	**0.0146**	**0.0102**	**0.1344**	**3.6000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.4000e-004**	**9.1300e-003**		**35.4108**	**35.4108**	**1.1100e-003**		**35.4386**

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	4.3670	16.8834	31.1597	0.0837	5.6840	0.0863	5.7702	1.5208	0.0808	1.6015		8,527.6628	8,527.6628	0.5501		8,541.4143
Unmitigated	4.3670	16.8834	31.1597	0.0837	5.6840	0.0863	5.7702	1.5208	0.0808	1.6015		8,527.6628	8,527.6628	0.5501		8,541.4143

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Convenience Market (24 Hour)	0.00	0.00	0.00		
Fast Food Restaurant with Drive Thru	1,414.02	1,414.02	1414.02	1,488,095	1,488,095
Gasoline/Service Station	1,834.08	1,834.08	1834.08	1,186,263	1,186,263
Parking Lot	0.00	0.00	0.00		
Total	3,248.10	3,248.10	3,248.10	2,674,357	2,674,357

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
Automobile Care Center	16.60	8.40	6.90	33.00	48.00	19.00	21	51	28
Convenience Market (24 Hour)	16.60	8.40	6.90	0.90	80.10	19.00	24	15	61
Fast Food Restaurant with Drive	16.60	8.40	6.90	2.20	78.80	19.00	29	21	50
Gasoline/Service Station	16.60	8.40	6.90	2.00	79.00	19.00	14	27	59
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955
Convenience Market (24 Hour)	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955
Fast Food Restaurant with Drive Thru	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955
Gasoline/Service Station	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955
Parking Lot	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955

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	0.0345	0.3140	0.2637	1.8800e-003		0.0239	0.0239		0.0239	0.0239		376.7556	376.7556	7.2200e-003	6.9100e-003	378.9945
NaturalGas Unmitigated	0.0345	0.3140	0.2637	1.8800e-003		0.0239	0.0239		0.0239	0.0239		376.7556	376.7556	7.2200e-003	6.9100e-003	378.9945

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					
Automobile Care Center	135.123	1.4600e-003	0.0133	0.0111	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003		15.8968	15.8968	3.0000e-004	2.9000e-004	15.9913
Convenience Market (24 Hour)	19.463	2.1000e-004	1.9100e-003	1.6000e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004		2.2898	2.2898	4.0000e-005	4.0000e-005	2.3034
Fast Food Restaurant with Drive Thru	2846.77	0.0307	0.2791	0.2344	1.6700e-003		0.0212	0.0212		0.0212	0.0212		334.9144	334.9144	6.4200e-003	6.1400e-003	336.9047
Gasoline/Service Station	201.064	2.1700e-003	0.0197	0.0166	1.2000e-004		1.5000e-003	1.5000e-003		1.5000e-003	1.5000e-003		23.6546	23.6546	4.5000e-004	4.3000e-004	23.7952
Parking Lot	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
Total		**0.0345**	**0.3140**	**0.2637**	**1.8800e-003**		**0.0239**	**0.0239**		**0.0239**	**0.0239**		**376.7556**	**376.7556**	**7.2100e-003**	**6.9000e-003**	**378.9945**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0.135123	1.4600e-003	0.0133	0.0111	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003		15.8968	15.8968	3.0000e-004	2.9000e-004	15.9913
Convenience Market (24 Hour)	0.019463	2.1000e-004	1.9100e-003	1.6000e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004		2.2898	2.2898	4.0000e-005	4.0000e-005	2.3034
Fast Food Restaurant with Drive Thru	2.84677	0.0307	0.2791	0.2344	1.6700e-003		0.0212	0.0212		0.0212	0.0212		334.9144	334.9144	6.4200e-003	6.1400e-003	336.9047
Gasoline/Service Station	0.201064	2.1700e-003	0.0197	0.0166	1.2000e-004		1.5000e-003	1.5000e-003		1.5000e-003	1.5000e-003		23.6546	23.6546	4.5000e-004	4.3000e-004	23.7952
Parking Lot	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
Total		**0.0345**	**0.3140**	**0.2637**	**1.8800e-003**		**0.0239**	**0.0239**		**0.0239**	**0.0239**		**376.7556**	**376.7556**	**7.2100e-003**	**6.9000e-003**	**378.9945**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2504	7.0000e-005	7.8600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0168	0.0168	4.0000e-005		0.0179
Unmitigated	0.2504	7.0000e-005	7.8600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0168	0.0168	4.0000e-005		0.0179

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	0.0290					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2208					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.4000e-004	7.0000e-005	7.8600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0168	0.0168	4.0000e-005		0.0179
Total	**0.2504**	**7.0000e-005**	**7.8600e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0168**	**0.0168**	**4.0000e-005**		**0.0179**

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	0.0290					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2208					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.4000e-004	7.0000e-005	7.8600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0168	0.0168	4.0000e-005		0.0179
Total	**0.2504**	**7.0000e-005**	**7.8600e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0168**	**0.0168**	**4.0000e-005**		**0.0179**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Toilet

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

Sycamore Canyon Project

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	52.00	Space	1.95	20,800.00	0
Fast Food Restaurant with Drive Thru	3.80	1000sqft	0.09	3,800.00	0
Automobile Care Center	1.52	1000sqft	0.03	1,518.00	0
Convenience Market (24 Hour)	3.20	1000sqft	0.07	3,200.00	0
Gasoline/Service Station	16.00	Pump	0.05	2,258.80	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2020
Utility Company	Riverside Public Utilities				
CO2 Intensity (lb/MWhr)	1325.65	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Sycamore Canyon Project - South Coast Air Basin, Winter

Project Characteristics -

Land Use - Per project site plan

Construction Phase - Per client info

Grading - Per site plans

Architectural Coating - Low VOC paint rul 1113

Vehicle Trips - Per project traffic study; 3248 daily trips all together

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	3.00	10.00
tblConstructionPhase	NumDays	6.00	20.00
tblConstructionPhase	NumDays	220.00	100.00
tblConstructionPhase	NumDays	10.00	30.00
tblConstructionPhase	NumDays	10.00	35.00
tblConstructionPhase	PhaseEndDate	6/5/2019	6/14/2019
tblConstructionPhase	PhaseEndDate	6/13/2019	7/12/2019
tblConstructionPhase	PhaseEndDate	4/16/2020	11/29/2019
tblConstructionPhase	PhaseEndDate	4/30/2020	12/20/2019
tblConstructionPhase	PhaseEndDate	5/14/2020	12/27/2019
tblConstructionPhase	PhaseStartDate	6/6/2019	6/17/2019
tblConstructionPhase	PhaseStartDate	6/14/2019	7/15/2019
tblConstructionPhase	PhaseStartDate	4/17/2020	11/11/2019
tblConstructionPhase	PhaseStartDate	5/1/2020	11/11/2019
tblGrading	AcresOfGrading	10.00	3.00

tblGrading	AcresOfGrading	15.00	4.50
tblLandUse	LandUseSquareFeet	1,520.00	1,518.00
tblLandUse	LotAcreage	0.47	1.95
tblTripsAndVMT	HaulingTripNumber	0.00	1,686.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	863.10	0.00
tblVehicleTrips	ST_TR	722.03	372.11
tblVehicleTrips	ST_TR	168.56	114.63
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	758.45	0.00
tblVehicleTrips	SU_TR	542.72	372.11
tblVehicleTrips	SU_TR	168.56	114.63
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	737.99	0.00
tblVehicleTrips	WD_TR	496.12	372.11
tblVehicleTrips	WD_TR	168.56	114.63

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	7.4452	48.2230	30.3649	0.0868	7.7654	1.9555	8.9348	3.7605	1.8527	4.8399	0.0000	9,204.4520	9,204.4520	1.1845	0.0000	9,234.0640
Maximum	**7.4452**	**48.2230**	**30.3649**	**0.0868**	**7.7654**	**1.9555**	**8.9348**	**3.7605**	**1.8527**	**4.8399**	**0.0000**	**9,204.4520**	**9,204.4520**	**1.1845**	**0.0000**	**9,234.0640**

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					
2019	7.4452	48.2230	30.3649	0.0868	3.9949	1.9555	5.1643	1.7308	1.8527	2.8102	0.0000	9,204.4520	9,204.4520	1.1845	0.0000	9,234.0640
Maximum	**7.4452**	**48.2230**	**30.3649**	**0.0868**	**3.9949**	**1.9555**	**5.1643**	**1.7308**	**1.8527**	**2.8102**	**0.0000**	**9,204.4520**	**9,204.4520**	**1.1845**	**0.0000**	**9,234.0640**

	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**	**48.56**	**0.00**	**42.20**	**53.97**	**0.00**	**41.94**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2504	7.0000e-005	7.8600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0168	0.0168	4.0000e-005		0.0179
Energy	0.0345	0.3140	0.2637	1.8800e-003		0.0239	0.0239		0.0239	0.0239		376.7556	376.7556	7.2200e-003	6.9100e-003	378.9945
Mobile	4.1858	16.8627	31.8701	0.0790	5.6840	0.0877	5.7717	1.5208	0.0822	1.6029		8,043.6710	8,043.6710	0.5728		8,057.9915
Total	**4.4707**	**17.1767**	**32.1417**	**0.0809**	**5.6840**	**0.1116**	**5.7956**	**1.5208**	**0.1061**	**1.6268**		**8,420.4434**	**8,420.4434**	**0.5801**	**6.9100e-003**	**8,437.0039**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2504	7.0000e-005	7.8600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0168	0.0168	4.0000e-005		0.0179
Energy	0.0345	0.3140	0.2637	1.8800e-003		0.0239	0.0239		0.0239	0.0239		376.7556	376.7556	7.2200e-003	6.9100e-003	378.9945
Mobile	4.1858	16.8627	31.8701	0.0790	5.6840	0.0877	5.7717	1.5208	0.0822	1.6029		8,043.6710	8,043.6710	0.5728		8,057.9915
Total	**4.4707**	**17.1767**	**32.1417**	**0.0809**	**5.6840**	**0.1116**	**5.7956**	**1.5208**	**0.1061**	**1.6268**		**8,420.4434**	**8,420.4434**	**0.5801**	**6.9100e-003**	**8,437.0039**

	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/3/2019	6/14/2019	5	10	
2	Grading	Grading	6/17/2019	7/12/2019	5	20	
3	Building Construction	Building Construction	7/15/2019	11/29/2019	5	100	
4	Paving	Paving	11/11/2019	12/20/2019	5	30	
5	Architectural Coating	Architectural Coating	11/11/2019	12/27/2019	5	35	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 3

Acres of Paving: 1.95

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 16,165; Non-Residential Outdoor: 5,388; Striped Parking Area: 1,248 (Architectural Coating – sqft)

OffRoad Equipment

Sycamore Canyon Project - South Coast Air Basin, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	1	8.00	132	0.36
Site Preparation	Scrapers	1	8.00	367	0.48
Building Construction	Welders	3	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
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	1,686.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	13.00	5.00	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
Architectural Coating	1	3.00	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 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4772	0.0000	0.4772	0.0515	0.0000	0.0515			0.0000			0.0000
Off-Road	1.7557	21.5386	11.9143	0.0245		0.8537	0.8537		0.7854	0.7854		2,426.5408	2,426.5408	0.7677		2,445.7341
Total	**1.7557**	**21.5386**	**11.9143**	**0.0245**	**0.4772**	**0.8537**	**1.3309**	**0.0515**	**0.7854**	**0.8369**		**2,426.5408**	**2,426.5408**	**0.7677**		**2,445.7341**

3.2 Site Preparation - 2019

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
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
Worker	0.0427	0.0299	0.3256	8.9000e-004	0.0894	7.0000e-004	0.0901	0.0237	6.4000e-004	0.0244		88.5734	88.5734	2.7800e-003		88.6428
Total	**0.0427**	**0.0299**	**0.3256**	**8.9000e-004**	**0.0894**	**7.0000e-004**	**0.0901**	**0.0237**	**6.4000e-004**	**0.0244**		**88.5734**	**88.5734**	**2.7800e-003**		**88.6428**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1861	0.0000	0.1861	0.0201	0.0000	0.0201			0.0000			0.0000
Off-Road	1.7557	21.5386	11.9143	0.0245		0.8537	0.8537		0.7854	0.7854	0.0000	2,426.5408	2,426.5408	0.7677		2,445.7341
Total	**1.7557**	**21.5386**	**11.9143**	**0.0245**	**0.1861**	**0.8537**	**1.0398**	**0.0201**	**0.7854**	**0.8055**	**0.0000**	**2,426.5408**	**2,426.5408**	**0.7677**		**2,445.7341**

3.2 Site Preparation - 2019

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
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
Worker	0.0427	0.0299	0.3256	8.9000e-004	0.0894	7.0000e-004	0.0901	0.0237	6.4000e-004	0.0244		88.5734	88.5734	2.7800e-003		88.6428
Total	**0.0427**	**0.0299**	**0.3256**	**8.9000e-004**	**0.0894**	**7.0000e-004**	**0.0901**	**0.0237**	**6.4000e-004**	**0.0244**		**88.5734**	**88.5734**	**2.7800e-003**		**88.6428**

3.3 Grading - 2019

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					6.1812	0.0000	6.1812	3.3274	0.0000	3.3274			0.0000			0.0000
Off-Road	2.0287	22.7444	10.1518	0.0206		1.0730	1.0730		0.9871	0.9871		2,041.2539	2,041.2539	0.6458		2,057.3997
Total	**2.0287**	**22.7444**	**10.1518**	**0.0206**	**6.1812**	**1.0730**	**7.2541**	**3.3274**	**0.9871**	**4.3145**		**2,041.2539**	**2,041.2539**	**0.6458**		**2,057.3997**

3.3 Grading - 2019

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	0.7453	25.4413	5.3892	0.0651	1.4724	0.0956	1.5680	0.4035	0.0914	0.4949		7,052.4814	7,052.4814	0.5352		7,065.8608
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
Worker	0.0533	0.0373	0.4070	1.1100e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305		110.7167	110.7167	3.4700e-003		110.8035
Total	**0.7986**	**25.4786**	**5.7962**	**0.0662**	**1.5842**	**0.0965**	**1.6807**	**0.4331**	**0.0923**	**0.5254**		**7,163.1981**	**7,163.1981**	**0.5387**		**7,176.6643**

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					2.4107	0.0000	2.4107	1.2977	0.0000	1.2977			0.0000			0.0000
Off-Road	2.0287	22.7444	10.1518	0.0206		1.0730	1.0730		0.9871	0.9871	0.0000	2,041.2539	2,041.2539	0.6458		2,057.3997
Total	**2.0287**	**22.7444**	**10.1518**	**0.0206**	**2.4107**	**1.0730**	**3.4836**	**1.2977**	**0.9871**	**2.2848**	**0.0000**	**2,041.2539**	**2,041.2539**	**0.6458**		**2,057.3997**

3.3 Grading - 2019

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	0.7453	25.4413	5.3892	0.0651	1.4724	0.0956	1.5680	0.4035	0.0914	0.4949		7,052.4814	7,052.4814	0.5352		7,065.8608
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
Worker	0.0533	0.0373	0.4070	1.1100e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305		110.7167	110.7167	3.4700e-003		110.8035
Total	**0.7986**	**25.4786**	**5.7962**	**0.0662**	**1.5842**	**0.0965**	**1.6807**	**0.4331**	**0.0923**	**0.5254**		**7,163.1981**	**7,163.1981**	**0.5387**		**7,176.6643**

3.4 Building Construction - 2019

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	2.5581	18.9103	15.2545	0.0250		1.0901	1.0901		1.0449	1.0449		2,312.1454	2,312.1454	0.4810		2,324.1705
Total	**2.5581**	**18.9103**	**15.2545**	**0.0250**		**1.0901**	**1.0901**		**1.0449**	**1.0449**		**2,312.1454**	**2,312.1454**	**0.4810**		**2,324.1705**

3.4 Building Construction - 2019

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
Vendor	0.0203	0.5747	0.1568	1.2500e-003	0.0320	3.8700e-003	0.0359	9.2100e-003	3.7000e-003	0.0129		133.5695	133.5695	9.8800e-003		133.8164
Worker	0.0693	0.0485	0.5291	1.4500e-003	0.1453	1.1400e-003	0.1465	0.0385	1.0500e-003	0.0396		143.9318	143.9318	4.5100e-003		144.0446
Total	**0.0896**	**0.6232**	**0.6858**	**2.7000e-003**	**0.1773**	**5.0100e-003**	**0.1823**	**0.0478**	**4.7500e-003**	**0.0525**		**277.5012**	**277.5012**	**0.0144**		**277.8610**

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	2.5581	18.9103	15.2545	0.0250		1.0901	1.0901		1.0449	1.0449	0.0000	2,312.1454	2,312.1454	0.4810		2,324.1705
Total	**2.5581**	**18.9103**	**15.2545**	**0.0250**		**1.0901**	**1.0901**		**1.0449**	**1.0449**	**0.0000**	**2,312.1454**	**2,312.1454**	**0.4810**		**2,324.1705**

3.4 Building Construction - 2019

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
Vendor	0.0203	0.5747	0.1568	1.2500e-003	0.0320	3.8700e-003	0.0359	9.2100e-003	3.7000e-003	0.0129		133.5695	133.5695	9.8800e-003		133.8164
Worker	0.0693	0.0485	0.5291	1.4500e-003	0.1453	1.1400e-003	0.1465	0.0385	1.0500e-003	0.0396		143.9318	143.9318	4.5100e-003		144.0446
Total	**0.0896**	**0.6232**	**0.6858**	**2.7000e-003**	**0.1773**	**5.0100e-003**	**0.1823**	**0.0478**	**4.7500e-003**	**0.0525**		**277.5012**	**277.5012**	**0.0144**		**277.8610**

3.5 Paving - 2019

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	1.2453	12.5685	11.8507	0.0178		0.7301	0.7301		0.6728	0.6728		1,746.2432	1,746.2432	0.5418		1,759.7870
Paving	0.1703					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4156**	**12.5685**	**11.8507**	**0.0178**		**0.7301**	**0.7301**		**0.6728**	**0.6728**		**1,746.2432**	**1,746.2432**	**0.5418**		**1,759.7870**

3.5 Paving - 2019

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
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
Worker	0.0800	0.0560	0.6105	1.6700e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		166.0751	166.0751	5.2100e-003		166.2053
Total	**0.0800**	**0.0560**	**0.6105**	**1.6700e-003**	**0.1677**	**1.3100e-003**	**0.1690**	**0.0445**	**1.2100e-003**	**0.0457**		**166.0751**	**166.0751**	**5.2100e-003**		**166.2053**

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	1.2453	12.5685	11.8507	0.0178		0.7301	0.7301		0.6728	0.6728	0.0000	1,746.2432	1,746.2432	0.5418		1,759.7870
Paving	0.1703					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4156**	**12.5685**	**11.8507**	**0.0178**		**0.7301**	**0.7301**		**0.6728**	**0.6728**	**0.0000**	**1,746.2432**	**1,746.2432**	**0.5418**		**1,759.7870**

3.5 Paving - 2019

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
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
Worker	0.0800	0.0560	0.6105	1.6700e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		166.0751	166.0751	5.2100e-003		166.2053
Total	**0.0800**	**0.0560**	**0.6105**	**1.6700e-003**	**0.1677**	**1.3100e-003**	**0.1690**	**0.0445**	**1.2100e-003**	**0.0457**		**166.0751**	**166.0751**	**5.2100e-003**		**166.2053**

3.6 Architectural Coating - 2019

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	3.0195					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423
Total	**3.2859**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**		**281.4481**	**281.4481**	**0.0238**		**282.0423**

3.6 Architectural Coating - 2019

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
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
Worker	0.0160	0.0112	0.1221	3.3000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.4000e-004	9.1300e-003		33.2150	33.2150	1.0400e-003		33.2411
Total	**0.0160**	**0.0112**	**0.1221**	**3.3000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.4000e-004**	**9.1300e-003**		**33.2150**	**33.2150**	**1.0400e-003**		**33.2411**

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	3.0195					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		282.0423
Total	**3.2859**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**	**0.0000**	**281.4481**	**281.4481**	**0.0238**		**282.0423**

3.6 Architectural Coating - 2019

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
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
Worker	0.0160	0.0112	0.1221	3.3000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.4000e-004	9.1300e-003		33.2150	33.2150	1.0400e-003		33.2411
Total	**0.0160**	**0.0112**	**0.1221**	**3.3000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.4000e-004**	**9.1300e-003**		**33.2150**	**33.2150**	**1.0400e-003**		**33.2411**

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	4.1858	16.8627	31.8701	0.0790	5.6840	0.0877	5.7717	1.5208	0.0822	1.6029		8,043.6710	8,043.6710	0.5728		8,057.9915
Unmitigated	4.1858	16.8627	31.8701	0.0790	5.6840	0.0877	5.7717	1.5208	0.0822	1.6029		8,043.6710	8,043.6710	0.5728		8,057.9915

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Convenience Market (24 Hour)	0.00	0.00	0.00		
Fast Food Restaurant with Drive Thru	1,414.02	1,414.02	1414.02	1,488,095	1,488,095
Gasoline/Service Station	1,834.08	1,834.08	1834.08	1,186,263	1,186,263
Parking Lot	0.00	0.00	0.00		
Total	3,248.10	3,248.10	3,248.10	2,674,357	2,674,357

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
Automobile Care Center	16.60	8.40	6.90	33.00	48.00	19.00	21	51	28
Convenience Market (24 Hour)	16.60	8.40	6.90	0.90	80.10	19.00	24	15	61
Fast Food Restaurant with Drive	16.60	8.40	6.90	2.20	78.80	19.00	29	21	50
Gasoline/Service Station	16.60	8.40	6.90	2.00	79.00	19.00	14	27	59
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955
Convenience Market (24 Hour)	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955
Fast Food Restaurant with Drive Thru	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955
Gasoline/Service Station	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955
Parking Lot	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955

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	0.0345	0.3140	0.2637	1.8800e-003		0.0239	0.0239		0.0239	0.0239		376.7556	376.7556	7.2200e-003	6.9100e-003	378.9945
NaturalGas Unmitigated	0.0345	0.3140	0.2637	1.8800e-003		0.0239	0.0239		0.0239	0.0239		376.7556	376.7556	7.2200e-003	6.9100e-003	378.9945

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					
Automobile Care Center	135.123	1.4600e-003	0.0133	0.0111	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003		15.8968	15.8968	3.0000e-004	2.9000e-004	15.9913
Convenience Market (24 Hour)	19.463	2.1000e-004	1.9100e-003	1.6000e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004		2.2898	2.2898	4.0000e-005	4.0000e-005	2.3034
Fast Food Restaurant with Drive Thru	2846.77	0.0307	0.2791	0.2344	1.6700e-003		0.0212	0.0212		0.0212	0.0212		334.9144	334.9144	6.4200e-003	6.1400e-003	336.9047
Gasoline/Service Station	201.064	2.1700e-003	0.0197	0.0166	1.2000e-004		1.5000e-003	1.5000e-003		1.5000e-003	1.5000e-003		23.6546	23.6546	4.5000e-004	4.3000e-004	23.7952
Parking Lot	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
Total		**0.0345**	**0.3140**	**0.2637**	**1.8800e-003**		**0.0239**	**0.0239**		**0.0239**	**0.0239**		**376.7556**	**376.7556**	**7.2100e-003**	**6.9000e-003**	**378.9945**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0.135123	1.4600e-003	0.0133	0.0111	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003		15.8968	15.8968	3.0000e-004	2.9000e-004	15.9913
Convenience Market (24 Hour)	0.019463	2.1000e-004	1.9100e-003	1.6000e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004		2.2898	2.2898	4.0000e-005	4.0000e-005	2.3034
Fast Food Restaurant with Drive Thru	2.84677	0.0307	0.2791	0.2344	1.6700e-003		0.0212	0.0212		0.0212	0.0212		334.9144	334.9144	6.4200e-003	6.1400e-003	336.9047
Gasoline/Service Station	0.201064	2.1700e-003	0.0197	0.0166	1.2000e-004		1.5000e-003	1.5000e-003		1.5000e-003	1.5000e-003		23.6546	23.6546	4.5000e-004	4.3000e-004	23.7952
Parking Lot	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
Total		**0.0345**	**0.3140**	**0.2637**	**1.8800e-003**		**0.0239**	**0.0239**		**0.0239**	**0.0239**		**376.7556**	**376.7556**	**7.2100e-003**	**6.9000e-003**	**378.9945**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2504	7.0000e-005	7.8600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0168	0.0168	4.0000e-005		0.0179
Unmitigated	0.2504	7.0000e-005	7.8600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0168	0.0168	4.0000e-005		0.0179

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	0.0290					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2208					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.4000e-004	7.0000e-005	7.8600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0168	0.0168	4.0000e-005		0.0179
Total	**0.2504**	**7.0000e-005**	**7.8600e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0168**	**0.0168**	**4.0000e-005**		**0.0179**

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	0.0290					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2208					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.4000e-004	7.0000e-005	7.8600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0168	0.0168	4.0000e-005		0.0179
Total	**0.2504**	**7.0000e-005**	**7.8600e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0168**	**0.0168**	**4.0000e-005**		**0.0179**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Toilet

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

Greenhouse Gas Emission Worksheet
N20 Mobile Emissions

Sycamore Canyon

Annual VMT*: 2,674,357

From CalEEMod 2016 Vehicle Fleet Mix Output:

Vehicle Type	Percent Type	CH4 Emission Factor (g/mile)**	CH4 Emission (g/mile)***	N2O Emission Factor (g/mile)**	N2O Emission (g/mile)***
Light Auto	55.0%	0.04	0.022	0.04	0.022
Light Truck < 3750 lbs	4.4%	0.05	0.0022	0.06	0.00264
Light Truck 3751-5750 lbs	20.0%	0.05	0.01	0.06	0.012
Med Truck 5751-8500 lbs	12.2%	0.12	0.01464	0.2	0.0244
Lite-Heavy Truck 8501-10,000 lbs	1.7%	0.12	0.00204	0.2	0.0034
Lite-Heavy Truck 10,001-14,000 lbs	0.6%	0.09	0.00054	0.125	0.00075
Med-Heavy Truck 14,001-33,000 lbs	2.1%	0.06	0.00126	0.05	0.00105
Heavy-Heavy Truck 33,001-60,000 lbs	3.0%	0.06	0.0018	0.05	0.0015
Other Bus	0.2%	0.06	0.00012	0.05	0.0001
Urban Bus	0.2%	0.06	0.00012	0.05	0.0001
Motorcycle	0.5%	0.09	0.00045	0.01	0.00005
School Bus	0.1%	0.06	0.00006	0.05	0.00005
Motor Home	0.1%	0.09	0.00009	0.125	0.000125
Total	**100.1%**		**0.05532**		**0.068165**

Total Emissions (metric tons) =
Emission Factor by Vehicle Mix (g/mi) x Annual VMT(mi) x 0.000001 metric tons/g

Conversion to Carbon Dioxide Equivalency (CO2e) Units based on Global Warming Potential (GWP)***

CH4	25	GWP
N2O	298	GWP
1 ton (short, US) =	0.90718474	metric ton

Annual Mobile Emissions:

	Total Emissions		Total CO2e units	
N20 Emissions:	0.1823	metric tons N2O	**54.32**	metric tons CO2e
		Project Total:	***54.32***	***metric tons CO2e***

References

* From CalEEMod 2016 results for mobile sources

** Table C.4: Methane and Nitrous Oxide Emission Factors for Mobile Sources by Vehicle and Fuel Type (g/mile).
in California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.
Assume Model year 2000-present, gasoline fueled.

*** California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.

**** Global warming potentials from IPCC Fourth Assessment Report

Greenhouse Gas Emission Worksheet
Construction Emissions

Sycamore Canyon

Annual Mobile Emissions:

Project Total:	***245 metric tons CO2e***
Amortarized (30 years)	**8.18**

References
CalEEMod Output

	Operation	Construction (Ann	Mobile	Total

APPENDIX C

BIOLOGICAL TECHNICAL REPORT

BIOLOGICAL TECHNICAL REPORT

FOR

CENTRAL AND SYCAMORE PROJECT

LOCATED IN THE CITY OF RIVERSIDE, RIVERSIDE COUNTY, CALIFORNIA

Prepared For:

KA Enterprises
5820 Oberlin Drive Suite 201, San Diego, California 92121
Contact: Eugene Marini
Phone: (858) 281-6091

Prepared By:

Glenn Lukos Associates, Inc.
29 Orchard
Lake Forest, California 92630
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Report Preparer: Tricia A. Campbell

June 30, 2017 [revised May 23, 2018]

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INFORMATION SUMMARY

A. Report Date: June 30, 2017 [revised May 23, 2018]

B. Report Title: Biological Technical Report for Central and Sycamore Project

C. Project site Location: City of Riverside, Riverside County

D. Owner/Applicant: Eugene Marini
5820 Oberlin Drive Suite 291, San Diego, California 92121
Phone: (858) 281-6091
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E. Principal Investigator: Glenn Lukos Associates, Inc.
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Report Preparer: Tricia A. Campbell

F. Report Summary: A biological study was performed for the proposed development of a roughly 2.71-acre property (Project site) located at the northeast corner of Sycamore Canyon Boulevard and Central Avenue, Riverside, California. The Project would construct a commercial development on the entire property. This document provides the results of a field study performed to evaluate the potential occurrence of biological resources and the requirements triggered by environmental laws and regulations. The site occurs within Criteria Cell 721 of Subunit 1 of the Sycamore Canyon/Box Springs Central Area Plan of the MSHCP. The Project site is not located within the MSHCP Narrow Endemic Plant Species Survey Area (NEPSSA), but it is located within the Criteria Area Plant Species Survey Area (CAPSSA) for Nevin's barberry (*Berberis nevinii*), smooth tarplant (*Centromadia pungens* ssp. *laevis*), and round-leaved filaree (*California macrophylla*). The Project site is located within the MSHCP Burrowing Owl Survey Area, but is not located within the MSHCP Mammal or Amphibian Areas. Proposed Constrained Linkage 7 occurs just south of the Project site. Habitat assessments were performed for special-status plants and animals and a jurisdictional waters and wetlands evaluation was conducted. The Project site does not support potential habitat for special-status plants (including NEPPA, CAPPSA), burrowing owl, riparian birds, and fairy shrimp. The only special-status animal it supports is coastal whiptail (*Aspidoscelis tigris stejnegeri*). The Project site lacks federal and state jurisdictional waters and wetlands as well as MSHCP riparian/riverine and vernal pool resources. Development of the Project site would have no potentially significant impacts under CEQA.

G. Individuals Conducting Fieldwork: Tricia A. Campbell

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1.0 INTRODUCTION

1.1 Background and Scope of Work

This document provides the results of a biological study for the approximately 2.71-acre Central and Sycamore Project (the Project) located in the City of Riverside, Riverside County, California [Exhibit 1 – Regional Map; Exhibit 2 – Vicinity Map]. This report identifies and evaluates impacts to biological resources associated with the proposed Project in the context of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), the California Environmental Quality Act (CEQA), and State and Federal regulations such as the Endangered Species Act (ESA), Clean Water Act (CWA), and the California Fish and Game Code.

The scope of this report includes a discussion of existing conditions for the approximately 2.71-acre Project site, all methods employed regarding the biological study, the documentation of botanical and wildlife resources identified (including special-status species), and an analysis of impacts to biological resources. Methods of the study include a review of relevant literature, field survey, and a Geographical Information System (GIS)-based analysis of vegetation communities. As appropriate, this report is consistent with accepted scientific and technical standards and survey guideline requirements issued by the U.S. Fish and Wildlife Service (USFWS), the California Department of Fish and Wildlife (CDFW), the California Native Plant Society (CNPS), and other applicable agencies/organizations.

For this report, the term *Project site* is defined as the approximately 2.71 acres of land proposed for direct and permanent impact by the Project.

The field study focused on a number of primary objectives that would comply with CEQA requirements, including (1) general reconnaissance survey and vegetation mapping; (2) general biological survey(s); (3) habitat assessments for special-status plant species (including species with applicable MSHCP survey requirements); (4) habitat assessments for special-status wildlife species (including species with applicable MSHCP survey requirements); (5) assessments for MSHCP riparian/riverine areas and vernal pools; and (6) assessments for areas subject to the jurisdiction of the U.S. Army Corps of Engineers (Corps) jurisdiction pursuant to Section 404 of the Clean Water Act, and CDFW jurisdiction pursuant to Division 2, Chapter 6, Section 1600–1616 of the California Fish and Game Code. Observations of all plant and wildlife species were recorded during the general biological survey and are included as Appendix A: Floral Compendium and Appendix B: Faunal Compendium.

1.2 Project Location

The Project site comprises approximately 2.71 acres in the City of Riverside, Riverside County California [Exhibit 1 – Regional Map] and is located within Section 33 of Township 2 South, Range 4 West, of the U.S. Geological Survey (USGS) 7.5" quadrangle map Riverside East (dated 1967 and photorevised in 1980) [Exhibit 2 – Vicinity Map]. The Project site is bordered by Sycamore Canyon Boulevard to the west, the Interstate 215/State Route 60 to the north and east, and Central Avenue to the south.

1.3 Project Description

The entire Project site will be developed into a commercial facility.

1.4 Existing Conditions

The Project site consists of mostly bare ground with disturbed vegetation. A small amount of Riversidean sage scrub is found along the western border of the Project site adjacent to Sycamore Canyon Boulevard. Based on the field conditions and review of historical satellite images, the Project site was heavily modified during construction of Sycamore Canyon Boulevard in 2005. The site was scraped, cut, devoid of vegetation and was used for spoil deposition (gravel, asphalt, dirt).

1.5 Relationship of the Project site to the MSHCP

1.5.1 MSHCP Background

The Western Riverside County MSHCP is a comprehensive habitat conservation/planning program for Western Riverside County. The intent of the MSHCP is to preserve native vegetation and meet the habitat needs of multiple species, rather than focusing preservation efforts on one species at a time. The MSHCP provides coverage (including take authorization for listed species) for special-status plant and animal species, as well as mitigation for impacts to special-status species and associated native habitats.

Through agreements with the U.S. Fish and Wildlife Service (USFWS) and CDFW, the MSHCP designates 146 special-status animal and plant species as Covered Species, of which the majority have no project-specific survey/conservation requirements. The MSHCP provides mitigation for project-specific impacts to these species for Projects that are compliant/consistent with MSHCP requirements, such that the impacts are reduced to below a level of significance pursuant to CEQA.

The Covered Species that are not yet adequately conserved have additional requirements in order for these species to ultimately be considered "adequately conserved". A number of these species have survey requirements based on a project's occurrence within a designated MSHCP survey area and/or based on the presence of suitable habitat. These include Narrow Endemic Plant Species (MSHCP *Volume I, Section 6.1.3*), as identified by the Narrow Endemic Plant Species Survey Areas (NEPSSA); Criteria Area Plant Species (MSHCP *Volume I, Section 6.3.2*) identified by the Criteria Area Plant Species Survey Areas (CAPSSA); animals species (burrowing owl, mammals, amphibians) identified by survey areas (MSHCP *Volume I, Section 6.3.2*); and species associated with riparian/riverine areas and vernal pool habitats, i.e., least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo, and three species of listed fairy shrimp (MSHCP *Volume I, Section 6.1.2*). An additional 28 species (MSHCP *Volume I*, *Table 9.3*) not yet adequately conserved have species-specific objectives in order for the species to become adequately conserved. However, these species do not have project-specific survey requirements.

The goal of the MSHCP is to have a total Conservation Area in excess of 500,000 acres, including approximately 347,000 acres on existing Public/Quasi-Public (PQP) Lands, and approximately 153,000 acres of Additional Reserve Lands targeted within the MSHCP Criteria Area. The MSHCP is divided into 16 separate Area Plans, each with its own conservation goals and objectives. Within each Area Plan, the Criteria Area is divided into Subunits, and further divided into Criteria Cells and Cell Groups (a group of criteria cells). Each Cell Group and ungrouped, independent Cell has designated "criteria" for the purpose of targeting additional conservation lands for acquisition. Projects located within the Criteria Area are subject to the Habitat Evaluation and Acquisition Negotiation Strategy (HANS) process to determine if lands are targeted for inclusion in the MSHCP Reserve. In addition, all Projects located within the Criteria Area are subject to the Joint Project Review (JPR) process, where the Project is reviewed by the Regional Conservation Authority (RCA) to determine overall compliance/consistency with the biological requirements of the MSHCP.

1.5.2 Relationship of the Project site to the MSHCP

The Project site is located within Criteria Cell 721 of Subunit 1 of the Sycamore Canyon/Box Springs Central Area Plan [Exhibit 3 – MSHCP Overlay Map]. The Project site is not located within the MSHCP Narrow Endemic Plant Species Survey Area (NEPSSA), but it is located within the Criteria Area Plant Species Survey Area (CAPSSA) for Nevin's barberry (*Berberis nevinii*), smooth tarplant (*Centromadia pungens* ssp. *laevis*), and round-leaved filaree (*California macrophylla*). The Project site is located within the MSHCP Burrowing Owl Survey Area, but is not located within the MSHCP Mammal or Amphibian Areas. Proposed Constrained Linkage 7 occurs just south of the Project site.

Within the designated Survey Areas, the MSHCP requires habitat assessments, and focused surveys within areas of suitable habitat. For locations with positive survey results, the MSHCP requires that 90 percent of those portions of the property that provide for long-term conservation value for the identified species shall be avoided until it is demonstrated that conservation goals for the particular species have been met throughout the MSHCP. Findings of equivalency shall be made demonstrating that the 90-percent standard has been met, if applicable. If equivalency findings cannot be demonstrated, then "biologically equivalent or superior preservation" must be provided.

2.0 METHODOLOGY

In order to adequately identify biological resources in accordance with the requirements of CEQA, Glenn Lukos Associates (GLA) assembled biological data consisting of two main components:

- Performance of vegetation mapping for the Project site;
- Performance of habitat assessments, and site-specific biological survey(s) to evaluate the presence/absence of special-status species in accordance with the requirements of CEQA; and

- Performance of an evaluation for the presence/absence of federal and state jurisdictional waters and wetlands.

The focus of the biological surveys was determined through initial site reconnaissance, a review of the CNDDB [CDFW 2017], CNPS 8th edition online inventory (CNPS 2017), Natural Resource Conservation Service (NRCS) soil data, MSHCP species and habitat maps and sensitive soil maps (Dudek 2003), other pertinent literature, and knowledge of the region. A site-specific general survey within the Project site was conducted on foot for each target plant and/or animal species identified below.

2.1 Summary of Surveys

GLA conducted biological studies to identify and analyze actual or potential impacts to biological resources associated with development of the Project site. Observations of all plant and wildlife species were recorded during the above survey effort(s) [Appendix A: Floral Compendium and Appendix B: Faunal Compendium]. The study conducted include the following:

- Performance of vegetation mapping;
- Performance of site-specific habitat assessments to evaluate the potential presence/absence of special-status species (or potentially suitable habitat) to the satisfaction of CEQA, federal and state regulations, and MSHCP requirements;
- Burrowing Owl burrow survey; and
- Performance of an aquatic resources assessment (including wetlands and riparian habitat) to evaluate the potential presence of resources subject to the jurisdiction of the U.S. Army Corps of Engineers (Corps), Regional Water Quality Control Board (Regional Board), and CDFW.

Table 2-1 provides a summary list of survey date(s), survey type(s) and personnel.

Table 2-1. Summary of Biological Survey(s) for the Project Site.

Survey Type	2017 Survey Dates	Biologist
General Biological Survey and Habitat Assessment	April 26 2017	Tricia Campbell
Burrowing Owl Burrow Survey	April 26, 2017	Tricia Campbell

Individual plants and wildlife species are evaluated in this report based on their "special-status." For the purpose of this report, plants were considered "special-status" based on one or more of the following criteria:

- Listing through the Federal and/or State Endangered Species Act (ESA);
- Occurrence in the CNPS Rare Plant Inventory (Rank 1A/1B, 2A/2B, 3, or 4); and/or
- Occurrence in the CNDDB inventory.

Wildlife species were considered "special-status" based on one or more of the following criteria:

- Listing through the Federal and/or State ESA; and
- Designation by the State as a Species of Special Concern (SSC) or California Fully Protected (CFP) species.

Vegetation communities and habitats were considered "special-status" based on one or more of the following criteria:

- Global (G) and/or State (S) ranking of category 3 or less based on CDFW (see Section 3.2.2 below for further explanation); and
- Aquatic habitat types.

2.2 Botanical Resources

A site-specific survey program was designed to accurately document the botanical resources within the Project site, and consisted of five components: (1) a literature search; (2) preparation of a list of target special-status plant species and sensitive vegetation communities that could occur within the Project site; (3) general field reconnaissance survey; (4) vegetation mapping according to Holland (1986) and (5) habitat assessments for special-status plants (including those with MSHCP requirements).

2.2.1 Literature Search

Prior to conducting fieldwork, pertinent literature on the flora of the region was examined. A thorough archival review was conducted using available literature and other historical records. These resources included the following:

- CNPS *Inventory of Rare and Endangered Plants of California* (eighth edition). Rare Plant Advisory Committee, David Tibor, Convening Editor, California Native Plant Society. Sacramento, CA x + 388pp; (CNPS 2010); and

- CNDDB for the USGS 7.5' quadrangles: Riverside East, San Bernardino South, Redlands, Sunnymead, Perris, Steele Peak, Lake Matthews, Riverside West, and Fontana. (CNDDB 2017).

2.2.2 Vegetation Mapping

Vegetation communities within the Project site were mapped according to Holland (1986). Where necessary, deviations were made when areas did not fit into exact habitat descriptions. Plant communities were mapped in the field directly onto a 200-scale (1"=200') aerial

photograph. A vegetation map is included as Exhibit 4. Representative site photographs are included as Exhibit 5.

2.2.3 Special-Status Plant Species and Habitats Evaluated for the Project site

A literature search was conducted to obtain a list of special-status plants with the potential to occur within the Project site. The CNDDB was initially consulted to determine well-known occurrences of plants and habitats of special concern in the region. Other sources used to develop a list of target species for the survey program included the CNPS online inventory (2017).

Based on this information, vegetation profiles and a list of target sensitive plant species and habitats that could occur within the Project site were developed and incorporated into a mapping and survey program to achieve the following goals: (1) characterize the vegetation associations and land use; (2) prepare a detailed floristic compendium; (3) identify the potential for any special status plants that may occur within the Project site; and (4) prepare a map showing the distribution of any sensitive botanical resources associated with the Project site, if applicable.

The Project site is not located within the MSHCP Narrow Endemic Plant Species Survey Area (NEPSSA), but it is located within the Criteria Area Plant Species Survey Area (CAPSSA) for Nevin's barberry, smooth tarplant, and round-leaved filaree. Pursuant to the MSHCP, these target species must be evaluated through habitat assessments and focused surveys (if suitable habitat is present).

2.2.4 Botanical Surveys

GLA biologist Tricia Campbell visited the site on April 26, 2017 to conduct a general plant survey and habitat assessment for special-status plant species. An aerial photograph, a soil map, and/or a topographic map were used to determine the community types and other physical features that may support sensitive and uncommon taxa or communities within the Project site. The survey was conducted by following meandering transects within the Project site. All plant species encountered during the field surveys were identified and recorded following the above-referenced guidelines adopted by CNPS (2010) and CDFW by Nelson (1984). A complete list of the plant species observed is provided in Appendix A. Scientific nomenclature and common names used in this report follow Baldwin et al (2012) and Munz (1974).

2.3 <u>Wildlife Resources</u>

Wildlife species were evaluated and detected during the field survey by sight, call, tracks, and scat. Site reconnaissance was conducted in such a manner as to allow inspection of the entire Project site by direct observation, including the use of binoculars. Observations of physical evidence and direct sightings of wildlife were recorded in field notes during the visit. A complete list of wildlife species observed within the Project site is provided in Appendix B. Scientific nomenclature and common names for vertebrate species referred to in this report follow the Complete List of Amphibian, Reptile, Bird, and Mammal Species in California (CDFG 2008), Standard Common and Scientific Names for North American Amphibians,

Turtles, Reptiles, and Crocodilians 6th Edition, Collins and Taggert (2009) for amphibians and reptiles, and the American Ornithologists' Union Checklist 7th Edition (2009) for birds. The methodology (including any applicable survey protocols) utilized to conduct general survey(s), habitat assessment(s), and/or focused survey(s) for special-status animals are included below.

2.3.1 General Surveys

Birds

During the general biological and reconnaissance survey within the Project site, birds were identified incidentally within each habitat type. Birds were detected by both direct observation and by vocalizations, and were recorded in field notes.

Mammals

During general biological and reconnaissance survey within the Project site, mammals were identified incidentally within each habitat type. Mammals were detected both by direct observations and by the presence of diagnostic sign (i.e., tracks, burrows, scat, etc.).

Reptiles and Amphibians

During general biological and reconnaissance surveys within the Project site, reptiles and amphibians were identified incidentally during surveys within each habitat type. Habitats were examined for diagnostic reptile sign, which include shed skins, scat, tracks, snake prints, and lizard tail drag marks. All reptiles and amphibian species observed, as well as diagnostic sign, were recorded in field notes.

2.3.2 Special-Status Animal Species Evaluated for the Project site

A literature search was conducted to obtain a list of special-status wildlife species with the potential to occur within the Project site. Species were evaluated based on two factors, including: 1) species identified by the CNDDB as occurring (either currently or historically) on or in the vicinity of the Project site, and 2) any other special-status animals that are known to occur within the vicinity of the Project site, or for which potentially suitable habitat occurs on the Project site.

2.3.3 Habitat Assessment for Special Status Animal Species

GLA biologist Tricia Campbell conducted habitat assessments for special-status animal species on April 26, 2017. An aerial photograph, soil map and/or topographic map were used to determine the community types and other physical features that may support special-status and uncommon taxa within the Project site.

During the field survey, the entire site was walked by foot, looking for potentially suitable burrows and indirect sign of burrowing owl.

2.3.4 Focused Surveys for Special-Status Animals Species

The Project site is located within the MSHCP survey area for the burrowing owl (*Athene cunicularia*) [Exhibit 3 – MSHCP Overlay Map]. Within areas of suitable habitat, the MSHCP first requires a focused burrow survey to map all suitable burrows. The focused burrow survey was conducted on April 26, 2017. As discussed in Section 2.3.3 above, the entire site was walked by foot, looking for potentially suitable burrows and indirect sign of burrowing owl. No burrows or owl sign were present, thus, a focused survey was not performed.

The Project site did not provide habitat for any other species with special status that would trigger a focused survey.

2.4 Federal and State Jurisdictional Waters and Wetlands Assessment

Prior to beginning the field study a 200-scale color aerial photograph and the previously cited USGS topographic maps were examined to determine any the locations of potential areas of Corps/CDFW jurisdiction. The entire Project site was checked in the field on foot for the presence of definable channels and/or wetland vegetation, soils and hydrology. A jurisdictional delineation of federal and state waters and wetlands was deemed unnecessary.

2.5 MSHCP Riparian/Riverine Areas and Vernal Pools

GLA surveyed the site for riparian/riverine areas and vernal pool/seasonal pool habitat. *Volume I, Section 6.1.2* of the MSHCP describes the process through which protection of riparian/riverine areas and vernal pools would occur within the MSHCP Plan Area. The purpose is to ensure that the biological functions and values of these areas throughout the MSHCP Plan Area are maintained such that habitat values for species inside the MSHCP Conservation Area are maintained. The MSHCP requires that as projects are proposed within the overall Plan Area, the effect of those projects on riparian/riverine areas and vernal pools must be addressed.

The MSHCP defines riparian/riverine areas as *lands which contain Habitat dominated by trees, shrubs, persistent emergent mosses and lichens, which occur close to or which depend upon soils moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year.*

The MSHCP defines vernal pools as *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 wetland indictors of hydrology and/or vegetation during the drier portion of the growing season.*

With the exception of wetlands created for the purpose of providing wetlands habitat or resulting from human actions to create open waters or from the alteration of natural stream courses, areas demonstrating characteristics as described above which are artificially created are not included in these definitions.

3.0 REGULATORY SETTING

The proposed Project is subject to state and federal regulations associated with a number of regulatory programs. These programs often overlap and were developed to protect natural resources, including: state- and federally listed plants and animals; aquatic resources including rivers and creeks, ephemeral streambeds, wetlands, and areas of riparian habitat; other special-status species which are not listed as threatened or endangered by the state or federal governments; and other special-status vegetation communities.

3.1 State and/or Federally Listed Plants or Animals

3.1.1 State of California Endangered Species Act

California's Endangered Species Act (CESA) defines an endangered species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease." The State defines a threatened species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the commission as rare on or before January 1, 1985 is a threatened species." Candidate species are defined as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list." Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission. Unlike the Federal Endangered Species Act (FESA), CESA does not list invertebrate species.

Article 3, Sections 2080 through 2085, of the CESA addresses the taking of threatened, endangered, or candidate species by stating "No person shall import into this state, export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided." Under the CESA, "take" is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Exceptions authorized by the state to allow "take" require permits or memoranda of understanding and can be authorized for endangered species, threatened species, or candidate species for scientific, educational, or management purposes and for take incidental to otherwise lawful activities. Sections 1901 and 1913 of the California Fish and Game Code provide that notification is required prior to disturbance.

3.1.2 Federal Endangered Species Act

The FESA of 1973 defines an endangered species as "any species that is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any

species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under provisions of Section 9(a)(1)(B) of the FESA it is unlawful to "take" any listed species. "Take" is defined in Section 3(18) of FESA: "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Further, the USFWS, through regulation, has interpreted the terms "harm" and "harass" to include certain types of habitat modification that result in injury to, or death of species as forms of "take." These interpretations, however, are generally considered and applied on a case-by-case basis and often vary from species to species. In a case where a property owner seeks permission from a Federal agency for an action that could affect a federally listed plant and animal species, the property owner and agency are required to consult with USFWS. Section 9(a)(2)(b) of the FESA addresses the protections afforded to listed plants.

3.1.3 State and Federal Take Authorizations for Listed Species

Federal or state authorizations of impacts to or incidental take of a listed species by a private individual or other private entity would be granted in one of the following ways:

- Section 7 of the FESA stipulates that any federal action that may affect a species listed as threatened or endangered requires a formal consultation with USFWS to ensure that the action is not likely to jeopardize the continued existence of the listed species or result in destruction or adverse modification of designated critical habitat. 16 U.S.C. 1536(a)(2).
- In 1982, the FESA was amended to give private landowners the ability to develop Habitat Conservation Plans (HCP) pursuant to Section 10(a) of the FESA. Upon development of an HCP, the USFWS can issue incidental take permits for listed species where the HCP specifies at minimum, the following: (1) the level of impact that will result from the taking, (2) steps that will minimize and mitigate the impacts, (3) funding necessary to implement the plan, (4) alternative actions to the taking considered by the applicant and the reasons why such alternatives were not chosen, and (5) such other measures that the Secretary of the Interior may require as being necessary or appropriate for the plan.
- Sections 2090-2097 of the CESA require that the state lead agency consult with CDFW on projects with potential impacts on state-listed species. These provisions also require CDFW to coordinate consultations with USFWS for actions involving federally listed as well as state-listed species. In certain circumstances, Section 2080.1 of the California Fish and Game Code allows CDFW to adopt the federal incidental take statement or the 10(a) permit as its own based on its findings that the federal permit adequately protects the species under state law.

3.1.4 Take Authorizations Pursuant to the MSHCP

The Western Riverside County MSHCP was adopted on June 17, 2003, and an Implementing Agreement (IA) was executed between the Federal and State Wildlife Agencies (USFWS and CDFW) and participating entities. The MSHCP is a comprehensive habitat conservation-planning program for western Riverside County. The intent of the MSHCP is to preserve native vegetation and meet the habitat needs of multiple species, rather than focusing preservation efforts on one species at a time. As such, the MSHCP is intended to streamline review of individual projects with respect to the species and habitats addressed in the MSHCP, and to provide for an overall

Conservation Area that would be of greater benefit to biological resources than would result from a piecemeal regulatory approach. The MSHCP provides coverage (including take authorization for listed species) for special-status plant and animal species, as well as mitigation for impacts to sensitive species.

Through agreements with the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW), the MSHCP designates 146 special-status animal and plant species that receive some level of coverage under the plan. Of the 146 "Covered Species" designated under the MSHCP, the majority of these species has no additional survey/conservation requirements. In addition, through project participation with the MSHCP, the MSHCP provides mitigation for project-specific impacts to Covered Species so that the impacts would be reduced to below a level of significance pursuant to CEQA. As noted above, project-specific survey requirements exist for species designated as "Covered Species not yet adequately conserved". These include Narrow Endemic Plant Species, as identified by the Narrow Endemic Plant Species Survey Areas (NEPSSA); Criteria Area Plant Species identified by the Criteria Area Species Survey Areas (CASSA); animal species as identified by survey area; and plant and animal species associated with riparian/riverine areas and vernal pool habitats (*Volume I, Section 6.1.2* of the MSHCP document).

3.2 California Environmental Quality Act

3.2.1 CEQA Guidelines Section 15380

CEQA requires evaluation of a project's impacts on biological resources and provides guidelines and thresholds for use by lead agencies for evaluating the significance of proposed impacts. Sections 5.1.1 and 5.2.2 below set forth these thresholds and guidelines. Furthermore, pursuant to the CEQA Guidelines Section 15380, CEQA provides protection for non-listed species that could potentially meet the criteria for state listing. For plants, CDFW recognizes that plants on Lists 1A, 1B, or 2 of the CNPS *Inventory of Rare and Endangered Plants in California* may meet the criteria for listing and should be considered under CEQA. CDFW also recommends protection of plants, which are regionally important, such as locally rare species, disjunct populations of more common plants, or plants CNPS Ranked 3 or 4.

3.2.2 Non-Listed Special-Status Plants, Wildlife and Vegetation Communities Evaluated Under CEQA

Federally Designated Special-Status Species

Within recent years, the USFWS instituted changes in the listing status of candidate species. Former C1 (candidate) species are now referred to simply as candidate species and represent the only candidates for listing. Former C2 species (for which the USFWS had insufficient evidence to warrant listing) and C3 species (either extinct, no longer a valid taxon or more abundant than was formerly believed) are no longer considered as candidate species. Therefore, these species are no longer maintained in list form by the USFWS, nor are they formally protected. This term is employed in this document, but carries no official protections. All references to federally protected species in this report (whether listed, proposed for listing, or candidate) include the

most current published status or candidate category to which each species has been assigned by USFWS.

For this report the following acronyms are used for federal special-status species:

- FE Federally listed as Endangered
- FT Federally listed as Threatened
- FPE Federally proposed for listing as Endangered
- FPT Federally proposed for listing as Threatened

State-Designated Special-Status Species

Some mammals and birds are protected by the state as Fully Protected (SFP) Mammals or Fully Protected Birds, as described in the California Fish and Game Code, Sections 4700 and 3511, respectively. California SSC are designated as vulnerable to extinction due to declining population levels, limited ranges, and/or continuing threats. This list is primarily a working document for the CDFW's CNDDB project. Informally listed taxa are not protected, but warrant consideration in the preparation of biotic assessments. For some species, the CNDDB is only concerned with specific portions of the life history, such as roosts, rookeries, or nest sites.

For this report the following acronyms are used for State special-status species:

- SE State-listed as Endangered
- ST State-listed as Threatened
- SR State-listed as Rare
- SCE State Candidate for listing as Endangered
- SCT State Candidate for listing as Threatened
- SFP State Fully Protected
- SP State Protected
- SSC State Species of Special Concern

California Native Plant Society

The CNPS is a private plant conservation organization dedicated to the monitoring and protection of sensitive species in California. The CNPS's Eighth Edition of the *California Native Plant Society's Inventory of Rare and Endangered Plants of California* separates plants of interest into five ranks. CNPS has compiled an inventory comprised of the information focusing on geographic distribution and qualitative characterization of Rare, Threatened, or Endangered vascular plant species of California. The list serves as the candidate list for listing as threatened and endangered by CDFW. CNPS has developed five categories of rarity that are summarized in Table 3-1.

Table 3-1. CNPS Ranks 1, 2, 3, & 4, and Threat Code Extensions

CNPS Rank	Comments
Rank 1A – Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere	Thought to be extinct in California based on a lack of observation or detection for many years.
Rank 1B – Plants Rare, Threatened, or Endangered in California and Elsewhere	Species, which are generally rare throughout their range that are also judged to be vulnerable to other threats such as declining habitat.
Rank 2A – Plants presumed Extirpated in California, But Common Elsewhere	Species that are presumed extinct in California but more common outside of California
Rank 2B – Plants Rare, Threatened or Endangered in California, But More Common Elsewhere	Species that are rare in California but more common outside of California
Rank 3 – Plants About Which More Information Is Needed (A Review List)	Species that are thought to be rare or in decline but CNPS lacks the information needed to assign to the appropriate list. In most instances, the extent of surveys for these species is not sufficient to allow CNPS to accurately assess whether these species should be assigned to a specific rank. In addition, many of the Rank 3 species have associated taxonomic problems such that the validity of their current taxonomy is unclear.
Rank 4 – Plants of Limited Distribution (A Watch List)	Species that are currently thought to be limited in distribution or range whose vulnerability or susceptibility to threat is currently low. In some cases, as noted above for Rank 3 species, CNPS lacks survey data to accurately determine status in California. Many species have been placed on Rank 4 in previous editions of the "Inventory" and have been removed as survey data has indicated that the species are more common than previously thought. CNPS recommends that species currently included on this list should be monitored to ensure that future substantial declines are minimized.
Extension	**Comments**
.1 – Seriously endangered in California	Species with over 80% of occurrences threatened and/or have a high degree and immediacy of threat.
.2 – Fairly endangered in California	Species with 20-80% of occurrences threatened.
.3 – Not very endangered in California	Species with <20% of occurrences threatened or with no current threats known.

3.3 Jurisdictional Waters

3.3.1 Army Corps of Engineers

Pursuant to Section 404 of the Clean Water Act, the Corps regulates the discharge of dredged and/or fill material into waters of the United States. The term "waters of the United States" is defined in Corps regulations at 33 CFR Part 328.3(a) as:

(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
(2) All interstate waters including interstate wetlands;
(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect foreign commerce including any such waters:
(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
(ii) From which fish or shell fish are or could be taken and sold in interstate or foreign commerce; or
(iii) Which are used or could be used for industrial purpose by industries in interstate commerce;
(4) All impoundments of waters otherwise defined as waters of the United States under the definition;
(5) Tributaries of waters identified in paragraphs (a) (1)-(4) of this section;
(6) The territorial seas;
(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1)-(6) of this section.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not waters of the United States.
(8) Waters of the United States do not include prior converted cropland.[1]

Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the EPA.

In the absence of wetlands, the limits of Corps jurisdiction in non-tidal waters, such as intermittent streams, extend to the OHWM which is defined at 33 CFR 328.3(e) as:

> *...that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*

[1] The term "prior converted cropland" is defined in the Corps' Regulatory Guidance Letter 90-7 (dated September 26, 1990) as "wetlands which were both manipulated (drained or otherwise physically altered to remove excess water from the land) and cropped before 23 December 1985, to the extent that they no longer exhibit important wetland values. Specifically, prior converted cropland is inundated for no more than 14 consecutive days during the growing season…." [Emphasis added.]

The term “wetlands” (a subset of “waters of the United States”) is defined at 33 CFR 328.3(b) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support...a prevalence of vegetation typically adapted for life in saturated soil conditions." In 1987 the Corps published a manual to guide its field personnel in determining jurisdictional wetland boundaries. The methodology set forth in the 1987 Wetland Delineation Manual and the Arid West Supplement generally require that, in order to be considered a wetland, the vegetation, soils, and hydrology of an area exhibit at least minimal hydric characteristics. While the manual and Supplement provide great detail in methodology and allow for varying special conditions, a wetland should normally meet each of the following three criteria:

- more than 50 percent of the dominant plant species at the site must be typical of wetlands (i.e., rated as facultative or wetter in the National List of Plant Species that Occur in Wetlands[2]);

- soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation (e.g., a gleyed color, or mottles with a matrix of low chroma indicating a relatively consistent fluctuation between aerobic and anaerobic conditions); and

- Whereas the 1987 Manual requires that hydrologic characteristics indicate that the ground is saturated to within 12 inches of the surface for at least five percent of the growing season during a normal rainfall year, the Arid West Supplement does not include a quantitative criteria with the exception for areas with “problematic hydrophytic vegetation”, which require a minimum of 14 days of ponding to be considered a wetland.

On January 9, 2001 and June 5, 2007 the Supreme Court of the United States issued two rulings *Solid Waste Agency of Northern Cook County* v. *United States Army Corps of Engineers, et al* [SWANCC] and *Rapanos* v. *United States* and *Carabell* v. *United States Army Corps of Engineers* [Rapanos], respectively). The first case reiterated that “isolated” waters (those with no interstate commerce connection) are not subject to federal jurisdiction under Section 404 of the Clean Water Act. The second case determined (in a plurality vote) that a water must have a nexus with a “traditionally navigable water” (an undefined term) to be subject to federal jurisdiction under Section 404 of the Clean Water Act. The Corps and EPA has continued to grapple with providing clear guidance on these two decisions and continue to propose and/or issue guidance.

On June 29, 2015, the EPA and the Corps issued the Clean Water Rule in the *Federal Register*, Volume 80, No. 124, which defines the scope of waters of the United States protected under the CWA. The rule becomes effective on August 28, 2015 and is a definitional rule intended to clarify the scope of “waters of the Unites States”. In this rule, waters of the Unites States would include the following categories of jurisdictional waters: (1) traditional navigable waters, (2) interstate waters, (3) territorial seas, (4) impoundments of jurisdictional waters, (5) tributary waters, (6) adjacent waters, and (7) regional features subject to a case-specific analysis to determine if a significant nexus exists, and (8) waters in the 100-year floodplain, or within 4,000

[2] Lichvar, R. W. 2013. *The National Wetland Plant List:* 2013 wetland ratings. Phytoneuron 2013-49: 1-241.

feet of a water of the United States, subject to a case-specific analysis, to determine if a significant nexus exists.

Each of these features, as necessary, are described below.

Traditional Navigable Waters, Interstate Waters, Territorial Seas, Impoundments of Jurisdictional Waters

There is no change to the definitions of the first four types: traditional navigable waters, interstate waters, territorial seas, impoundments of jurisdictional waters.

Tributaries

The terms tributary and tributaries, as described in 33 CFR Part 328.3, each mean a water that contributes flow, either directly or through another water (including an impoundment identified in paragraph (a)(4) of this section), to a water identified in paragraphs (a)(1) through (3) of this section that is characterized by the presence of the physical indicators of a bed and banks and an ordinary high water mark. These physical indicators demonstrate there is volume, frequency, and duration of flow sufficient to create a bed and banks and an ordinary high water mark, and thus to qualify as a tributary. A tributary can be a natural, man-altered, or man-made water and includes waters such as rivers, streams, canals, and ditches not excluded under paragraph (b) of this section. A water that otherwise qualifies as a tributary under this definition does not lose its status as a tributary if, for any length, there are one or more constructed breaks (such as bridges, culverts, pipes, or dams), or one or more natural breaks (such as wetlands along the run of a stream, debris piles, boulder fields, or a stream that flows underground) so long as a bed and banks and an ordinary high water mark can be identified upstream of the break. A water that otherwise qualifies as a tributary under this definition does not lose its status as a tributary if it contributes flow through a water of the United States that does not meet the definition of tributary or through a non-jurisdictional water to a water identified in paragraphs (a)(1) through (3) of this section.

Adjacent Waters

As described in 33 CFR, Part 328.3, the term adjacent means bordering, contiguous, or neighboring a water identified in paragraphs (a)(1) through (5) of this section, including waters separated by constructed dikes or barriers, natural river berms, beach dunes, and the like. For purposes of adjacency, an open water such as a pond or lake includes any wetlands within or abutting its ordinary high water mark. Adjacency is not limited to waters located laterally to a water identified in paragraphs (a)(1) through (5) of this section. Adjacent waters also include all waters that connect segments of a water identified in paragraphs (a)(1) through (5) or are located at the head of a water identified in paragraphs (a)(1) through (5) of this section and are bordering, contiguous, or neighboring such water. Waters being used for established normal farming, ranching, and silviculture activities (33 U.S.C. 1344(f)) are not adjacent.

Adjacent is based on whether the feature neighbors a traditional navigable water. *Neighboring* is defined in 33 CFR Part 328.3 as:

(i) All waters located within 100 feet of the ordinary high water mark of a water identified in paragraphs (a)(1) through (5) of this section. The entire water is neighboring if a portion is located within 100 feet of the ordinary high water mark;

(ii) All waters located within the 100-year floodplain of a water identified in paragraphs (a)(1) through (5) of this section and not more than 1,500 feet from the ordinary high water mark of such water. The entire water is neighboring if a portion is located within 1,500 feet of the ordinary high water mark and within the 100-year floodplain; and

(iii) All waters located within 1,500 feet of the high tide line of a water identified in paragraphs (a)(1) or (a)(3) of this section, and all waters within 1,500 feet of the ordinary high water mark of the Great Lakes. The entire water is neighboring if a portion is located within 1,500 feet of the high tide line or within 1,500 feet of the ordinary high water mark of the Great Lakes.

Case-Specific Waters

The final rule creates *case-specific waters*, meaning they are not jurisdictional by rule but are subject to case-specific analysis to determine if a significant nexus exists and the water is a water of the United States. They are as follows:

- Prairie potholes
- Carolina and Delmarva bays
- Pocosins
- western vernal pools in California
- Texas coastal prairie wetlands.
- Waters within the 100-year floodplain of a traditional navigable water, interstate water, or the territorial seas **and** waters within 4,000 feet of the high tide line or the ordinary high water mark of a traditional navigable water, interstate water, the territorial seas, impoundments, or covered tributary are subject to case-specific significant nexus determinations, unless the water is excluded under paragraph (b) of the rule.

Case-specific waters may be evaluated as ‘‘similarly situated,’’ but it must be first demonstrated that these waters function alike and are sufficiently close to function together in affecting downstream waters. The significant nexus analysis must then be conducted based on consideration of the functions provided by those waters in combination in the point of entry watershed.

The final rule keeps existing exclusions but now excludes by rule certain ditches from jurisdiction, including ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary, and ditches with intermittent flow that are not a relocated tributary, or excavated in a tributary, or drain wetlands. The final rule also excludes groundwater and erosional features as well as stormwater control features constructed to convey, treat, or store stormwater, and cooling ponds that are created in dry land.

SUMMARY

The agencies will assert jurisdiction over the following waters:

1. Traditional navigable waters
2. Interstate waters
3. Territorial seas
4. Impoundments of jurisdictional waters
5. Tributaries having bed and bank and ordinary high water mark
6. Adjacent waters neighboring traditional navigable waters, interstate waters, territorial seas, impoundments of jurisdictional waters, or tributaries with neighboring defined as follows: (1) Waters located in whole or in part within 100 feet of the ordinary high water mark of 1 thru 5 above; (2) Waters located in whole or in part in the 100-year floodplain and that are within 1,500 feet of the ordinary high water mark of 1 thru 5 above (floodplain waters); or (3) Waters located in whole or in part within 1,500 feet of the high tide line of 1 or 2 and waters located within 1,500 feet of the ordinary high water mark of the Great Lakes.

The agencies will decide jurisdiction over the following waters based on a case-specific analysis to determine whether they have a significant nexus:

- Prairie potholes, Carolina and Delmarva bays, pocosins, western vernal pools in California, and Texas coastal prairie wetlands; and
- Waters within the 100-year floodplain of a traditional navigable water, interstate water, or the territorial seas and waters within 4,000 feet of the high tide line or the ordinary high water mark of a traditional navigable water, interstate water, the territorial seas, impoundments, or covered tributary are subject to case-specific significant nexus determinations, unless the water is excluded under paragraph (b) of the rule.

The agencies generally will **not** assert jurisdiction over the following features:

- Ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary
- Ditches with intermittent flow that are not a relocated tributary, or excavated in a tributary, or drain wetlands.
- Groundwater and erosional features as well as stormwater control features constructed to convey, treat, or store stormwater, and cooling ponds that are created in dry land.
- Prior converted cropland and waste treatment systems.
- Erosional features, including gullies, rills, and ephemeral features that do not have a bed and banks and ordinary high water mark.

The agencies will apply the significant nexus standard as follows:

- A significant nexus is present when waters ‘‘either alone or in combination with similarly situated [wet]lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as ‘navigable.’ ’’

3.3.2 Regional Water Quality Control Board

Section 401 of the Clean Water Act requires any applicant for a Section 404 permit to obtain certification from the State that the discharge (and the operation of the facility being constructed) will comply with the applicable effluent limitation and water quality standards. In California this 401 certification is obtained from the Regional Water Quality Control Board. The Corps, by law, cannot issue a Section 404 permit until a 401 certification is issued or waived.

Subsequent to the SWANCC decision, the Chief Counsel for the State Water Resources Control Board issued a memorandum that addressed the effects of the SWANCC decision on the Section 401 Water Quality Certification Program.[3] The memorandum stating that for waters that are no longer considered subject to federal jurisdiction pursuant to Section 404 of the Clean Water Act, but which remain "waters of the state", the State will continue to regulate discharges under the Porter-Cologne Act. In such cases the applicant must apply for and obtain a Waste Discharge Requirement from the Regional Board.

3.3.3 California Department of Fish and Wildlife

Pursuant to Division 2, Chapter 6, Sections 1600-1603 of the California Fish and Game Code, the CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake, which supports fish or wildlife.

CDFW defines a "stream" (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." CDFW definition of "lake" includes "natural lakes or man-made reservoirs."

CDFW jurisdiction within altered or artificial waterways is based upon the value of those waterways to fish and wildlife. CDFW Legal Advisor has prepared the following opinion[4]:

- Natural waterways that have been subsequently modified and which have the potential to contain fish, aquatic insects and riparian vegetation will be treated like natural waterways...

- Artificial waterways that have acquired the physical attributes of natural stream courses and which have been viewed by the community as natural stream courses, should be treated by [CDFW] as natural waterways...

- Artificial waterways without the attributes of natural waterways should generally not be subject to Fish and Game Code provisions...

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[3] Wilson, Craig M. January 25, 2001. Memorandum addressed to State Board Members and Regional Board Executive Officers.

[4] California Department of Fish and Game. Environmental Services Division (ESD). 1994. A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607, California Fish and Game Code.

Thus, CDFW jurisdictional limits closely mirror those of the Corps. Exceptions are CDFW's addition of artificial stock ponds and irrigation ditches constructed on uplands, and the addition of riparian habitat supported by a river, stream, or lake regardless of the riparian area's federal wetland status.

4.0 RESULTS

This section provides the results of general biological survey, vegetation mapping, habitat assessments for special-status plants and animals, an assessment for MSHCP riparian/riverine areas and vernal pools, and a jurisdictional assessment for Waters of the United States (including wetlands) subject to the jurisdiction of the Corps and Regional Board, and streams (including riparian vegetation) and lakes subject to the jurisdiction of CDFW.

4.1 Existing Conditions

The Project site consists of mostly developed lands with disturbed vegetation. A small amount of Riversidean sage scrub is found long the western border of the Project site adjacent to Sycamore Canyon Boulevard.

4.2 Vegetation Mapping

During vegetation mapping of the Project site, one vegetation alliance was identified. Table 4-1 provides a summary of vegetation alliances/land uses and the corresponding acreage. Detailed descriptions of each vegetation type follow the table. A Vegetation Map is attached as Exhibit 4. Photographs depicting the various vegetation types and land uses are attached as Exhibit 5.

Table 4-1. Summary of Vegetation/Land Use Types for the Project Site

VEGETATION COMMUNITY	ACREAGE
Riversidean Sage Scrub	0.61
Developed/Disturbed Lands	2.10
TOTAL	**2.71**

4.2.1 RIVERSIDEAN SAGE SCRUB

Approximately 0.61 acre of the Project site consists of a cut slope revegetated with Riversidean sage scrub. This vegetation community on the Project site was dominated by California buckwheat (*Eriogonum fasciculatum*), brittlebush (*Encelia farinosa*), and foxtail brome (*Bromus madritensis*). Other species within the scrub included hoary saltbush (*Atriplex canescens*) and deerweed (*Acmispon glaber*).

4.2.2 DISTURBED/DEVELOPED LANDS

Approximately 2.10 acres of the Project site consist of disturbed/developed lands. Vegetation in these areas is sparse and ruderal in nature, consisting largely of invasive non-native plants including common sow thistle (*Sonchus oleraceus*), foxtail barley (*Hordeum murinum*), prickly lettuce (*Lactuca serriola*), red-stemmed filaree (*Erodium cicutarium*), Russian thistle (*Salsola tragus*), short-podded mustard (*Hirschfeldia incana*), tocalote (*Centaurea melitensis*), and yellow sweet clover (*Melilotus indicus*).

4.3 Special-Status Vegetation Communities

The CNDDB identifies the following six special-status vegetation communities for the Riverside East, San Bernardino South, Redlands, Sunnymead, Perris, Steele Peak, Lake Matthews, Riverside West, and Fontana USGS quadrangle maps: Riversidean Alluvial Fan Sage Scrub, Southern California Arroyo Chub/Santa Ana Sucker Stream, Southern Coast Live Oak Riparian Forest, Southern Cottonwood Willow Riparian Forest, Southern Sycamore Alder Riparian Woodland, and Southern Willow Scrub. The Project site does not support any of these special-status vegetation types, identified by the CNDDB.

The site does support 0.61 acre of revegetated Riversidean sage scrub, a vegetation community that has declined appreciably in extent across the past several decades due to human development and can support a wide array of special-status plants and animals. The sage scrub on the Project site is limited in size, growing on a cut slope, and is surrounded by developed roadways. It is expected to have minimal function and value relative to intact sage scrub communities in the western Riverside County. Refer to Section 5.2 for an analysis of impact to this vegetation under CEQA.

4.4 Special-Status Plants

No special-status plants were detected at the Project site, including Nevin's barberry, smooth tarplant, and round-leaved filaree. The Project site does not support potentially suitable habitat for the three MSHCP Criteria Area Plant Species needing review under the MSHCP [Exhibit 3 – MSHCP Overlay Map]. Species with Table 4-2 provides a list of special-status plants evaluated for the Project site through the general biological survey and habitat assessments. Species were evaluated based on the following factors: 1) species identified by the CNDDB and CNPS as occurring (either currently or historically) on or in vicinity of the Project site, 2) applicable MSHCP survey areas, and 3) any other special-status plants that are known to occur within the vicinity of the Project site, or for which potentially suitable habitat occurs within the site.

Table 4-2. Special-Status Plants Evaluated for the Project Site

Status	
Federal	**State**
FE – Federally Endangered	SE – State Endangered
FT – Federally Threatened	ST – State Threatened
CNPS	

Rank 1A – Plants presumed extirpated in California and either rare or extinct elsewhere.
Rank 1B – Plants rare, threatened, or endangered in California and elsewhere.
Rank 2A – Plants presumed extirpated in California, but common elsewhere.
Rank 2B – Plants rare, threatened, or endangered in California, but more common elsewhere.
Rank 3 – Plants about which more information is needed (a review list).
Rank 4 – Plants of limited distribution (a watch list).

Threat Code extension
.1 – Seriously endangered in California (over 80% occurrences threatened)
.2 – Fairly endangered in California (20-80% occurrences threatened)
.3 – Not very endangered in California (<20% of occurrences threatened or no current threats known)

MSHCP
MSHCP = No additional action necessary
MSHCP(a) = Surveys may be required as part of wetlands mapping
MSHCP(b) = Surveys may be required within the Narrow Endemic Plant Species survey area
MSHCP(c) = Surveys may be required within locations shown on survey maps
MSHCP(d) = Surveys may be required within Criteria Area
MSHCP(e) = Conservation requirements identified in species-specific conservation objectives need to be met before classified as a Covered Species
MSHCP(f) = Covered species when a Memorandum of Understanding is executed with the Forest Service Land

Occurrence

- Does not occur – The site does not contain habitat for the species and/or the site does not occur within the geographic range of the species.
- Absent – The site contains suitable habitat for the species, but the species has been confirmed absent through focused surveys.
- Not expected to occur – The species is not expected to occur onsite due to low habitat quality, however absence cannot be ruled out.
- Potential to occur – The species has a potential to occur onsite based on suitable habitat, however its presence/absence could not be confirmed.
- Present – The species was detected onsite incidentally or through focused surveys.

Species Name	Status	Habitat Requirements	Occurrence
Alvin Meadow beadstraw *Galium californicum* ssp. *primum*	Federal: None State: None CNPS: Rank 1B.2 MSHCP(f)	Granitic and sandy soils in chaparral and lower montane coniferous forest.	Does not occur. Project site is outside of species' geographic range and habitat is absent.
Brand's star phacelia *Phacelia stellaris*	Federal: None State: None CNPS: Rank 1B.1 MSHCP(b)	Coastal dunes and coastal sage scrub.	Does not occur at the Project site; suitable soils are absent and sage scrub is too disturbed to support species.
Bristly sedge *Carex comosa*	Federal: None State: None CNPS: Rank 2B.1	Coastal prairie, marshes and swamps (lake margins), and valley and foothill grassland.	Does not occur at the Project site; suitable hydrology absent.

Species Name	Status	Habitat Requirements	Occurrence
California satintail *Imperata brevifolia*	Federal: None State: None CNPS: Rank 2B.1	Mesic soils in chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), and riparian scrub.	Does not occur at the Project site; suitable hydrology absent.
Chaparral ragwort *Senecio aphanactis*	Federal: None State: None CNPS: Rank 2B.2	Chaparral, cismontane woodland, coastal scrub. Sometimes associated with alkaline soils.	Does not occur at the Project site; soils unsuitable and sage scrub present is revegetated and too disturbed to support the species.
Chaparral sand-verbena *Abronia villosa* var. *aurita*	Federal: None State: None CNPS: Rank 1B.1	Sandy soils in chaparral, coastal sage scrub.	Does not occur at the Project site; soils not suitable.
Coulter's goldfields *Lasthenia glabrata* ssp. *coulteri*	Federal: None State: None CNPS: Rank 1B.1 MSHCP(d)	Playas, vernal pools, marshes and swamps (coastal salt).	Does not occur at the Project site; suitable soils and mesic conditions absent.
Coulter's matilija poppy *Romneya coulteri*	Federal: None State: None CNPS: Rank 4.2 MSHCP	Often in burns in chaparral and coastal scrub.	Absent. Species would have been detectible at time of field survey.
Davidson's saltscale *Atriplex serenana* var. *davidsonii*	Federal: None State: None CNPS: Rank 1B.2 MSHCP(d)	Alkaline soils in coastal sage scrub, coastal bluff scrub.	Does not occur at the Project site; soils and conditions unsuitable.
Gambel's water cress *Nasturtium gambelii*	Federal: FE State: ST CNPS: Rank 1B.1	Marshes and swamps (freshwater or brackish).	Does not occur at the Project site; hydrology absent.
Horn's milk-vetch *Astragalus hornii* var. *hornii*	Federal: None State: None CNPS: Rank 1B.1	Lake margins with alkaline soils, meadows and seeps, and playas.	Does not occur at the Project site; hydrology and suitable soils absent.
Little mousetail *Myosurus minimus* ssp. *apus*	Federal: None State: None CNPS: Rank 3.1 MSHCP(d)	Valley and foothill grassland, vernal pools (alkaline soils).	Does not occur at the Project site; hydrology and suitable soils absent.
Long-spined spineflower *Chorizanthe polygonoides* var. *longispina*	Federal: None State: None CNPS: Rank 1B.2 MSHCP	Clay soils in chaparral, coastal sage scrub, meadows and seeps,and valley and foothill grasslands	Does not occur at the Project site; soils and site conditions inappropriate.
Los Angeles sunflower *Helianthus nuttallii* ssp. *parishii*	Federal: None State: None CNPS: Rank 1A	Marshes and swamps (coastal salt and freshwater).	Does not occur at the Project site; hydrology and conditions unsuitable.

Species Name	Status	Habitat Requirements	Occurrence
Many-stemmed dudleya *Dudleya multicaulis*	Federal: None State: None CNPS: Rank 1B.2 MSHCP(b)	Chaparral, coastal sage scrub, valley and foothill grassland. Often occurring in clay soils.	Does not occur at the Project site; soils unsuitable and sage scrub present is a cut slope.
Marsh sandwort *Arenaria paludicola*	Federal: FE State: SE CNPS: Rank 1B.1	Bogs and fens, freshwater marshes and swamps.	Does not occur at the Project site; hydrology and conditions unsuitable.
Mesa horkelia *Horkelia cuneata* var. *puberula*	Federal: None State: None CNPS: Rank 1B.1	Sandy or gravelly soils in chaparral (maritime), cismontane woodland, and coastal scrub.	Does not occur at the Project site; suitable soils absent and site lacks natural topography and top soil.
Munz's onion *Allium munzii*	Federal: FE State: ST CNPS: Rank 1B.1 MSHCP(b)	Clay soils in chaparral, coastal sage scrub, and valley and foothill grasslands	Does not occur at the Project site; suitable soils absent and site too disturbed and modified to support species.
Nevin's barberry *Berberis nevinii*	Federal: FE State: SE CNPS: Rank 1B.1 MSHCP(d)	Sandy or gravelly soils in chaparral, cismontane woodland, coastal scrub, and riparian scrub.	Species was confirmed absent and no survey is required. No potential habitat is present and if the species was present, it would have been observed during the April 26, 2017 field survey as it is a perennial species. Site does not provide the necessary soils and conditions for species.
Palmer's grapplinghook *Harpagonella palmeri*	Federal: None State: None CNPS: Rank 4.2 MSHCP	Chaparral, coastal sage scrub, valley and foothill grassland. Occurring in clay soils.	Does not occur at the Project site. Site does not provide the necessary soils and conditions for species.
Paniculate tarplant *Deinandra paniculata*	Federal: None State: None CNPS: Rank 4.2	Usually in vernally mesic, sometimes sandy soils in coastal scrub, valley and foothill grassland, and vernal pools.	Does not occur at the Project site. This species tolerates high levels of disturbance but was confirmed absent during the field visit.
Parish's brittlescale *Atriplex parishii*	Federal: None State: None CNPS: Rank 1B.1 MSHCP(d)	Chenopod scrub, playas, vernal pools.	Does not occur at the Project site. Site lacks suitable soils and conditions.

Species Name	Status	Habitat Requirements	Occurrence
Parish's bush-mallow *Malacothamnus parishii*	Federal: None State: None CNPS: Rank 1A	Chaparral and coastal scrub	Does not occur at the Project site; conditions too disturbed and topography modified.
Parish's desert-thorn *Lycium parishii*	Federal: None State: None CNPS: Rank 2B.3	Coastal sage scrub, Sonoran desert scrub	Absent. Conditions not suitable and the species would have been detectable at the time of the field visit. Species confirmed absent.
Parish's gooseberry *Ribes divaricatum* var. *parishii*	Federal: None State: None CNPS: Rank 1A	Riparian woodland	Does not occur at the Project site; hydrology and conditions not suitable.
Parry's spineflower *Chorizanthe parryi* var. *parryi*	Federal: None State: None CNPS: Rank 1B.1 MSHCP	Sandy or rocky soils in open habitats of chaparral and coastal sage scrub.	Does not occur at the Project site; soils and conditions not suitable.
Payson's jewelflower *Caulanthus simulans*	Federal: None State: None CNPS: Rank 4.2 MSHCP	Sandy or granitic soils in chaparral and coastal scrub.	Does not occur at the Project site; soils and conditions not suitable.
Peninsular spineflower *Chorizanthe leptotheca*	Federal: None State: None CNPS: Rank 4.2 MSHCP	Alluvial fan, granitic. Chaparral, coastal scrub, lower montane coniferous forest.	Does not occur at the Project site; soils and conditions not suitable.
Peruvian dodder *Cuscuta obtusiflora* var. *glandulosa*	Federal: None State: None CNPS: Rank 2B.2	Marshes and swamps (freshwater). Annual vine (parasitic).	Does not occur at the Project site; hydrology and suitable conditions absent.
Plummer's mariposa lily *Calochortus plummerae*	Federal: None State: None CNPS: Rank 4.2 MSHCP	Granitic, rock soils within chaparral, cismontane woodland, coastal sage scrub, lower montane coniferous forest, valley and foothill grassland.	Does not occur at the Project site; soils and conditions not suitable.
Prairie wedge grass *Sphenopholis obtusata*	Federal: None State: None CNPS: Rank 2B.2	Mesic soils in cismontane woodland, meadows and seeps.	Does not occur at the Project site; hydrology and suitable conditions absent.
Pringle's monardella *Monardella pringlei*	Federal: None State: None CNPS: Rank 1A	Sandy soils in coastal sage scrub.	Does not occur at the Project site; soils and conditions not suitable.
Robinson's pepper grass *Lepidium virginicum* var. *robinsonii*	Federal: None State: None CNPS: Rank 4.3	Chaparral, coastal sage scrub	Does not occur at the Project site; too disturbed with top soils removed.

Species Name	Status	Habitat Requirements	Occurrence
Round-leaved filaree *California macrophylla*	Federal: None State: None CNPS: Rank 1B.1 MSHCP(d)	Clay soils in cismontane woodland, valley and foothill grassland	Suitable soils (clay soils) and vegetation are absent from the Project site. There is no potential for the species to occur and thus, no survey is required.
Salt marsh bird's-beak *Chloropyron maritimum* ssp. *maritimum*	Federal: FE State: SE CNPS: Rank 1B.2	Coastal dune, coastal salt marshes and swamps.	Does not occur at the Project site; hydrology and suitable conditions absent.
Salt Spring checkerbloom *Sidalcea neomexicana*	Federal: None State: None CNPS: Rank 2B.2	Mesic, alkaline soils in chaparral, coastal sage scrub, lower montane coniferous forest, Mojavean desert scrub, and playas.	Does not occur at the Project site; suitable soils and mesic conditions absent.
San Bernardino aster *Symphyotrichum defoliatum*	Federal: None State: None CNPS: Rank 1B.2	Cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, valley and foothill grassland (vernally mesic).	Does not occur at the Project site; hydrology and other needed conditions absent.
San Diego ambrosia *Ambrosia pumila*	Federal: FE State: None CNPS: Rank 1B.1 MSHCP(b)	Chaparral, coastal sage scrub, valley and foothill grassland, vernal pools. Often in disturbed habitats.	Does not occur at the Project site; natural topography absent due to cut and spoil deposition. Site too disturbed.
San Diego sagewort *Artemisia palmeri*	Federal: None State: None CNPS: Rank 4.2	Sandy and mesic soils in chaparral, coastal scrub, riparian forest, riparian scrub, and riparian woodland.	Does not occur at the Project site; suitable soils and conditions absent.
San Jacinto Valley crownscale *Atriplex coronata* var. *notatior*	Federal: FE State: None CNPS: Rank 1B.1 MSHCP(d)	Alkaline soils in chenopod scrub, valley and foothill grassland, vernal pools.	Does not occur at the Project site; soils and hydrology needed by species absent from site.
Santa Ana River woolly star *Eriastrum densifolium* ssp. *sanctorum*	Federal: FE State: SE CNPS: Rank 1B.1 MSHCP	Alluvial fan sage scrub, chaparral. Occurring on sandy or rocky soils.	Does not occur at the Project site; hydrology and soils absent.
Slender-horned spineflower *Dodecahema leptoceras*	Federal: FE State: SE CNPS: Rank 1B.1 MSHCP(b)	Sandy soils in alluvial scrub, chaparral, cismontane woodland.	Does not occur at the Project site; hydrology and soils absent.

Species Name	Status	Habitat Requirements	Occurrence
Small-flowered microseris *Microseris douglasii* spp. *platycarpha*	Federal: None State: None CNPS: Rank 4.2 MSHCP	Cismontane woodland, coastal sage scrub, valley and foothill grassland, vernal pools. Occurring on clay soils.	The Project site lacks clay soils, the necessary vegetation community this species occurs in, and the site is far too disturbed to support this species. A survey is not needed because there is no potential for the species to be present.
Small-flowered morning-glory *Convolvulus simulans*	Federal: None State: None CNPS: Rank 4.2	Chaparral (openings), coastal sage scrub, valley and foothill grassland. Occurring on clay soils and serpentinite seeps.	Does not occur at the Project site; suitable soils and conditions absent.
Smooth tarplant *Centromadia pungens* spp. *laevis*	Federal: None State: None CNPS: Rank 1B.1 MSHCP(d)	Alkaline soils in chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grasslands, disturbed habitats.	Species does not have potential to occur at the Project site. The species occurs in alkaline, silty soils where soils are wet/damp for extended periods of time. No survey is needed.
Snake cholla *Cylindropuntia californica* var. *californica*	Federal: None State: None CNPS: Rank 1B.1	Chaparral, coastal sage scrub.	Absent. Species would have been detectable if present during field visit.
South coast saltscale *Atriplex pacifica*	Federal: None State: None CNPS: Rank 1B.2	Coastal bluff scrub, coastal dunes, coastal sage scrub, playas.	Does not occur at the Project site; soils and conditions unsuitable.
Spreading navarretia *Navarretia fossalis*	Federal: FT State: None CNPS: Rank 1B.1 MSHCP(b)	Vernal pools, playas, chenopod scrub, marshes and swamps (assorted shallow freshwater).	Does not occur at the Project site; hydrology and other conditions absent.
Thread-leaved brodiaea *Brodiaea filifolia*	Federal: FT State: SE CNPS: Rank 1B.1 MSHCP(d)	Clay soils in chaparral (openings), cismontane woodland, coastal sage scrub, playas, valley and foothill grassland, vernal pools.	Does not occur at the Project site; suitable soils absent and site too disturbed.
Vernal barley *Hordeum intercedens*	Federal: None State: None CNPS: Rank 3.2 MSHCP	Coastal dunes, coastal sage scrub, valley and foothill grassland (saline flats and depressions), vernal pools.	Does not occur at the Project site; mesic conditions not present and site too disturbed.
Western spleenwort *Asplenium vespertinum*	Federal: None State: None CNPS: Rank 4.2	Rocky soils in chaparral, cismontane woodland, and coastal scrub.	Does not occur at the Project site; suitable soils and conditions absent.

Species Name	Status	Habitat Requirements	Occurrence
White rabbit-tobacco *Pseudognaphalium leucocephalum*	Federal: None State: None CNPS: Rank 2B.2	Sandy or gravelly soils in chaparral, cismontane woodland, coastal scrub, and riparian woodland.	Does not occur at the Project site; hydrology and suitable conditions absent.
Woven-spored lichen *Texosporium sancti-jacobi*	Federal: None State: None CNPS: Rank 3	On soil, small mammal pellets, dead twigs, and on *Selaginella* spp. Chaparral (openings).	Does not occur at the Project site; site too disturbed.
Wright's trichocoronis *Trichocoronis wrightii* var. *wrightii*	Federal: None State: None CNPS: Rank 2B.1 MSHCP(b)	Alkaline soils in meadows and seeps, marshes and swamps, riparian scrub, vernal pools.	Does not occur at the Project site; suitable soils and hydrology absent.

4.4.1 Special-Status Plants Detected at the Project site

No special-status plants were detected. No special-status plant has potential to be present based on hydrology, soils, vegetation association, and/or site disturbances.

4.5 Special-Status Animals

A single special-status animal was found, coastal whiptail (*Aspidoscelis tigris stejnegeri*). Refer to Section 4.5.1 for more detail. No other special-status animals were detected at the Project site, including burrowing owl. Table 4-3 provides a list of special-status animals evaluated for the Project site through a general biological survey and habitat assessments. Species were evaluated based on the following factors, including: 1) species identified by the CNDDB as occurring (either currently or historically) on or in the vicinity of the Project site, 2) applicable MSHCP survey areas, and 3) any other special-status animals that are known to occur within the vicinity of the Project site, for which potentially suitable habitat occurs on the site.

Table 4-3. Special Status Animals Evaluated for the Project Site

Status	
Federal	**State**
FE – Federally Endangered	SE – State Endangered
FT – Federally Threatened	ST – State Threatened
FPT – Federally Proposed Threatened	SCE – State Endangered Candidate
FC – Federal Candidate	CFP – California Fully-Protected Species
	SSC – Species of Special Concern
MSHCP	
MSHCP = No additional action necessary	
MSHCP(a) = Surveys may be required as part of wetlands mapping	
MSHCP(b) = Surveys may be required within the Narrow Endemic Plant Species survey area	
MSHCP(c) = Surveys may be required within locations shown on survey maps	
MSHCP(d) = Surveys may be required within Criteria Area	
MSHCP(e) = Conservation requirements identified in species-specific conservation objectives need to be met before classified as a Covered Species	

MSHCP(f) = Covered species when a Memorandum of Understanding is executed with the Forest Service Land
Western Bat Working Group (WBWG) H – High Priority LM – Low-Medium Priority M – Medium Priority MH – Medium-High Priority
<u>Occurrence</u> • Absent – The species is absent from the site, either because the site lacks suitable habitat for the species, the site is located outside of the known range of the species, or focused surveys has confirmed the absence of the species. • Not expected to occur – The species is not expected to occur onsite due to low habitat quality, however absence cannot be ruled out. • Potential to occur – The species has a potential to occur onsite based on suitable habitat, however its presence/absence could not be confirmed. • Present – The species was detected onsite incidentally or through focused surveys.

Species Name	Status	Habitat Requirements	Occurrence
Invertebrates			
Delhi-sands flower-loving fly *Rhaphiomidas terminatus abdominalis*	Federal: FE State: None MSHCP	Fine, sandy soils, often associated with wholly or partially consolidated dunes referred to as the "Delhi" series. Vegetation consists of a sparse cover, including Californica buckwheat, California croton, deerweed, and evening primrose.	Absent from Project site due to lack of suitable habitat (soils unsuitable).
Quino checkerspot butterfly *Euphydryas editha quino*	Federal: FE State: None MSHCP	Larval and adult phases each have distinct habitat requirements tied to host plant species and topography. Larval host plants include *Plantago erecta* and *Castilleja exserta*. Adults occur on sparsely vegetated rounded hilltops and ridgelines, and are known to disperse through disturbed habitats to reach suitable nectar plants.	Absent from Project site due to lack of suitable habitat (too disturbed and isolated).
Riverside fairy shrimp *Streptocephalus woottoni*	Federal: FE State: None MSHCP(a)	Restricted to deep seasonal vernal pools, vernal pool-like ephemeral ponds, and stock ponds.	Absent from Project site due to lack of suitable habitat (lacks season ponds or depressions).

Species Name	Status	Habitat Requirements	Occurrence
Fish			
Santa Ana speckled dace *Rhinichthys osculus* spp. *3*	Federal: None State: SSC	Occurs in the headwaters of the Santa Ana and San Gabriel Rivers. May be extirpated from the Los Angeles River system. Requires permanent flowing streams with summer water temperatures of 17-20 C. Usually inhabits shallow cobble and gravel riffles.	Absent from Project site due to lack of suitable habitat.
Santa Ana sucker *Catostomus santaanae*	Federal: FT State: SSC MSHCP	Small, shallow streams, less than 7 meters in width, with currents ranging from swift in the canyons to sluggish in the bottom lands. Preferred substrates are generally coarse and consist of gravel, rubble, and boulders with growths of filamentous algae, but occasionally they are found on sand/mud substrates.	Absent from Project site due to lack of suitable habitat.
Amphibians			
Southern mountain yellow-legged frog *Rana muscosa*	Federal: FE State: SE, SSC MSHCP(c)	Streams and small pools in ponderosa pine, montane hardwood-conifer, and montane riparian habitat types.	Absent from Project site due to lack of suitable habitat (montane species).
Western spadefoot *Spea hammondii*	Federal: None State: SSC MSHCP	Seasonal pools in coastal sage scrub, chaparral, and grassland habitats.	Absent from Project site due to lack of suitable habitat.
Reptiles			
California glossy snake *Arizona elegans occidentalis*	Federal: None State: SSC	Inhabits arid scrub, rocky washes, grasslands, chaparral.	Absent from Project site due to lack of suitable habitat (site too disturbed and isolated).
Coastal whiptail *Aspidoscelis tigris stejnegeri (multiscutatus)*	Federal: None State: SSC MSHCP	Open, often rocky areas with little vegetation, or sunny microhabitats within shrub or grassland associations.	Single individual detected during field visit. Refer to Section 4.5.1 for more detail and Section 5.4 for an analysis of impact to the species from development of the Project.
Coast horned lizard *Phrynosoma blainvillii*	Federal: None State: SSC MSHCP	Occurs in a variety of vegetation types including coastal sage scrub,	Not expected to occur on the Project site. Site too

Species Name	Status	Habitat Requirements	Occurrence
		chaparral, annual grassland, oak woodland, and riparian woodlands.	disturbed, isolated, and conditions not suitable.
Coast patch-nosed snake *Salvadora hexalepis virgultea*	Federal: None State: SSC	Occurs in coastal chaparral, desert scrub, washes, sandy flats, and rocky areas.	Absent from Project site due to lack of suitable habitat.
Red-diamond rattlesnake *Crotalus ruber*	Federal: None State: SSC MSHCP	Habitats with heavy brush and rock outcrops, including coastal sage scrub and chaparral.	No potential for the species to be present due to the site being surrounded by city roads and I-215.
San Diego banded gecko *Coleonyx variegatus abbotti*	Federal: None State: SSC MSHCP	Primarily a desert species, but also occurs in cismontane chaparral, desert scrub, and open sand dunes.	Absent from Project site due to lack of suitable habitat (site too small and "isolated" from other potential habitat).
Silvery legless lizard *Anniella pulchra pulchra*	Federal: None State: SSC	Occurs primarily in areas with sandy or loose organic soil, or where there is plenty of leaf litter. Associated with coastal sage scrub, chaparral, coastal dunes, valley/foothill grasslands, oak woodlands, and pine forests.	Absent from Project site due to lack of suitable habitat (site too small and "isolated" from other potential habitat).
Two-striped garter snake *Thamnophis hammondii*	Federal: None State: SSC	Aquatic snake typically associated with wetland habitats such as streams, creeks, and pools.	Absent from Project site due to lack of suitable habitat (no aquatic habitats).
Western pond turtle *Emys marmorata*	Federal: None State: SSC MSHCP	Slow-moving permanent or intermittent streams, small ponds and lakes, reservoirs, abandoned gravel pits, permanent and ephemeral shallow wetlands, stock ponds, and treatment lagoons. Abundant basking sites and cover necessary, including logs, rocks, submerged vegetation, and undercut banks.	Absent from Project site due to lack of suitable habitat (no aquatic habitats).
Birds			
Bald eagle (nesting & wintering) *Haliaeetus leucocephalus*	Federal: Delisted State: SE, CFP MSHCP	Primarily in or near seacoasts, rivers, swamps, and large lakes. Perching sites consist of large trees or snags with heavy limbs or broken tops.	Absent from Project site due to lack of suitable habitat (no nesting or foraging).

Species Name	Status	Habitat Requirements	Occurrence
Burrowing owl (burrow sites & some wintering sites) *Athene cunicularia*	Federal: None State: SSC MSHCP(c)	Shortgrass prairies, grasslands, lowland scrub, agricultural lands (particularly rangelands), coastal dunes, desert floors, and some artificial, open areas as a year-long resident. Occupies abandoned ground squirrel burrows as well as artificial structures such as culverts and underpasses.	The Project site occurs within the MSHCP survey area for burrowing owl. During the field survey, the entire site was walked by foot, looking for potentially suitable burrows and indirect sign of the species. No burrows or sign were found. Per the MSHCP survey protocol, when potential burrow habitat is absent, no survey is required.
Coastal California gnatcatcher *Polioptila californica californica*	Federal: FT State: SSC MSHCP	Low elevation coastal sage scrub and coastal bluff scrub.	The Riversidean sage scrub present is too limited in extent and isolated from other adjacent potential habitat for this species. This species is judged to have no potential to be present on the Project site.
Least Bell's vireo (nesting) *Vireo bellii pusillus*	Federal: FE State: SE MSHCP(a)	Dense riparian habitats with a stratified canopy, including southern willow scrub, mule fat scrub, and riparian forest.	Absent from Project site due to lack of suitable habitat (riparian scrub).
Long-eared owl (nesting) *Asio otus*	Federal: None State: SSC	Riparian habitats are required by the long-eared owl, but it also uses live-oak thickets and other dense stands of trees.	Absent from Project site due to lack of suitable habitat (riparian, oak woodland).
Southwestern willow flycatcher (nesting) *Empidonax traillii extimus*	Federal: FE State: SE MSHCP(a)	Riparian woodlands along streams and rivers with mature dense thickets of trees and shrubs.	Absent from Project site due to lack of suitable habitat (mature riparian forest/scrub).
Swainson's hawk (nesting) *Buteo swainsoni*	Federal: None State: ST MSHCP	Summer in wide open spaces of the American West. Nest in grasslands, but can use sage flats and agricultural lands. Nests are placed in lone trees.	Not expected to occur on the Project site. The Project site is outside the nesting range of this species and the Project site does not support potential foraging habitat for wintering or migrating individuals. During migration/winter this species occurs in groups and is associated with large expanses of agriculture and/or open grasslands. The Project site lacks potential habitat and conditions for this

Species Name	Status	Habitat Requirements	Occurrence
			species. No potential to be present.
Tricolored blackbird (nesting colony) *Agelaius tricolor*	Federal: None State: SCE MSHCP	Breeding colonies require nearby water, a suitable nesting substrate, and open-range foraging habitat of natural grassland, woodland, or agricultural cropland.	Absent from Project site due to lack of suitable habitat (extensive freshwater marsh, agriculture, grasslands).
Western yellow-billed cuckoo (nesting) *Coccyzus americanus occidentalis*	Federal: FT State: SE MSHCP(a)	Dense, wide riparian woodlands with well-developed understories.	Absent from Project site due to lack of suitable habitat.
White-tailed kite (nesting) *Elanus leucurus*	Federal: None State: FP MSHCP	Low elevation open grasslands, savannah-like habitats, agricultural areas, wetlands, and oak woodlands. Dense canopies used for nesting and cover.	The Project site lacks the open landscape needed for foraging by the species and the site lacks shrubs or trees for nesting by this species. No potential for this species to occur.
Yellow warbler (nesting) *Setophaga petechia*	Federal: None State: SSC MSHCP	Breed in lowland and foothill riparian woodlands dominated by cottonwoods, alders, or willows and other small trees and shrubs typical of low, open-canopy riparian woodland. During migration, forages in woodland, forest, and shrub habitats.	Absent from Project site due to lack of suitable habitat (riparian forest).
Mammals			
American badger *Taxidea taxus*	Federal: None State: SSC	Most abundant in drier open stages of most scrub, forest, and herbaceous habitats, with friable soils.	There is no potential for this species to occur on the Project site. During the April 26, 2017 field survey, the entire site was checked for burrows and there were no badger burrows. Because the site is surrounded by development, there is no potential for badger to use the site for foraging.
Los Angeles pocket mouse *Perognathus longimembris brevinasus*	Federal: None State: SSC MSHCP(c)	Fine, sandy soils in coastal sage scrub and grasslands.	Absent from Project site due to lack of suitable habitat (site “isolated” and far too disturbed).
Northwestern San Diego pocket mouse *Chaetodipus fallax fallax*	Federal: None State: SSC MSHCP	Coastal sage scrub, sage scrub/grassland ecotones, and chaparral.	Absent from Project site due to lack of suitable habitat (site “isolated” and far too disturbed).

Species Name	Status	Habitat Requirements	Occurrence
Pallid bat *Antrozous pallidus*	Federal: None State: SSC WBWG: H	Deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting.	Absent from Project site due to lack of suitable habitat.
Pocketed free-tailed bat *Nyctinomops femorosaccus*	Federal: None State: SSC WBWG: M	Rocky areas with high cliffs in pine-juniper woodlands, desert scrub, palm oasis, desert wash, and desert riparian.	Absent from Project site due to lack of suitable habitat.
San Bernardino kangaroo rat *Dipodomys merriami parvus*	Federal: FE State: SSC MSHCP(c)	Typically found in Riversidean alluvial fan sage scrub and sandy loam soils, alluvial fans and floodplains, and along washes with nearby sage scrub.	Absent from Project site due to lack of suitable habitat (site lacks alluvial scrub).
San Diego black-tailed jackrabbit *Lepus californicus bennettii*	Federal: None State: SSC MSHCP	Occupies a variety of habitats, but is most common among shortgrass habitats. Also occurs in sage scrub, but needs open habitats.	The Project site does not provide potential habitat for this species. The site is surrounded by development. There is no potential for this species to be present.
San Diego desert woodrat *Neotoma lepida intermedia*	Federal: None State: SSC MSHCP	Occurs in a variety of shrub and desert habitats, primarily associated with rock outcrops, boulders, cacti, or areas of dense undergrowth.	Confirmed absent from Project site lacks suitable habitat.
Southern grasshopper mouse *Onychomys torridus ramona*	Federal: None State: SSC	Desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover.	Absent from Project site due to lack of suitable habitat (site "isolated" and far too disturbed).
Stephens' kangaroo rat *Dipodomys stephensi*	Federal: FE State: ST MSHCP	Open grasslands or sparse shrublands with less than 50% vegetation cover during the summer.	Absent from Project site due to lack of suitable habitat (site "isolated" and far too disturbed).
Western mastiff bat *Eumops perotis californicus*	Federal: None State: SSC WBWG: H	Occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, and chaparral. Roosts in crevices in cliff faces, high buildings, trees, and tunnels.	Absent from Project site due to lack of suitable habitat.
Western yellow bat *Lasiurus xanthinus*	Federal: None State: SSC WBWG: H	Found in valley foothill riparian, desert riparian, desert wash, and palm	Absent from Project site due to lack of suitable habitat.

Species Name	Status	Habitat Requirements	Occurrence
		oasis habitats. Roosts in trees, particularly palms. Forages over water and among trees.	
Yuma Myotis *Myotis yumanensis*	Federal: None State: None WBWG: LM	Optimal habitats are open forests and woodlands with sources of water over which to feed. Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.	Absent from Project site due to lack of suitable habitat.

4.5.1 Special-Status Wildlife Species Observed within the Project Site

One special-status animal was found on the Project site, coastal whiptail (*Aspidoscelis tigris stejnegeri*). It was a single individual that may have come from the open space west of Sycamore Canyon Boulevard. No other special-status animals were found and no others have potential to occur. Refer to Section 5.4 for an analysis of impact to coastal whiptail from development of the Project.

4.5.2 Special-Status Wildlife Species Reviewed for Potential to Occur at the Project Site

Due to the Project site being limited in extent, being comprised of cut and fill, and surrounded by City and Interstate roadways, no special-status wildlife species are expected to occur at the Project site, including burrowing owl. The entire Project site was checked for burrows potentially suitable for burrowing owl and none were present. A survey was not performed for burrowing owl because the first step is to determine the presence of potentially suitable burrows. If there are no potential burrows or artificial features (e.g. concrete pile, riprap) that could provide "burrowing" habitat present, a focused survey is not required under the MSHCP.

4.5.3 Critical Habitat

The Project site does not occur within any USFWS designated or proposed critical habitat.

4.6 <u>Raptor Use</u>

Southern California holds a diversity of birds of prey (raptors), and many of these species are in decline. For most of the declining species, foraging requirements include extensive open, undisturbed, or lightly disturbed areas, especially grasslands. This type of habitat has declined severely in the region, affecting many species, but especially raptors.

The Project site is too limited in size to provide raptor foraging habitat and no potential nesting habitat is present. No raptors were detected during the field work.

4.7 Nesting Birds

The Project site contains shrubs, grass, and bareground that could conceivably provide suitable habitat for common nesting migratory birds. Impacts to nesting birds are prohibited under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code.[5] Refer to Section 5.6 for an analysis of impact to nesting birds by development of the Project and Section 6.2 for a mitigation measure to address the potential impact.

4.8 Wildlife Movement and Nurseries

The Project site does not support physical features that could support wildlife migration (movement), such as drainages and/or ridgelines. The Project site is a triangle of land that is surrounded by major roadways. The Project site also lacks aquatic or woodlands that may support wildlife nurseries.

4.9 Soil Mapping

The Natural Resource Conservation Service (NRCS) identifies Cieneba soils as present, and specifically Cieneba sandy loam and Cieneba rocky sandy loam [Exhibit 4]. The Cieneba soils consist of somewhat excessively drained soils on uplands that formed in coarse-grained igneous rock. Because the Project site has experienced cut and fill during construction of Sycamore Canyon Boulevard, the NRCS soil mapping may not be completely accurate.

4.10 Jurisdictional Delineation

No jurisdictional features are present on the Project site.

4.11 MSHCP Riparian/Riverine Areas and Vernal Pools

No MSHCP riparian/riverine areas and/or vernal pools are present on the Project site.

5.0 IMPACT ANALYSIS

The following discussion examines the potential impacts to plant and wildlife resources that would occur as a result of the proposed project. Impacts (or effects) can occur in two forms, direct and indirect. Direct impacts are considered to be those that involve the loss, modification or disturbance of plant communities, which in turn, directly affect the flora and fauna of those habitats. Direct impacts also include the destruction of individual plants or animals, which may also directly affect regional population numbers of a species or result in the physical isolation of populations thereby reducing genetic diversity and population stability.

[5] The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 C.F.R. Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 C.F.R.21). In addition, sections 3505, 3503.5, and 3800 of the California Department of Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs.

Indirect impacts pertain to those impacts that result in a change to the physical environment, but which is not immediately related to a project. Indirect (or secondary) impacts are those that are reasonably foreseeable and caused by a project, but occur at a different time or place. Indirect impacts can occur at the urban/wildland interface of projects, to biological resources located downstream from projects, and other off site areas where the effects of the project may be experienced by plants and wildlife. Examples of indirect impacts include the effects of increases in ambient levels of noise or light; predation by domestic pets; competition with exotic plants and animals; introduction of toxics, including pesticides; and other human disturbances such as hiking, off-road vehicle use, unauthorized dumping, etc. Indirect impacts are often attributed to the subsequent day-to-day activities associated with project build-out, such as increased noise, the use of artificial light sources, and invasive ornamental plantings that may encroach into native areas. Indirect effects may be both short-term and long-term in their duration. These impacts are commonly referred to as "edge effects" and may result in a slow replacement of native plants by non-native invasives, as well as changes in the behavioral patterns of wildlife and reduced wildlife diversity and abundance in habitats adjacent to project sites.

Cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. A cumulative impact can occur from multiple individual effects from the same project, or from several projects. The cumulative impact from several projects is the change in the environment resulting from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

5.1 <u>California Environmental Quality Act (CEQA)</u>

5.1.1 Thresholds of Significance

Environmental impacts to biological resources are assessed using impact significance threshold criteria, which reflect the policy statement contained in CEQA, Section 21001(c) of the California Public Resources Code. Accordingly, the State Legislature has established it to be the policy of the State of California:

> *"Prevent the elimination of fish or wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities..."*

Determining whether a project may have a significant effect, or impact, plays a critical role in the CEQA process. According to CEQA, Section 15064.7 (Thresholds of Significance), each public agency is encouraged to develop and adopt (by ordinance, resolution, rule, or regulation) thresholds of significance that the agency uses in the determination of the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant. In the development of thresholds of significance for impacts to biological resources CEQA provides guidance primarily

in Section 15065, Mandatory Findings of Significance, and the CEQA Guidelines, Appendix G, Environmental Checklist Form. Section 15065(a) states that a project may have a significant effect where:

> *"The project has 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 wildlife community, reduce the number or restrict the range of an endangered, rare, or threatened species, ..."*

Therefore, for the purpose of this analysis, impacts to biological resources are considered potentially significant (before considering offsetting mitigation measures) if one or more of the following criteria discussed below would result from implementation of the proposed project.

5.1.2 Criteria for Determining Significance Pursuant to CEQA

Appendix G of the 2017 State CEQA guidelines indicate that a project may be deemed to have a significant effect on the environment if the project is likely to:

> *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 Game 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 Game or U.S. Fish and Wildlife Service.*
>
> *c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.*
>
> *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.*

5.2 Impacts to Native Vegetation

Table 5-1 provides a summary of proposed impacts to vegetation from development of the Project site. The proposed Project would permanently impact approximately 0.61 acre of revegetated Riversidean sage scrub. This vegetation occurs as a strip of vegetation on the cut slope adjacent to Sycamore Canyon Boulevard and thus is limited in size, highly disturbed, and does not provide the function and value indicative of intact sage scrub. Because of this, the 0.61 acre of sage scrub present would not provide habitat for species that rely on sage scrub vegetation communities [Exhibit 5]. The Project would also permanently remove 2.10 acres of developed/disturbed land. The proposed permanent removal of 0.61 acre of Riversidean sage scrub would not be a significant impact under CEQA, neither would the removal of 2.10 acres of 2.10 acres of developed/disturbed land. However, the removal of sage scrub by the proposed project would be fully mitigated under CEQA through compliance with the biological requirements of the MSHCP. Compliance meaning the permittees under the MSHCP will review each development or discretionary project application to ensure certain specifications, siting and design criteria, and general avoidance guidelines are followed, as outlined in Section 7.0 of the MSHCP. In addition, for this Project, a Joint Project Review (JPR) is necessary as the project occurs within a criteria cell.

Table 5-1. Summary of Vegetation/Land Use Impacts

VEGETATION COMMUNITY	IMPACT ACREAGE
Riversidean Sage Scrub	0.61
Developed/Disturbed Lands	2.10
TOTAL	**2.71**

5.3 Impacts to Special-Status Plants

Because there is no potential habitat for any special-status species. The proposed Project will not impact special-status plants.

5.4 Impacts to Special-Status Animals

The proposed Project may impact one special-status species, coastal whiptail. An individual was observed during the field visit. Given the small size and location of the Project site, no more than a few individuals of this species are expected to occur on the site. No other special-status animals are expected. The removal of coastal whiptail habitat and potential mortality to a few individuals would not be potentially significant under CEQA because the species remains common in western Riverside County. In addition, coastal whiptail is a fully covered species under the MSHCP, meaning that any potential impacts to the species by the proposed Project would be mitigated by the MSHCP. No mitigation is needed.

Although there was no potential for burrowing owl to be present due to a lack of burrows, the MSHCP requires that a pre-construction survey be performed. Refer to Section 6.1 for additional details.

5.5 Impacts to Critical Habitat

The proposed Project will not impact lands designated as critical habitat by the USFWS.

5.6 Impacts to Nesting Birds

The project has the potential to impact active bird nests if vegetation is removed during the nesting season (February 1 to August 31). Although impacts to native birds are prohibited by MBTA and similar provisions of California Fish and Game Code, impacts to native birds by the proposed Project would not be a significant impact under CEQA. The native birds with potential to nest on the Project site would be those that are extremely common to the region and highly adapted to human landscapes (e.g., house finch, killdeer). The number of individuals potentially affected by the Project would not significantly affect regional, or local populations of such species. However, to ensure compliance with MBTA and Fish and Game Code, an avoidance/minimization measure is provided in Section 6.2.

5.7 Impacts to MSHCP Riparian/Riverine Areas

The proposed Project will not impact MSHCP Riparian/Riverine areas as there are none on or adjacent to the Project site.

5.8 Impacts to Jurisdictional Waters

The proposed Project will not impact any jurisdictional waters as none are present on or directly adjacent to the Project site.

5.9 Impacts to Wildlife Movement/Nurseries

The Project site lacks migratory wildlife corridors and wildlife nursery sites. The Project site does not occur within MSHCP Cores or Linkages. The proposed Project would not interfere or impact (1) the movement of native resident or migratory fish or wildlife species or (2) established native resident or migratory wildlife corridors, or (3) impede the use of native wildlife nursery sites. No impact would occur.

5.10 Indirect Impacts to Biological Resources

In the context of biological resources, indirect effects are those effects associated with developing lands adjacent to native open space. Potential indirect effects associated with development include water quality impacts from associated with drainage into adjacent open space/downstream aquatic resources; lighting effects; noise effects; invasive plant species from landscaping; and effects from human access into adjacent open space, such as recreational activities (including off-road vehicles and hiking), pets, dumping, etc. Temporary, indirect effects may also occur as a result of construction-related activities.

The proposed Project is not directly adjacent to existing MSHCP conservation area. Proposed Constrained Linkage 7 is south of the Project site, on the south side of Central Avenue [Exhibit 3

– MSHCP Overlay Map]. The proposed Project is a commercial development with existing road infrastructure (Sycamore Canyon Boulevard and Central Avenue) and a vacant property between it and Proposed Constrained Linkage 7.

The Project is not expected to result in significant indirect impacts to special-status biological resources, with the implementation of measures pursuant to the MSHCP Urban/Wildlands Interface Guidelines (*Volume I, Section 6.1.4* of the MSHCP). These guidelines are intended to address indirect effects associated with locating projects (particularly development) in proximity to the MSHCP Conservation Area. To minimize potential edge effects, the guidelines are to be implemented in conjunction with review of individual public and private development projects in proximity to the MSHCP Conservation Area. The Project will implement measure consistent with the MSHCP guidelines to address the following:

- Drainage;
- Toxics;
- Lighting;
- Noise;
- Invasives;
- Barriers; and
- Grading/Land Development.

5.10.1 Drainage

Proposed Projects in proximity to the MSHCP Proposed Constrained Linkage 7 and shall incorporate measures, including measures required through the National Pollutant Discharge Elimination System (NPDES) requirements, to ensure that the quantity and quality of runoff discharged to the MSHCP Proposed Constrained Linkage 7 is not altered in an adverse way when compared with existing conditions. In particular, measures shall be put in place to avoid discharge of untreated surface runoff from developed and paved areas into the MSHCP Proposed Constrained Linkage 7. Stormwater systems, as applicable, shall be designed to prevent the release of toxins, chemicals, petroleum products, exotic plant materials or other elements that might degrade or harm biological resources or ecosystem processes within the MSHCP Proposed Constrained Linkage 7. This can be accomplished using a variety of methods including natural detention basins, grass swales or mechanical trapping devices. Regular maintenance shall occur to ensure effective operations of runoff control systems.

The Project's contractor will develop a Stormwater Pollution Prevention Plan (SWPPP) to address runoff and water quality during construction (refer to Section 6.3). However, following the completion of activities, the Project site will not contain any developed or paved areas, that will in any way result in increased drainage to the MSHCP Proposed Constrained Linkage 7. As such, no measures would be required post-construction.

5.10.2 Toxics

Land uses proposed in proximity to the MSHCP Proposed Constrained Linkage 7 that use chemicals or generate bioproducts such as manure that are potentially toxic or may adversely

affect wildlife species, habitat or water quality shall incorporate measures to ensure that application of such chemicals does not result in discharge to the MSHCP Proposed Constrained Linkage 7. Measures such as those employed to address drainage issues shall be implemented. The proposed Project will implement a SWPPP that will address runoff during construction (refer to Section 6.3).

5.10.3 Lighting

Night lighting shall be directed away from the MSHCP Proposed Constrained Linkage 7 to protect species from direct night lighting (refer to Section 6.4). If night lighting is required during construction, shielding shall be incorporated to ensure ambient lighting in the MSHCP Proposed Constrained Linkage 7 is not increased.

5.10.4 Noise

Proposed noise generating land uses affecting MSHCP Conservation Area shall incorporate setbacks, berms or walls to minimize the effects of noise on MSHCP Conservation Area resources pursuant to applicable rules, regulations and guidelines related to land use noise standards. For planning purposes, wildlife within the MSHCP Conservation Area should not be subject to noise that would exceed residential noise standards.

Given the location and existing vehicle and human activities surrounding the Project site, measures to reduce noise is not expected to be necessary.

5.10.5 Invasives

Projects adjacent to the MSHCP Conservation Area (including MSHCP Proposed Constrained Linkage 7) shall avoid the use of invasive plant species in landscaping, including invasive, non-native plant species listed in *Volume I,* Table 6-2 of the MSHCP (refer to Section 6.5).

5.10.6 Barriers

Proposed land uses adjacent to the MSHCP Conservation Area (including MSHCP Proposed Constrained Linkage 7) shall incorporate barriers, where appropriate in individual project designs to minimize unauthorized public access, domestic animal predation, illegal trespass or dumping in the MSHCP Conservation Area. Such barriers may include native landscaping, rocks/boulders, fencing, walls, signage and/or other appropriate mechanisms.

Given the location of the Project site and MSHCP Proposed Constrained Linkage 7, barriers would not be necessary.

5.10.7 Grading/Land Development

The MSHCP states that manufactured slopes associated with development shall not extend into the MSHCP Conservation Area.

The Project site is not directly adjacent to MSHCP Proposed Constrained Linkage 7.

5.11 Cumulative Impacts to Biological Resources

Cumulative impacts are defined as the direct and indirect effects of a proposed project which, when considered alone, would not be deemed a substantial impact, but when considered in addition to the impacts of related projects in the area, would be considered potentially significant. "Related projects" refers to past, present, and reasonably foreseeable probable future projects, which would have similar impacts to the proposed project.

Any Project anticipated cumulative impacts would be addressed by the MSHCP, which, as currently adopted, addresses 146 "Covered Species" that represent a broad range of habitats and geographical areas within western Riverside County, including threatened and endangered species and regionally- or locally-sensitive species that have specific habitat requirements and conservation and management needs. The MSHCP addresses biological impacts for take of Covered Species within the MSHCP area. Impacts to Covered Species and establishment and implementation of a regional conservation strategy and other measures included in the MSHCP are intended to address the federal, state, and local mitigation requirements for these species and their habitats. Specifically, Section 4.4 of the MSHCP states that:

The MSHCP was specifically designed to cover a large geographical area so that it would protect numerous endangered species and habitats throughout the region. It is the projected cumulative effect of future development that has required the preparation and implementation of the MSHCP to protect multiple habitats and multiple endangered species.

Of the limited biology present, implementation of the proposed Project would not cause potentially significant impacts to biological resources. The site is small, surrounded by major roadways, and has been severely mechanically manipulated in past years.

6.0 MITIGATION/AVOIDANCE MEASURES

The following discussion provides project-specific mitigation/avoidance measures for actual or potential impacts to special-status resources.

6.1 Burrowing Owl

The Project site occurs within the MSHCP survey area for burrowing owl. Although the site lacked potential burrows during the current field work, MSHCP Objective 6 for burrowing owls requires that pre-construction surveys prior to site grading. As such, the following measure is required to avoid direct impacts to burrowing owls and to ensure consistency with the MSHCP:

- A qualified biologist will conduct a pre-construction presence/absence survey for burrowing owls within 30 days prior to site disturbance. If burrowing owls are detected onsite, the owls will be relocated/excluded from the site outside of the breeding season

following accepted protocols, and subject to the approval of the RCA and wildlife agencies.

6.2 Nesting Birds

The Project site contains vegetation with the potential to support nesting birds. As discussed above, the MBTA and California Fish and Game Code prohibit impacts to nesting birds. The following measure is recommended to avoid impacts to nesting birds:

- As feasible, vegetation clearing should be conducted outside of the nesting season, which is generally identified as February 1 through September 15. If avoidance of the nesting season is not feasible, then a qualified biologist shall conduct a nesting bird survey within three days prior to any disturbance of the site, including disking, demolition activities, and grading. If active nests are identified, the biologist shall establish suitable buffers around the nests, and the buffer areas shall be avoided until the nests are no longer occupied and the juvenile birds can survive independently from the nests.

6.3 Drainage

The Project's contractor will develop a Stormwater Pollution Prevention Plan (SWPPP) to address runoff and water quality during construction. Following the completion of construction of the Project, the Project site will not contain any developed or paved areas, that will in any way result in increased drainage to the MSHCP Proposed Constrained Linkage 7. As such, no measures will be required post-construction.

The Project will design a stormwater system as part of the Project design to prevent the release of toxins, chemicals, petroleum products, exotic plant materials or other elements that might degrade or harm biological resources or ecosystem processes within the adjacent MSHCP Proposed Constrained Linkage 7. Specifically, in accordance with federal, state, regional and local standards and regulations concerning water quality.

6.4 Lighting

Night lighting shall be directed away from MSHCP Constrained Linkage 7. Shielding shall be incorporated into project designs to ensure ambient lighting in the area of Constrained Linkage 7 does not increase from existing conditions.

6.5 Invasive Species Landscaping

Project landscaping will avoid the use of invasive plant species in landscaping, including invasive, non-native plant species listed in Volume I, Table 6-2 of the MSHCP.

7.0 MSHCP CONSISTENCY ANALYSIS

The purpose of this section is to provide an analysis of the proposed Project with respect to compliance with biological aspects of the Western Riverside County MSHCP. Specifically, this analysis evaluates the proposed Project with respect to the Project's consistency with MSHCP Reserve assembly requirements, *Section 6.1.2* (Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools), *Section 6.1.3* (Protection of Narrow Endemic Plant Species), *Section 6.1.4* (Guidelines Pertaining to the Urban/Wildlands Interface), and *Section 6.3.2* (Additional Survey Needs and Procedures).

7.1 Project Relationship to Reserve Assembly

The Project site is located within Criteria Cell 721 of Subunit 1 of the Sycamore Canyon/Box Springs Central Area Plan [Exhibit 3 – MSHCP Overlay Map]. Although the Project site was land within California Department of Transportation Right Of Way (ROW) the proposed Project is subject to the Habitat Evaluation and Acquisition Negotiation Strategy (HANS) process. The Project is also subject to Joint Project Review (JPR) by the RCA in order for the RCA to determine that the Project will be consistent with the MSHCP.

7.2 Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools

The Project site does not support MSHCP riparian/riverine resources.

7.3 Protection of Narrow Endemic Plants

Volume I, Section 6.1.3 of the MSHCP requires that within identified Narrow Endemic Plant Species Survey Areas (NEPSSA), site-specific focused surveys for Narrow Endemic Plants Species will be required for all public and private projects where appropriate soils and habitat are present.

The Project site does not occur within a NEPSSA survey area and does not support potential habitat for special-status plants.

7.4 Guidelines Pertaining to the Urban/Wildland Interface

The MSHCP Urban/Wildland Interface Guidelines are intended to address indirect effects associated with locating development in proximity to the MSHCP Conservation Area (including MSHCP Proposed Constrained Linkage 7). As the MSHCP Conservation Area is assembled, development is expected to occur adjacent to the Conservation Area. Future development in proximity to the MSHCP Conservation Area may result in edge effects with the potential to adversely affect biological resources within the Conservation Area. To minimize such edge effects, the guidelines shall be implemented in conjunction with review of individual public and private development projects in proximity to the MSHCP Conservation Area and address the following:

- Drainage;

- Toxics;
- Lighting;
- Noise;
- Invasive species;
- Barriers;
- Grading/Land Development.

As discussed in Section 5.0 of this report, the Project will implement applicable measures as it relates to temporary construction impacts to minimize adverse indirect impacts on special-status resources within Conserved Lands. The proposed Project will be consistent with *Section 6.1.4* of the MSHCP.

7.5 Additional Survey Needs and Procedures

The Project site occurs within the CAPSSA survey area for Nevin's barberry, smooth tarplant, and round-leaved filaree. The Project site is located within the MSHCP Burrowing Owl Survey Area, but is not located within the MSHCP Mammal or Amphibian Areas.

Based on the field work performed and site conditions, it was determined that the Project site does not support potential habitat for the three CAPSSA species and did not support any potential burrows for burrowing owl. As such the proposed Project would not impact these species and is consistent with the MSHCP.

7.6 Conclusion of MSHCP Consistency

As outlined above, the proposed Project will be consistent with the biological requirements of the MSHCP; specifically pertaining to the Project's relationship to reserve assembly, *Section 6.1.2* (Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools), *Section 6.1.3* (Protection of Narrow Endemic Plant Species), *Section 6.1.4* (Guidelines Pertaining to the Urban/Wildlands Interface), and *Section 6.3.2* (Additional Survey Needs and Procedures).

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9.0 CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Signed:_____ Date: _May 23, 2018_____

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APPENDICES

APPENDIX A

FLORAL COMPENDIUM

The floral compendium lists all species identified during floristic level/focused plant surveys conducted for the Project site. Taxonomy typically follows The Jepson Manual, 2nd Edition (2012). Common plant names are taken from Baldwin (2012), Munz (1974), and Roberts et al (2004) and Roberts (2008). An asterisk (*) denotes a non-native species.

SCIENTIFIC NAME	COMMON NAME
MAGNOLIOPHYTA	**FLOWERING PLANTS**
MONOCOTYLEDONES	**MONOCOTS**
ARECACEAE	**Palm Family**
* *Washingtonia robusta*	Mexican fan palm
POACEAE	**Grass Family**
* *Bromus madritensis* ssp. *rubens*	foxtail chess
* *Hordeum murinum*	foxtail barley
EUDICOTYLEDONES	**EUDICOTS**
ASTERACEAE	**Sunflower Family**
Baccharis salicifolia	mulefat
* *Centaurea melitensis*	tocalote
Encelia farinosa	brittlebush
Heterotheca grandiflora	telegraph weed
* *Lactuca serriola*	common groundsel
Matricaria discoidea	pineapple weed
* *Sonchus oleraceus*	common sow thistle
Stephanomeria sp.	stephanomeria
BRASSICACEAE	**Mustard Family**
* *Hirschfeldia incana*	short-podded mustard
CARYOPHYLLACEAE	**Carnation Family**
Spergularia sp.	sand spurry

CHENOPODIACEAE		**Goosefoot Family**
	Atriplex canescens	hoary saltbush
*	*Salsola tragus*	Russian thistle
FABACEAE		**Legume Family**
	Acmispon glaber	deerweed
*	*Melilotus indicus*	yellow sweetclover
GERANIACEAE		**Geranium Family**
*****	*Erodium cicutarium*	red-stemmed filaree
LAMIACEAE		**Mint Family**
	Salvia columbariae	chia sage
POLYGONACEA		**Knotweed family**
	Eriogonum fasciculatum	California buckwheat
RANUNCULACEAE		**Buttercup/Crowfoot Family**
	Myosurus sp.	mousetail
SOLANCEAE		**Nightshade Family**
	Datura wrightii	jimsonweed

APPENDIX B

FAUNAL COMPENDIUM

The faunal compendium lists species identified on the Project site. Scientific nomenclature and common names for vertebrate species referred to in this report follow Collins (2009) for amphibians and reptiles, Bradley, et al. (2014) for mammals, and AOU Checklist (1998) for birds. An (*) denotes non-native species.

AVES

FRINGILLIDAE
Spinus psaltria

BIRDS

Finches
lesser goldfinch

REPTILIA

TEIIDAE
Aspidoscelis tigris

REPTILES

Whiptails
western whiptail

MAMMALIA

LEOPRIDAE
Sylvilagus audubonii

MAMMALS

Rabbits and Hares
desert cottontail

EXHIBITS

Source: ESRI World Street Map

N

0 2 4 8 Miles

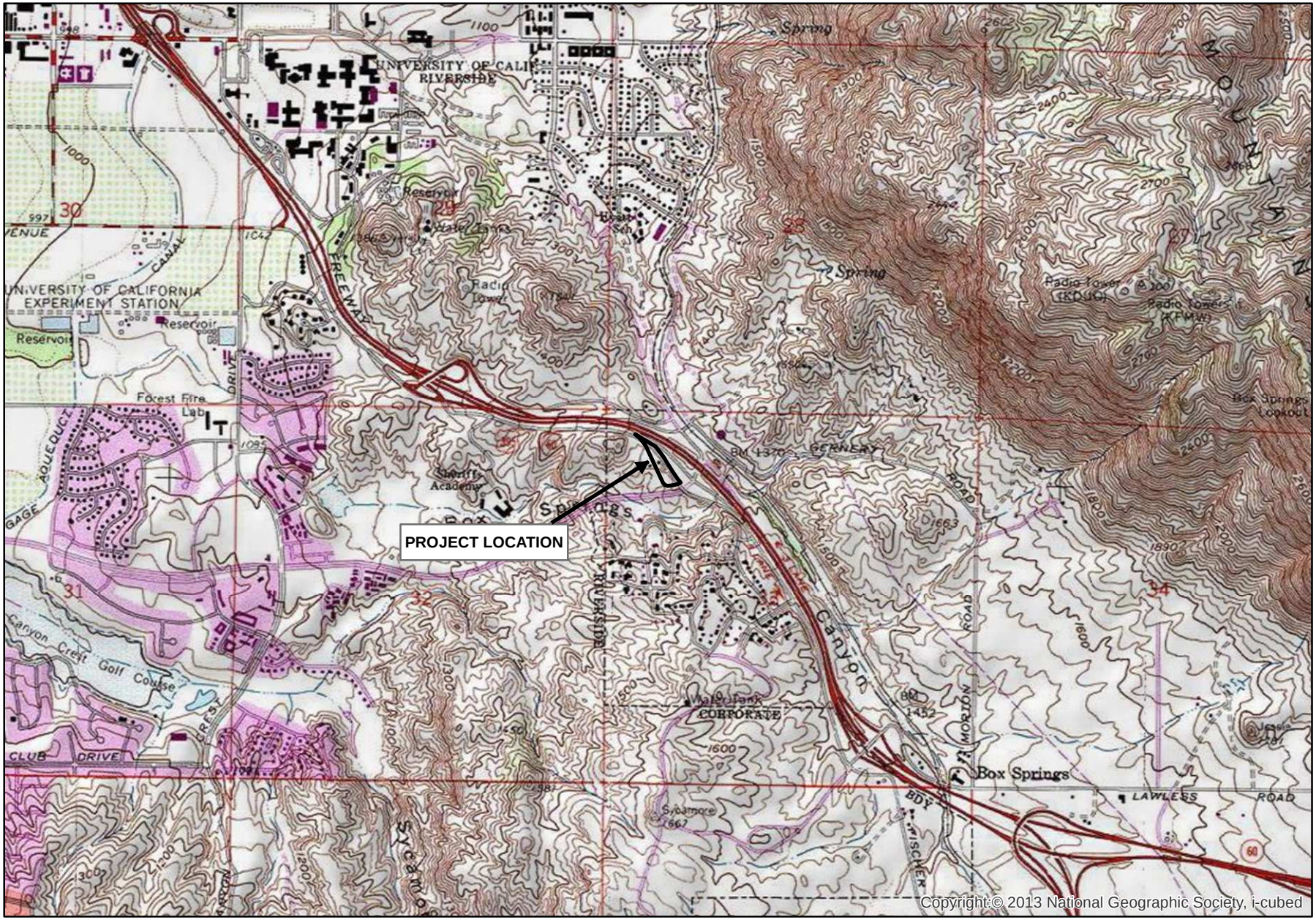
CENTRAL AND SYCAMORE PROJECT

Regional Map

GLENN LUKOS ASSOCIATES

Exhibit 1

Adapted from USGS Riverside East, CA quadrangle



N

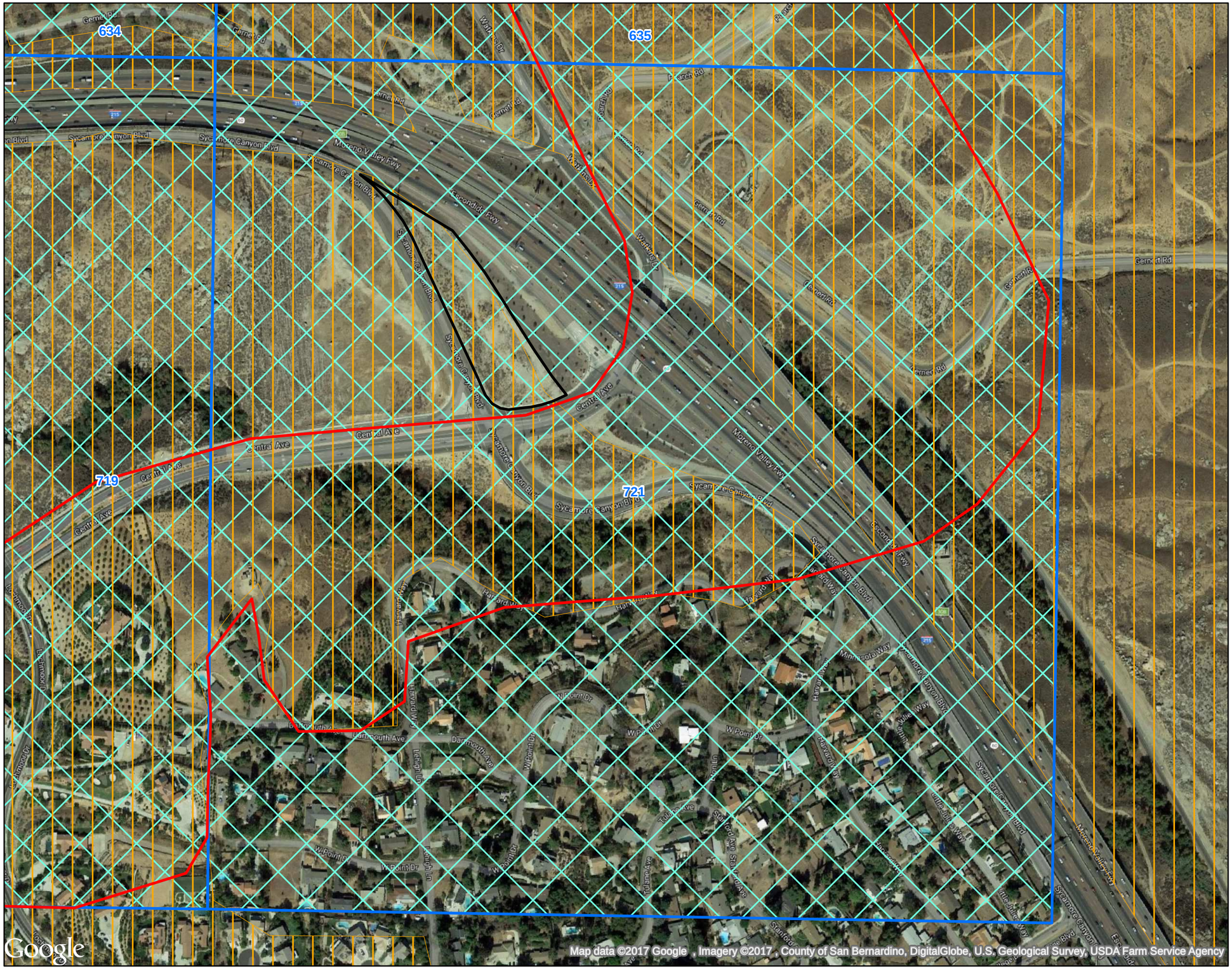
0 1,000 2,000 4,000 Feet

CENTRAL AND SYCAMORE PROJECT

Vicinity Map

GLENN LUKOS ASSOCIATES

Exhibit 2



Project Site

Proposed Constrained Linkage 7

Criteria Cell 721

Burrowing Owl Survey Area

Criteria Area Plant Species Survey Area

N

0 150 300 600

Feet

1 inch = 300 feet

CENTRAL AND SYCAMORE PROJECT

MSHCP Overlay Map

GLENN LUKOS ASSOCIATES

Exhibit 3

X:\1100 AFTER THE REST\1288-01SCCA\1288-1GIS\MSHCPGIS\1288-1MSHCP.mxd

Project Site

ChF2 - Cieneba sandy loam, 15 to 50 percent slopes, eroded

CkF2 - Cieneba rocky sandy loam, 15 to 50 percent slopes, eroded

N

0 50 100 200

Feet

1 inch = 100 feet

CENTRAL AND SYCAMORE PROJECT

Soils Map

GLENN LUKOS ASSOCIATES

Exhibit 4

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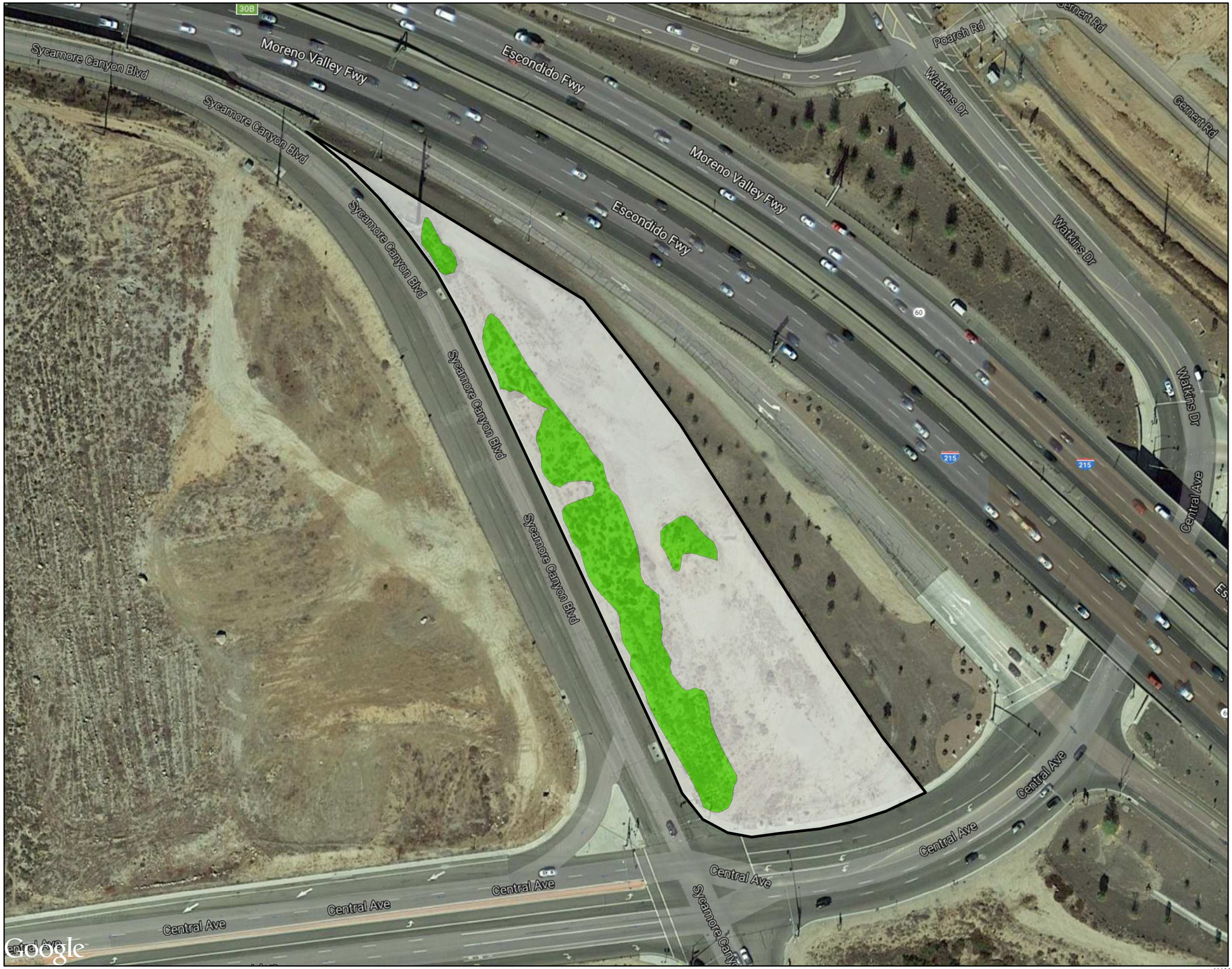

Project Site

Disturbed/Developed Lands

Riversidean Sage Scrub

N

0 50 100 200

Feet

1 inch = 100 feet

CENTRAL AND SYCAMORE PROJECT

Vegetation Map

GLENN LUKOS ASSOCIATES

Exhibit 5

X:\1100 AFTER THE REST\1288-01SCCA\1288-1GIS\VegetationGIS\1288-1Vegetation.mxd

Photograph 1: View of Riversidean Sage Scrub adjacent to Sycamore Canyon Boulevard

Photograph 2: View of developed/disturbed lands on site and Proposed Constrained Linkage 7 in the distance.

GLENN LUKOS ASSOCIATES

Exhibit 6

Site Photographs

APPENDIX D

PHASE 1 HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY

PHASE I HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY

SYCAMORE CANYON BOULEVARD PROJECT

Near the City of Riverside
Riverside County, California

For Submittal to:

Planning Division
City of Riverside
3900 Main Street
Riverside, CA 92522

Prepared for:

KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, CA 92121

Prepared by:

CRM TECH
1016 E. Cooley Drive, Suite A/B
Colton, CA 92324

Bai "Tom" Tang, Principal Investigator
Michael Hogan, Principal Investigator

Revised October 18, 2018
September 14, 2017
CRM TECH Contract No. 3252

Title: Phase I Historical/Archaeological Resources Survey: Sycamore Canyon Boulevard Project, near the City of Riverside, Riverside County, California

Authors: Bai "Tom" Tang, Principal Investigator/Historian
Deirdre Encarnación, Archaeologist/Report Writer
Daniel Ballester, Archaeologist/Field Director
Nina Gallardo, Archaeologist/Native American Liaison

Consulting Firm: CRM TECH
1016 E. Cooley Drive, Suite A/B
Colton, CA 92324
(909) 824-6400

Date: September 14, 2017; Revised October 18, 2018

For Submittal to: Planning Division
City of Riverside
3900 Main Street
Riverside, CA 92522
(951) 826-5371

Prepared for: Eugene Marini
KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, CA 92121
(858) 404-6080

USGS Quadrangle: Riverside East, Calif., 7.5' quadrangle (Section 33, T2S R4W, San Bernardino Baseline and Meridian)

Project Size: Approximately 2.19 acres

Keywords: Inland Empire region, southern California; Phase I cultural resources survey; Site 33-006002/CA-RIV-5669 (bedrock milling feature); no "historical resources" or "tribal cultural resources" affected under CEQA

MANAGEMENT SUMMARY

In August and September 2017, at the request of KA Enterprises, CRM TECH performed a cultural resources study on approximately 2.19 acres of vacant land in the sphere of influence of the City of Riverside, Riverside County, California. The subject property of the study is located on the north side of Central Avenue and between Sycamore Canyon Boulevard and Interstate Highway 215/State Route 60, in the northwest quarter of Section 33, T2S R4W, San Bernardino Baseline and Meridian.

The study is part of the environmental review process for the proposed Sycamore Canyon Boulevard Project, which entails primarily the construction of a gas station/convenience store with a car wash and one fast-food (with drive-thru) restaurant on the property. As the lead agency for the project, the City of Riverside required the study in compliance with the California Environmental Quality Act (CEQA) and the City's Cultural Resources Ordinance.

The purpose of the study is to provide the City of Riverside with the necessary information and analysis to determine whether the proposed project would cause substantial adverse changes to any "historical resources" or "tribal cultural resources," as defined by CEQA, that may exist in or around the project area. In order to identify such resources, CRM TECH conducted a cultural resources records search, pursued historical background research, contacted Native American representatives, and carried out an intensive-level field survey of the entire project area.

The results of the records search indicate that a prehistoric—i.e., Native American—archaeological site consisting of a bedrock outcrop with three milling slicks, 33-006002 (CA-RIV-5669), was recorded within the project area in 1995. At the time of recordation, the site was determined not to be significant under CEQA provisions, and it was subsequently removed during mass grading on the property. The field survey results confirm that Site 33-006002 is no longer extant, and reveal that the entire project area has been extensively disturbed, leaving little remnant of the original ground surface. No other potential "historical resources" or "tribal cultural resources" were identified within or adjacent to the project area throughout the course of this study.

Based on these findings, CRM TECH recommends to the City of Riverside a determination of *No Impact* regarding cultural resources. No further cultural resources investigation is recommended for the project unless development plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are discovered during earth-moving operations associated with the project, the City of Riverside should be notified immediately, and all work in the immediate vicinity should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

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INTRODUCTION

In August and September 2017, at the request of KA Enterprises, CRM TECH performed a cultural resources study on approximately 2.19 acres of vacant land in the sphere of influence of the City of Riverside, Riverside County, California (Fig.1). The subject property of the study is located on the north side of Central Avenue and between Sycamore Canyon Boulevard and Interstate Highway 215/State Route 60, in the northwest quarter of Section 33, T2S R4W, San Bernardino Baseline and Meridian (Figs. 2, 3).

The study is part of the environmental review process for the proposed Sycamore Canyon Boulevard Project, which entails primarily the construction of a gas station/convenience store with a car wash and one fast-food restaurant on the property (Fig. 4). As the lead agency for the project, the City of Riverside required the study in compliance with the California Environmental Quality Act (CEQA; PRC §21000, et seq.) and the City's Cultural Resources Ordinance (Title 20, Riverside Municipal Code).

The purpose of the study is to provide the City of Riverside with the necessary information and analysis to determine whether the proposed project would cause substantial adverse changes to any "historical resources" or "tribal cultural resources," as defined by CEQA, that may exist in or around the project area. In order to identify such resources, CRM TECH conducted a cultural resources records search, pursued historical background research, contacted Native American representatives, and carried out an intensive-level field survey of the entire project area. 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.

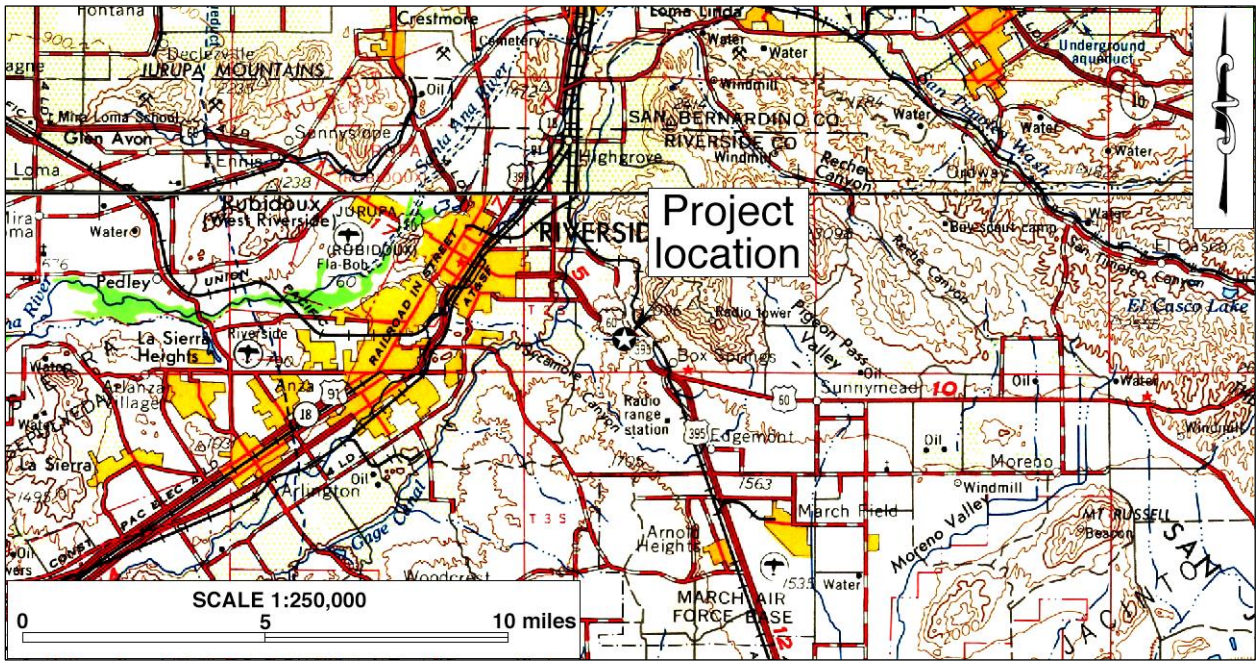

Figure 1. Project vicinity. (Based on USGS San Bernardino and Santa Ana, Calif., 1:250,000 quadrangles [USGS 1969; 1979])

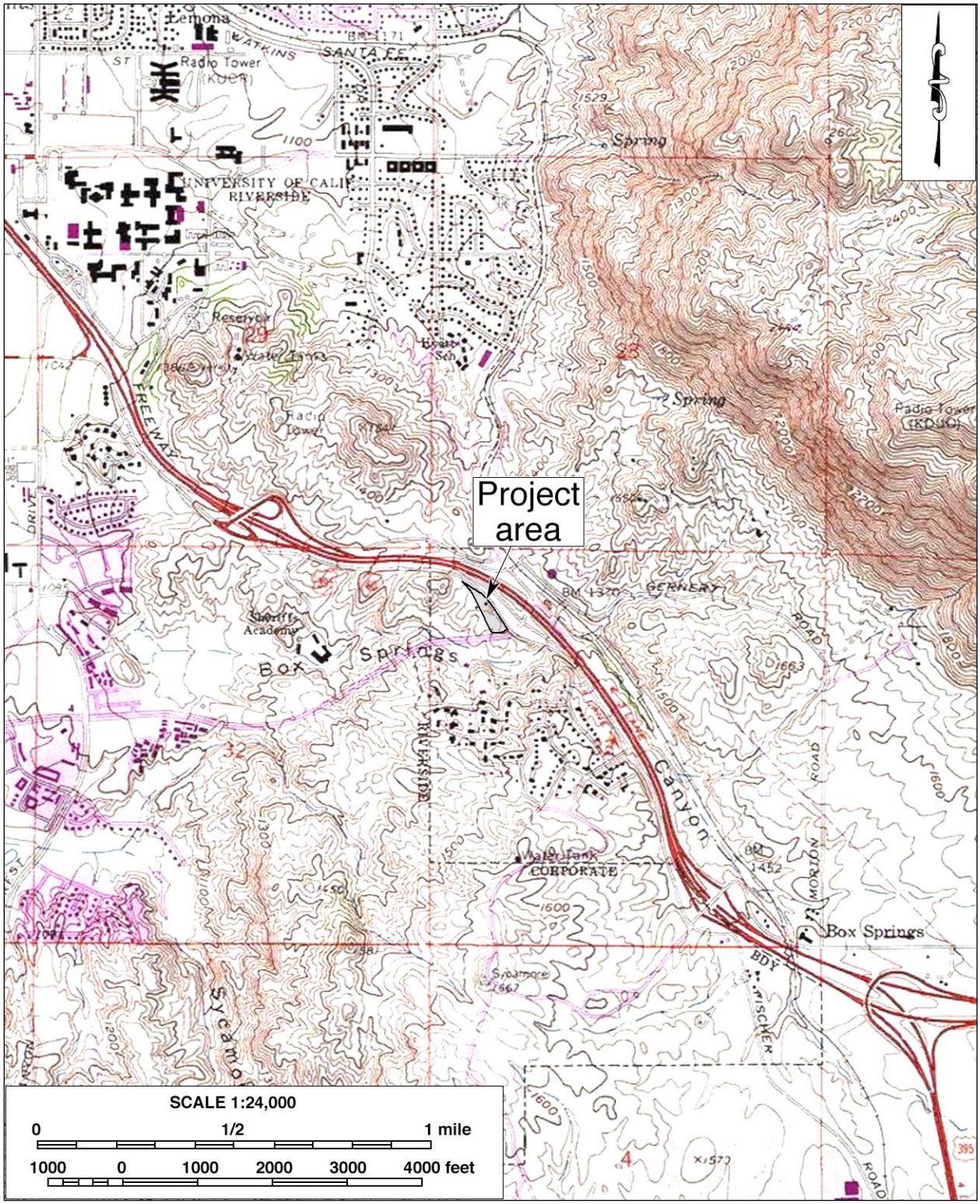

Figure 2. Project location. (Based on USGS Riverside East, Calif., 1:24,000 quadrangle [USGS 1980])

Figure 3. Aerial view of the project area.

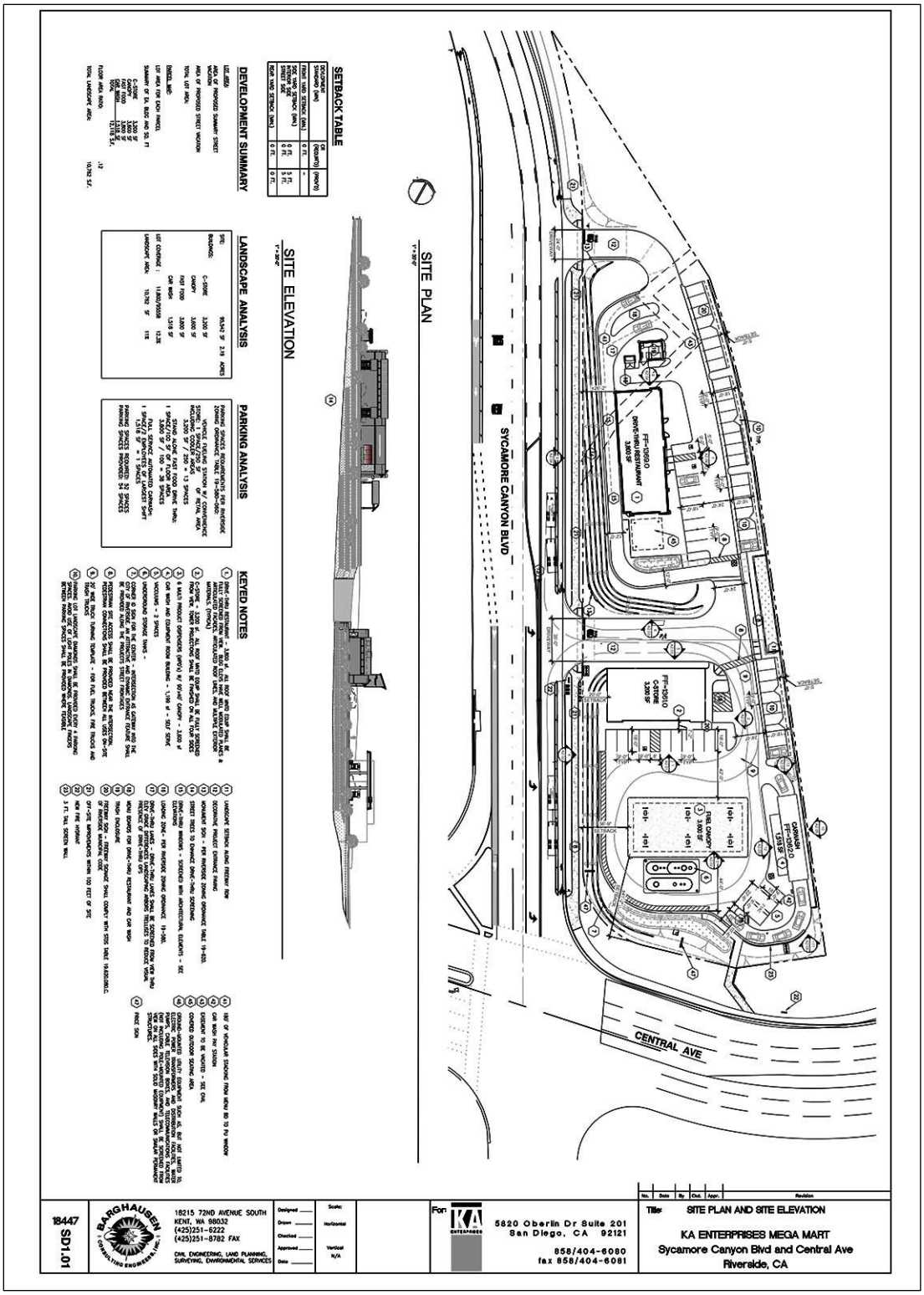

Figure 4. Project site plan; adapted from figure provided by the Client.

SETTING

CURRENT NATURAL SETTING

The City of Riverside lies in the Riverside-San Bernardino-Ontario metropolitan area, commonly known as the "Inland Empire," which is surrounded by the Santa Ana Mountains on the southwest, the San Jacinto Mountains on the southeast, and the convergence of the San Gabriel and San Bernardino Mountain Ranges on the north. The natural landscape in the region features broad inland valleys separated by groups of rolling hills and rocky knolls. The climate in the region is mild and temperate, and the average annual rainfall is approximately 12 inches, most of which occurs between November and March.

The project area encompasses an irregularly-shaped tract of vacant land bounded by Sycamore Canyon Boulevard on the west-southwest, Central Avenue on the south-southeast, and the Central Avenue off-ramp on Interstate Highway 215/State Route 60 on the north-northeast (Fig. 3). Beyond these public roadways, it is surrounded by other parcels of undeveloped land, with a residential neighborhood further to the south. Elevations in the project area range approximately from 1,350 feet to 1,375 feet above mean sea level. The terrain features a gradual incline to the northeast, with a relatively sharp drop in elevation along the edges of the Sycamore Canyon Boulevard and Central Avenue rights-of-way.

The ground surface on the property has been leveled and graded in the past, and little vestige survives of the native landscape (Fig. 5). The remaining surface soils appear to be rather shallow, with the underlying granitic bedrock exposed on the southern edge of the project area. The existing vegetation consists of sagebrush, buckwheat, and invasive grasses and shrubs, concentrated mostly in the westernmost portion of the project area, on the slope leading to Sycamore Canyon Boulevard.

Figure 5. Overview of the project area. (Photograph taken on August 30, 2017; view to the west)

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 history 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 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 western Riverside County can be broken 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 leaves 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, what is now the City of Riverside lies on the border between the traditional territories of three Native American groups: the Serrano of the San Bernardino Mountains, the Luiseño of the Perris-Elsinore region, and the Gabrielino of the San Gabriel Valley. Kroeber (1925:Plate 57) suggests that the Native Americans of the Riverside area were probably Luiseño, Reid (1968:8-9) states that they were Serrano, and Strong (1929:7-9, 275)

claims that they were Gabrielino. In any case, there also occurred a late influx of Cahuilla during the 19th century (Bean 1978). All of these groups spoke languages of the Shoshonean group, which in turn is part of the Uto-Aztecan stock, a family of languages that covers most of the southwest United States and reaches southward as far as Mexico City (Kroeber 1925:577).

Whatever the linguistic affiliation, Native Americans along the Santa Ana River exhibited similar social organization and resource procurement strategies. Villages were based on clan or lineage groups. Their home/base sites are marked by midden deposits, often with bedrock mortar features. During their seasonal rounds to exploit plant resources, small groups often ranged some distances in search of specific plants and animals. Their gathering strategies often left behind signs of special use sites, usually grinding slicks on bedrock boulders, at the locations of the resources.

Historic Context

The present-day Riverside area received its first European visitors during the early and mid-1770s, shortly after the beginning of Spanish colonization of Alta California in 1769 (Beck and Haase 1974:15). After the establishment of Mission San Gabriel in 1771, the area became one of the mission's principal *rancherías*, known at the time as Jurupa (Gunther 1984:258). Despite these early contacts, no Europeans are known to have settled in the area until after the creation of the Rancho Jurupa land grant in 1838, which encompassed what is now the northern portion of the City of Riverside (Patterson 1996:121). During the 1840s, a number of other ranchos were established in the vicinity. The project location, as well as the area around it, was not included in any of these land grants, and remained public land when California became a part of the United States in 1848.

In 1870, the town of Riverside was founded in today's downtown area, followed in the next few years by two other colonies in the Arlington-La Sierra area (Patterson 1996:47-48, 65-69). The three separate enterprises eventually merged in 1875, and the City of Riverside was incorporated in 1883 (*ibid.*:94). The project area, a part of Riverside's eastern "highlands," was not involved in any of these early colonies, and was not incorporated into the city (*ibid.*:16-17). Situated at higher elevations than the colonies' first irrigation canals, the upper plain was largely undeveloped until 1885-1886, when the completion of the Gage Canal greatly increased the acreage under cultivation in the Riverside area, marking the beginning of a new phase in the city's growth (*ibid.*:183-186). For more than a half-century after that, however, the project location was well outside the city boundaries, until the post-WWII urban/suburban expansion ultimately brought the eastern boundary of the city to within a few hundred feet from the project location.

In the 1870s and 1880s, amid a land boom that swept through southern California, the young community of Riverside grew rapidly. The most important boost to Riverside's early prosperity came with the introduction of the navel orange in the mid-1870s (Brown 1985:56-57). Its instant success in Riverside led to the spread of citrus cultivation throughout southern California, and propelled Riverside to the forefront of the citrus industry (*ibid.*). In 1893, after a bitter local political dispute, Riverside split itself from San Bernardino County, and became the county seat and the dominant urban center of the newly created Riverside County (Patterson 1996:209-210). Since the mid-20th century, with the increasing diversification of its economic livelihood, much of Riverside's once extensive citrus acreage has given way to urban expansion. Nevertheless, the "citrus culture" that developed from the city's orange-dominated past continues to be an integral part of the community identity to the present time.

RESEARCH METHODS

RECORDS SEARCH

On August 29, 2017, CRM TECH archaeologist Nina Gallardo completed the records search at the Eastern Information Center (EIC), University of California, Riverside, which is the State of California's official cultural resource records repository for the County of Riverside. During the records search, Gallardo examined maps and records on file at the EIC for previously identified cultural resources and existing cultural resources reports within a one-mile radius of the project area. 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.

HISTORICAL RESEARCH

Historical background research for this study was conducted by CRM TECH principle investigator/ historian Bai "Tom" Tang. In addition to published literature in local and regional history, sources consulted during the research included U.S. General Land Office (GLO) land survey plat maps dated 1855-1877, U.S. Geological Survey (USGS) topographic maps dated 1901-1980, and aerial photographs taken in 1966-2016. The historic maps are collected at the Science Library of the University of California, Riverside, and the California Desert District of the U.S. Bureau of Land Management, located in Moreno Valley. The aerial photographs are available at the NETR Online website and through the Google Earth software.

NATIVE AMERICAN PARTICIPATION

On August 23, 2017, 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. On the same day, the nearby Pechanga and Soboba Bands of Luiseño Indians were notified of the upcoming archaeological fieldwork and invited to participate. Following the NAHC's recommendations and previously established consultation protocol, CRM TECH further contacted a total of 55 tribal representatives in the region in writing on August 28, 2017, for further information on potential Native American cultural resources in or near the project area. The correspondence between CRM TECH and the Native American representatives is presented in Appendix 2.

FIELD SURVEY

On August 30, 2017, CRM TECH archaeologist Daniel Ballester carried out the intensive-level field survey of the project area with the assistance of Native American monitor Melody Granados from the Soboba Band of Luiseño Indians. The survey was completed on foot by walking a series of parallel northwest-southeast transects spaced 15 meters (approximately 50 feet) apart. In this way, the ground surface in the entire 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 from fair (70%) in the westernmost portion of the project area to excellent (100%) in the eastern portion, which has been largely cleared of vegetation.

RESULTS AND FINDINGS

RECORDS SEARCH

According to EIC records, the project area was included in at least four previous cultural resources studies completed between 1973 and 1995, including three Phase I surveys covering much larger areas and an archaeological monitoring program during mass grading on 14 acres in 1995. During the monitoring program, a prehistoric—i.e., Native American—archaeological site consisting of three milling slicks on a granitic bedrock outcrop was recorded in the western portion of the current project area and subsequently designated Site 33-006002 (CA-RIV-5669) in the California Historical Resources Inventory (Keller 1995a). The monitoring report states:

> The milling slicks comprising this site are surprisingly uniform in size and shape. Feature A measures 17.8x17.8 cm, Feature B measures 17.8x17.8 cm, and Feature C measures 21.6x14.0 cm. All features are highly exfoliating, with only polished high spots remaining. No surface indications of associated midden or artifacts were observed. Monitoring of grading done around the site revealed no subsurface cultural resource deposit. (Keller 1995b:27)

As a temporary occupation site "utilized by either a small group or an individual during seasonal resource procurement," and lacking any diagnostic artifacts, Site 33-006002 was found not to be significant under CEQA provisions (Keller 1995b:40-41). Subsequently, the site was destroyed by the grading activities (Keller 1995a:1).

Outside of project area but within a one-mile radius, EIC records show more than 30 other previous studies on various tracts of land and linear features (Fig. 6). In all, more than 70% of the land within the scope of the records search has been covered by previous studies, resulting in the identification of 37 historical/archaeological sites and one isolate—i.e., a locality with fewer than three artifacts—within the one-mile radius.

The vast majority of these recorded sites, more than 30 in total, were of prehistoric origin, as was the isolate. Virtually all of the prehistoric sites represented bedrock milling features such as grinding slicks and mortars, scattered among the ubiquitous granitic boulder outcrops in the rolling hills around the project area. The isolate was described as a hand-held grinding stone tool, either a mano or a pestle. The rest of the sites dated to the historic period and included three refuse dumps, a structural foundation, a single-family residence, and the former Riverside County Sheriff's Academy. None of these known cultural resources was found in the immediate vicinity of the project area, and thus none of them requires further consideration during this study.

HISTORICAL RESEARCH

Historical sources consulted during this study indicate that the project vicinity, known as the Box Springs Grade, as long been an important travel corridor. In the 1850s-1870s, the nearest man-made feature was the main road from San Bernardino to San Diego, which traversed a short distance to the east of the project location (Fig. 7). In later years, the general course of this wagon road was followed by the 1880s Atchison, Topeka and Santa Fe Railway (also known as the California Southern Railroad or the Southern California Railroad in this area), the 1920s U.S. Highway 395, and finally today's Interstate Highway 215/State Route 60 (Figs. 2, 8-10).

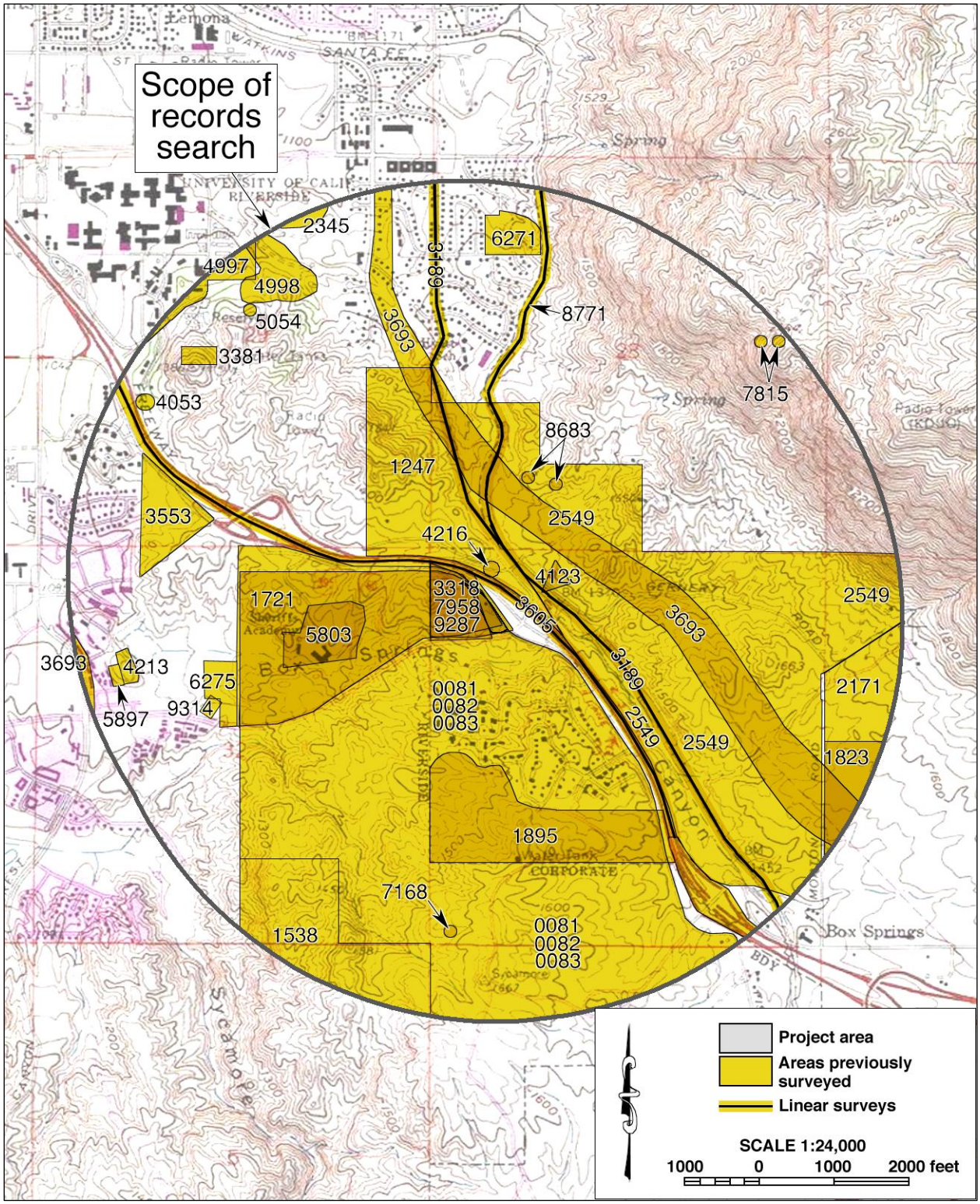

Figure 6. Previous cultural resources studies in the vicinity of the project area, listed by EIC file number. Locations of known historical/archaeological sites are not shown as a protective measure.

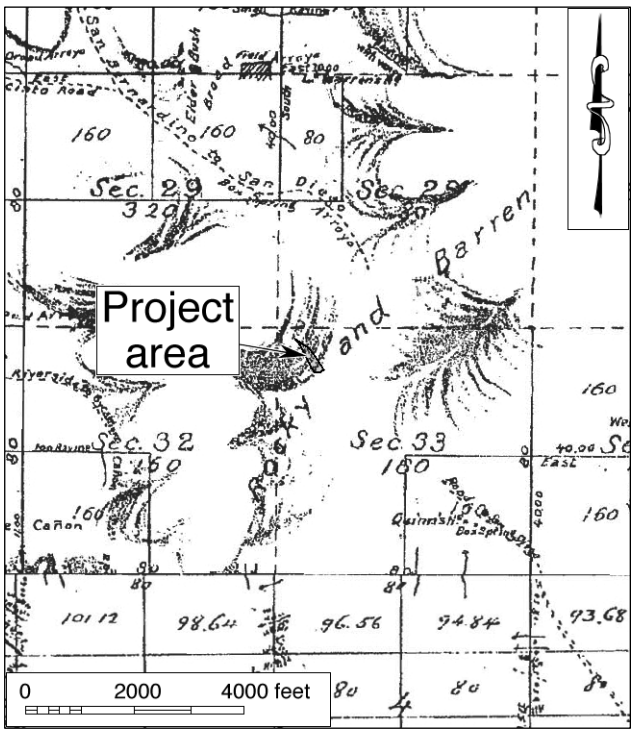

Figure 7. The project area and vicinity in 1853-1877. (Source: GLO 1855; 1877)

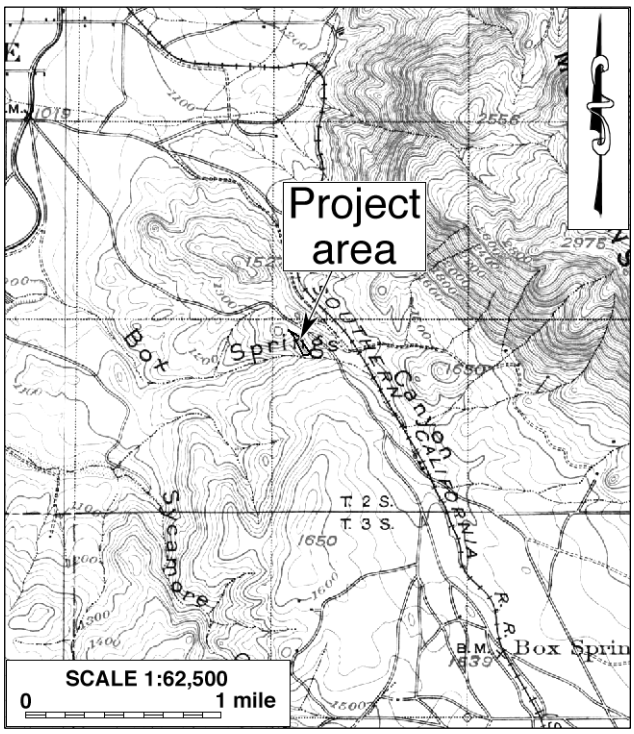

Figure 8. The project area and vicinity in 1897. (Source: USGS 1901)

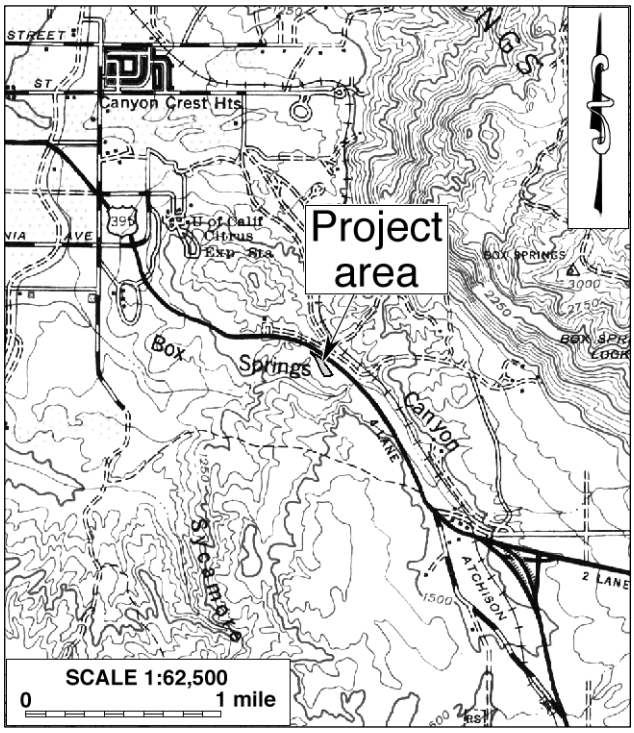

Figure 9. The project area and vicinity in 1939. (Source: USGS 1942)

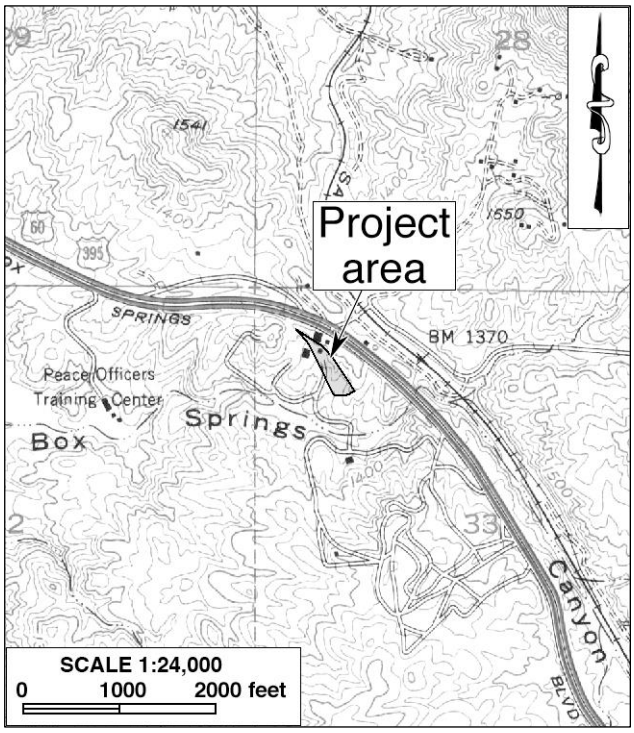

Figure 10. The project area and vicinity in 1951-1953. (Source: USGS 1953)

Also during the 1850s-1870s, a few scattered homesteads were noted in the project vicinity, dotting the "rocky and barren" landscape (Fig. 7). Up to the late 1930s, however, no buildings or other evidence of any settlement or land development activities were observed at or near the project location (Fig. 7-9). By the early 1950s, a group of buildings had appeared in and around the northern portion of the project area, including at least one within the project boundaries (Fig. 10). Aerial photographs from the 1960s-1970s show a substantial complex of buildings and other associated features at that location, lying across the present-day alignment of Sycamore Canyon Boulevard (NETR Online 1966-1978).

By 2002, all components of the complex of buildings had been removed, and the ground surface in the project area had been cleared, presumably as a result of the mass grading activities reported in 1995 (Google Earth 1994; 2002; Keller 1995). In 2005-2006, what is now Sycamore Canyon Boulevard was realigned from the northeastern side of the project area to the southwestern side, resulting substantial alterations to the natural topography of the entire project area (Google Earth 2005-2006). Nearly all of the original surface soils within the project boundaries appear to have been removed or at least extensively disturbed at that time. Since then, the project area has undergone little further change, remaining vacant to the present time (Google Earth 2009-2016).

NATIVE AMERICAN PARTICIPATION

In response to CRM TECH's inquiry, the NAHC reported that although the sacred lands record search identified no Native American cultural resources within the project area, the general location was considered to be sensitive for such resources (see App. 2). Therefore, the NAHC recommended that local Native American groups be contacted for further information, and provided a list of potential contacts in the region for that purpose (see App. 2).

Upon receiving the NAHC's response, CRM TECH sent written requests for comments to 44 of the 47 individuals on the referral list and the organizations they represent. The other three persons on the list, John Perada of the Los Coyotes Band of Cahuilla and Cupeño Indians, Jim McPherson of the Rincon Band of Mission Indians, and Julie Hagen of the Viejas Band of Kumeyaay Indians, no longer serve the tribes as spokespersons on cultural resources issues, according to previous responses from the tribes. Meanwhile, as recommended previously by the appropriate tribal government staff, the following 11 designated spokespersons for the tribes were also contacted:

- David L. Saldivar, Tribal Government Affairs Manager, Augustine Band of Cahuilla Indians;
- Judy Stapp, Director of Cultural Affairs, Cabazon Band of Mission Indians;
- Bobby Ray Esparza, Cultural Director, Cahuilla Band of Indians;
- Desiderio Vela, Environmental Program Manager, Ewiiaapaayp Band of Kumeyaay Indians;
- Samuel H. Dunlap, Cultural Resources Director, Gabrielino Tongva Nation;
- Rob Roy, Environmental Director, La Jolla Band of Luiseño Indians;
- Raymond Huaute, Cultural Resource Specialist, Morongo Band of Mission Indians;
- Chris Devers, Cultural Liaison, Pauma Band of Luiseño Indians;
- Vincent Whipple, Culture Resources Manager, Rincon Band of Luiseño Indians;
- Gabriella Rubalcava, Environmental Director, Santa Rosa Band of Cahuilla Indians;
- Ernest Pingleton, Cultural Resource Manager, Viejas Band of Kumeyaay Indians.

As of this time, four tribal representatives have responded in writing (see App. 2). Among them, Shasta Gaughen, Tribal Historic Preservation Officer for the Pala Band of Mission Indians, stated that the tribe had no objection to the proposed project and would defer to other tribes located in closer proximity. Ray Teran of the Viejas Band of Kumeyaay Indians wrote that the project location has "little cultural significance or ties" to the tribe. He also deferred to other tribes in closer proximity, but requested to be informed of any cultural resource discoveries in the project area.

Chris Devers of the Pauma Band of Luiseño Indians noted that, while it was unfortunate that a known cultural resource (i.e., Site 33-006002) had been destroyed, the tribe was unaware of any additional resources on the property. The tribe recommended that, depending on the level of ground disturbances, "a monitoring team should be used." Jessica Mauck, Cultural Resources Analyst for the San Manuel Band of Mission Indians, found the project vicinity to be within the ancestral territory of the tribe. She recommended "a thorough land use history, and perhaps subsurface testing" to determine the likelihood of any subsurface artifact deposits.

FIELD SURVEY

The field survey produced negative results for potential cultural resources, and no buildings, structures, objects, sites, features, or artifact deposits more than 50 years of age were observed within or adjacent to the project area. No bedrock outcrops are currently present on the property, confirming the removal of the bedrock milling feature recorded as Site 33-006002 in 1995, nor were any remnants found of the building(s) that once stood in the project area. A covered manhole was noted in the project area, suggesting that some subsurface disturbances have occurred in association with the installation of underground utility lines.

DISCUSSION

The purpose of this study is to identify any cultural resources in the project area, and to assist the City of Riverside in determining whether such resources meet the definition of "historical resources" or "tribal cultural 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))

For "tribal cultural resources," PRC §21074, enacted and codified as part of a 2014 amendment to CEQA through Assembly Bill 52, provides the statutory definition as follows:

> "Tribal cultural resources" are either of the following:
> (1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
> (A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
> (B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
> (2) 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 purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

A local register of historical resources, as defined by PRC §5020.1(k), "means a list of properties officially designated or recognized as historically significant by a local government pursuant to a local ordinance or resolution." For individual properties in Riverside, the City's Cultural Resources Ordinance provides two categories of historical significance designation, "Landmarks" and "Structures or Resources of Merit," the criteria for which are outlined in Riverside Municipal Code §20.50.010(T) and §20.50.010(DD), respectively. A "Landmark," according to the ordinance:

> means any Improvement or Natural Feature that is an exceptional example of a historical, archaeological, cultural, architectural, community, aesthetic or artistic heritage of the City, retains a high degree of integrity, and:
> 1. Exemplifies or reflects special elements of the City's cultural, social, economic, political, aesthetic, engineering, architectural, or natural history;
> 2. Is identified with persons or events significant in local, state or national history;
> 3. Embodies distinctive characteristics of a style, type, period or method of construction, or is a valuable example of the use of indigenous materials or craftsmanship;
> 4. Represents the work of a notable builder, designer, or architect, or important creative individual;
> 5. Embodies elements that possess high artistic values or represents a significant structural or architectural achievement or innovation;
> 6. Reflects significant geographical patterns, including those associated with different eras of settlement and growth, particular transportation modes, or distinctive examples of park or community planning, or cultural landscape;
> 7. Is one of the last remaining examples in the City, region, State, or nation possessing distinguishing characteristics of an architectural or historical type or specimen; or
> 8. Has yielded or may be likely to yield, information important in history or prehistory. (RMC §20.50.010(T))

For the status of "Structure or Resource of Merit," the ordinance set forth the definition and criteria as follows:

> "Structure or Resource of Merit" means any Improvement or Natural Feature which contributes to the broader understanding of the historical, archaeological, cultural, architectural, community, aesthetic or artistic heritage of the City, retains sufficient integrity, and:
> 1. Has a unique location or singular physical characteristics or is a view or vista representing an established and familiar visual feature of a neighborhood community or of the City;
> 2. Is an example of a type of building which was once common but is now rare in its neighborhood, community or area;
> 3. Is connected with a business or use which was once common but is now rare;
> 4. A Cultural Resource that could be eligible under Landmark Criteria no longer exhibiting a high level of integrity, however, retaining sufficient integrity to convey significance under one or more of the Landmark Criteria;
> 5. Has yielded or may be likely to yield, information important in history or prehistory; or
> 6. An improvement or resource that no longer exhibits the high degree of integrity sufficient for Landmark designation, yet still retains sufficient integrity under one or more of the Landmark criteria to convey cultural resource significance as a Structure or Resource of Merit. (RMC §20.50.010(DD))

In addition, City of Riverside policies also require potential "historical resources" identified within the City's jurisdiction to be evaluated for listing in the National Register of Historic Places. The eligibility for inclusion in the National Register is determined by applying the Secretary of the Interior's criteria, developed by the National Park Service as per provision of the National Historic Preservation Act, which are essentially identical to the California Register criteria. Federal regulations provide the National Register criteria as follows:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and
> (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
> (b) that are associated with the lives of persons significant in our past; or
> (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
> (d) that have yielded, or may be likely to yield, information important in prehistory or history. (36 CFR 60.4)

As discussed above, 33-006002, a prehistoric archaeological site consisting of a bedrock outcrop with three milling slicks, was recorded in the project area in 1995, but the site was determined not to be significant for CEQA-compliance purposes at the time and was subsequently removed. Lightly used bedrock milling features like this, the most ubiquitous type of prehistoric sites in the Riverside area, were created by the Native people through occasional use during resource-gathering excursions, and typically do not have a substantial subsurface component. Because no buried cultural deposit was found at Site 33-006002 when the milling feature was removed in 1995, and because of the extent of further ground disturbance that has occurred on the property since then, this study concludes that Site 33-006002 is no longer extant either above or below the ground surface.

Since no other potential cultural resources were encountered through the various avenues of research, this study further concludes that no "historical resources" or "tribal cultural resources," as defined above, are known to exist within or adjacent to the project area. While Site 33-006002 and

at least one building from the late historic period were previously present on the property, the entire project area was extensively disturbed in recent years, significantly altering the topography of the land and leaving little remnant of the original ground surface. Consequently, the project area does not demonstrate any particular sensitivity for buried archaeological remains from the prehistoric or historic period.

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 summary of the research results presented above, no "historical resources" or "tribal cultural resources" are known to be present within or adjacent to the project area, and the subsurface sediments on the property, which appear to be a shallow veneer over decomposing granite, do not demonstrate any particular archaeological sensitivity. Based on these findings, CRM TECH presents the following recommendations to the City of Riverside:

- The project as currently proposed will not cause a substantial adverse change to any "historical resources" or "tribal cultural resources."
- No further cultural resources investigation is 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 during earth-moving operations associated with the project, the City of Riverside should be notified immediately, and all work in the immediate vicinity should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

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APPENDIX 1:
PERSONNEL QUALIFICATIONS

PRINCIPAL INVESTIGATOR/HISTORIAN
Bai "Tom" Tang, M.A.

Education

1988-1993	Graduate Program in Public History/Historic Preservation, UC 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, UC Riverside.
1990	Intern Researcher, California State Office of Historic Preservation, Sacramento.
1990-1992	Teaching Assistant, History of Modern World, UC Riverside.
1988-1993	Research Assistant, American Social History, UC 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/ARCHAEOLOGIST
Michael Hogan, Ph.D., RPA*

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.
1996-1998	Project Director and Ethnographer, Statistical Research, Inc., Redlands.
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	Archaeological Technician, Field Director, and Project Director 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

Author and co-author of, contributor to, and principal investigator for numerous cultural resources management study reports since 1986.

Memberships

* Register of Professional Archaeologists; Society for American Archaeology; Society for California Archaeology; Pacific Coast Archaeological Society; Coachella Valley Archaeological Society.

PROJECT ARCHAEOLOGIST/REPORT WRITER
Deirdre Encarnación, M.A.

Education

2003	M.A., Anthropology, San Diego State University, California.
2000	B.A., Anthropology, minor in Biology, with honors; San Diego State University, California.
1993	A.A., Communications, Nassau Community College, Garden City, N.Y.
2001	Archaeological Field School, San Diego State University.
2000	Archaeological Field School, San Diego State University.

Professional Experience

2004-	Project Archaeologist/Report Writer, CRM TECH, Riverside/Colton, California.
2001-2003	Part-time Lecturer, San Diego State University, California.
2001	Research Assistant for Dr. Lynn Gamble, San Diego State University.
2001	Archaeological Collection Catalog, SDSU Foundation.

PROJECT ARCHAEOLOGIST
Nina Gallardo, B.A.

Education

2004 B.A., Anthropology/Law and Society, University of California, Riverside.

Professional Experience

2004- Project Archaeologist, CRM TECH, Riverside/Colton, California.

- Surveys, excavations, construction monitoring, field recordation, mapping, records searches, and Native American liaison.

PROJECT ARCHAEOLOGIST/FIELD DIRECTOR
Daniel Ballester, M.S.

Education

2013	M.S., Geographic Information System (GIS), University of Redlands, California.
1998	B.A., Anthropology, California State University, San Bernardino.
1997	Archaeological Field School, University of Las Vegas and University of California, Riverside.
1994	University of Puerto Rico, Rio Piedras, Puerto Rico.
2007	Certificate in Geographic Information Systems (GIS), California State University, San Bernardino.
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.
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.

APPENDIX 2

CORRESPONDENCE WITH NATIVE AMERICAN REPRESENTATIVES*

* A total of 55 local Native American representatives were contacted; a sample letter is included in this appendix.

SACRED LANDS FILE & NATIVE AMERICAN CONTACTS LIST REQUEST

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916)373-3710
(916)373-5471 Fax
nahc@pacbell.net

Project: Proposed Sycamore Canyon Boulevard Project (CRM TECH No. 3252)

County: Riverside

USGS Quadrangle Name: Riverside

Township 2 South **Range** 4 West SB **BM; Section(s)** 33

Company/Firm/Agency: CRM TECH

Contact Person: Nina Gallardo

Street Address: 1016 E. Cooley Drive, Suite A/B

City: Colton, CA **Zip:** 92324

Phone: (909) 824-6400 **Fax:** (909) 824-6405

Email: ngallardo@crmtech.us

Project Description: The primary component of the project is to develop on approximately 2.5 acres of land located between Sycamore Canyon Boulevard and the I-215 Freeway, north of Central Avenue, in the City of Riverside, Riverside County, California.

August 23, 2017

From: Nina Gallardo <ngallardo@crmtech.us>
Sent: Wednesday, August 23, 2017 3:26 PM
To: Joseph Ontiveros; 'Jessica Valdez'
Subject: Cultural Study & Participation in Fieldwork for the Proposed Sycamore Canyon Boulevard Project in the City of Riverside

Hello,

I'm emailing to inform you that CRM TECH will be conducting a cultural study for the proposed Sycamore Canyon Boulevard Project in the City of Riverside, Riverside County (CRM TECH No. 3252). I'm contacting you to see if the tribe would like to participate in the field survey for the project and we will contact the tribe again when we have a specific time and date for the fieldwork. CRM TECH would appreciate any information regarding the project area. We will be sending an NA scoping letter with additional information in a few weeks. I'm attaching the project area map and other information.

Thank you for your time and input on this project.

Nina Gallardo

From: Nina Gallardo <ngallardo@crmtech.us>
Sent: Wednesday, August 23, 2017 3:29 PM
To: Ebru Ozdil (eozdil@pechanga-nsn.gov); 'Tina Thompson Mendoza'; Tony Foussat
Subject: Cultural Study & Participation in Fieldwork for the Proposed Sycamore Canyon Boulevard Project in the City of Riverside

Hello,

I'm emailing to inform you that CRM TECH will be conducting a cultural study for the proposed Sycamore Canyon Boulevard Project in the City of Riverside, Riverside County (CRM TECH No. 3252). I'm contacting you to see if the tribe would like to participate in the field survey for the project and we will contact the tribe again when we have a specific time and date for the fieldwork. CRM TECH would appreciate any information regarding the project area. We will be sending an NA scoping letter with additional information in a few weeks. I'm attaching the project area map and other information.

Thank you for your time and input on this project.

Nina Gallardo

August 28, 2017

Jeff Grubbe, Chairperson
Agua Caliente Band of Cahuilla Indians
5401 Dinah Shore Drive
Palm Springs, CA 92264

RE: Central & Sycamore Project
2.5 Acres in the City of Riverside
Riverside County, California
CRM TECH Contract #3252

Dear Mr. Grubbe:

I am writing to bring your attention to an ongoing CEQA-compliance study for the proposed project referenced above. The project entails the construction of a convenience store/gas station and two fast food restaurants on approximately 2.5 acres of undeveloped land located on the northeast corner of Sycamore Canyon Boulevard and Central Avenue in the City of Riverside. In 1995, Jean Keller recorded a site on the property that consisted of a bedrock milling feature, but it has since been destroyed by past grading activities. The accompanying map, based on the USGS Riverside East, Calif., 7.5' quadrangle, depicts the location of the project area in Section 33, T2S R4W, SBBM.

In a letter dated August 28, 2017, the Native American Heritage Commission reports that the sacred lands record search produced negative results within the project area, but the Commission noted that the area is sensitive for cultural resources. The Native American Heritage Commission recommends that local Native American groups be contacted for further information (see attached). Therefore, as part of the cultural resources study for this project, I am writing to request your input on potential Native American cultural resources in or near the project area.

Please respond at your earliest convenience if you have any specific knowledge of sacred/religious sites or other sites of Native American traditional cultural value in or near the project area, or any other information to consider during the cultural resources investigation. Any information or concerns may be forwarded to CRM TECH by telephone, e-mail, facsimile, or standard mail. Requests for documentation or information we cannot provide will be forwarded to our client and/or the lead agency, namely the City of Riverside.

We would also like to clarify that, as the cultural resources consultant for the project, CRM TECH is not involved in the AB 52-compliance process or in government-to-government consultations. The purpose of this letter is to seek any information that you may have to help us determine if there are cultural resources in or near the project area that we should be aware of and to help us assess the sensitivity of the project area. Thank you for your time and effort in addressing this important matter.

Respectfully,

Nina Gallardo
Project Archaeologist/Native American liaison
CRM TECH

From: Jessica Mauck <JMauck@sanmanuel-nsn.gov>
Sent: Monday, August 28, 2017 5:29 PM
To: 'Nina Gallardo'
Subject: RE: NA Scoping Letter for the Proposed Central & Sycamore Project in the City of Riverside, Riverside County (CRM TECH # 3252)

Hi Nina,

Thank you for contacting the San Manuel Band of Mission Indians (SMBMI) regarding the above referenced project. SMBMI appreciates the opportunity to review the project documentation, which was received by our Cultural Resources Management Department on 28 Aug 2017. The proposed project area exists within Serrano ancestral territory and, therefore, is of interest to the Tribe. Box Springs is located just to the northeast of the project area and contains a high level of cultural sensitivity. Furthermore, cultural resources have been previously discovered in the valley floor below these mountains. However, this project area looks like it may be developed – a thorough land use history, and perhaps subsurface testing, is recommended in order to obtain a full understanding of the likelihood of the presence of subsurface cultural materials.

Regards,

Jessica Mauck
CULTURAL RESOURCES ANALYST
O: (909) 864-8933 x3249
M: (909) 725-9054
26569 Community Center Drive, Highland California

From: Cultural Pauma <cultural@pauma-nsn.gov>
Sent: Wednesday, September 6, 2017 10:11 AM
To: Nina Gallardo
Cc: pdixon@palomar.edu; Jeremy Zagarella
Subject: Central & Sycamore Project

Ms. Gallardo,

The Cultural Office of the Pauma Band of Luiseno Indians has received your August 28 notice for the Central & Sycamore Project in Riverside. It is unfortunate that a previous resource has been destroyed through development. We are unaware of any additional resources on the project property. Depending on the level of ground disturbance, a monitoring team should be used to be assured that additional cultural resources have not been displaced. Please contact us if there are any questions.

Thank you,

Mr. Chris Devers
Cultural Liaison
Pauma Band of Luiseno Indians

APPENDIX E

GEOTECHNICAL INVESTIGATION REPORT

GEOTECHNICAL INVESTIGATION
PROPOSED RETAIL DEVELOPMENT

NEC Sycamore Canyon Boulevard and Central Avenue
Riverside, California
For
KA Enterprises

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

December 11, 2017

KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, California 92121

Attention: Mr. Eugene Marini

Project No.: **17G134-3**

Subject: **Geotechnical Investigation**
Proposed Retail Development
NEC Sycamore Canyon Boulevard and Central Avenue
Riverside, California

Gentlemen:

In accordance with your request, we have conducted a geotechnical investigation at the subject site. We are pleased to present this report summarizing the conclusions and recommendations developed from our investigation.

We sincerely appreciate the opportunity to be of service on this project. We look forward to providing additional consulting services during the course of the project. If we may be of further assistance in any manner, please contact our office.

Respectfully Submitted,

SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

Daniel W. Nielsen, RCE 77915
Project Engineer

Daryl R. Kas, CEG 2467
Project Geologist

Robert G. Trazo, M.Sc., GE 2655
Principal Engineer

Distribution: (1) Addressee

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1.0 EXECUTIVE SUMMARY

Presented below is a brief summary of the conclusions and recommendations of this investigation. Since this summary is not all inclusive, it should be read in complete context with the entire report.

Site Preparation

- Initial site preparation should include stripping of any surficial vegetation. The surficial vegetation, weeds, grasses, shrubs and any organic soils should be properly disposed of off-site.
- Artificial fill soils were encountered at several of the boring and all of the trench locations, extending from the ground surface to depths of 1 to 9½± feet. Bedrock was encountered at the ground surface and beneath the fill soils at all of the boring and trench locations.
- The fill soils possess occasional to extensive debris content and possess varying strengths. In addition, the existing fill soils are considered to represent undocumented fill. These soils, in their present condition, are not considered suitable for support of the foundation loads of the new structures.
- Remedial grading is recommended to be performed within the new building pad areas. The existing soils within the building pad areas should be overexcavated to a depth of 2 feet below existing grade and to a depth of 2 feet below proposed pad grade, whichever is greater. All existing artificial fill materials should also be removed from the new building pad areas. The soils within the proposed foundation influence zones should be overexcavated to a depth of at least 2 feet below proposed foundation bearing grades.
- After overexcavation has been completed, the resulting subgrade soils should be evaluated by the geotechnical engineer to identify any additional soils that should be overexcavated, moisture conditioned, and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. The previously excavated soils may then be replaced as compacted structural fill.
- The new parking area subgrade soils are recommended to be scarified to a depth of 12± inches, thoroughly moisture conditioned and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density.

Building Foundations

- Conventional shallow foundations, supported in newly placed compacted fill.
- 2,500 lbs/ft^2 maximum allowable soil bearing pressure.
- Reinforcement consisting of at least two (2) No. 5 rebars (1 top and 1 bottom) in strip footings. Additional reinforcement may be necessary for structural considerations.

Building Floor Slab

- Conventional Slab-on-Grade, 5 inches thick.
- Minimum reinforcement not required for geotechnical considerations assuming a very low expansion index pad. The actual floor slab reinforcement should be determined by the structural engineer, based upon the imposed loading.

Pavements

ASPHALT PAVEMENTS (R = 40)		
Materials	**Thickness (inches)**	
	Auto Parking and Drive Lanes (TI = 4.0 to 5.0)	Truck Traffic (TI = 6.0)
Asphalt Concrete	3	3½
Aggregate Base	4	6
Compacted Subgrade	12	12

PORTLAND CEMENT CONCRETE PAVEMENTS		
Materials	**Thickness (inches)**	
	Autos Parking and Drive Lanes (TI = 4.0 & 5.0)	Truck Traffic (TI = 6.0)
PCC	5	5½
Compacted Subgrade (95% minimum compaction)	12	12

2.0 SCOPE OF SERVICES

The scope of services performed for this project was in general accordance with our Proposal No. 17P350, dated September 25, 2017. The scope of services included a visual site reconnaissance, subsurface exploration, field and laboratory testing, and geotechnical engineering analysis to provide criteria for preparing the design of the building foundations, building floor slabs, and parking lot pavements along with site preparation recommendations and construction considerations for the proposed development. The evaluation of the environmental aspects of this site was beyond the scope of services for this geotechnical investigation.

3.0 SITE AND PROJECT DESCRIPTION

3.1 Site Conditions

The subject site is located at the northeast corner of Sycamore Canyon Boulevard and Central Avenue in Riverside, California. The site is bounded to the north and east by the Central Avenue off-ramp of the eastbound Moreno Valley Freeway (Highway 60), to the south by Central Avenue, and to the west by Sycamore Canyon Boulevard. The general location of the site is illustrated on the Site Location Map, included as Plate 1 of this report.

The subject site consists of several irregular-shaped contiguous parcels which total 2.5± acres in size. The site is currently vacant and undeveloped except for a cell phone tower located near the north corner of the site. A soil stockpile, approximately 50 feet in diameter and 6 to 8 feet in height, is located in the central area of the site. A slope is present along the western property line which descends downward toward Sycamore Canyon Boulevard. The height of the slope ranges from approximately 3 to 15± feet with an inclination of approximately 2h:1v. The ground surface consists of exposed soil with sparse native grass and weed growth and exposed soil with moderate to heavy grass and weed growth on the existing slope.

Topographical information for the subject site was obtained from a map provided by Omega Engineering Consultants, Inc., the project civil engineer. The site topography ranges from 1370± feet mean sea level (msl) in the northern area of the site to 1353± feet msl in the southwestern corner of the site. The maximum elevation differential across the site is approximately 17 feet.

3.2 Proposed Development

Based on a conceptual grading plan prepared by Omega Engineering Consultants, Inc., the site will be developed with a convenience store and a restaurant building. The convenience store will be located in the south-central region of the site and will be 3,200± ft² in size. A fuel island and canopy structure will be constructed south of the convenience store and a car wash building will be located in the southeastern area of the site. The restaurant building will be located in the north-central area of the site and will be 3,800± ft² in size. A drive-thru lane will be constructed along the northern, western, and southern sides of the restaurant. The buildings will be surrounded by asphaltic concrete pavements in the parking and drive areas, Portland cement concrete pavements in the drive-thru lanes, concrete flatwork, and limited areas of landscape planters. A slope will be constructed along the northern portion of the western property line. The slope will be approximately 6 feet in height and have an inclination of 2h:1v. Retailing walls will also be located in the western portion of the site. The northern wall will range from 1 to 13± feet in height and the southern wall will range from 2 to 12½± feet in height. A retaining wall will also be constructed along the southern portion of the eastern property line. This retaining wall will range from 1 to 7± feet in height.

Detailed structural information has not been provided. It is assumed that the new buildings will be single -story structures of wood frame or masonry block construction and supported on

conventional shallow foundations with concrete slab-on-grade floors. Based on the assumed construction, maximum column and wall loads are expected to be on the order of 30 kips and 1 to 3 kips per linear foot, respectively.

No significant amounts of below grade construction, such as basements or crawl spaces, are expected to be included in the proposed development. Based on the conceptual grading plan provided to our office, cuts of up to 8± feet and fills of up to 8± feet are expected to be necessary to achieve the proposed site grades.

3.3 Previous Studies

Southern California Geotechnical, Inc. (SCG) previously performed two investigations for the subject site. The results of the previous investigations are documented in the reports referenced below:

> Results of Limited Geotechnical Reconnaissance and Research, Proposed Retail Development, Northeast Corner of Sycamore Canyon Boulevard and Central Avenue, Riverside, California, prepared by Southern California Geotechnical, Inc. (SCG) for KA Enterprises, SCG Project No. 17G134-1, dated April 10, 2017.

SCG performed visual reconnaissance and performed research of the available geologic literature for this site. Our observations and the results of this study are presented in the report referenced above. As part of this study, an SCG certified engineering geologist (CEG) conducted a site reconnaissance. No subsurface exploration was performed as part of this study. Bedrock materials were observed at the ground surface in limited areas along the southern property line and on a portion of the surface of the slope along the western property line. In addition, bedrock materials were observed beneath the surficial soils at a couple locations in the central area of the site. SCG reported that the site was likely underlain by Val Verde Formation tonalite bedrock. SCG recommended that a geophysical rippability study be performed at the subject site.

> Seismic Refraction Study, Proposed Retail Development, Northeast Corner of Sycamore Canyon Boulevard and Central Avenue, Riverside, California, prepared by SCG for KA Enterprises, SCG Project No. 17G134-2, dated April 25, 2017.

SCG previously performed a seismic refraction study at the subject site. Four (4) 150-foot long seismic refraction lines were performed at the site. SCG concluded that the very weathered tonalite bedrock was considered marginally rippable to depths of 7 to 30 feet. However, SCG did indicate that if deeper cuts were expected, blasting would be expected in any areas where less weathered bedrock materials would be encountered.

4.0 SUBSURFACE EXPLORATION

4.1 Scope of Exploration/Sampling Methods

The subsurface exploration conducted for this project consisted of five (5) soil borings drilled to depths of 10 to 25± feet below existing site grades and six (6) trenches excavated to depths of 4 to 15± feet below currently existing site grades. All of the borings and trenches were logged during drilling and trenching by our engineering geology personnel.

The trenches were excavated using a track mounted excavator equipped with a 24-inch wide bucket. All of the borings were advanced with hollow-stem augers, by a conventional truck-mounted drilling rig. Representative bulk and relatively undisturbed soil samples were taken during drilling and trenching. Relatively undisturbed samples were taken with a split barrel "California Sampler" containing a series of one inch long, 2.416± inch diameter brass rings. This sampling method is described in ASTM Test Method D-3550. Relatively undisturbed samples were also taken using a 1.4± inch inside diameter split spoon sampler, in general accordance with ASTM D-1586. Both of these samplers are driven into the ground with successive blows of a 140-pound weight falling 30 inches. The blow counts obtained during driving are recorded for further analysis. Bulk samples were collected in plastic bags to retain their original moisture content. The relatively undisturbed ring samples were placed in molded plastic sleeves that were then sealed and transported to our laboratory.

The approximate locations of the borings and trenches are indicated on the Boring and Trench Location Plan, included as Plate 2 in Appendix A of this report. The Boring Logs and Trench Logs, which illustrate the conditions encountered at the boring and trench locations, as well as the results of some of the laboratory testing, are included in Appendix B.

4.2 Geotechnical Conditions

Artificial Fill

Artificial fill soils were encountered at the ground surface at three (3) of the boring locations and all of the trench locations extending to depths of 1 to 9½± feet below the existing site grades. The fill soils generally consist of silty fine to coarse sands with varying amounts of gravel content. Construction debris including concrete, asphalt, tile, metal, plastic, and rebar were observed within Trench Nos. T-3, T-4, and T-5. The construction debris ranged in size from 1-inch to 4-feet. The fill soils possess abundant debris content, variable strengths and a disturbed appearance, resulting in their classification as fill.

Alluvium

Native alluvial soil were encountered beneath the fill soils at Trench No T-6 and Boring No. B-4. The native soils extended to depths of 12 to 13± feet below the existing site grades. The alluvial soils consist of loose to medium dense silty fine to medium sands and silty fine to coarse sands.

Val Verde Tonalite

Val Verde Formation Tonalite bedrock was encountered at the ground surface or beneath the fill or alluvium at all of the boring and trench locations. The bedrock materials encountered throughout the site consists of dense to very dense, light brown to dark gray brown fine to coarse grained tonalite, jointed, weathered and friable. Gouge filled joints were observed at Trench Nos. T-2 and T-3. Joints with no gouge were observed at Trench No. T-5. The bedrock was generally massive.

Groundwater

Free water was not encountered during excavation of any of the borings or trenches. Based on the lack of any water within the borings and trenches, and the moisture contents of the recovered soil samples, the static groundwater table is considered to have existed at a depth in excess of 25± feet at the time of the subsurface exploration.

As part of our research, we reviewed available groundwater data in order to determine the historic high groundwater level for the site. The primary reference used to determine the groundwater depths in this area is the California Department of Water Resources website, http://www.water.ca.gov/waterdatalibrary/. However, there are no wells within 1 mile of the subject site.

4.3 Geologic Conditions

Regional geologic conditions were obtained from the Preliminary Geologic Map of the Riverside East 7.5 Minute Quadrangle, Riverside County, California, published by the California Geological Survey (CGS) by Morton and Cox, 1997. This map indicates that the site is underlain by Cretaceous age Val Verde Formation tonalite (Map Symbol Kvt). The Val Verde Formation is described as gray, weathered, relatively homogeneous, massive, medium- to coarse-grained tonalite. A portion of this map, indicating the location of the subject site, is included as Plate 3 in Appendix A.

Based on the materials encountered in the exploratory borings and trenches, it is our opinion the site is underlain by Val Verde Tonalite. Bedrock was encountered at all of the boring and trench locations. The bedrock consists of dense to very dense, fine to coarse grained, jointed, weathered tonalite of the Val Verde formation. The geologic conditions at the site are consistent with the mapped geologic conditions.

5.0 LABORATORY TESTING

The soil samples recovered from the subsurface exploration were returned to our laboratory for further testing to determine selected physical and engineering properties of the soils. The tests are briefly discussed below. It should be noted that the test results are specific to the actual samples tested, and variations could be expected at other locations and depths.

Classification

All recovered soil samples were classified using the Unified Soil Classification System (USCS), in accordance with ASTM D-2488. The field identifications were then supplemented with additional visual classifications and/or by laboratory testing. The USCS classifications are shown on the Boring and Trench Logs and are periodically referenced throughout this report.

Density and Moisture Content

The density has been determined for selected relatively undisturbed ring samples. These densities were determined in general accordance with the method presented in ASTM D-2937. The results are recorded as dry unit weight in pounds per cubic foot. The moisture contents are determined in accordance with ASTM D-2216, and are expressed as a percentage of the dry weight. These test results are presented on the Boring and Trench Logs.

Consolidation

Selected soil samples from our previous geotechnical investigation have been tested to determine their consolidation potential, in accordance with ASTM D-2435. The testing apparatus is designed to accept either natural or remolded samples in a one-inch high ring, approximately 2.416 inches in diameter. Each sample is then loaded incrementally in a geometric progression and the resulting deflection is recorded at selected time intervals. Porous stones are in contact with the top and bottom of the sample to permit the addition or release of pore water. The samples are typically inundated with water at an intermediate load to determine their potential for collapse or heave. The results of the consolidation testing are plotted on Plates C-1 through C-8 in the Appendix of this report.

Maximum Dry Density and Optimum Moisture Content

Representative bulk samples were tested for their maximum dry densities and optimum moisture contents. The results have been obtained using the Modified Proctor procedure, per ASTM D-1557. These tests are generally used to compare the in-situ densities of undisturbed field samples, and for later compaction testing. Additional testing of other soil type or soil mixes may be necessary at a later date. The results of the testing are plotted on Plates C-9 and C-10 in Appendix C of this report.

Soluble Sulfates

Representative samples of the near-surface soils were submitted to a subcontracted analytical laboratory for determination of soluble sulfate content. Soluble sulfates are naturally present in

soils, and if the concentration is high enough, can result in degradation of concrete which comes into contact with these soils. The results of the soluble sulfate testing are presented below, and are discussed further in a subsequent section of this report.

Sample Identification	Soluble Sulfates (%)	ACI Classification
B-2 @ 0 to 5 feet	0.005	Negligible
B-4 @ 0 to 5 feet	0.008	Negligible

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our review, field exploration, laboratory testing and geotechnical analysis, the proposed development is considered feasible from a geotechnical standpoint. The recommendations contained in this report should be taken into the design, construction, and grading considerations.

The recommendations are contingent upon all grading and foundation construction activities being monitored by the geotechnical engineer of record. The recommendations are provided with the assumption that an adequate program of client consultation, construction monitoring, and testing will be performed during the final design and construction phases to verify compliance with these recommendations. Maintaining Southern California Geotechnical, Inc., (SCG) as the geotechnical consultant from the beginning to the end of the project will provide continuity of services. The geotechnical engineering firm providing testing and observation services shall assume the responsibility of Geotechnical Engineer of Record.

The Grading Guide Specifications, included as Appendix D, should be considered part of this report, and should be incorporated into the project specifications. The contractor and/or owner of the development should bring to the attention of the geotechnical engineer any conditions that differ from those stated in this report, or which may be detrimental for the development.

6.1 Seismic Design Considerations

The subject site is located in an area which is subject to strong ground motions due to earthquakes. The performance of a site specific seismic hazards analysis was beyond the scope of this investigation. However, numerous faults capable of producing significant ground motions are located near the subject site. Due to economic considerations, it is not generally considered reasonable to design a structure that is not susceptible to earthquake damage. Therefore, significant damage to structures may be unavoidable during large earthquakes. The proposed structures should, however, be designed to resist structural collapse and thereby provide reasonable protection from serious injury, catastrophic property damage and loss of life.

Faulting and Seismicity

Research of available maps indicates that the subject site is not located within an Alquist-Priolo Earthquake Fault Zone. Furthermore, SCG did not identify any evidence of faulting during the geotechnical investigation. Therefore, the possibility of significant fault rupture on the site is considered to be low.

The potential for other geologic hazards such as seismically induced settlement, lateral spreading, tsunamis, inundation, seiches, flooding, and subsidence affecting the site is considered low.

Seismic Design Parameters

Based on standards in place at the time of this report, the proposed development is expected to be designed in accordance with the requirements of the 2016 edition of the California Building Code (CBC). The CBC provides procedures for earthquake resistant structural design that include considerations for on-site soil conditions, occupancy, and the configurations of the structures including the structural system and height. The seismic design parameters presented below are based on the soil profile and the proximity of known faults with respect to the subject site.

The 2016 CBC Seismic Design Parameters have been generated using U.S. Seismic Design Maps, a web-based software application developed by the United States Geological Survey. This software application, available at the USGS web site, calculates seismic design parameters in accordance with the 2016 CBC, utilizing a database of deterministic site accelerations at 0.01 degree intervals. The table below is a compilation of the data provided by the USGS application. A copy of the output generated from this program is included in Appendix E of this report. A copy of the Design Response Spectrum, as generated by the USGS application is also included in Appendix E. Based on this output, the following parameters may be utilized for the subject site:

2016 CBC SEISMIC DESIGN PARAMETERS

Parameter		Value
Mapped Spectral Acceleration at 0.2 sec Period	S_S	1.500
Mapped Spectral Acceleration at 1.0 sec Period	S_1	0.611
Site Class	---	C
Site Modified Spectral Acceleration at 0.2 sec Period	S_{MS}	1.500
Site Modified Spectral Acceleration at 1.0 sec Period	S_{M1}	0.794
Design Spectral Acceleration at 0.2 sec Period	S_{DS}	1.000
Design Spectral Acceleration at 1.0 sec Period	S_{D1}	0.529

Liquefaction

Liquefaction is the loss of strength in generally cohesionless, saturated soils when the pore-water pressure induced in the soil by a seismic event becomes equal to or exceeds the overburden pressure. The primary factors which influence the potential for liquefaction include groundwater table elevation, soil type and grain size characteristics, relative density of the soil, initial confining pressure, and intensity and duration of ground shaking. The depth within which the occurrence of liquefaction may impact surface improvements is generally identified as the upper 50 feet below the existing ground surface. Liquefaction potential is greater in saturated, loose, poorly graded fine sands with a mean (d_{50}) grain size in the range of 0.075 to 0.2 mm (Seed and Idriss, 1971). Clayey (cohesive) soils or soils which possess clay particles ($d<0.005$mm) in excess of 20 percent (Seed and Idriss, 1982) are generally not considered to be susceptible to liquefaction, nor are those soils which are above the historic static groundwater table.

Based on mapping performed by the California Geological Survey (CGS) the subject site is not located within a designated liquefaction hazard zone. In addition, the subsurface conditions encountered at the boring and trench locations are not considered to be conducive to liquefaction. Based on the mapping performed by CGS and the conditions encountered at the boring locations, liquefaction is not considered to be a design concern for this project.

6.2 Geotechnical Design Considerations

General

The subject site is underlain by artificial fill soils, extending to depths of up to 9½± feet. All of the fill soils on site are considered to be undocumented fill since the fill soils were not placed under engineering controlled conditions. The fill soils possess extensive debris content, variable strengths, and based on the results of laboratory testing, are highly collapsible. Therefore, remedial grading is recomended to overexcavate and recompact these soils.

The most significant geotechnical design consideration that will impact the proposed development is the excavation characteristics of the bedrock that underlies the subject site. Bedrock was encountered at the ground surface, and beneath the fill and native alluvial soils, where present. Based on conditions encountered at the boring, trench, and seismic refraction line locations, the bedrock is considered marginally rippable within the depths of the expected cut depths. Gouge filled joints were observed at two of the trench locations. If the gouge filled joints are exposed during the grading operation, an engineering geologist or geotechnical engineer should evaluate the gouge filled joints to determine the appropriate remediation, if necessary.

Another geotechnical design consideration is the differing support conditions of engineered fill and bedrock at foundation bearing surfaces. A portion of the near-surface bedrock is recommended to be overexcavated and recompacted as structural fill in order to provide more uniform support characteristics for the proposed structures.

Potential Surcharge Loads

Based on our review of the preliminary grading plan, the proposed restaurant building will be located near the proposed retaining wall along the western property line. The restaurant building foundation may induce a surcharge load on the western retaining wall if the retaining wall is located within the foundation influence zone of the building foundations. For the purpose of detrmining the surcharge potential, the foundation influence zone is considered to be the area within a 1h:1v projection downward from the bottom of the building foundation. Therefore, in order to avoid potential surcharge of the retaining wall, we recommend that the building foundation along the western wall be placed at a depth such that the retaining wall is not located within the foundation influence zone.

Settlement

The recommended remedial grading will remove all of the existing undocumented fill, as well as a portion of the near-surface bedrock, and replace them as compacted fill soils. The underlying

bedrock is not considered to be susceptible to significant settlement from the foundation loads of the proposed structures. Provided that the recommended remedial grading is completed, the post-construction static settlement of the proposed structure is expected to be within tolerable limits.

Expansion

The near-surface soils generally consist of silty sands and tonalite bedrock. These materials have been visually classified as very low to non-expansive. Therefore, no design considerations related to expansive soils are considered warranted for this site.

Shrinkage/Subsidence

Removal and recompaction of the fill soils is estimated to result in an average shrinkage of 12 to 16 percent. Excavation of the bedrock and placement as compacted fill is estimated to result in bulking of 0 to 5 percent.

No significant subsidence is expected to occur in excavations that are underlain by bedrock materials.

These estimates are based on previous experience and the subsurface conditions encountered at the trench and boring locations. The actual amount of subsidence is expected to be variable and will be dependent on the type of machinery used, repetitions of use, and dynamic effects, all of which are difficult to assess precisely.

Grading and Foundation Plan Review

This report was prepared in consideration of the preliminary grading plan that was provided to our office. However, foundation plans were not available at the time of this report. It is therefore recommended that we be provided with copies of precise grading and preliminary foundation plans, when they become available, for review with regard to the conclusions, recommendations, and assumptions contained within this report.

6.3 Site Grading Recommendations

The grading recommendations presented below are based on the subsurface conditions encountered at the boring and trench locations and our understanding of the proposed development. We recommend that all grading activities be completed in accordance with the Grading Guide Specifications included as Appendix D of this report, unless superseded by site-specific recommendations presented below.

Site Stripping and Demolition

Initial site stripping should include removal of any surficial vegetation. This should include any weeds, grasses, and shrubs. The actual extent of site stripping should be determined in the field by the geotechnical engineer, based on the organic content and stability of the materials encountered.

Treatment of Existing Soils: Building Pads

Remedial grading should be performed within the proposed building areas in order to remove all existing fill soils. Based on conditions encountered at the boring and trench locations, the existing materials within the proposed building pad areas are recommended to be overexcavated to a depth of at least 2 feet below proposed building pad subgrade elevation and to a depth of at least 2 feet below existing grade, whichever is greater. **The depth of the overexcavation should also extend to a depth sufficient to remove all undocumented fill soils**. The undocumented fill soils at extend to depths up to 9½± feet. Additional overexcavation should be performed within the influence zones of the new foundations, to provide for a new layer of compacted structural fill extending to a depth of at least 2 feet below proposed bearing grades. In areas of cut/fill transitions, it is recommended that grading be performed in order to remove and replace a portion of the bedrock as compacted structural fill. This grading is considered warranted, in order to soften the transition from the fill soils to the bedrock, thereby reducing the potential for excessive future settlements.

The overexcavation areas should extend at least 5 feet beyond the building and foundation perimeters, and to an extent equal to the depth of fill below the new foundations. If the proposed structure incorporates any exterior columns (such as for a canopy or overhang) the area of overexcavation should also encompass these areas.

Following completion of the overexcavation, the subgrade soils and/or bedrock materials within the building areas should be evaluated by the geotechnical engineer to verify their suitability to serve as the structural fill subgrade, as well as to support the foundation loads of the new structures. This evaluation should include proofrolling and probing to identify any soft, loose or otherwise unstable soils that must be removed. Some localized areas of deeper excavation may be required if additional fill materials or loose, porous, or low density native soils are encountered at the base of the overexcavation.

After a suitable overexcavation subgrade has been achieved, the exposed soils and/or bedrock materials should be scarified to a depth of at least 12 inches, thoroughly moisture conditioned, and recompacted. Overexcavation bottoms should be thoroughly moisture conditioned to achieve a moisture content of 0 to 4 percent above the optimum moisture content, extending to a depth of 18 to 24 inches below the overexcavation subgrade. The previously excavated soils may then be replaced as compacted structural fill.

Treatment of Existing Soils: Cut and Fill Slopes

New cut and fill slopes will be constructed around the perimeter of the project. Maximum heights of cut and fill slopes are indicated on the plan to be 6± feet. All slopes should be at an inclination of 2h:1v. A keyway should be excavated at the toe of new fill slopes which are not located in fill areas. The keyway should be at least 15 feet in width and 3 feet deep. The recommended width of the keyway is based on 1½ times the width of typical grading equipment. If smaller equipment is utilized, a smaller keyway may be suitable, at the discretion of the geotechnical engineer. The base of the keyway should slope at least 1 foot downward into the slope. Following completion of the keyway cut, the subgrade soils should be evaluated by the geotechnical engineer to verify that the keyway is founded into competent materials. The resulting subgrade soils should then be scarified to a depth of 10 to 12 inches, moisture conditioned to 0 to 4 percent above optimum moisture content and recompacted. During

construction of the new fill slope, the existing slope should be benched in accordance with the detail presented on Plate D-4. Benches less than 4 feet in height may be used at the discretion of the geotechnical engineer.

Cut slopes in bedrock may be cut to grade, undercut and replaced as stability fills. Stability fills for cut slopes will provide a more uniform appearance and allow landscaping on the slope. A keyway should be excavated at the toe of any stability fill slope. The keyway should be at least 15 feet in width. The recommended width of the keyway is based on 1½ times the width of typical grading equipment. If smaller equipment is utilized, a smaller keyway may be suitable, at the discretion of the geotechnical engineer. Following completion of the keyway cut, the subgrade soils should be evaluated by the geotechnical engineer to verify that the keyway is founded into competent materials. The resulting subgrade soils should then be scarified to a depth of 10 to 12 inches, moisture conditioned to 0 to 4 percent above optimum moisture content and recompacted. During construction of the new fill slope, the existing slope should be benched in accordance with the detail presented on Plate D-5. Benches less than 4 feet in height may be used at the discretion of the geotechnical engineer.

Treatment of Existing Soils: Retaining Walls and Site Walls

The existing soils within the areas of proposed retaining and non-retaining site walls should be overexcavated to a depth of at least 2 feet below foundation bearing grade and replaced as compacted structural fill as discussed above for the proposed building pad. Any undocumented fill soils within any of these foundation influence areas should be removed in their entirety. The overexcavation should extend at least 5 feet beyond the foundation perimeters, and to an extent equal to the depth of fill below the new foundations. Please note that erection pads are considered to be part of the foundation system. These overexcavation recommendations apply to erection pads also. The overexcavation subgrade soils should be evaluated by the geotechnical engineer prior to scarifying, moisture conditioning, and recompacting the upper 12 inches of exposed subgrade soils, as discussed for the building areas. The previously excavated soils may then be replaced as compacted structural fill.

Treatment of Existing Soils: Parking Areas

Based on economic considerations, overexcavation of the existing near-surface existing soils in the new flatwork, parking and drive areas is not considered warranted, with the exception of areas where lower strength or unstable soils are identified by the geotechnical engineer during grading. Subgrade preparation in the new flatwork, parking and drive areas should initially consist of removal of all soils disturbed during stripping and demolition operations.

The geotechnical engineer should then evaluate the subgrade to identify any areas of additional unsuitable soils. Any such materials should be removed to a level of firm and unyielding soil. The exposed subgrade soils should then be scarified to a depth of 12± inches, moisture conditioned to 0 to 4 percent above the optimum moisture content, and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. Based on the presence of variable strength surficial soils throughout the site, it is expected that some isolated areas of additional overexcavation may be required to remove zones of lower strength, unsuitable soils.

The grading recommendations presented above for the proposed flatwork, parking and drive areas assume that the owner and/or developer can tolerate minor amounts of settlement within

the proposed flatwork, parking and drive areas. The grading recommendations presented above do not completely mitigate the extent of existing fill soils that may be present in the flatwork, parking and drive areas. As such, some settlement and associated pavement distress could occur. Typically, repair of such distressed areas involves significantly lower costs than completely mitigating these soils at the time of construction. If the owner cannot tolerate the risk of such settlements, the flatwork, parking and drive areas should be overexcavated to a depth of 2 feet below proposed pavement subgrade elevation, with the resulting soils replaced as compacted structural fill.

Fill Placement

- Fill soils should be placed in thin (6± inches), near-horizontal lifts, moisture conditioned to 0 to 4 percent above the optimum moisture content, and compacted.
- On-site soils may be used for fill provided they are cleaned of any debris to the satisfaction of the geotechnical engineer.
- All grading and fill placement activities should be completed in accordance with the requirements of the 2016 CBC and the grading code of the city of Riverside.
- All fill soils should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density. Fill soils should be well mixed.
- Compaction tests should be performed periodically by the geotechnical engineer as random verification of compaction and moisture content. These tests are intended to aid the contractor. Since the tests are taken at discrete locations and depths, they may not be indicative of the entire fill and therefore should not relieve the contractor of his responsibility to meet the job specifications.

Selective Grading and Oversized Material Placement

At several of the trench locations, the existing fill soils possess occasional to extensive amounts of cobble to boulder size debris. The presence of particles greater than 3 inches in diameter within the upper 1 to 3 feet of the building pad subgrade will impact the utility and foundation excavations. Depending on the depths of fills required within the proposed parking areas, it may be feasible to sort the on-site soils, placing the materials greater than 3 inches in diameter within the lower depths of the fills, and limiting the upper 1 to 3 feet of soils to materials less than 3 inches in size. Oversized materials could also be placed within the lower depths of the recommended overexcavations. In order to achieve this grading, it would likely be necessary to use rock buckets and/or rock sieves to separate the oversized materials from the remaining soil. Although such selective grading will facilitate further construction activities, it is not considered mandatory and a suitable subgrade could be achieved without such extensive sorting. However, in any case it is recommended that all materials greater than 6 inches in size be excluded from the upper 1 foot of the surface of any compacted fills. The placement of any oversized materials should be performed in accordance with the grading guide specifications included in Appendix D of this report. If disposal of oversized materials is required, rock blankets or windrows should be used and such areas should be observed during construction and placement by a representative of the geotechnical engineer.

Imported Structural Fill

All imported structural fill should consist of very low to non-expansive (EI < 20), well graded soils possessing at least 10 percent fines (that portion of the sample passing the No. 200 sieve).

Additional specifications for structural fill are presented in the Grading Guide Specifications, included as Appendix D.

Utility Trench Backfill

In general, all utility trench backfill should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density. Compacted trench backfill should conform to the requirements of the local grading code, and more restrictive requirements may be indicated by the city of Riverside. All utility trench backfills should be witnessed by the geotechnical engineer. The trench backfill soils should be compaction tested where possible; probed and visually evaluated elsewhere.

Utility trenches which parallel a footing, and extending below a 1h:1v plane projected from the outside edge of the footing should be backfilled with structural fill soils, compacted to at least 90 percent of the ASTM D-1557 standard. Pea gravel backfill should not be used for these trenches.

6.4 Construction Considerations

Excavation Considerations

The near surface soils generally consist of silty sands. These materials will be subject to caving within shallow excavations. Where caving occurs within shallow excavations, flattened excavation slopes may be sufficient to provide excavation stability. On a preliminary basis, temporary excavation slopes should be made no steeper than 2h:1v. Deeper excavations may require some form of external stabilization such as shoring or bracing. Maintaining adequate moisture content within the near-surface soils will improve excavation stability. All excavation activities on this site should be conducted in accordance with Cal-OSHA regulations

In addition, the soils from 7 to 30± feet below the existing site grades are considered marginally rippable with a single shank dozer. If any deeper cuts are proposed at this site to facilitate construction of the proposed buildings and improvements, localized blasting could be expected in areas where the less weathered bedrock materials are encountered.

Groundwater

Based on the conditions encountered in the trenches and borings, groundwater is not present within 25± feet of the ground surface. Based on the anticipated depth to groundwater, it is not expected that the groundwater will affect excavations for the foundations or utilities.

6.5 Foundation Design and Construction

Based on the preceding grading recommendations, it is assumed that the new building pads will be underlain by structural fill soils used to replace the existing fill and bedrock materials. These new structural fill soils are expected to extend to depths of at least 2 feet below proposed foundation bearing grade, underlain by 1± foot of additional soil or bedrock that has been

scarified, moisture conditioned, and recompacted. Based on this subsurface profile, the proposed structures may be supported on conventional shallow foundations.

Building Foundation Design Parameters

New square and rectangular footings may be designed as follows:

- Maximum, net allowable soil bearing pressure: 2,500 lbs/ft^2.
- Minimum wall/column footing width: 14 inches/24 inches.
- Minimum longitudinal steel reinforcement within strip footings: Two (2) No. 5 rebars (1 top and 1 bottom).
- Minimum foundation embedment: 12 inches into suitable structural fill soils, and at least 18 inches below adjacent grade.
- It is recommended that the perimeter building foundations be continuous across all exterior doorways. Any flatwork adjacent to the exterior doors should be doweled into the perimeter foundations in a manner determined by the structural engineer.

The allowable bearing pressures presented above may be increased by 1/3 when considering short duration wind or seismic loads. The minimum steel reinforcement recommended above is based on geotechnical considerations. Additional rigidity may be necessary for structural considerations. The actual design of the foundations should be determined by the structural engineer.

Foundation Construction

The foundation subgrade soils should be evaluated at the time of overexcavation, as discussed in Section 6.3 of this report. It is further recommended that the foundation subgrade soils be evaluated by the geotechnical engineer immediately prior to steel or concrete placement. Within the new building areas, soils suitable for direct foundation support should consist of newly placed structural fill, compacted to at least 90 percent of the ASTM D-1557 maximum dry density. Any unsuitable materials should be removed to a depth of suitable bearing compacted structural fill or competent bedrock materials, with the resulting excavations backfilled with compacted fill soils. As an alternative, lean concrete slurry (500 to 1,500 psi) may be used to backfill such isolated overexcavations.

The foundation subgrade soils should also be properly moisture conditioned to 0 to 4 percent of the Modified Proctor optimum, to a depth of at least 12 inches below bearing grade. **Since it is typically not feasible to increase the moisture content of the floor slab and foundation subgrade soils once rough grading has been completed, care should be taken to maintain the moisture content of the building pad subgrade soils throughout the construction process**.

Estimated Foundation Settlements

Post-construction total and differential settlements of shallow foundations designed and constructed in accordance with the previously presented recommendations are estimated to be less than 1.0 and 0.5 inches, respectively. Differential movements are expected to occur over a 30-foot span, thereby resulting in an angular distortion of less than 0.002 inches per inch.

Lateral Load Resistance

Lateral load resistance will be developed by a combination of friction acting at the base of foundations and slabs and the passive earth pressure developed by footings below grade. The following friction and passive pressure may be used to resist lateral forces:

- Passive Earth Pressure: 300 lbs/ft^3
- Friction Coefficient: 0.30

These are allowable values, and include a factor of safety. When combining friction and passive resistance, the passive pressure component should be reduced by one-third. These values assume that footings will be poured directly against compacted structural fill. The maximum allowable passive pressure is 2,500 lbs/ft^2.

6.6 Floor Slab Design and Construction

Subgrades which will support new floor slabs should be prepared in accordance with the recommendations contained in the ***Site Grading Recommendations*** section of this report. Based on the anticipated grading which will occur at this site, the floors of the new structures may be constructed as conventional slabs-on-grade supported on newly placed structural fill, extending to a depth of at least 2 feet below finished pad grade. Based on geotechnical considerations, the floor slab may be designed as follows:

- Minimum slab thickness: 5 inches.

- Minimum slab reinforcement: Not required for geotechnical considerations assuming a very low expansion index pad. The actual floor slab reinforcement should be determined by the structural engineer, based upon the imposed loading.

- If moisture sensitive floor coverings will be used, then minimum slab underlayment should consist of a moisture vapor barrier constructed below the entire slab area where the moisture sensitive floor coverings are expected. The moisture vapor barrier should meet or exceed the Class A rating as defined by ASTM E 1745-97 and have a permeance rating less than 0.01 perms as described in ASTM E 96-95 and ASTM E 154-88. The moisture vapor barrier should be properly constructed in accordance with all applicable manufacturer specifications. Given that a rock free subgrade is anticipated and that a capillary break is not required, sand below the barrier is not required. The need for sand and/or the amount of sand above the moisture vapor barrier should be specified by the structural engineer or concrete contractor. The selection of sand above the barrier is not a geotechnical engineering issue and hence outside our purview.

- Moisture condition the floor slab subgrade soils to 0 to 4 percent of the Modified Proctor optimum moisture content, to a depth of 12 inches. The moisture content of the floor slab subgrade soils should be verified by the geotechnical engineer within 24 hours prior to concrete placement.

- Proper concrete curing techniques should be utilized to reduce the potential for slab curling or the formation of excessive shrinkage cracks.

- The floor slab should be structurally connected to the foundations as detailed by the structural engineer.

The actual design of the floor slab should be completed by the structural engineer to verify adequate thickness and reinforcement.

6.7 Retaining Wall Design and Construction

Retaining walls are will be constructed along the western property line to heights up to 13± feet and along the eastern property line to heights up to 7± feet. The parameters recommended for use in the design of these walls are presented below.

Retaining Wall Design Parameters

Based on the soil conditions encountered at the boring locations, the following parameters may be used in the design of new retaining walls for this site. The following parameters assume that only the on-site soils will be utilized for retaining wall backfill. The on-site soils generally consist of silty fine to medium sands with varying gravel content. Based on their composition, the on-site soils have been assigned a friction angle of 30 degrees.

If desired, SCG could provide design parameters for an alternative select backfill material behind the retaining walls. The use of select backfill material could result in lower lateral earth pressures. In order to use the design parameters for the imported select fill, this material must be placed within the entire active failure wedge. This wedge is defined as extending from the heel of the retaining wall upwards at an angle of approximately 60° from horizontal. If select backfill material behind the retaining wall is desired, SCG should be contacted for supplementary recommendations.

RETAINING WALL DESIGN PARAMETERS

Design Parameter		**Soil Type** On-Site Sandy Soils
Internal Friction Angle (ϕ)		30°
Unit Weight		125 lbs/ft^3
Equivalent Fluid Pressure:	Active Condition (level backfill)	42 lbs/ft^3
	Active Condition (2h:1v backfill)	67 lbs/ft^3

	At-Rest Condition (level backfill)	63 lbs/ft^3

Regardless of the backfill type, the walls should be designed using a soil-footing coefficient of friction of 0.30 and an equivalent passive pressure of 300 lbs/ft^3. The structural engineer should incorporate appropriate factors of safety in the design of the retaining walls.

The active earth pressure may be used for the design of retaining walls that do not directly support structures or support soils that in turn support structures and which will be allowed to deflect. The at-rest earth pressure should be used for walls that will not be allowed to deflect such as those which will support foundation bearing soils, or which will support foundation loads directly.

Where the soils on the toe side of the retaining wall are not covered by a "hard" surface such as a structure or pavement, the upper 1 foot of soil should be neglected when calculating passive resistance due to the potential for the material to become disturbed or degraded during the life of the structure.

Seismic Lateral Earth Pressures

In accordance with the 2016 CBC, any retaining walls more than 6 feet in height must be designed for seismic lateral earth pressures. The recommended seismic pressure distribution is triangular in shape, with a maximum magnitude of 18H lbs/ft^2, where H is the overall height of the wall. The maximum pressure should be assumed to occur at the top of the wall, decreasing to 0 at the base of the wall. The seismic pressure distribution is based on the Mononobe-Okabe equation, utilizing a design acceleration of 0.38g. The 2016 CBC does not provide definitive guidance on determination of the design acceleration to be used in generating the seismic lateral earth pressure. In accordance with standard geotechnical practice, we have calculated the design acceleration as $^2/_3$ of the PGA_M.

Retaining Wall Foundation Design

The retaining wall foundations should be supported within newly placed compacted structural fill, extending to a depth of at least 2 feet below the proposed bearing grade. Foundations to support new retaining walls should be designed in accordance with the general Foundation Design Parameters presented in a previous section of this report.

Backfill Material

On-site soils may be used to backfill the retaining walls. However, all backfill material placed within 3 feet of the back wall face should have a particle size no greater than 3 inches. The retaining wall backfill materials should be well graded.

It is recommended that a minimum 1 foot thick layer of free-draining granular material (less than 5 percent passing the No. 200 sieve) be placed against the face of the retaining walls. This material should extend from the top of the retaining wall footing to within 1 foot of the ground surface on the back side of the retaining wall. This material should be approved by the geotechnical engineer. In lieu of the 1 foot thick layer of free-draining material, a properly installed prefabricated drainage composite such as the MiraDRAIN 6000XL (or approved

equivalent), which is specifically designed for use behind retaining walls, may be used. If the layer of free-draining material is not covered by an impermeable surface, such as a structure or pavement, a 12-inch thick layer of a low permeability soil should be placed over the backfill to reduce surface water migration to the underlying soils. The layer of free draining granular material should be separated from the backfill soils by a suitable geotextile, approved by the geotechnical engineer.

All retaining wall backfill should be placed and compacted under engineering controlled conditions in the necessary layer thicknesses to ensure an in-place density between 90 and 93 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D1557-91). Care should be taken to avoid over-compaction of the soils behind the retaining walls, and the use of heavy compaction equipment should be avoided.

Subsurface Drainage

As previously indicated, the retaining wall design parameters are based upon drained backfill conditions. Consequently, some form of permanent drainage system will be necessary in conjunction with the appropriate backfill material. Subsurface drainage may consist of either:

- A weep hole drainage system typically consisting of a series of 4-inch diameter holes in the wall situated slightly above the ground surface elevation on the exposed side of the wall and at an approximate 8-foot on-center spacing. The weep holes should include a 2 cubic foot pocket of open graded gravel, surrounded by an approved geotextile fabric, at each weep hole location.

- A 4-inch diameter perforated pipe surrounded by 2 cubic feet of gravel per linear foot of drain placed behind the wall, above the retaining wall footing. The gravel layer should be wrapped in a suitable geotextile fabric to reduce the potential for migration of fines. The footing drain should be extended to daylight or tied into a storm drainage system.

6.8 Pavement Design Parameters

Site preparation in the pavement area should be completed as previously recommended in the ***Site Grading Recommendations*** section of this report. The subsequent pavement recommendations assume proper drainage and construction monitoring, and are based on either PCA or CALTRANS design parameters for a twenty (20) year design period. However, these designs also assume a routine pavement maintenance program to obtain the anticipated 20-year pavement service life.

Pavement Subgrades

It is anticipated that the new pavements will be primarily supported on a layer of compacted structural fill, consisting of recompacted soil and bedrock materials. The on-site soils generally consist of silty sands with varying amounts of gravel. These soils are considered to possess good pavement support characteristics with estimated R-values of 40 to 50. Since R-value testing was not included in the scope of services for this project, the subsequent pavement design is based upon a conservatively assumed R-value of 40. Any fill material imported to the site should have support characteristics equal to or greater than that of the on-site soils and be placed and

compacted under engineering controlled conditions. It is recommended that R-value testing be performed after completion of rough grading. Depending upon the results of the R-value testing, it may be feasible to use thinner pavement sections in some areas of the site.

Asphaltic Concrete

Presented below are the recommended thicknesses for new flexible pavement structures consisting of asphaltic concrete over a granular base. The pavement designs are based on the traffic indices (TI's) indicated. The client and/or civil engineer should verify that these TI's are representative of the anticipated traffic volumes. If the client and/or civil engineer determine that the expected traffic volume will exceed the applicable traffic index, we should be contacted for supplementary recommendations. The design traffic indices equate to the following approximate daily traffic volumes over a 20 year design life, assuming six operational traffic days per week.

Traffic Index	**No. of Heavy Trucks per Day**
4.0	0
5.0	1
6.0	3

For the purpose of the traffic volumes indicated above, a truck is defined as a 5-axle tractor trailer unit with one 8-kip axle and two 32-kip tandem axles. All of the traffic indices allow for 1,000 automobiles per day.

ASPHALT PAVEMENTS (R = 40)		
Materials	**Thickness (inches)**	
	Auto Parking and Drive Lanes (TI = 4.0 to 5.0)	Light Truck Traffic (TI = 6.0)
Asphalt Concrete	3	3½
Aggregate Base	4	6
Compacted Subgrade	12	12

The aggregate base course should be compacted to at least 95 percent of the ASTM D-1557 maximum dry density. The asphaltic concrete should be compacted to at least 95 percent of the Marshall maximum density, as determined by ASTM D-2726. The aggregate base course may consist of crushed aggregate base (CAB) or crushed miscellaneous base (CMB), which is a recycled gravel, asphalt and concrete material. The gradation, R-Value, Sand Equivalent, and Percentage Wear of the CAB or CMB should comply with appropriate specifications contained in the current edition of the "Greenbook" Standard Specifications for Public Works Construction.

Portland Cement Concrete

The preparation of the subgrade soils within concrete pavement areas should be performed as previously described for proposed asphalt pavement areas. The minimum recommended thicknesses for the Portland Cement Concrete pavement sections are as follows:

PORTLAND CEMENT CONCRETE PAVEMENTS		
Materials	**Thickness (inches)**	
	Autos and Drive Lanes (TI = 4.0 & 5.0)	Light Truck Traffic TI = 6.0
PCC	5	5½
Compacted Subgrade (95% minimum compaction)	12	12

The concrete should have a 28-day compressive strength of at least 3,000 psi. The maximum joint spacing within all of the PCC pavements is recommended to be equal to or less than 30 times the pavement thickness. The actual joint spacing and reinforcing of the Portland cement concrete pavements should be determined by the structural engineer.

7.0 GENERAL COMMENTS

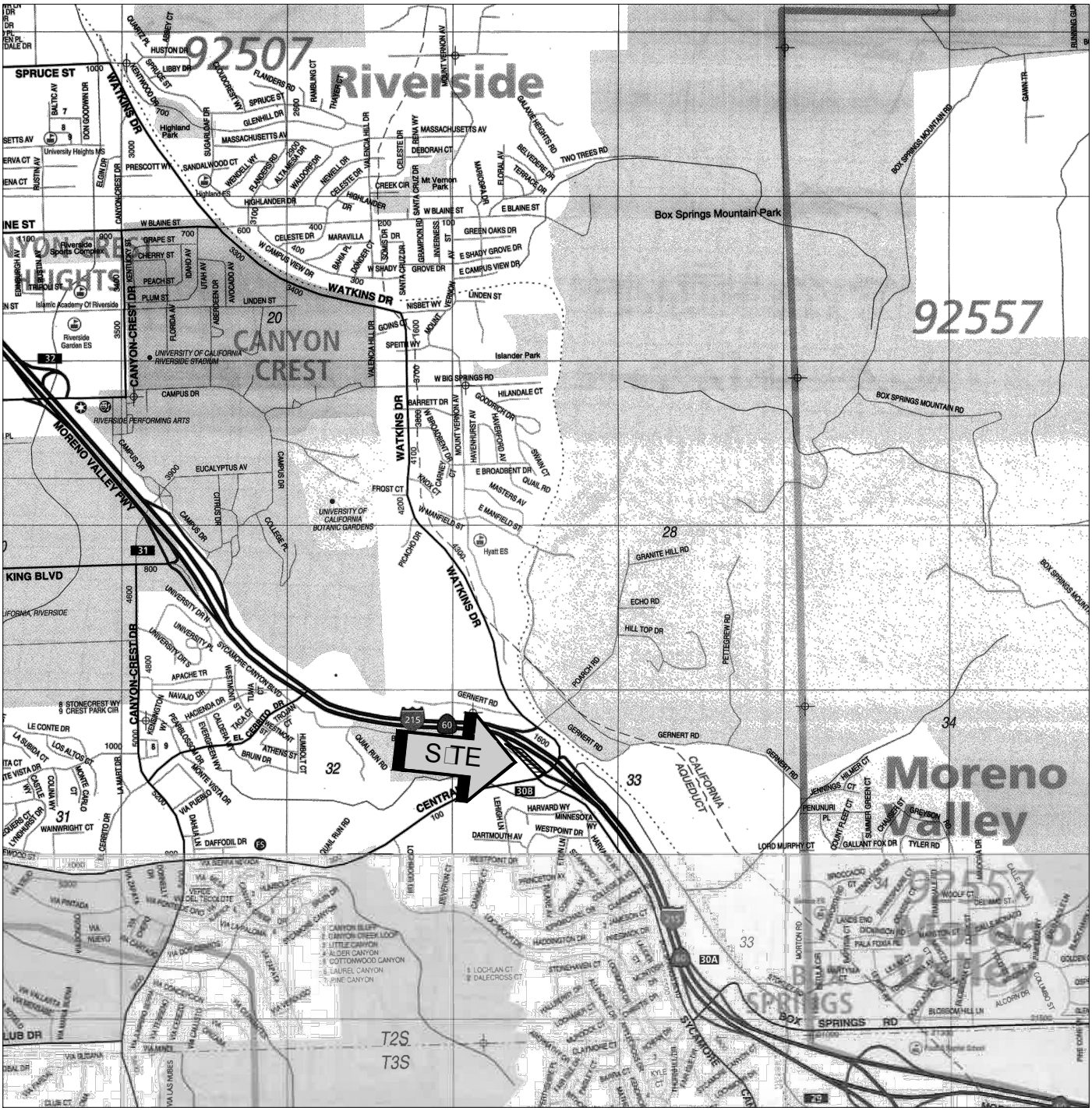
This report has been prepared as an instrument of service for use by the client, in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. This report may be provided to the contractor(s) and other design consultants to disclose information relative to the project. However, this report is not intended to be utilized as a specification in and of itself, without appropriate interpretation by the project architect, civil engineer, and/or structural engineer. The reproduction and distribution of this report must be authorized by the client and Southern California Geotechnical, Inc. Furthermore, any reliance on this report by an unauthorized third party is at such party's sole risk, and we accept no responsibility for damage or loss which may occur. The client(s)' reliance upon this report is subject to the Engineering Services Agreement, incorporated into our proposal for this project.

The analysis of this site was based on a subsurface profile interpolated from limited discrete soil samples. While the materials encountered in the project area are considered to be representative of the total area, some variations should be expected between boring locations and sample depths. If the conditions encountered during construction vary significantly from those detailed herein, we should be contacted immediately to determine if the conditions alter the recommendations contained herein.

This report has been based on assumed or provided characteristics of the proposed development. It is recommended that the owner, client, architect, structural engineer, and civil engineer carefully review these assumptions to ensure that they are consistent with the characteristics of the proposed development. If discrepancies exist, they should be brought to our attention to verify that they do not affect the conclusions and recommendations contained herein. We also recommend that the project plans and specifications be submitted to our office for review to verify that our recommendations have been correctly interpreted.

The analysis, conclusions, and recommendations contained within this report have been promulgated in accordance with generally accepted professional geotechnical engineering practice. No other warranty is implied or expressed.

APPENDIX A



SOURCE: RIVERSIDE COUNTY
THOMAS GUIDE

SITE LOCATION MAP

PROPOSED RETAIL DEVELOPMENT

RIVERSIDE, CALIFORNIA

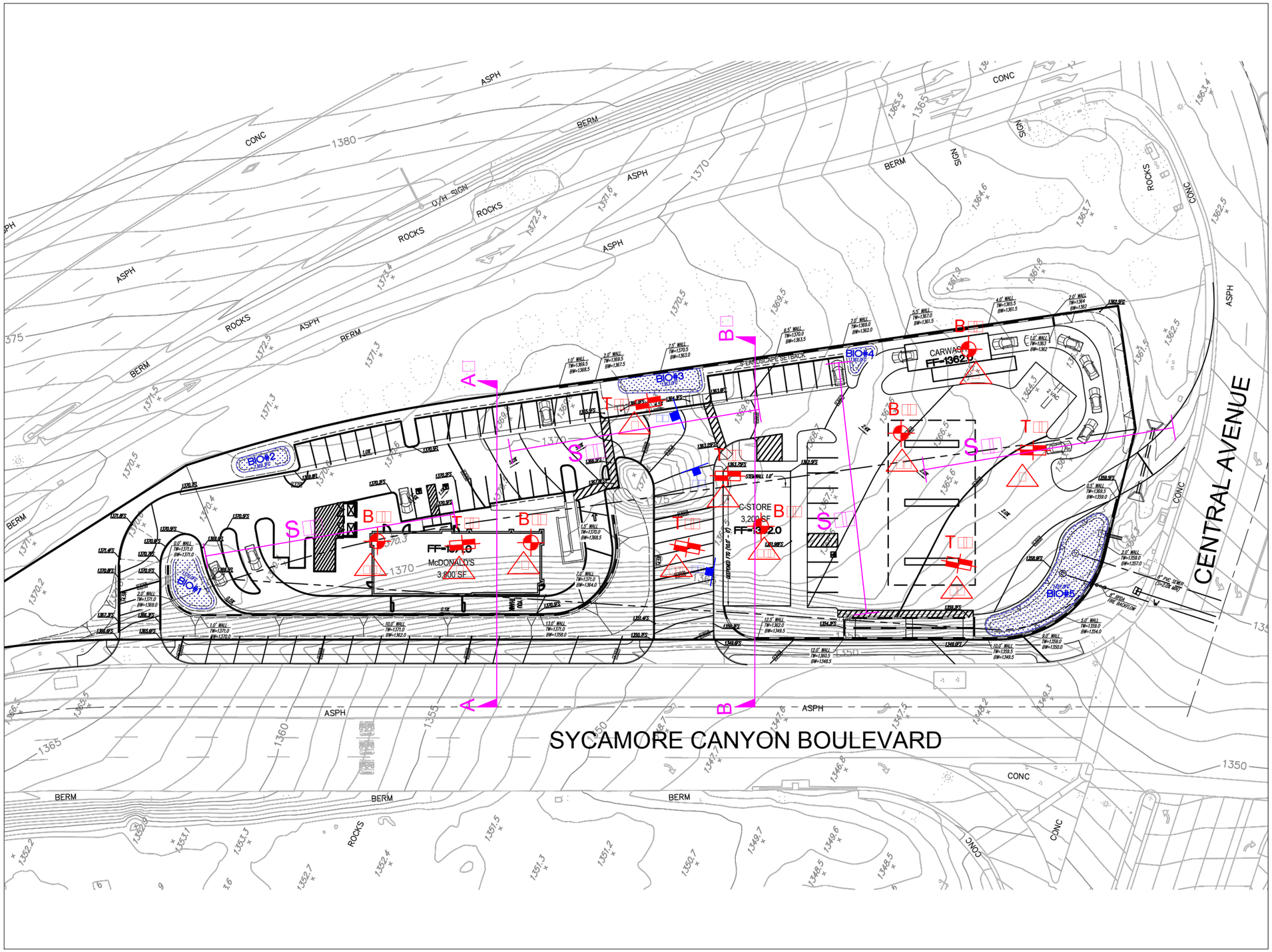
SCALE: 1" = 2000'

DRAWN BY: C. DRAT

SCHEMATIC

PLATE 1

SOUTHERN CALIFORNIA GEOTECHNICAL



GEOTECHNICAL LEGEND

- APPROXIMATE BORING LOCATION
- APPROXIMATE TRENCH LOCATION
- POINTS
- ARTIFICIAL FILL DETAIL SHEET
- CROSS SECTION LINE
- PREVIOUS SEISMIC LINE
  SCH PROJECT NO

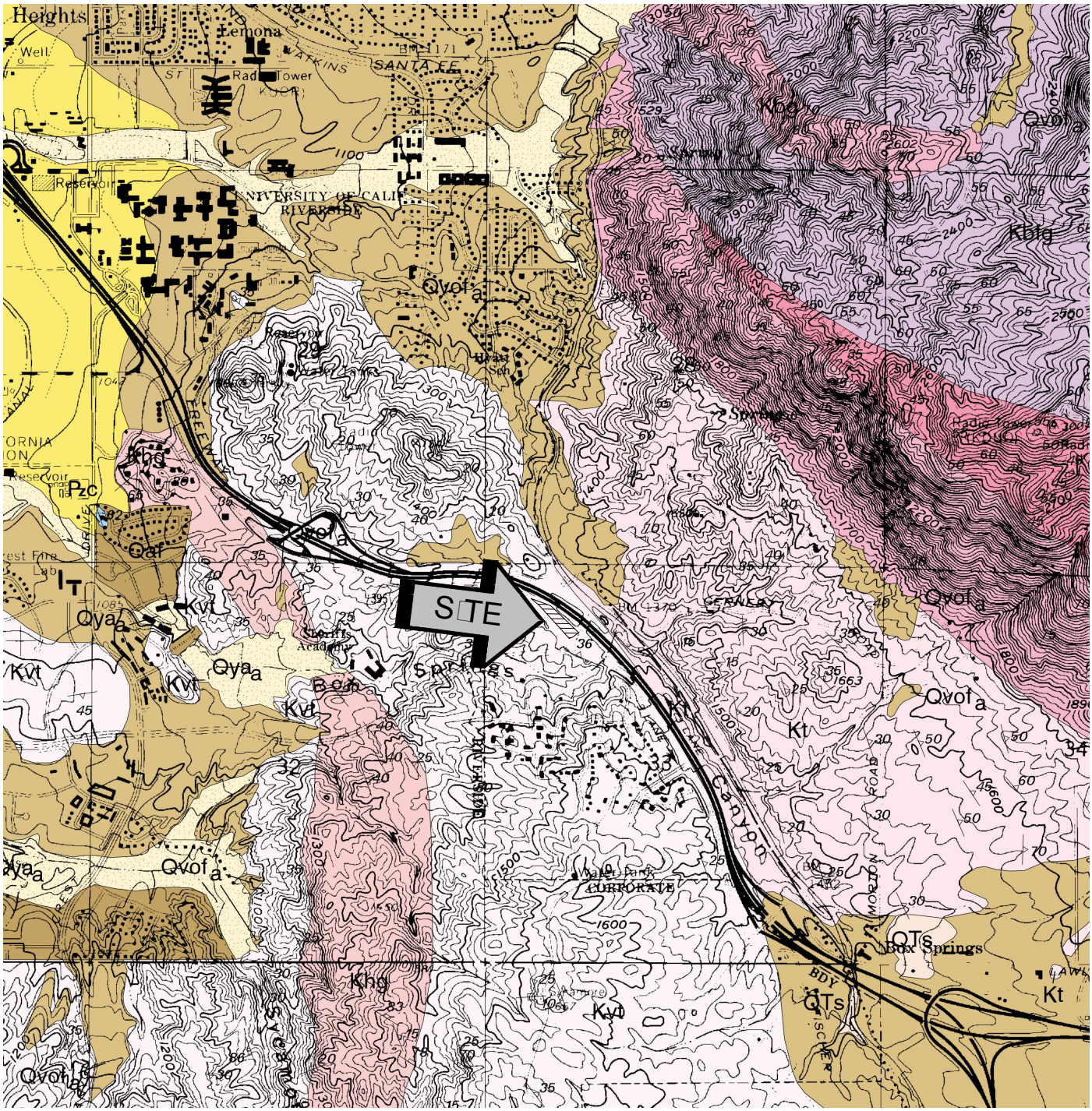
NOTE: BASE MAP PREPARED BY OMEGA ENGINEERING CONSULTANTS INC.

BORING AND TRENCH LOCATION PLAN

PROPOSED RETAIL DEVELOPMENT

RIVERSIDE, CALIFORNIA

SCALE: 1" = 40'	SOUTHERN CALIFORNIA GEOTECHNICAL
DRAWN BY: C.D.R.T.	
SCH PROJECT	
PLATE 2	



DESCRIPTION OF MAP UNITS

Kvt

Val Verde tonalite—Gray-weathering, relatively homogeneous, massive- to well-foliated, medium- to coarse-grained, hypautomorphic-granular biotite-hornblende tonalite; principal rock type of Val Verde pluton. Contains subequal biotite and hornblende, quartz and plagioclase. Potassium feldspar generally less than two percent of rock. Where present, foliation typically strikes northwest and dips moderately to steeply northeast. Northern part of pluton contains younger, intermittently developed, northeast-striking foliation. In central part of pluton, tonalite is mostly massive, and contains few segregational masses of mesocratic to melanocratic tonalite. Elliptical- to pancake-shaped, meso-to melanocratic inclusions are common.

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GEOLOGIC MAP

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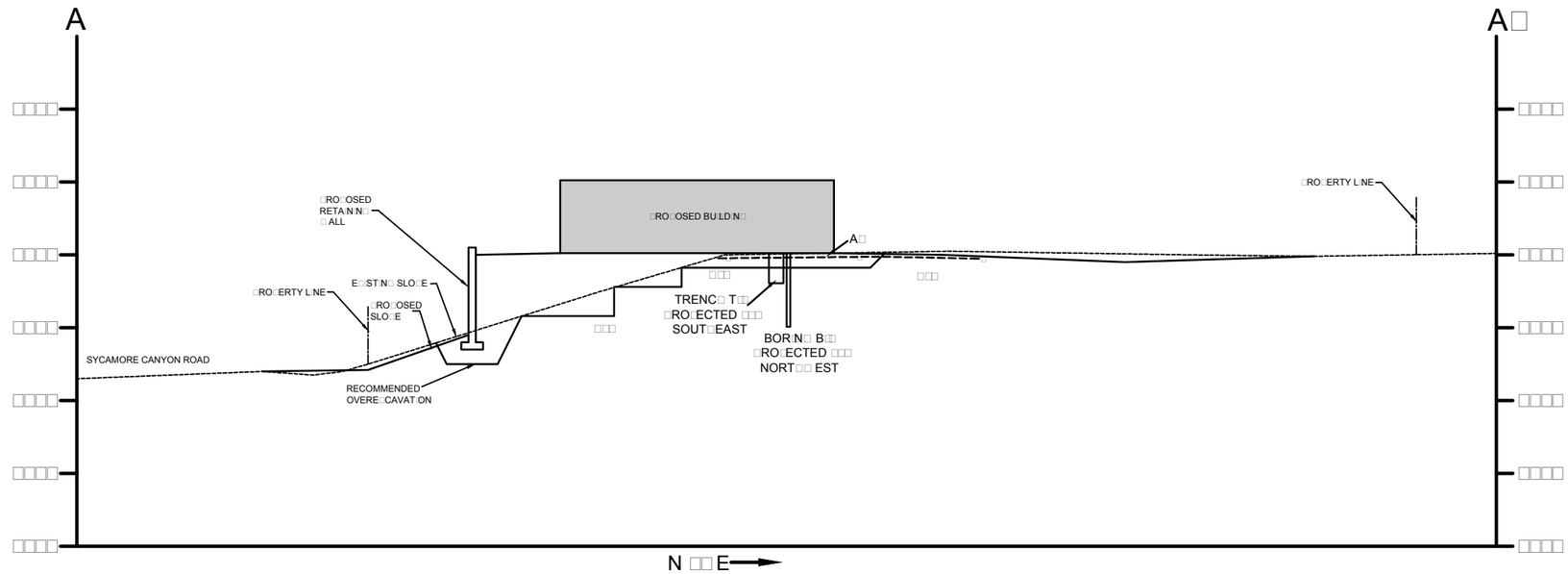
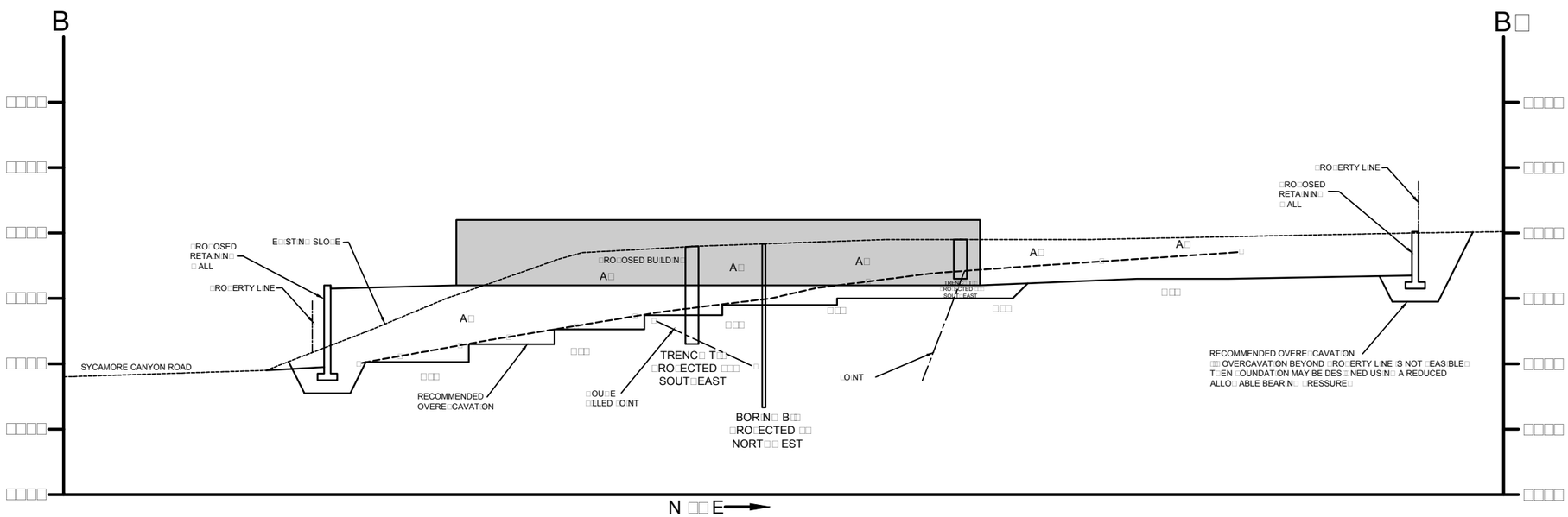
PLATE 3

SOUTHERN CALIFORNIA GEOTECHNICAL





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CROSS-SECTION A-A' AND B-B'
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PLATE 4

SOUTHERN CALIFORNIA GEOTECHNICAL

APPENDIX B

BORING LOG LEGEND

SAMPLE TYPE	GRAPHICAL SYMBOL	SAMPLE DESCRIPTION
AUGER		SAMPLE COLLECTED FROM AUGER CUTTINGS, NO FIELD MEASUREMENT OF SOIL STRENGTH. (DISTURBED)
CORE		ROCK CORE SAMPLE: TYPICALLY TAKEN WITH A DIAMOND-TIPPED CORE BARREL. TYPICALLY USED ONLY IN HIGHLY CONSOLIDATED BEDROCK.
GRAB		SOIL SAMPLE TAKEN WITH NO SPECIALIZED EQUIPMENT, SUCH AS FROM A STOCKPILE OR THE GROUND SURFACE. (DISTURBED)
CS		CALIFORNIA SAMPLER: 2-1/2 INCH I.D. SPLIT BARREL SAMPLER, LINED WITH 1-INCH HIGH BRASS RINGS. DRIVEN WITH SPT HAMMER. (RELATIVELY UNDISTURBED)
NSR		NO RECOVERY: THE SAMPLING ATTEMPT DID NOT RESULT IN RECOVERY OF ANY SIGNIFICANT SOIL OR ROCK MATERIAL.
SPT		STANDARD PENETRATION TEST: SAMPLER IS A 1.4 INCH INSIDE DIAMETER SPLIT BARREL, DRIVEN 18 INCHES WITH THE SPT HAMMER. (DISTURBED)
SH		SHELBY TUBE: TAKEN WITH A THIN WALL SAMPLE TUBE, PUSHED INTO THE SOIL AND THEN EXTRACTED. (UNDISTURBED)
VANE		VANE SHEAR TEST: SOIL STRENGTH OBTAINED USING A 4 BLADED SHEAR DEVICE. TYPICALLY USED IN SOFT CLAYS-NO SAMPLE RECOVERED.

COLUMN DESCRIPTIONS

DEPTH: Distance in feet below the ground surface.

SAMPLE: Sample Type as depicted above.

BLOW COUNT: Number of blows required to advance the sampler 12 inches using a 140 lb hammer with a 30-inch drop. 50/3" indicates penetration refusal (>50 blows) at 3 inches. WH indicates that the weight of the hammer was sufficient to push the sampler 6 inches or more.

POCKET PEN.: Approximate shear strength of a cohesive soil sample as measured by pocket penetrometer.

GRAPHIC LOG: Graphic Soil Symbol as depicted on the following page.

DRY DENSITY: Dry density of an undisturbed or relatively undisturbed sample in lbs/ft^3.

MOISTURE CONTENT: Moisture content of a soil sample, expressed as a percentage of the dry weight.

LIQUID LIMIT: The moisture content above which a soil behaves as a liquid.

PLASTIC LIMIT: The moisture content above which a soil behaves as a plastic.

PASSING #200 SIEVE: The percentage of the sample finer than the #200 standard sieve.

UNCONFINED SHEAR: The shear strength of a cohesive soil sample, as measured in the unconfined state.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-1

JOB NO.: 17G134-3
PROJECT: Proposed Retail Development
LOCATION: Riverside, California

DRILLING DATE: 11/10/17
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Daryl Kas

WATER DEPTH: Dry
CAVE DEPTH: 9 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1370.5 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	UNCONFINED SHEAR (TSF)	COMMENTS
					FILL: Light Brown coarse Gravel, trace to little fine to coarse Sand, very dense-dry		1					
		67/10"			VAL VERDE FORMATION BEDROCK: Light Brown fine to coarse grained Tonalite Bedrock, friable, slightly weathered, very dense-dry	111	2					
5		100/6"				109	2					
		50/3"					2					
10		50/3"					1					
					Boring Terminated at 10'							

TBL 17G134.GPJ SOCALGEO.GDT 12/11/17

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-2

JOB NO.: 17G134-3
PROJECT: Proposed Retail Development
LOCATION: Riverside, California

DRILLING DATE: 11/10/17
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Daryl Kas

WATER DEPTH: Dry
CAVE DEPTH: 5.5 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1370.5 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	UNCONFINED SHEAR (TSF)	COMMENTS
		50/3"			VAL VERDE FORMATION BEDROCK: Light Gray fine to coarse grained Tonalite Bedrock, friable, slightly weathered, very dense-dry to damp		1					Disturbed Sample
		50/5"					1					
5												
		66/9"					3					
		50/2"										No Sample Recovered
10												
					Boring Terminated at 10'							

TBL 17G134.GPJ SOCALGEO.GDT 12/11/17

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-3

JOB NO.: 17G134-3
PROJECT: Proposed Retail Development
LOCATION: Riverside, California

DRILLING DATE: 11/10/17
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Daryl Kas

WATER DEPTH: Dry
CAVE DEPTH: 13.5 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1368 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	UNCONFINED SHEAR (TSF)	COMMENTS
	X	38			FILL: Gray Brown Silty fine to coarse Sand, trace fine Gravel, medium dense-damp	111	4					
	X	21				115	3					
5	X	28				108	4					
	X	6			FILL: Brown fine to coarse Sand, trace to little Silt, loose-damp	98	3					
	X	48			VAL VERDE FORMATION BEDROCK: Light Gray fine to coarse grained Tonalite Bedrock, friable, weathered, dense to very dense-dry	121	1					
10												
	X	50/3"					1					
15												
	X	50/4"					1					
20												
	X	50/3"					1					
25												
					Boring Terminated at 25'							

TBL 17G134.GPJ SOCALGEO.GDT 12/11/17

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-4

JOB NO.: 17G134-3
PROJECT: Proposed Retail Development
LOCATION: Riverside, California

DRILLING DATE: 11/10/17
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Daryl Kas

WATER DEPTH: Dry
CAVE DEPTH: 8.5 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1367 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	UNCONFINED SHEAR (TSF)	COMMENTS
	X	29			FILL: Brown Silty fine to coarse Sand, loose to medium dense-damp	106	4					
	X	10				103	5					
5	X	9				105	2					
	X	6			@ 7 to 8 feet, very loose to loose	94	5					
10	X	7			ALLUVIUM: Brown Silty fine to medium Sand, little coarse Sand, loose-damp	93	4					
					VAL VERDE FORMATION BEDROCK: Light Gray fine to coarse grained Tonalite Bedrock, friable, highly weathered, very dense-dry to damp							
15	X	69/"				103	3					
					Boring Terminated at 15'							

TBL 17G134.GPJ SOCALGEO.GDT 12/11/17

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-5

JOB NO.: 17G134-3
PROJECT: Proposed Retail Development
LOCATION: Riverside, California

DRILLING DATE: 11/10/17
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Daryl Kas

WATER DEPTH: Dry
CAVE DEPTH:
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1365.5 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	UNCONFINED SHEAR (TSF)	COMMENTS
	X	50/5"			VAL VERDE FORMATION BEDROCK: Light Gray Brown fine to coarse grained Tonalite Bedrock, friable, slightly weathered, very dense-dry		2					
	X	67/9"					2					
5	X	50/5"					2					
	X	50/4"					1					
10												
	X	50/5"					1					
15					Boring Terminated at 15'							

TBL 17G134.GPJ SOCALGEO.GDT 12/11/17

SOUTHERN CALIFORNIA GEOTECHNICAL

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TRENCH LOG

PLATE B-6

SOUTHERN CALIFORNIA GEOTECHNICAL

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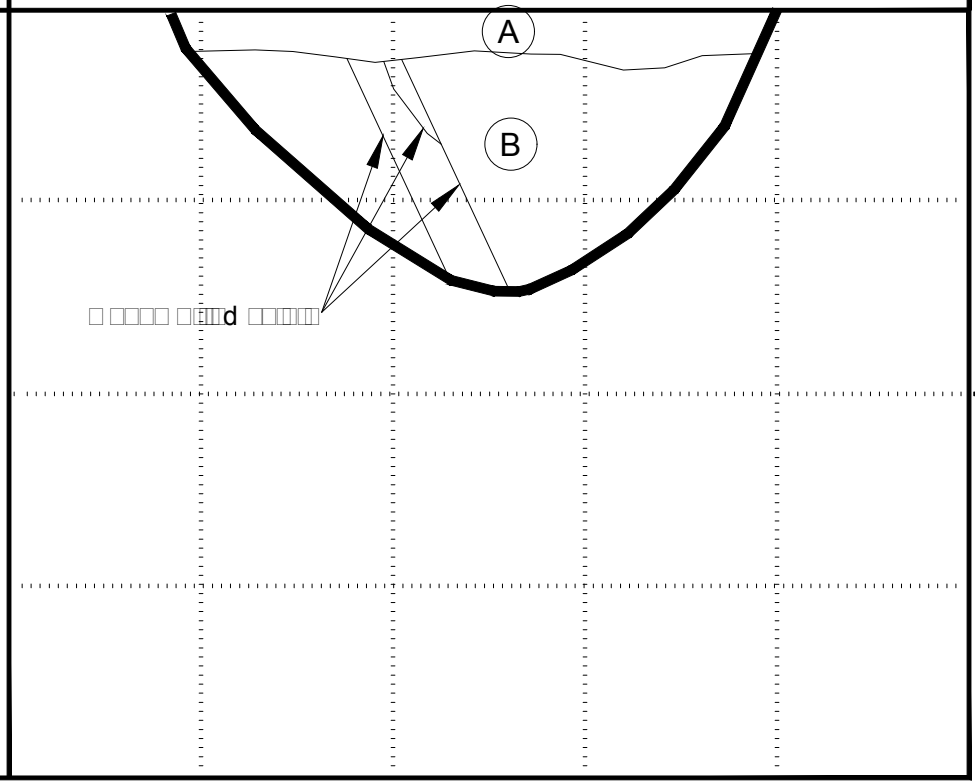

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TRENCH LOG

PLATE B-7

SOUTHERN CALIFORNIA GEOTECHNICAL

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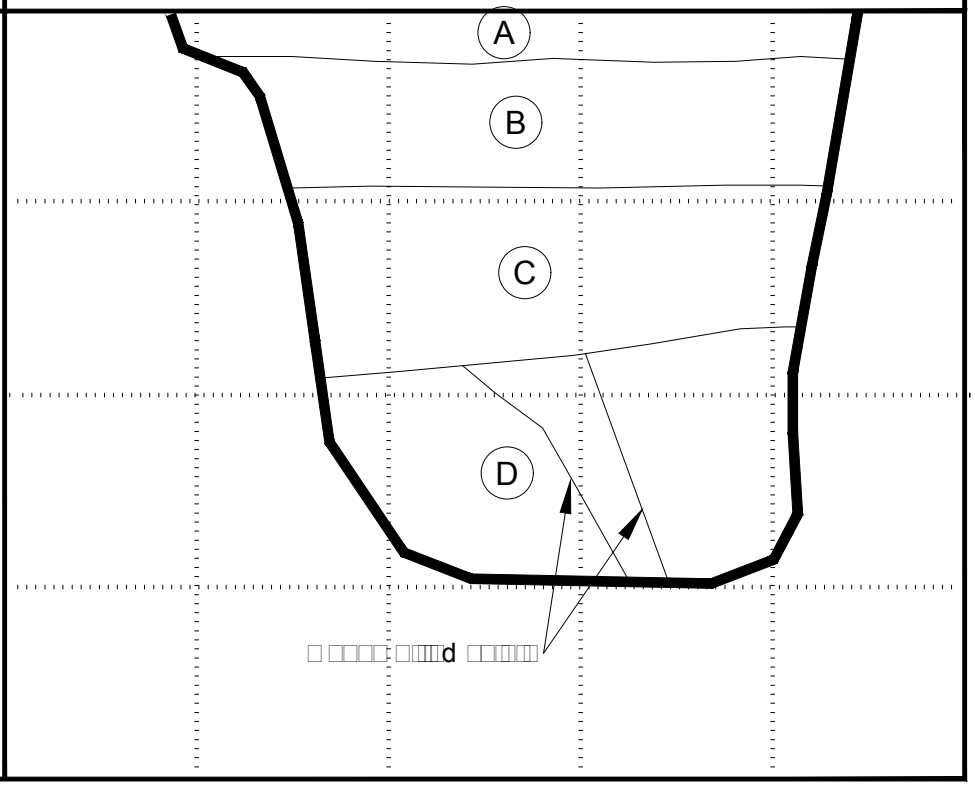

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TRENCH LOG

PLATE B-8

SOUTHERN CALIFORNIA GEOTECHNICAL

TRENCH NO.
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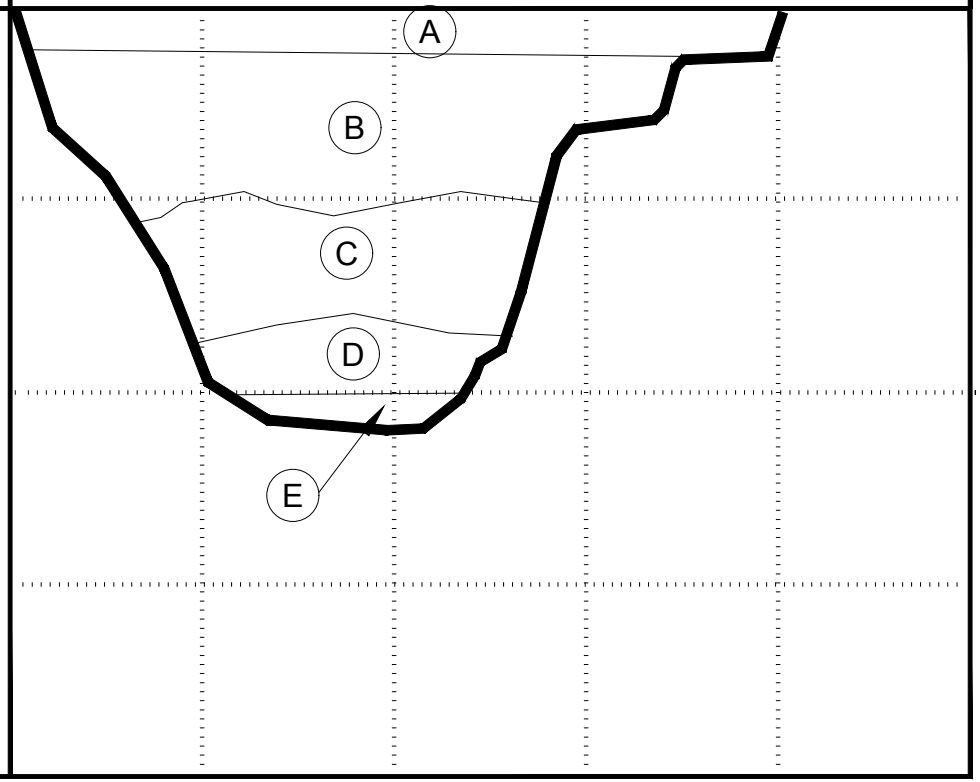

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TRENCH LOG

PLATE B-9

SOUTHERN CALIFORNIA GEOTECHNICAL

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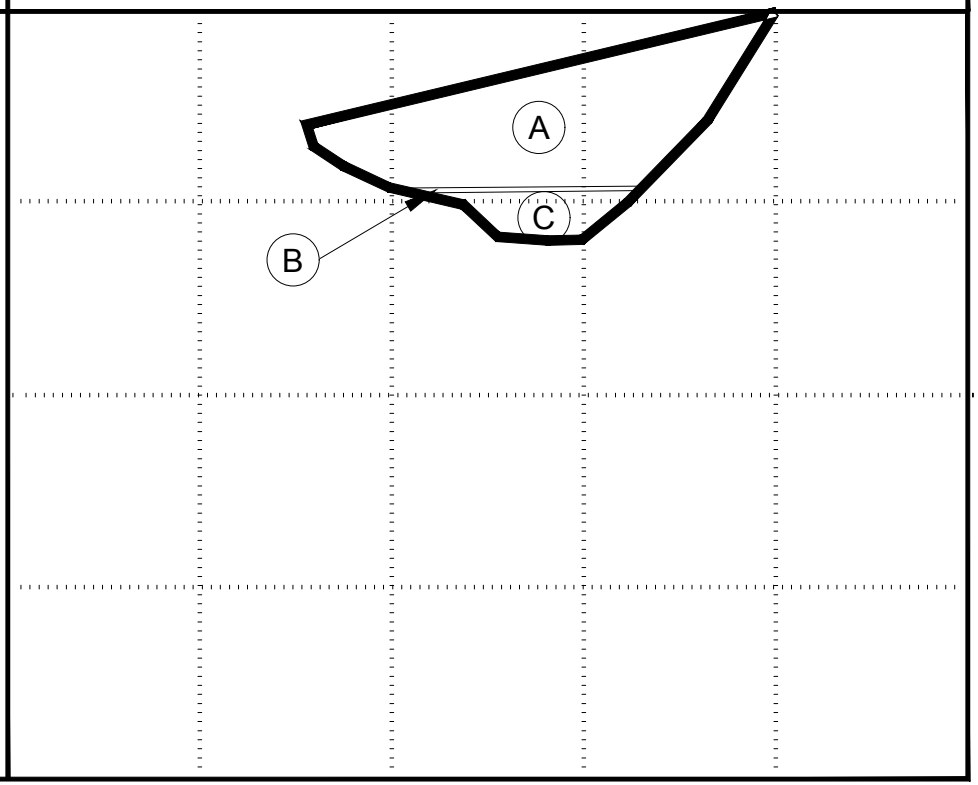

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TRENCH LOG

PLATE B-10

SOUTHERN CALIFORNIA GEOTECHNICAL

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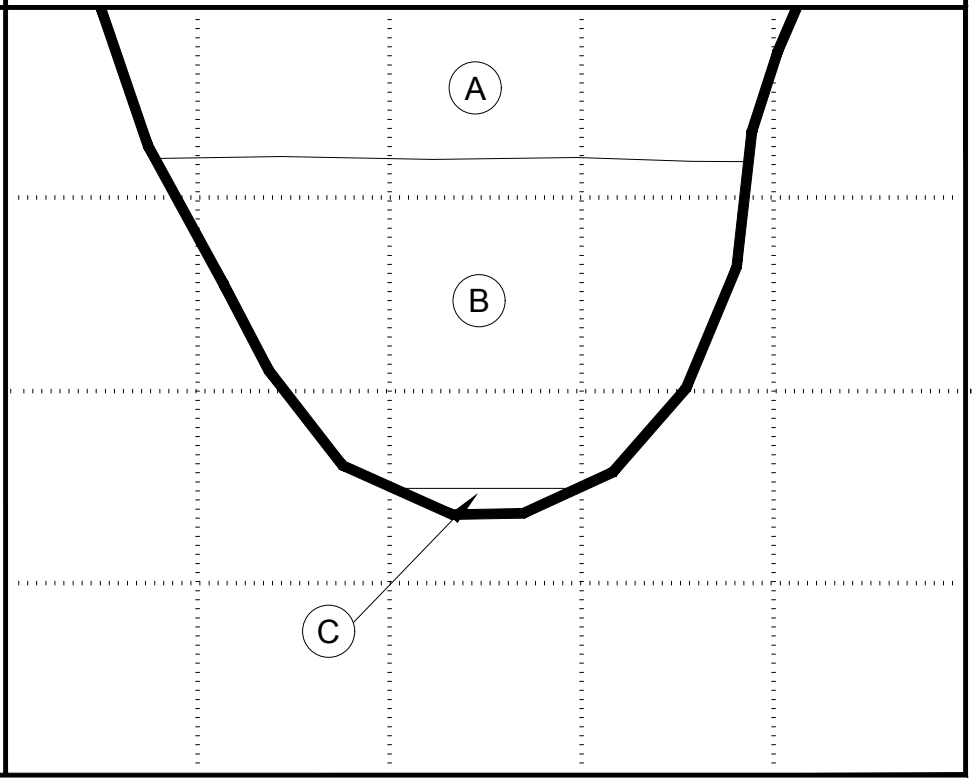
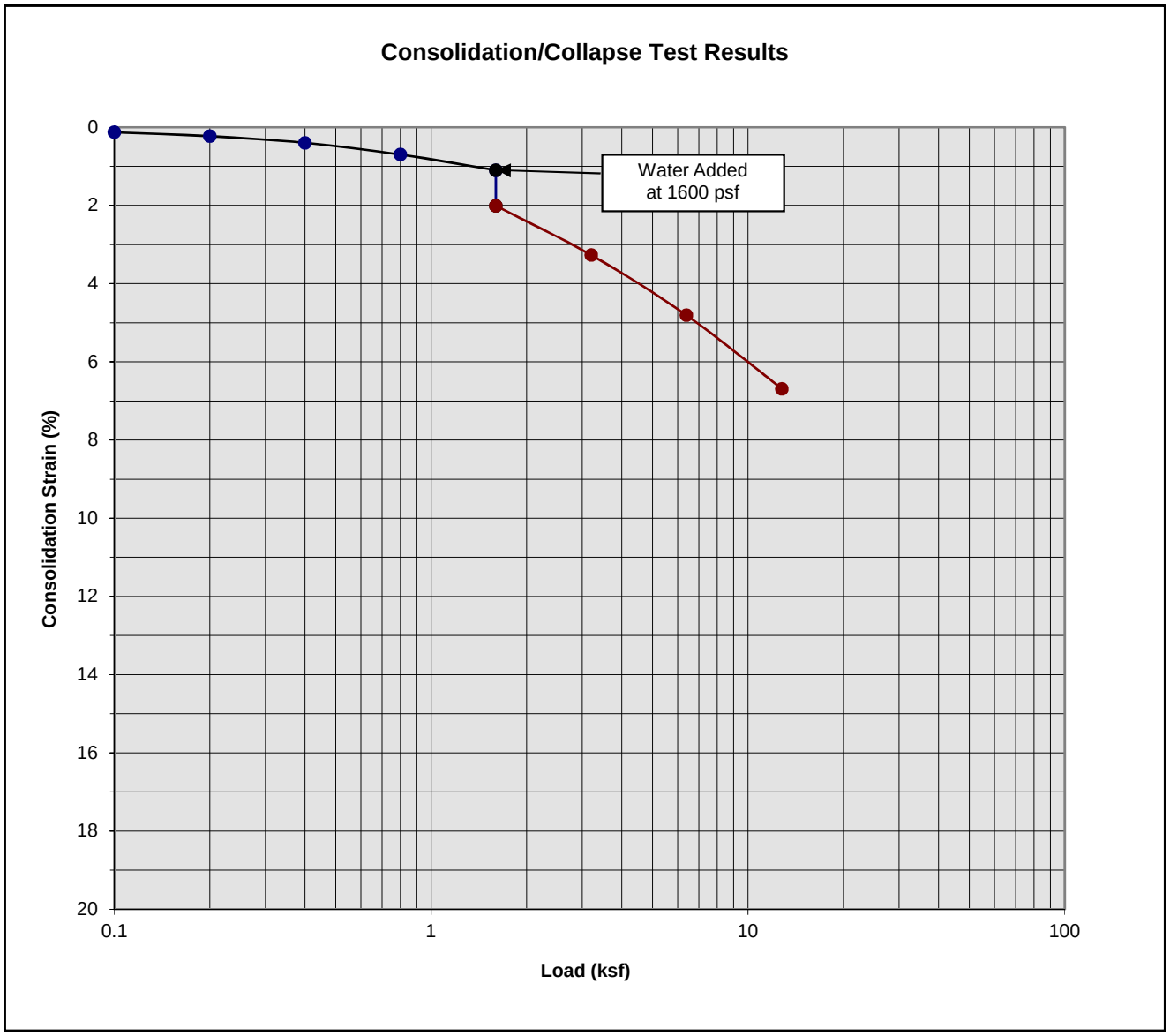


TRENCH LOG

PLATE B-11

APPENDIX C



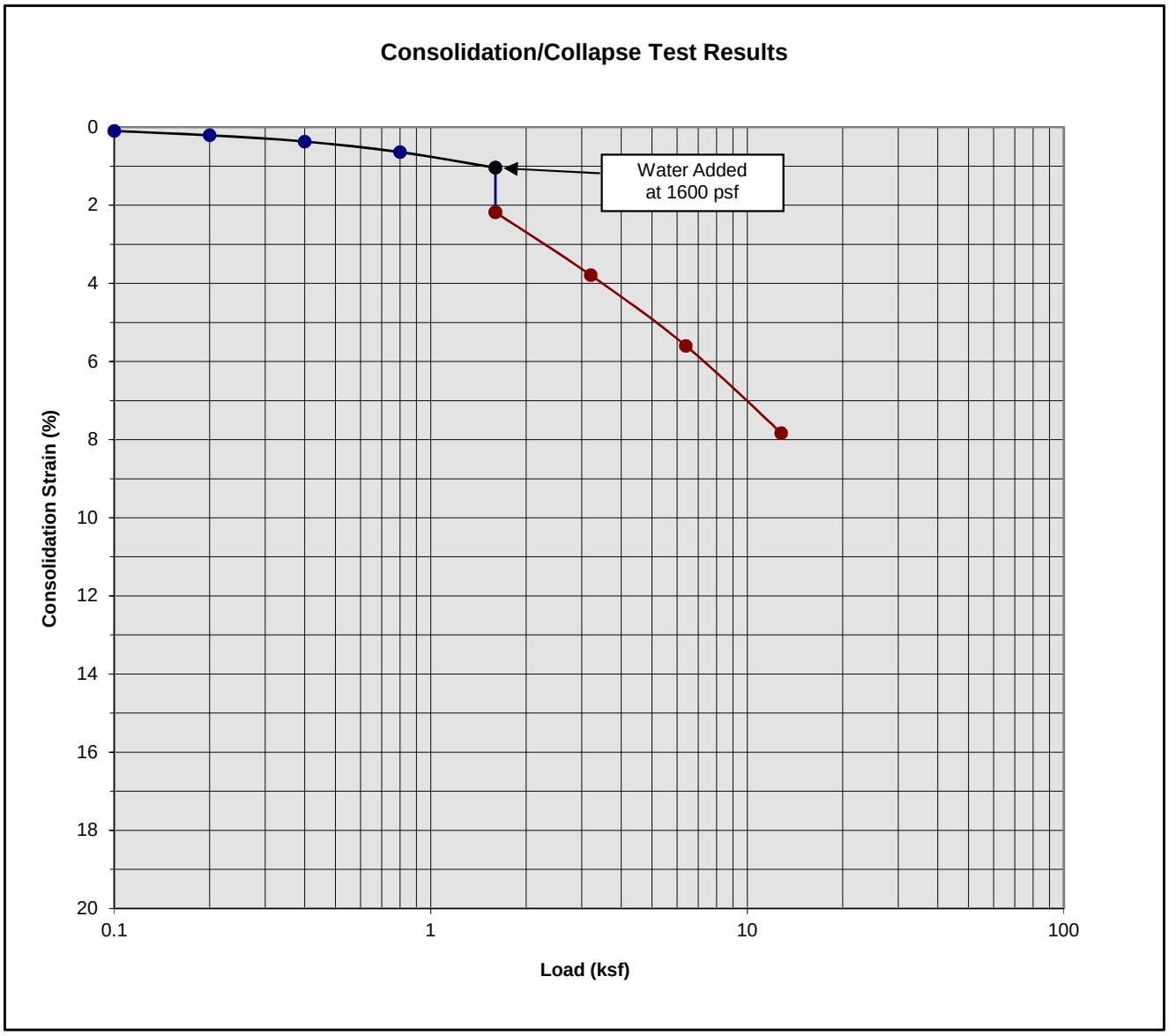
Classification: FILL: Gray Brown Silty fine to coarse Sand, trace fine Gravel

Boring Number:	B-3	Initial Moisture Content (%)	3
Sample Number:	---	Final Moisture Content (%)	11
Depth (ft)	3 to 4	Initial Dry Density (pcf)	115.7
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	124.4
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.91

Proposed Retail Development
Riverside, California
Project No. 17G134-3

PLATE C- 1

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation



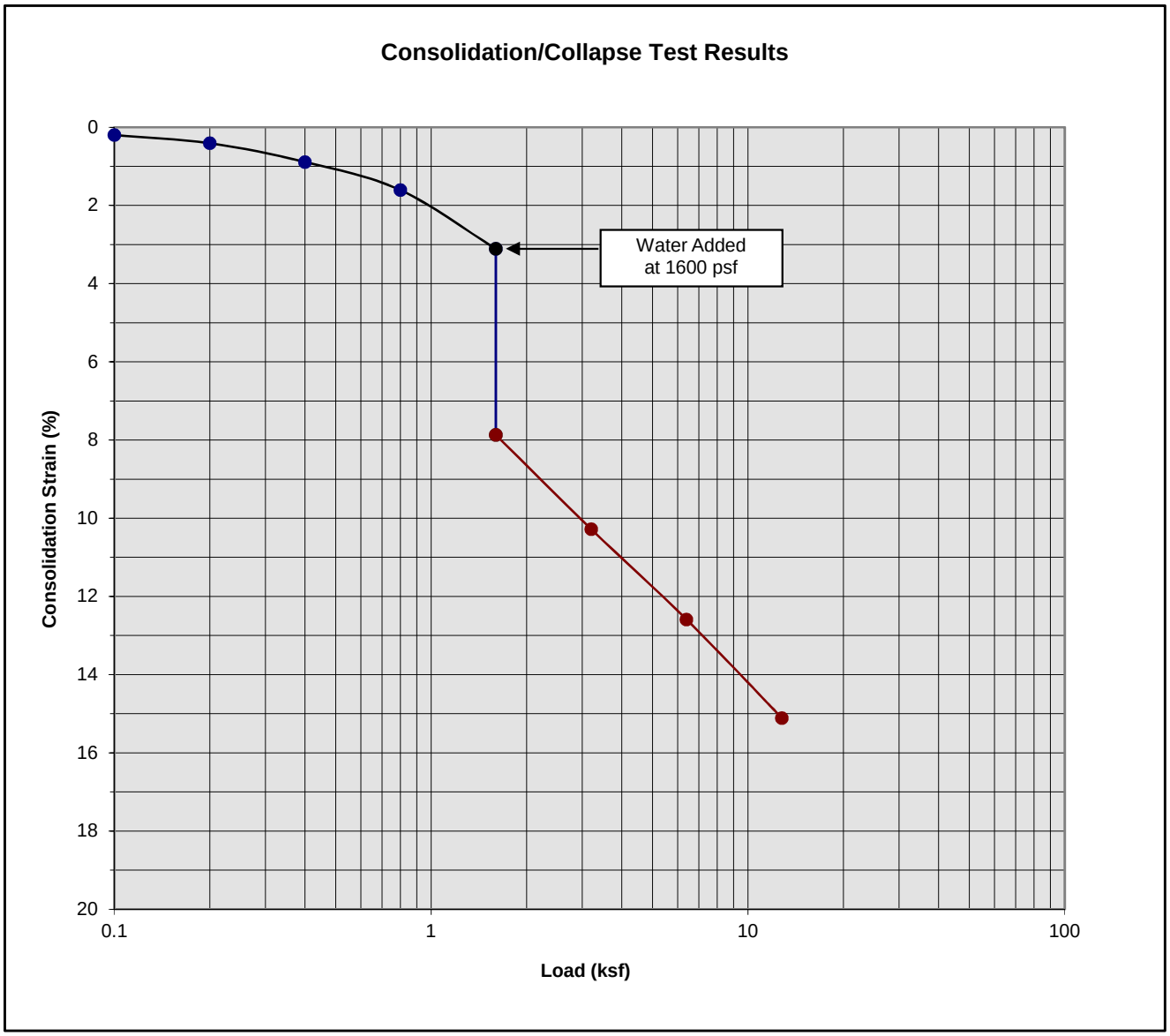
Classification: FILL: Gray Brown Silty fine to coarse Sand, trace fine Gravel

Boring Number:	B-3	Initial Moisture Content (%)	4
Sample Number:	---	Final Moisture Content (%)	12
Depth (ft)	5 to 6	Initial Dry Density (pcf)	108.7
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	118.3
Specimen Thickness (in)	1.0	Percent Collapse (%)	1.14

Proposed Retail Development
Riverside, California
Project No. 17G134-3

PLATE C- 2

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation



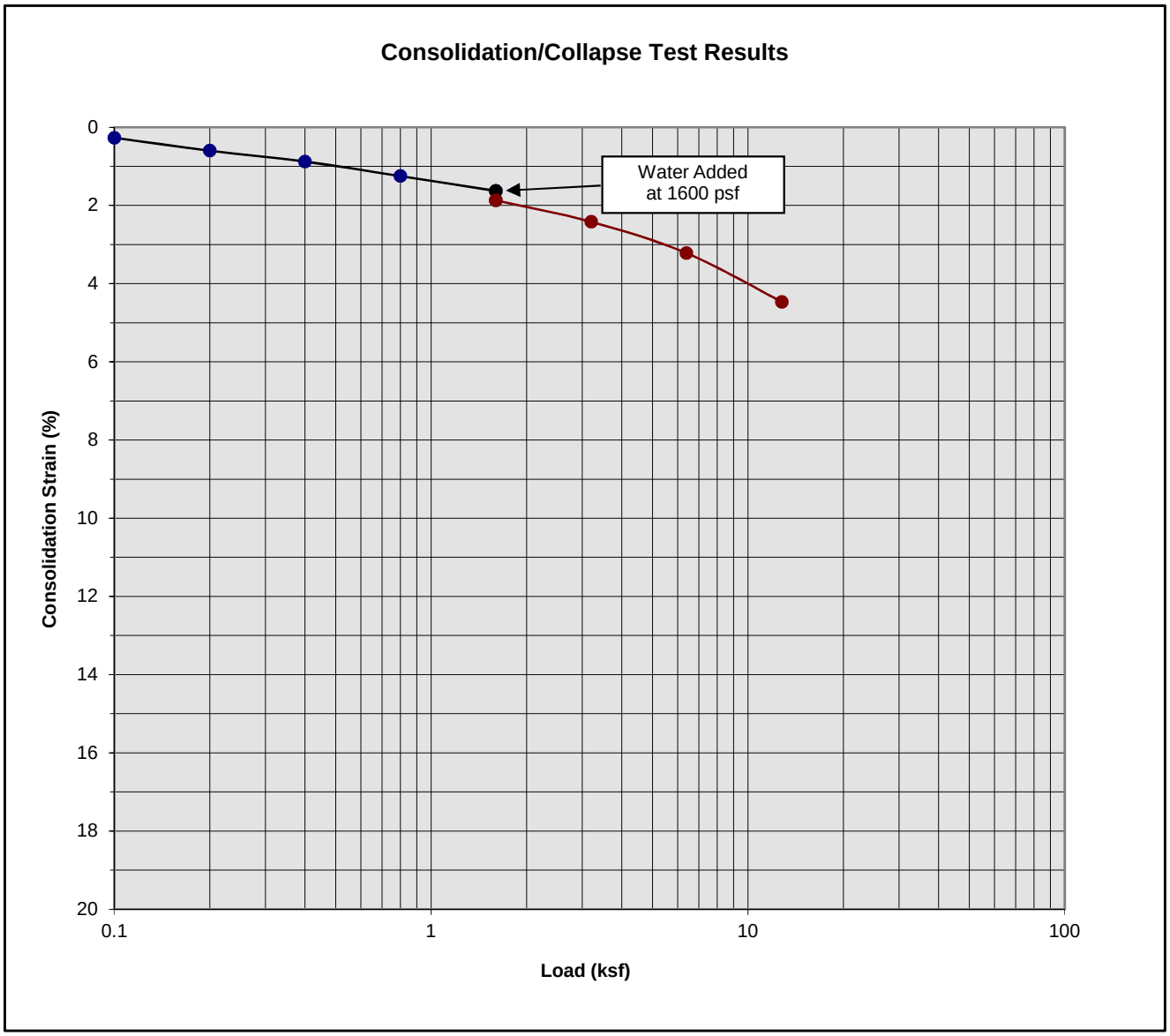
Classification: FILL: Brown fine to coarse Sand, trace to little Silt

Boring Number:	B-3	Initial Moisture Content (%)	3
Sample Number:	---	Final Moisture Content (%)	14
Depth (ft)	7 to 8	Initial Dry Density (pcf)	98.1
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	115.5
Specimen Thickness (in)	1.0	Percent Collapse (%)	4.76

Proposed Retail Development
Riverside, California
Project No. 17G134-3

PLATE C- 3

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation



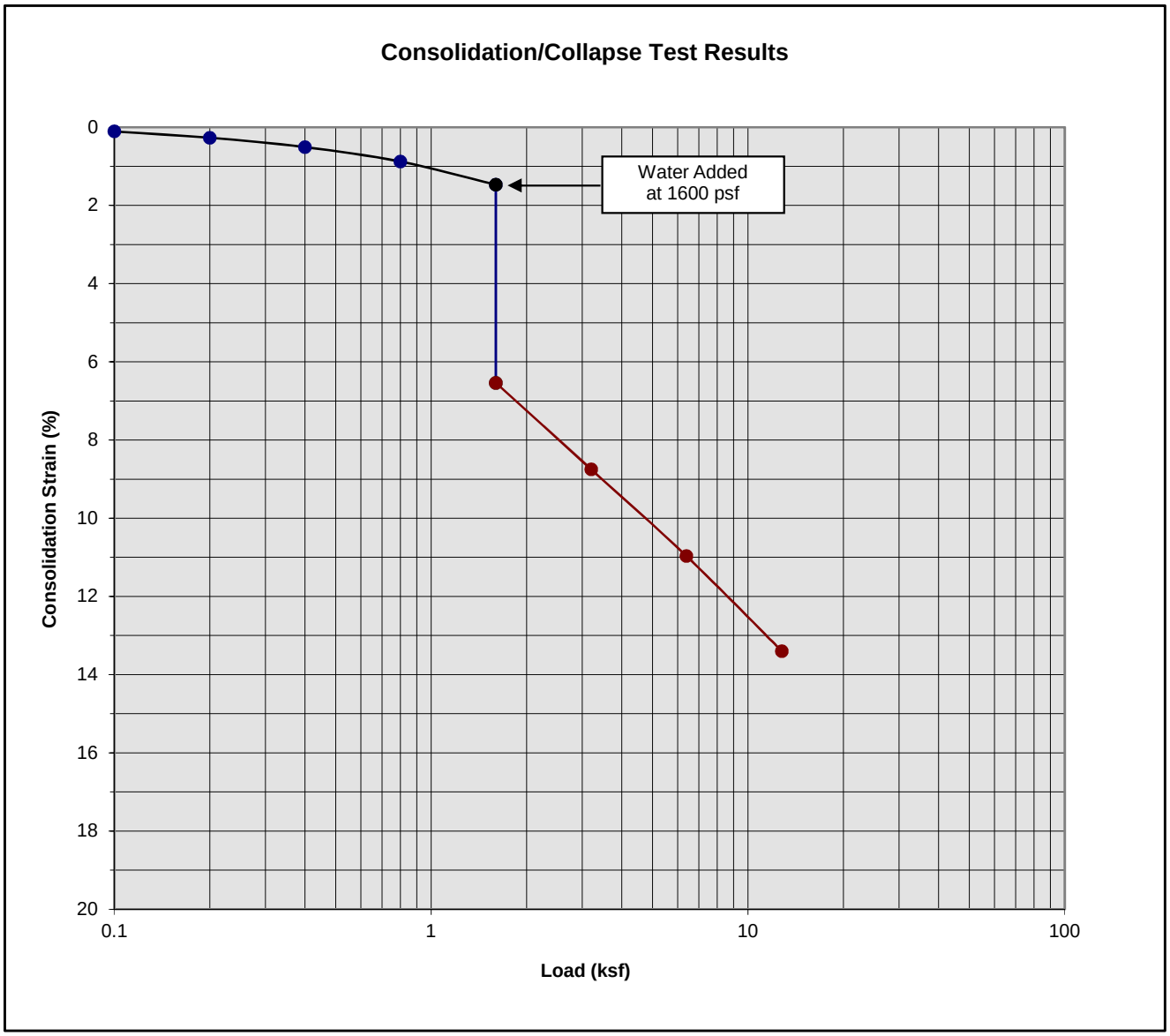
Classification: Light Gray fine to coarse grained Tonalite Bedrock

Boring Number:	B-3	Initial Moisture Content (%)	1
Sample Number:	---	Final Moisture Content (%)	12
Depth (ft)	9 to 10	Initial Dry Density (pcf)	120.4
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	125.4
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.24

Proposed Retail Development
Riverside, California
Project No. 17G134-3

PLATE C- 4

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation



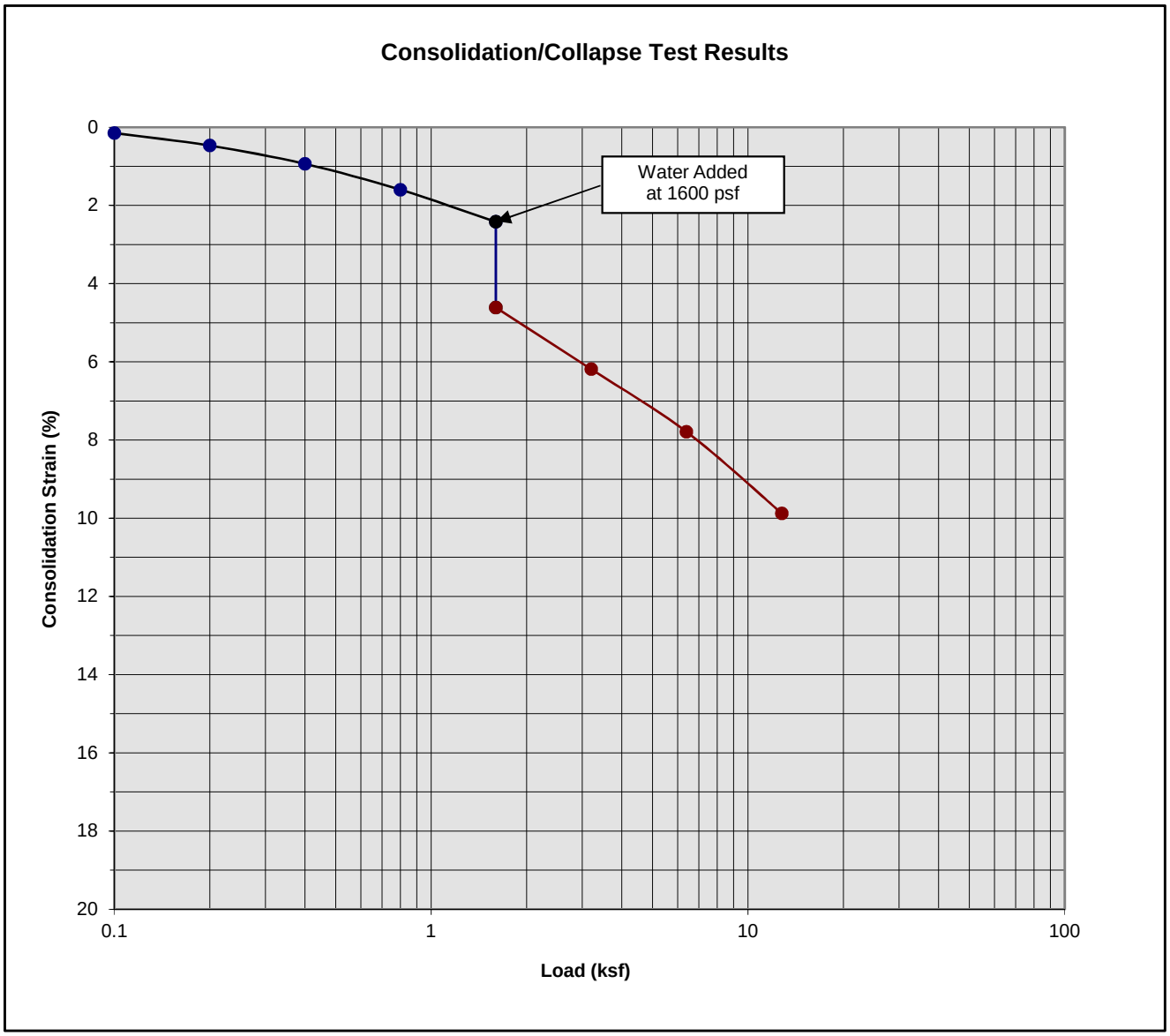
Classification: FILL: Brown Silty fine to coarse Sand

Boring Number:	B-4	Initial Moisture Content (%)	5
Sample Number:	---	Final Moisture Content (%)	12
Depth (ft)	3 to 4	Initial Dry Density (pcf)	103.5
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	122.6
Specimen Thickness (in)	1.0	Percent Collapse (%)	5.07

Proposed Retail Development
Riverside, California
Project No. 17G134-3

PLATE C- 5

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation



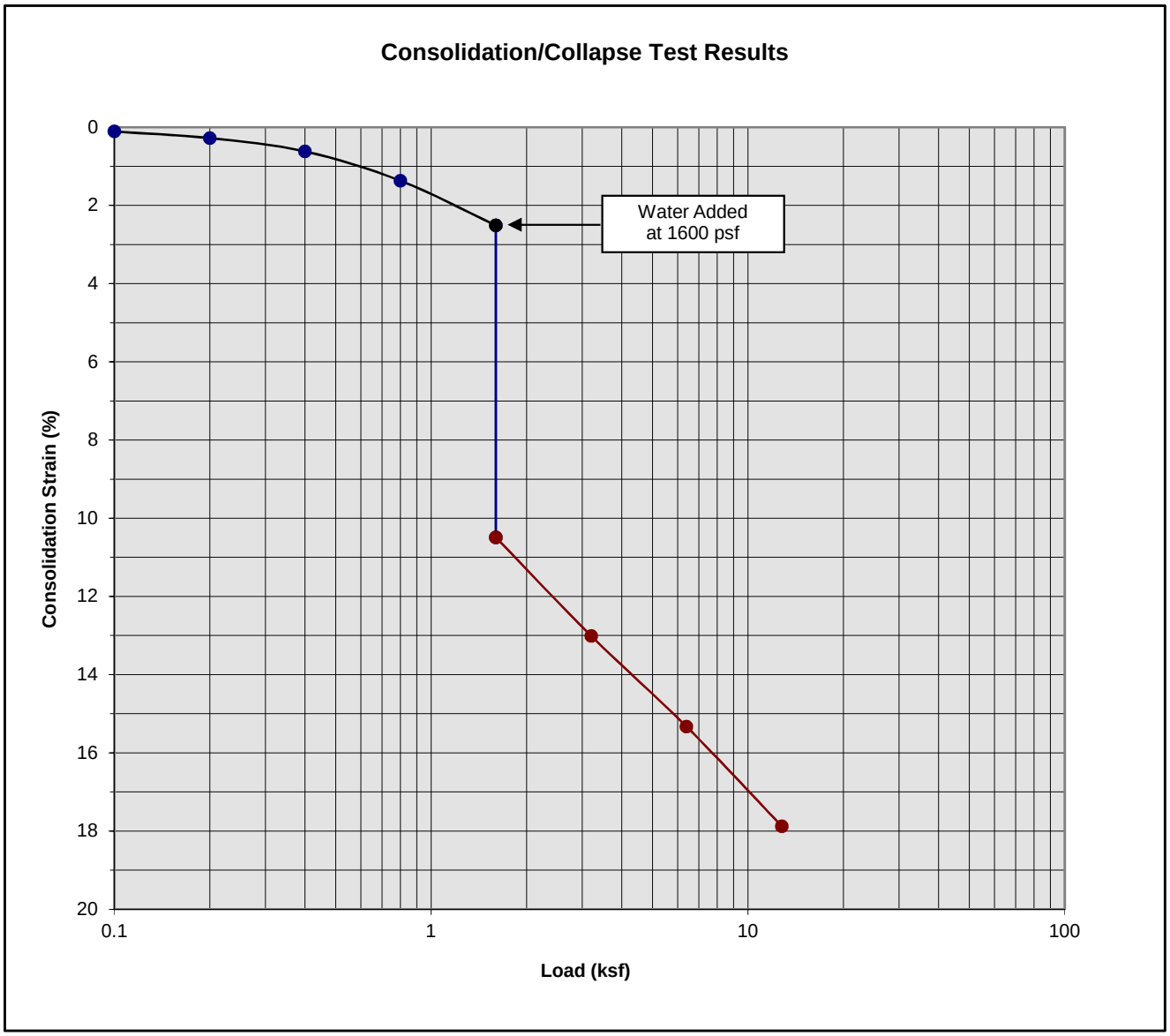
Classification: FILL: Brown Silty fine to coarse Sand

Boring Number:	B-4	Initial Moisture Content (%)	2
Sample Number:	---	Final Moisture Content (%)	11
Depth (ft)	5 to 6	Initial Dry Density (pcf)	105.7
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	119.1
Specimen Thickness (in)	1.0	Percent Collapse (%)	2.19

Proposed Retail Development
Riverside, California
Project No. 17G134-3

PLATE C- 6

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation



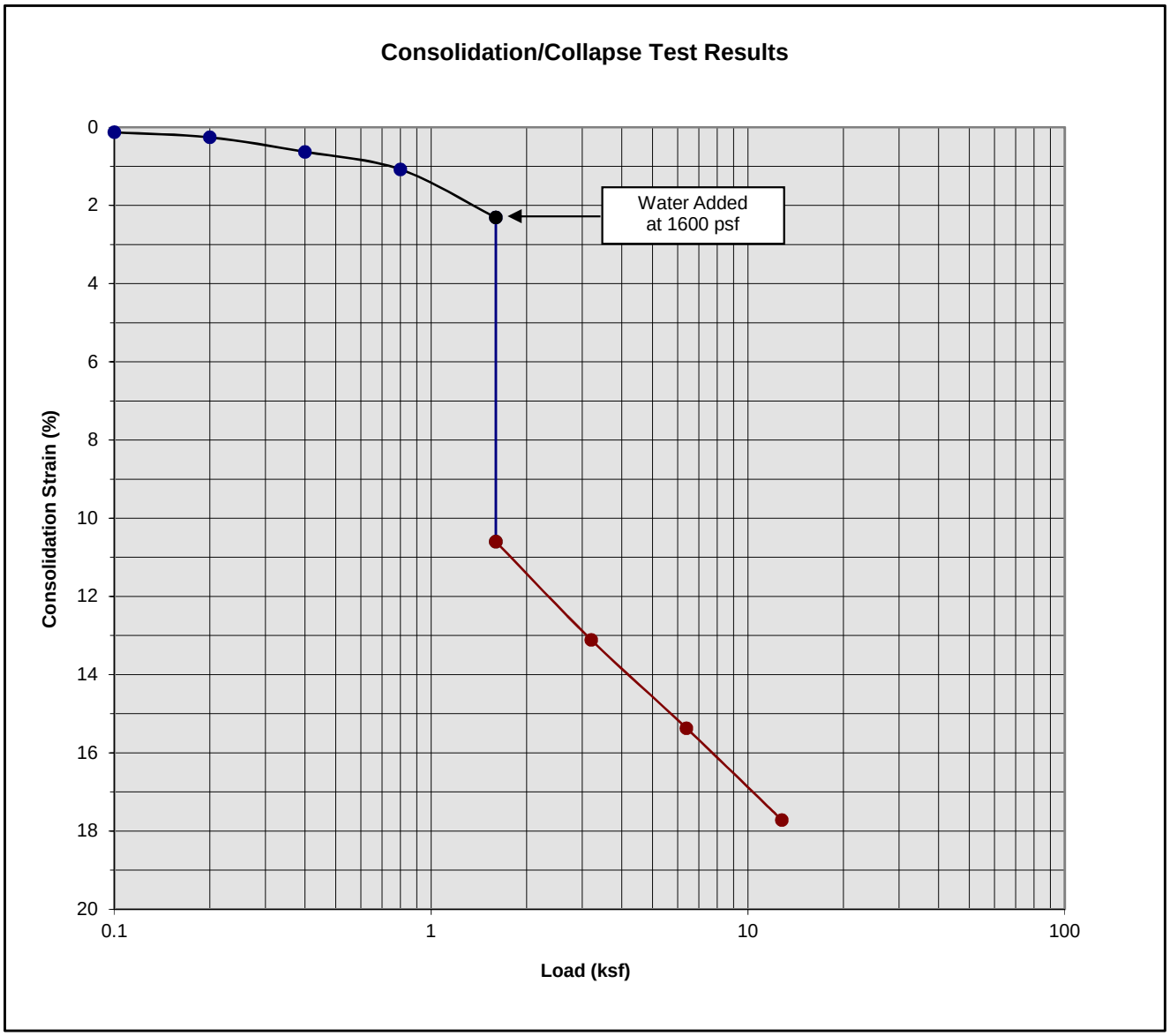
Classification: FILL: Brown Silty fine to coarse Sand

Boring Number:	B-4	Initial Moisture Content (%)	5
Sample Number:	---	Final Moisture Content (%)	13
Depth (ft)	7 to 8	Initial Dry Density (pcf)	95.1
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	118.2
Specimen Thickness (in)	1.0	Percent Collapse (%)	7.98

Proposed Retail Development
Riverside, California
Project No. 17G134-3

PLATE C- 7

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation



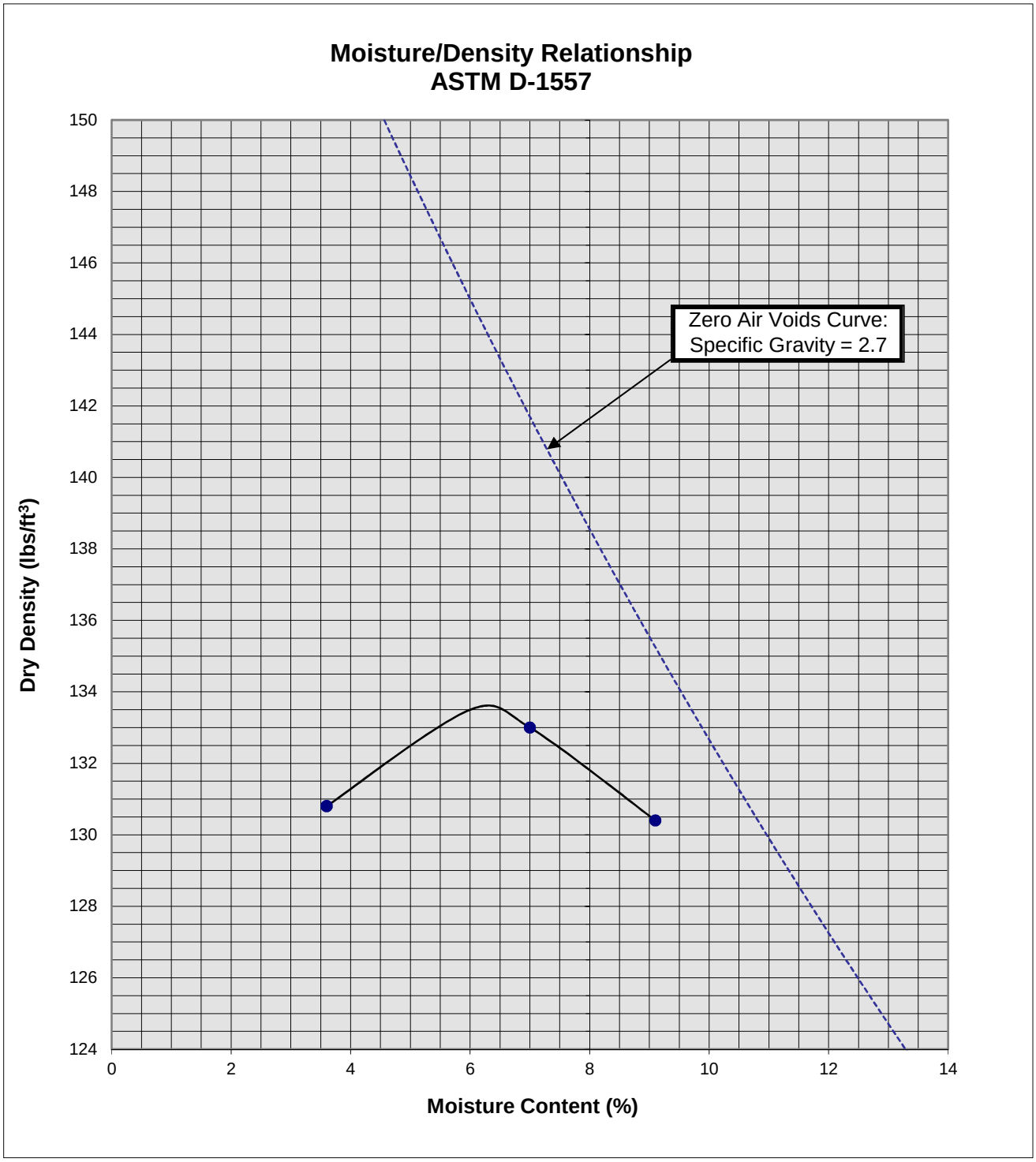
Classification: Brown Silty fine to medium Sand, little coarse Sand

Boring Number:	B-4	Initial Moisture Content (%)	4
Sample Number:	---	Final Moisture Content (%)	14
Depth (ft)	9 to 10	Initial Dry Density (pcf)	93.6
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	121.7
Specimen Thickness (in)	1.0	Percent Collapse (%)	8.29

Proposed Retail Development
Riverside, California
Project No. 17G134-3

PLATE C- 8

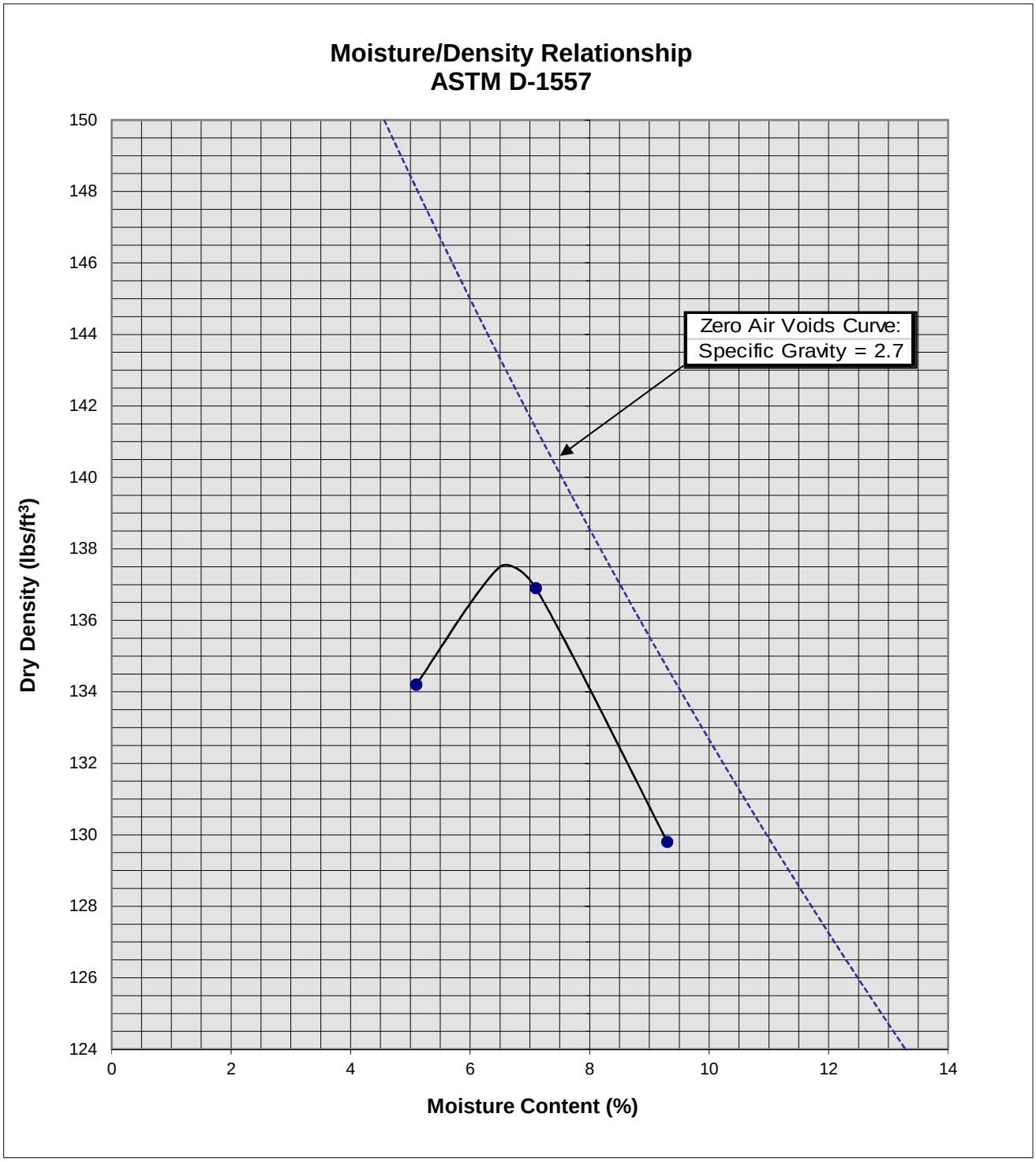
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation



Soil ID Number	B-2 @ 0 to 5'
Optimum Moisture (%)	6
Maximum Dry Density (pcf)	133.5
Soil Classification	Derived from Crushed Bedrock: Light Gray fine to coarse Sand trace Gravel

Proposed Retail Development
Riverside, California
Project No. 17G134-3
PLATE C-9

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation



Soil ID Number	B-4 @ 0 to 5'
Optimum Moisture (%)	6.5
Maximum Dry Density (pcf)	137.5
Soil Classification	Brown Silty fine to coarse Sand

Proposed Retail Development
Riverside, California
Project No. 17G134-3
PLATE C-10

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

APPENDIX D

GRADING GUIDE SPECIFICATIONS

These grading guide specifications are intended to provide typical procedures for grading operations. They are intended to supplement the recommendations contained in the geotechnical investigation report for this project. Should the recommendations in the geotechnical investigation report conflict with the grading guide specifications, the more site specific recommendations in the geotechnical investigation report will govern.

General

- The Earthwork Contractor is responsible for the satisfactory completion of all earthwork in accordance with the plans and geotechnical reports, and in accordance with city, county, and applicable building codes.

- The Geotechnical Engineer is the representative of the Owner/Builder for the purpose of implementing the report recommendations and guidelines. These duties are not intended to relieve the Earthwork Contractor of any responsibility to perform in a workman-like manner, nor is the Geotechnical Engineer to direct the grading equipment or personnel employed by the Contractor.

- The Earthwork Contractor is required to notify the Geotechnical Engineer of the anticipated work and schedule so that testing and inspections can be provided. If necessary, work may be stopped and redone if personnel have not been scheduled in advance.

- The Earthwork Contractor is required to have suitable and sufficient equipment on the job-site to process, moisture condition, mix and compact the amount of fill being placed to the approved compaction. In addition, suitable support equipment should be available to conform with recommendations and guidelines in this report.

- Canyon cleanouts, overexcavation areas, processed ground to receive fill, key excavations, subdrains and benches should be observed by the Geotechnical Engineer prior to placement of any fill. It is the Earthwork Contractor's responsibility to notify the Geotechnical Engineer of areas that are ready for inspection.

- Excavation, filling, and subgrade preparation should be performed in a manner and sequence that will provide drainage at all times and proper control of erosion. Precipitation, springs, and seepage water encountered shall be pumped or drained to provide a suitable working surface. The Geotechnical Engineer must be informed of springs or water seepage encountered during grading or foundation construction for possible revision to the recommended construction procedures and/or installation of subdrains.

Site Preparation

- The Earthwork Contractor is responsible for all clearing, grubbing, stripping and site preparation for the project in accordance with the recommendations of the Geotechnical Engineer.

- If any materials or areas are encountered by the Earthwork Contractor which are suspected of having toxic or environmentally sensitive contamination, the Geotechnical Engineer and Owner/Builder should be notified immediately.

- Major vegetation should be stripped and disposed of off-site. This includes trees, brush, heavy grasses and any materials considered unsuitable by the Geotechnical Engineer.

- Underground structures such as basements, cesspools or septic disposal systems, mining shafts, tunnels, wells and pipelines should be removed under the inspection of the Geotechnical Engineer and recommendations provided by the Geotechnical Engineer and/or city, county or state agencies. If such structures are known or found, the Geotechnical Engineer should be notified as soon as possible so that recommendations can be formulated.

- Any topsoil, slopewash, colluvium, alluvium and rock materials which are considered unsuitable by the Geotechnical Engineer should be removed prior to fill placement.

- Remaining voids created during site clearing caused by removal of trees, foundations basements, irrigation facilities, etc., should be excavated and filled with compacted fill.

- Subsequent to clearing and removals, areas to receive fill should be scarified to a depth of 10 to 12 inches, moisture conditioned and compacted

- The moisture condition of the processed ground should be at or slightly above the optimum moisture content as determined by the Geotechnical Engineer. Depending upon field conditions, this may require air drying or watering together with mixing and/or discing.

Compacted Fills

- Soil materials imported to or excavated on the property may be utilized in the fill, provided each material has been determined to be suitable in the opinion of the Geotechnical Engineer. Unless otherwise approved by the Geotechnical Engineer, all fill materials shall be free of deleterious, organic, or frozen matter, shall contain no chemicals that may result in the material being classified as “contaminated,” and shall be very low to non-expansive with a maximum expansion index (EI) of 50. The top 12 inches of the compacted fill should have a maximum particle size of 3 inches, and all underlying compacted fill material a maximum 6-inch particle size, except as noted below.

- All soils should be evaluated and tested by the Geotechnical Engineer. Materials with high expansion potential, low strength, poor gradation or containing organic materials may require removal from the site or selective placement and/or mixing to the satisfaction of the Geotechnical Engineer.

- Rock fragments or rocks less than 6 inches in their largest dimensions, or as otherwise determined by the Geotechnical Engineer, may be used in compacted fill, provided the distribution and placement is satisfactory in the opinion of the Geotechnical Engineer.

- Rock fragments or rocks greater than 12 inches should be taken off-site or placed in accordance with recommendations and in areas designated as suitable by the Geotechnical Engineer. These materials should be placed in accordance with Plate D-8 of these Grading Guide Specifications and in accordance with the following recommendations:

    - Rocks 12 inches or more in diameter should be placed in rows at least 15 feet apart, 15 feet from the edge of the fill, and 10 feet or more below subgrade. Spaces should be left between each rock fragment to provide for placement and compaction of soil around the fragments.

    - Fill materials consisting of soil meeting the minimum moisture content requirements and free of oversize material should be placed between and over the rows of rock or

concrete. Ample water and compactive effort should be applied to the fill materials as they are placed in order that all of the voids between each of the fragments are filled and compacted to the specified density.

- Subsequent rows of rocks should be placed such that they are not directly above a row placed in the previous lift of fill. A minimum 5-foot offset between rows is recommended.

- To facilitate future trenching, oversized material should not be placed within the range of foundation excavations, future utilities or other underground construction unless specifically approved by the soil engineer and the developer/owner representative.

- Fill materials approved by the Geotechnical Engineer should be placed in areas previously prepared to receive fill and in evenly placed, near horizontal layers at about 6 to 8 inches in loose thickness, or as otherwise determined by the Geotechnical Engineer for the project.

- Each layer should be moisture conditioned to optimum moisture content, or slightly above, as directed by the Geotechnical Engineer. After proper mixing and/or drying, to evenly distribute the moisture, the layers should be compacted to at least 90 percent of the maximum dry density in compliance with ASTM D-1557-78 unless otherwise indicated.

- Density and moisture content testing should be performed by the Geotechnical Engineer at random intervals and locations as determined by the Geotechnical Engineer. These tests are intended as an aid to the Earthwork Contractor, so he can evaluate his workmanship, equipment effectiveness and site conditions. The Earthwork Contractor is responsible for compaction as required by the Geotechnical Report(s) and governmental agencies.

- Fill areas unused for a period of time may require moisture conditioning, processing and recompaction prior to the start of additional filling. The Earthwork Contractor should notify the Geotechnical Engineer of his intent so that an evaluation can be made.

- Fill placed on ground sloping at a 5-to-1 inclination (horizontal-to-vertical) or steeper should be benched into bedrock or other suitable materials, as directed by the Geotechnical Engineer. Typical details of benching are illustrated on Plates D-2, D-4, and D-5.

- Cut/fill transition lots should have the cut portion overexcavated to a depth of at least 3 feet and rebuilt with fill (see Plate D-1), as determined by the Geotechnical Engineer.

- All cut lots should be inspected by the Geotechnical Engineer for fracturing and other bedrock conditions. If necessary, the pads should be overexcavated to a depth of 3 feet and rebuilt with a uniform, more cohesive soil type to impede moisture penetration.

- Cut portions of pad areas above buttresses or stabilizations should be overexcavated to a depth of 3 feet and rebuilt with uniform, more cohesive compacted fill to impede moisture penetration.

- Non-structural fill adjacent to structural fill should typically be placed in unison to provide lateral support. Backfill along walls must be placed and compacted with care to ensure that excessive unbalanced lateral pressures do not develop. The type of fill material placed adjacent to below grade walls must be properly tested and approved by the Geotechnical Engineer with consideration of the lateral earth pressure used in the design.

Foundations

- The foundation influence zone is defined as extending one foot horizontally from the outside edge of a footing, and proceeding downward at a ½ horizontal to 1 vertical (0.5:1) inclination.

- Where overexcavation beneath a footing subgrade is necessary, it should be conducted so as to encompass the entire foundation influence zone, as described above.

- Compacted fill adjacent to exterior footings should extend at least 12 inches above foundation bearing grade. Compacted fill within the interior of structures should extend to the floor subgrade elevation.

Fill Slopes

- The placement and compaction of fill described above applies to all fill slopes. Slope compaction should be accomplished by overfilling the slope, adequately compacting the fill in even layers, including the overfilled zone and cutting the slope back to expose the compacted core

- Slope compaction may also be achieved by backrolling the slope adequately every 2 to 4 vertical feet during the filling process as well as requiring the earth moving and compaction equipment to work close to the top of the slope. Upon completion of slope construction, the slope face should be compacted with a sheepsfoot connected to a sideboom and then grid rolled. This method of slope compaction should only be used if approved by the Geotechnical Engineer.

- Sandy soils lacking in adequate cohesion may be unstable for a finished slope condition and therefore should not be placed within 15 horizontal feet of the slope face.

- All fill slopes should be keyed into bedrock or other suitable material. Fill keys should be at least 15 feet wide and inclined at 2 percent into the slope. For slopes higher than 30 feet, the fill key width should be equal to one-half the height of the slope (see Plate D-5).

- All fill keys should be cleared of loose slough material prior to geotechnical inspection and should be approved by the Geotechnical Engineer and governmental agencies prior to filling.

- The cut portion of fill over cut slopes should be made first and inspected by the Geotechnical Engineer for possible stabilization requirements. The fill portion should be adequately keyed through all surficial soils and into bedrock or suitable material. Soils should be removed from the transition zone between the cut and fill portions (see Plate D-2).

Cut Slopes

- All cut slopes should be inspected by the Geotechnical Engineer to determine the need for stabilization. The Earthwork Contractor should notify the Geotechnical Engineer when slope cutting is in progress at intervals of 10 vertical feet. Failure to notify may result in a delay in recommendations.

- Cut slopes exposing loose, cohesionless sands should be reported to the Geotechnical Engineer for possible stabilization recommendations.

- All stabilization excavations should be cleared of loose slough material prior to geotechnical inspection. Stakes should be provided by the Civil Engineer to verify the location and dimensions of the key. A typical stabilization fill detail is shown on Plate D-5.

- Stabilization key excavations should be provided with subdrains. Typical subdrain details are shown on Plates D-6.

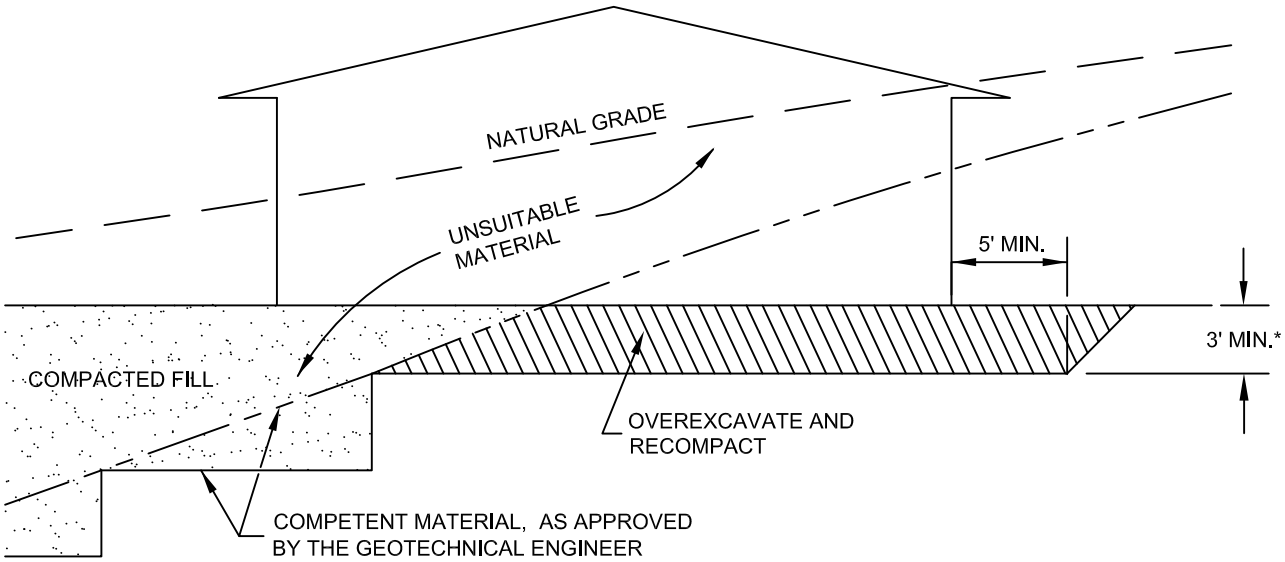
Subdrains

- Subdrains may be required in canyons and swales where fill placement is proposed. Typical subdrain details for canyons are shown on Plate D-3. Subdrains should be installed after approval of removals and before filling, as determined by the Soils Engineer.

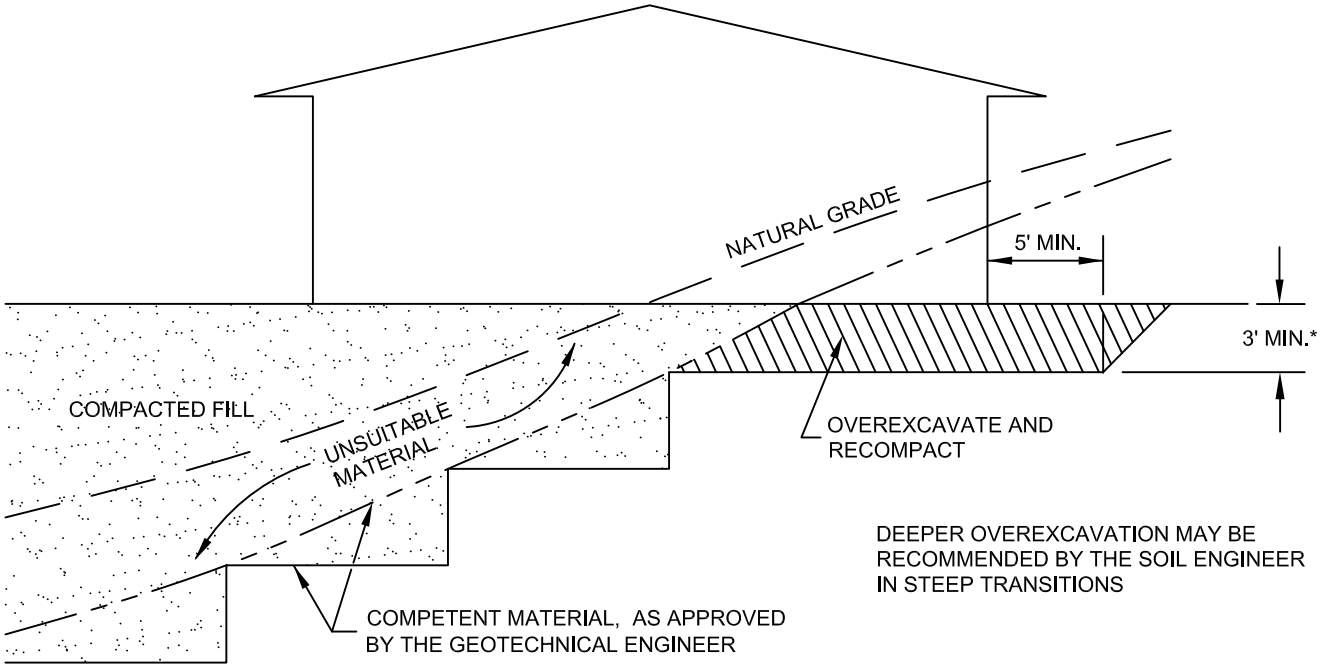
- Plastic pipe may be used for subdrains provided it is Schedule 40 or SDR 35 or equivalent. Pipe should be protected against breakage, typically by placement in a square-cut (backhoe) trench or as recommended by the manufacturer.

- Filter material for subdrains should conform to CALTRANS Specification 68-1.025 or as approved by the Geotechnical Engineer for the specific site conditions. Clean ¾-inch crushed rock may be used provided it is wrapped in an acceptable filter cloth and approved by the Geotechnical Engineer. Pipe diameters should be 6 inches for runs up to 500 feet and 8 inches for the downstream continuations of longer runs. Four-inch diameter pipe may be used in buttress and stabilization fills.

CUT LOT



CUT/FILL LOT (TRANSITION)



*SEE TEXT OF REPORT FOR SPECIFIC RECOMMENDATION. ACTUAL DEPTH OF OVEREXCAVATION MAY BE GREATER.

TRANSITION LOT DETAIL

GRADING GUIDE SPECIFICATIONS

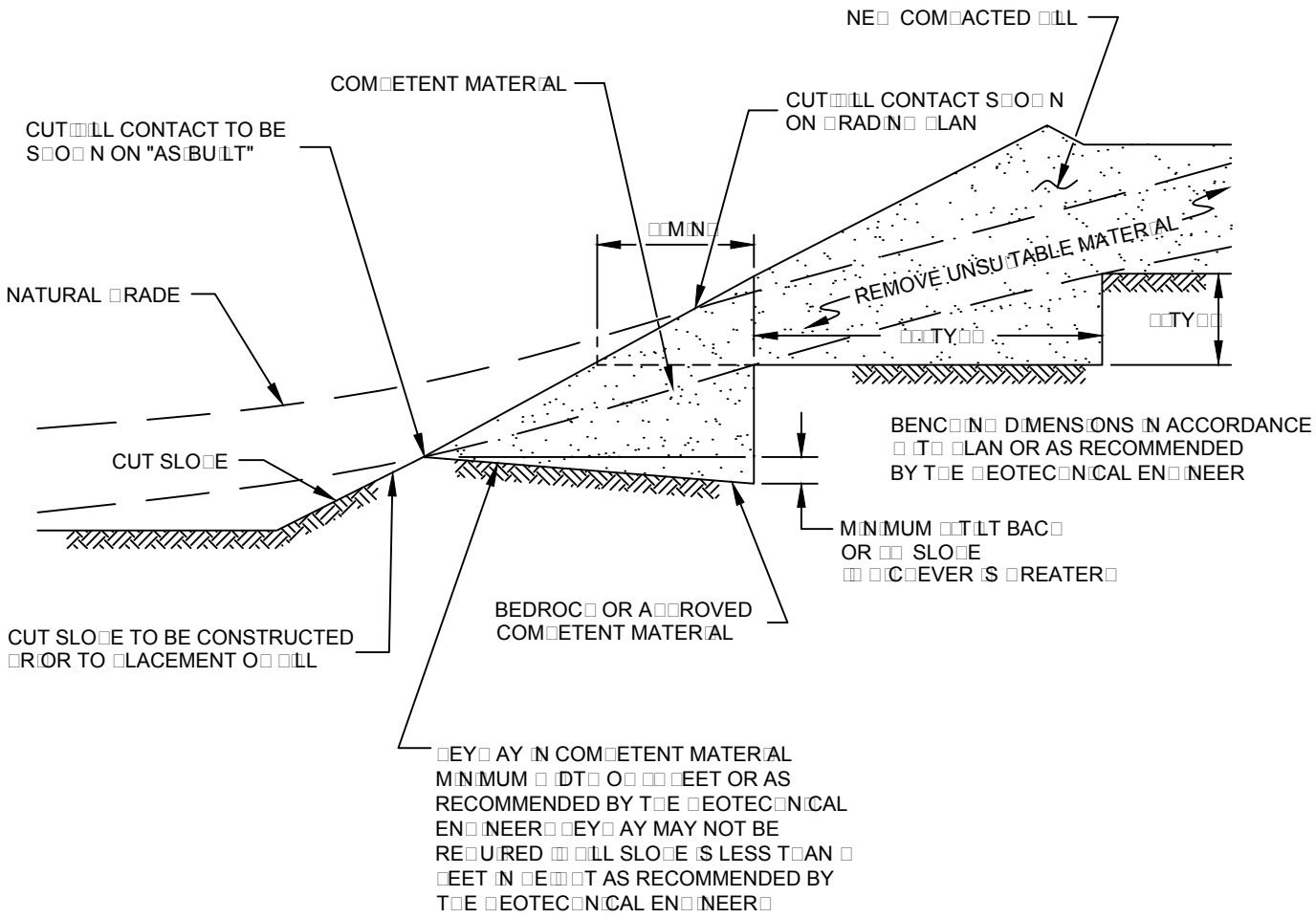
NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-1

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



FILL ABOVE CUT SLOPE DETAIL

□RAD□N□ □U□DE S□EC□□□CAT□ONS

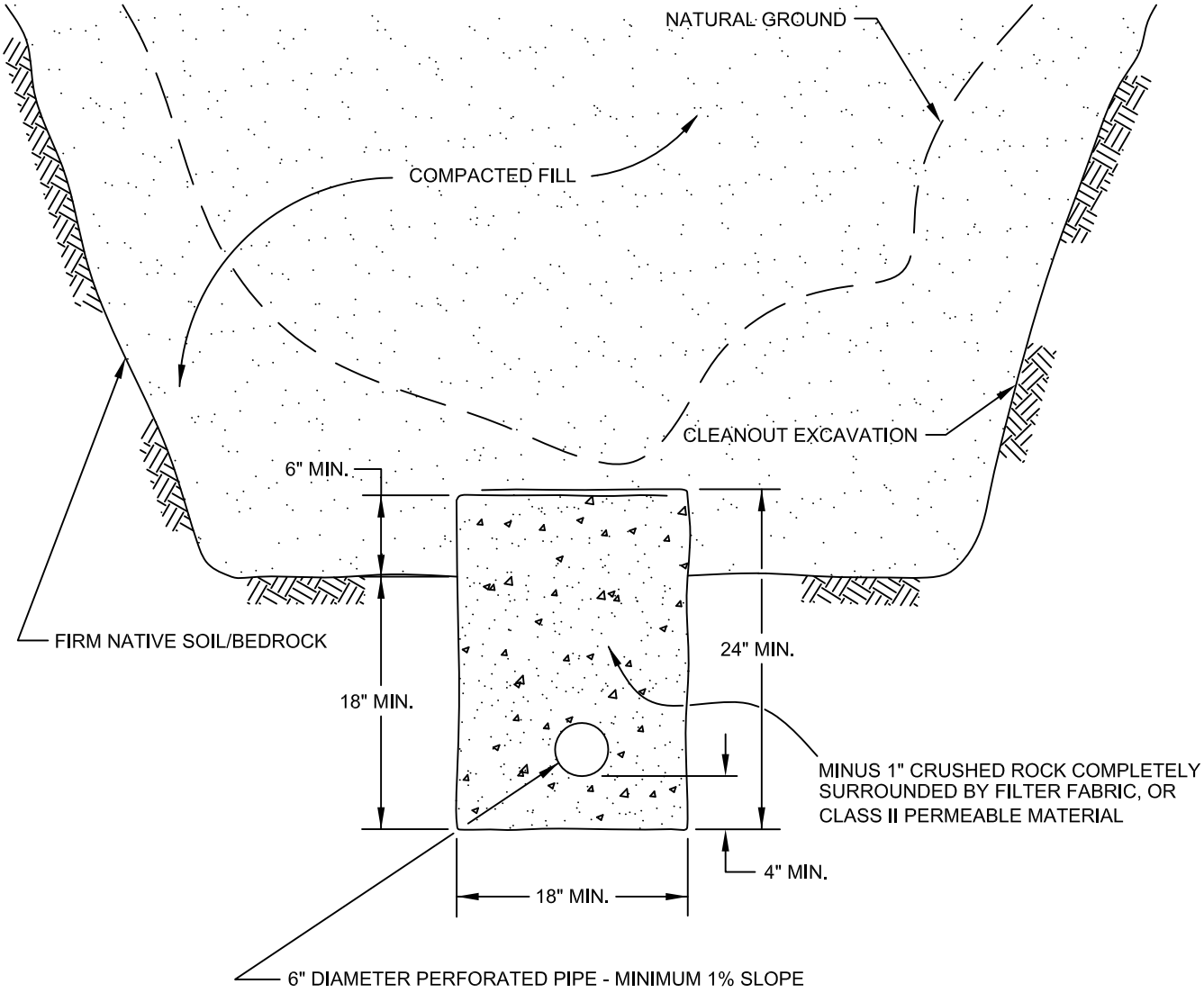
NOT TO SCALE

DRA□ N□□AS
C□□D□ □□M

PLATE D-2

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



PIPE MATERIAL	DEPTH OF FILL OVER SUBDRAIN
ADS (CORRUGATED POLETHYLENE)	8
TRANSITE UNDERDRAIN	20
PVC OR ABS: SDR 35	35
SDR 21	100

SCHEMATIC ONLY
NOT TO SCALE

CANYON SUBDRAIN DETAIL

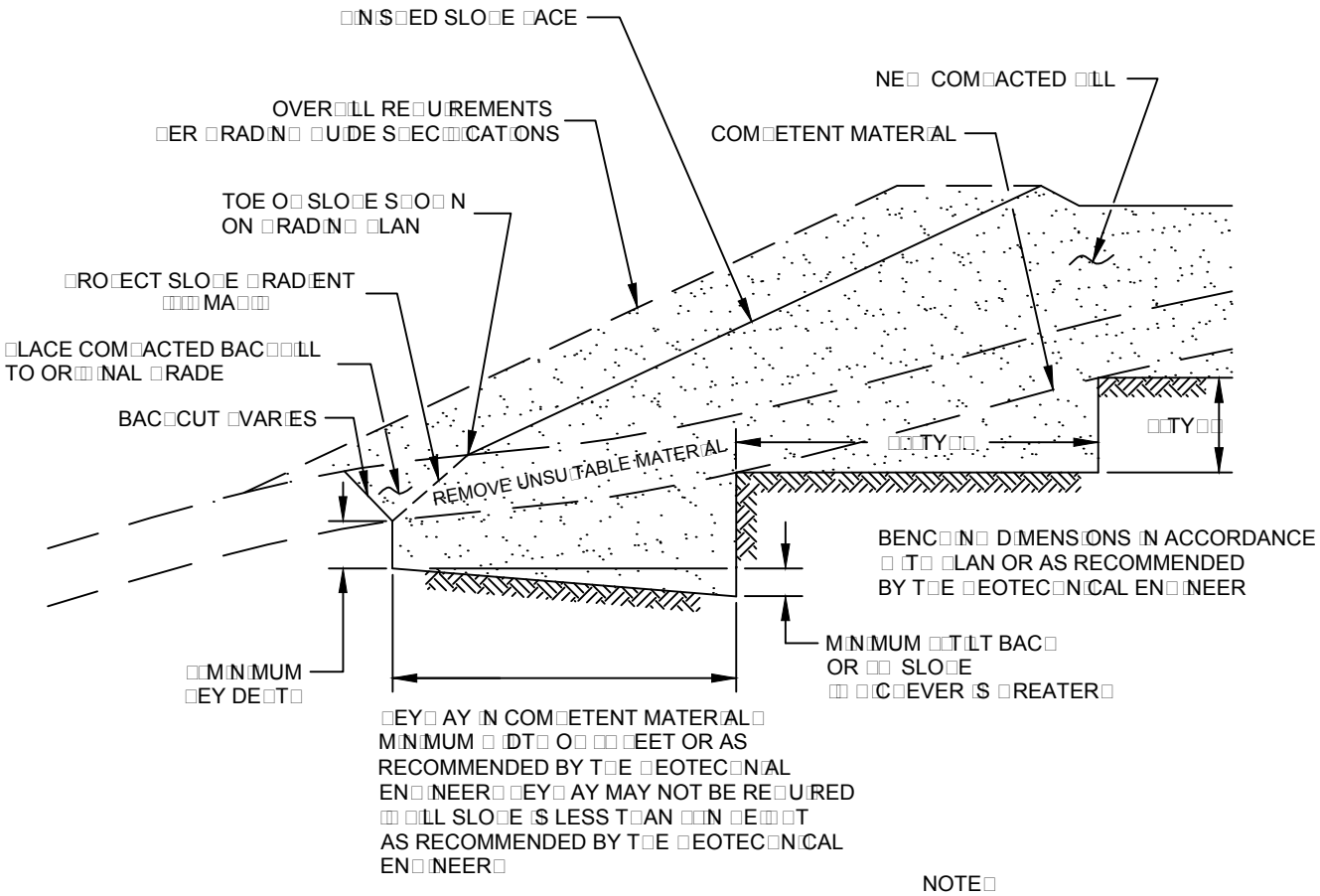
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-3

SOUTHERN CALIFORNIA GEOTECHNICAL



NOTE□
BENC□□N□ S□ALL BE RE□U□RED
□ □EN NATURAL SLO□ES ARE
E□UAL TO OR STEE□ER T□AN □□□
OR □ □EN RECOMMENDED BY
T□E □EOTEC□N□CAL EN□□NEER□

FILL ABOVE NATURAL SLOPE DETAIL

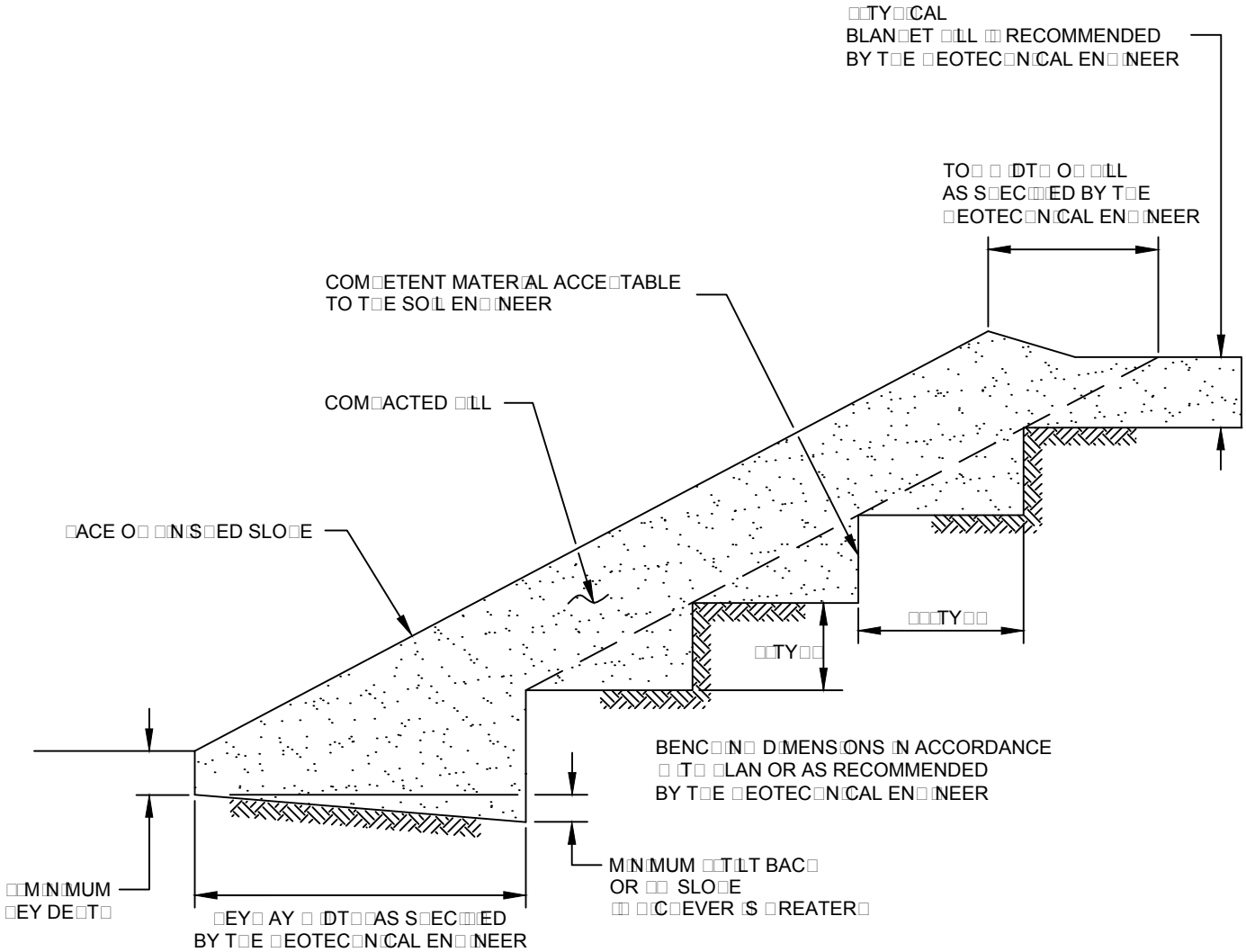
□RAD□N□ □U□DE S□EC□□□CAT□ONS

NOT TO SCALE

DRA□ N□□AS
C□□D□□□M

PLATE D-4

SOUTHERN CALIFORNIA GEOTECHNICAL



STABILIZATION FILL DETAIL

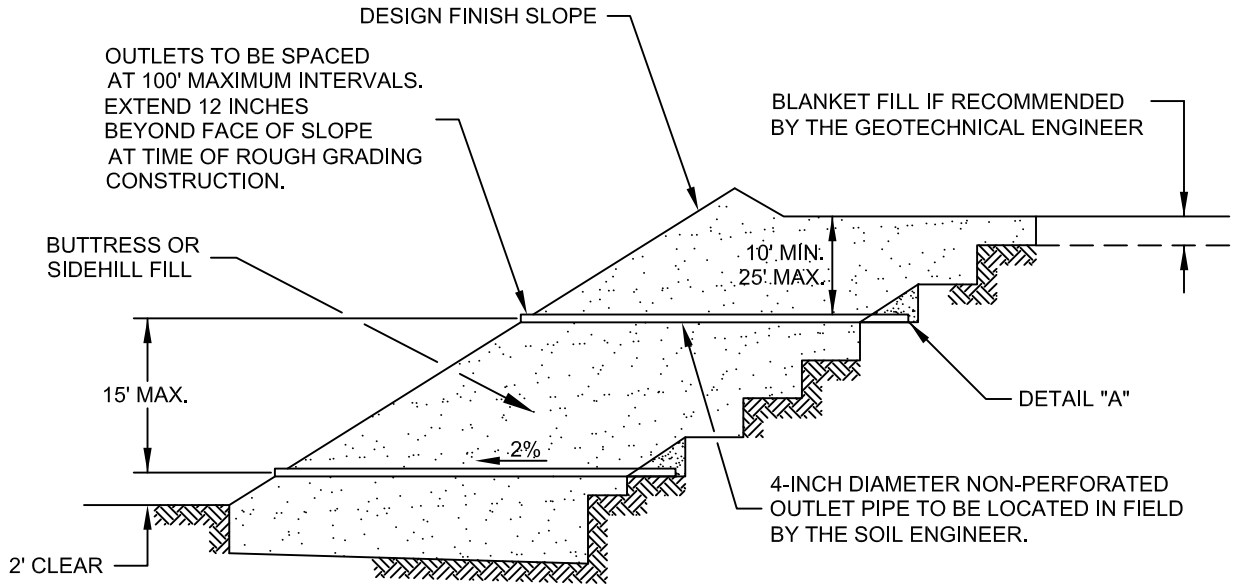
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN AS
COMPUTER

PLATE D-5

SOUTHERN
CALIFORNIA
GEOTECHNICAL



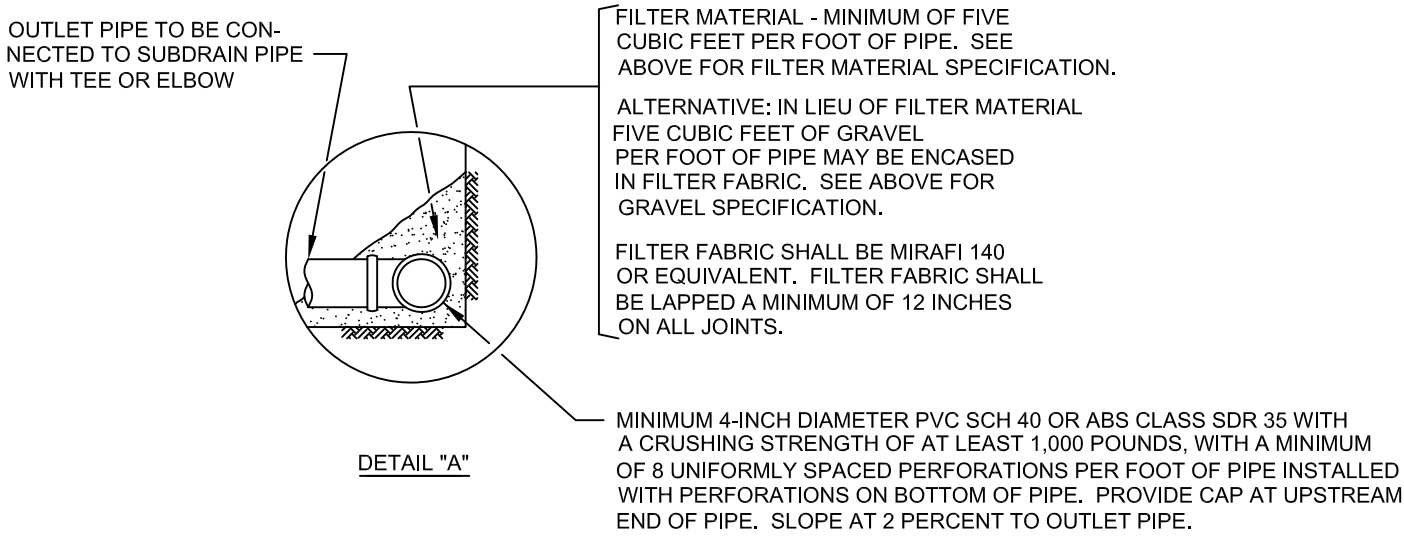
"FILTER MATERIAL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT: (CONFORMS TO EMA STD. PLAN 323)

SIEVE SIZE	PERCENTAGE PASSING
1"	100
3/4"	90-100
3/8"	40-100
NO. 4	25-40
NO. 8	18-33
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

"GRAVEL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT:

SIEVE SIZE	MAXIMUM PERCENTAGE PASSING
1 1/2"	100
NO. 4	50
NO. 200	8

SAND EQUIVALENT = MINIMUM OF 50



DETAIL "A"

NOTES:
1. TRENCH FOR OUTLET PIPES TO BE BACKFILLED WITH ON-SITE SOIL.

SLOPE FILL SUBDRAINS

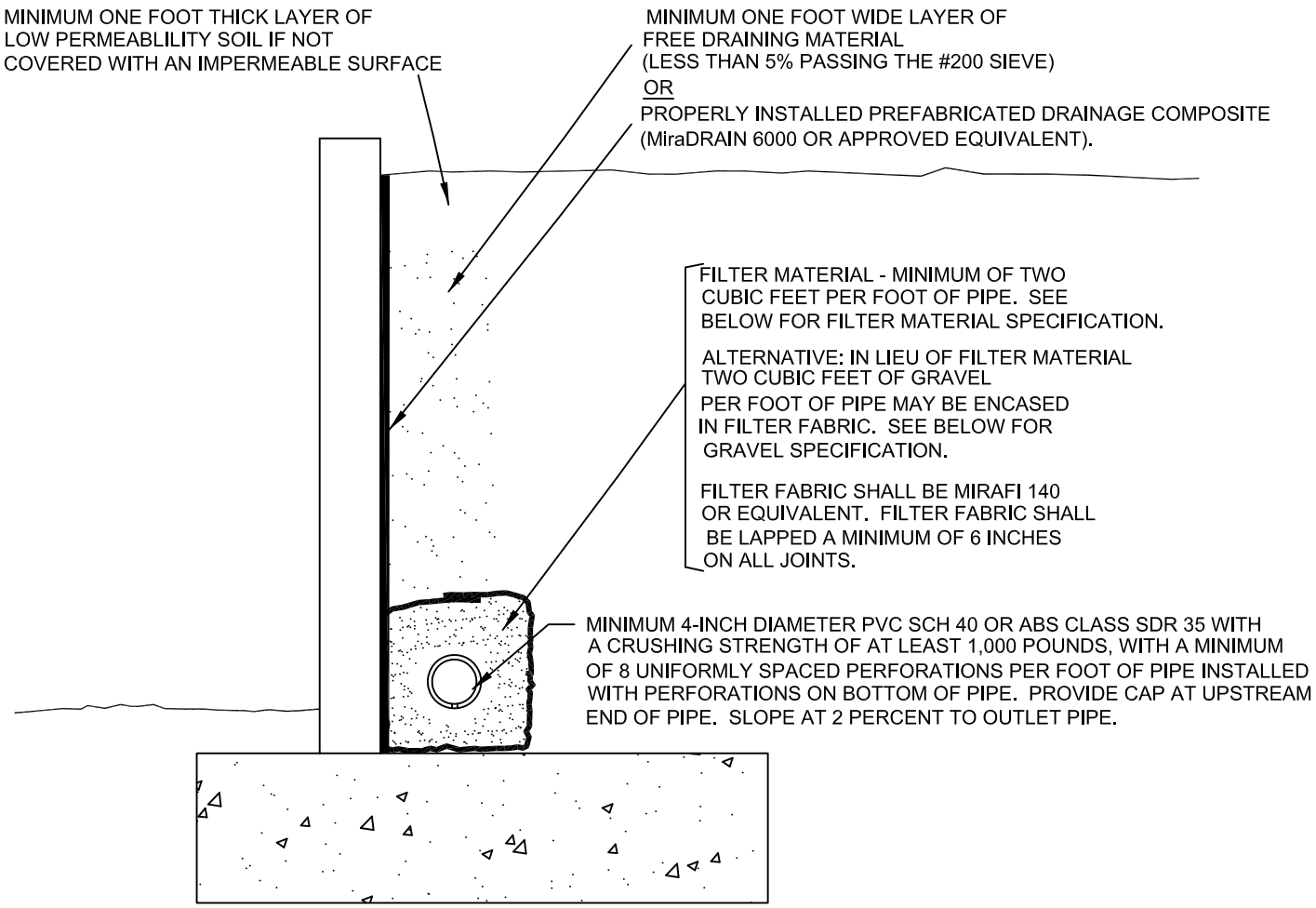
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-6

SOUTHERN CALIFORNIA GEOTECHNICAL



"FILTER MATERIAL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT: (CONFORMS TO EMA STD. PLAN 323)

SIEVE SIZE	PERCENTAGE PASSING
1"	100
3/4"	90-100
3/8"	40-100
NO. 4	25-40
NO. 8	18-33
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

"GRAVEL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT:

SIEVE SIZE	MAXIMUM PERCENTAGE PASSING
1 1/2"	100
NO. 4	50
NO. 200	8

SAND EQUIVALENT = MINIMUM OF 50

RETAINING WALL BACKDRAINS

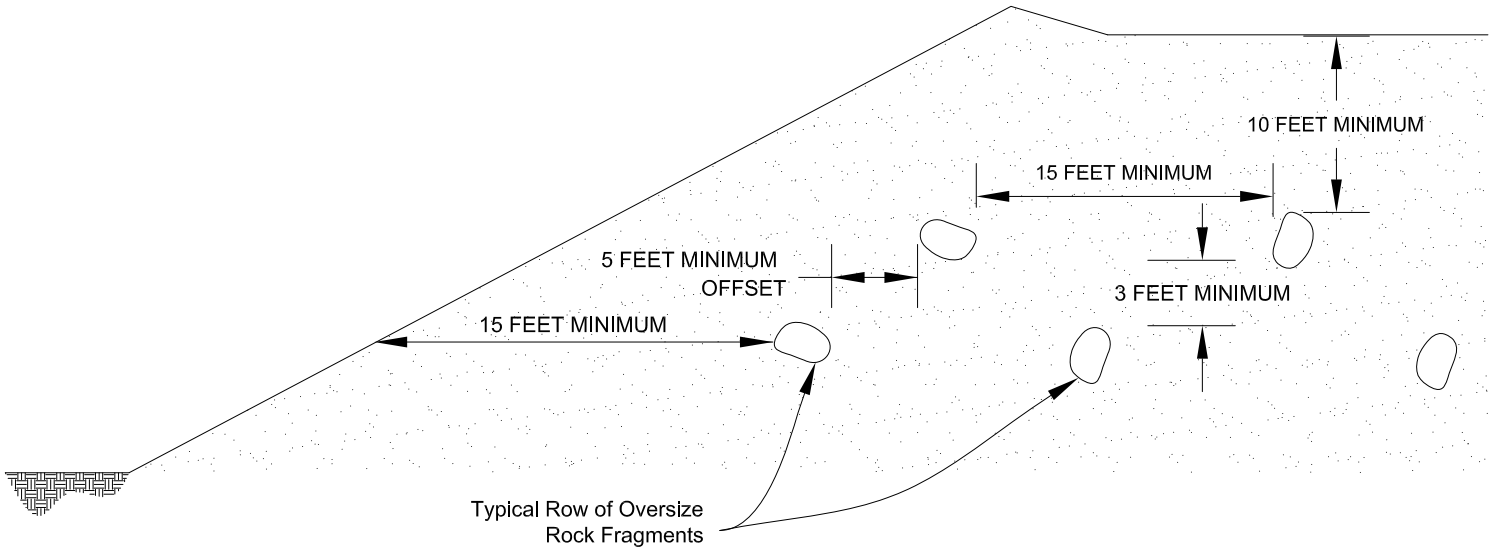
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

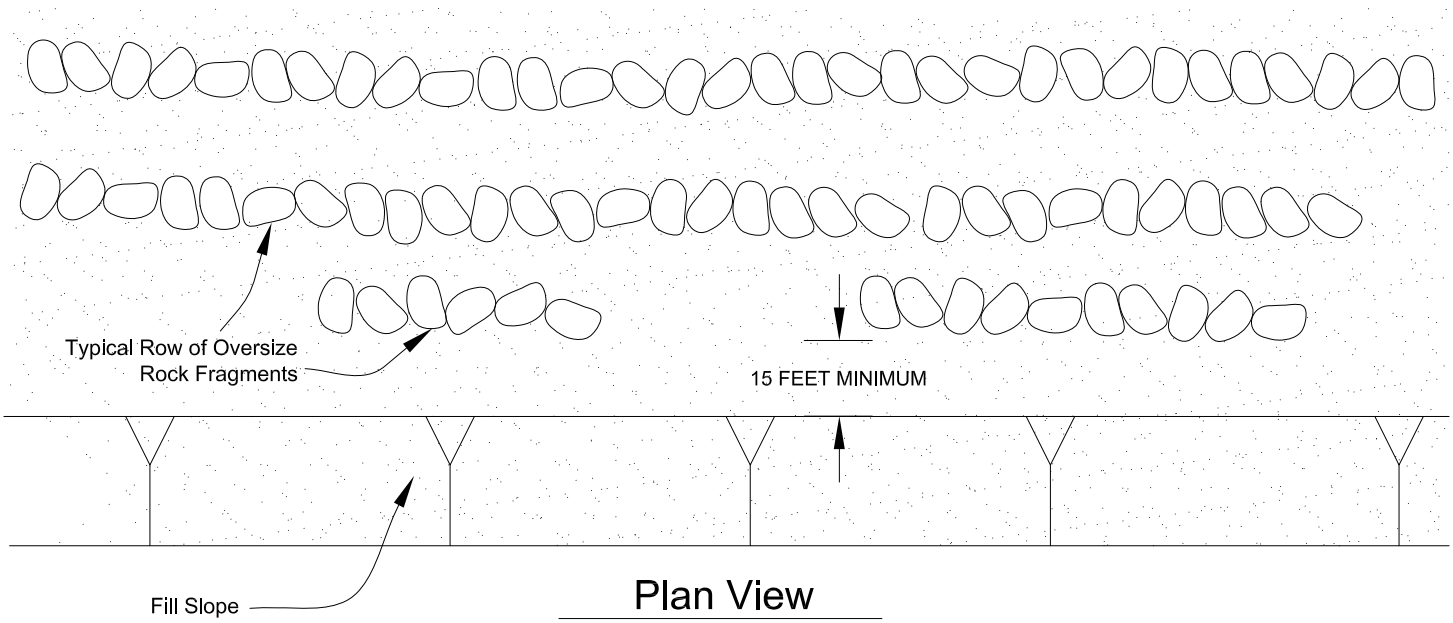
DRAWN: JAS
CHKD: GKM

PLATE D-7

SOUTHERN CALIFORNIA GEOTECHNICAL



Section View



Plan View

PLACEMENT OF OVERSIZED MATERIAL

GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: PM
CHKD: GKM

PLATE D-8

SOUTHERN CALIFORNIA GEOTECHNICAL

APPENDIX E

USGS Design Maps Summary Report

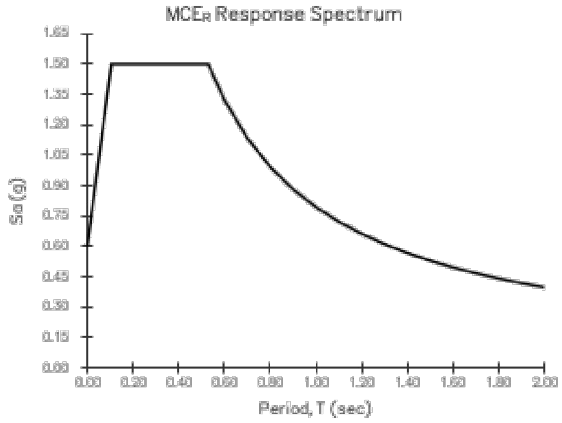
User–Specified Input

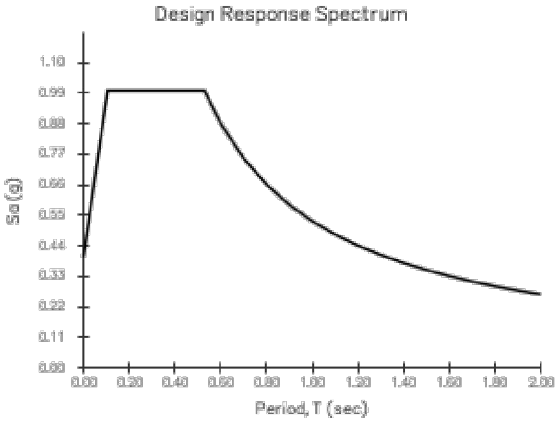
Report Title	Proposed Retail Development Mon December 11, 2017 18:18:18 UTC
Building Code Reference Document	ASCE 7-10 Standard (which utilizes USGS hazard data available in 2008)
Site Coordinates	33.95882°N, 117.31104°W
Site Soil Classification	Site Class C – "Very Dense Soil and Soft Rock"
Risk Category	I/II/III

USGS–Provided Output

S_S =	1.500 g	S_{MS} =	1.500 g	S_{DS} =	1.000 g
S_1 =	0.611 g	S_{M1} =	0.794 g	S_{D1} =	0.529 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





SOURCE□U□S□□EOLO□□CAL SURVEY □US□S□
□□□□□□□□□□□□rd□□□□□□□□□□d□□□□□ □□□□□□□□□□□□□□□□□□□□□□□□□□□□

SEISMIC DESIGN PARAMETERS
□RO□OSED RETA□L DEVELO□MENT
R□VERS□DE□CAL□□ORN□A

DRA□ N□DR□
C□□D□R□T

SC□ □RO□ECT
□□□ □□□□□

PLATE E-1

SOUTHERN CALIFORNIA GEOTECHNICAL

APPENDIX F

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Phase I Environmental Site Assessment

Northeast Corner of Central Avenue and
Sycamore Canyon Boulevard
Riverside, California

Prepared for:
KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, California 92121

Prepared by:
Ardent Environmental Group, Inc.
1827 Capital Street, Suite 103
Corona, California 92880

August 23, 2017
Project No. 100873002

August 23, 2017
Project No. 100873002

Mr. Eugene Marini
KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, California 92121

Subject: Phase I Environmental Site Assessment
Northeast Corner of Central Avenue and
Sycamore Canyon Boulevard
Riverside, California

Dear Mr. Marini:

Ardent Environmental Group, Inc. (Ardent) has performed a Phase I Environmental Site Assessment (ESA) of the property located on the northeast corner of the intersection of Central Avenue and Sycamore Canyon Boulevard, in the city of Riverside, California (site). Work was conducted in general accordance with the proposal dated April 12, 2017 between Ardent and KA Enterprises. The attached report presents our methodology, findings, opinions, and conclusions regarding the environmental conditions at the site. We appreciate the opportunity to be of service to you on this project. If there are any questions, please feel free to call the undersigned at your convenience.

Sincerely,
Ardent Environmental Group, Inc.

Ricardo Munoz
Staff Geologist

Paul A. Roberts, P.G.
Principal Geologist

PAR/RM/aw

Distribution: (1) Addressee (electronic copy)

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EXECUTIVE SUMMARY

Ardent Environmental Group, Inc. (Ardent) was retained by KA Enterprises to perform a Phase I Environmental Site Assessment (ESA) of the property located on the northeast corner of the intersection of Central Avenue and Sycamore Canyon Boulevard in the city of Riverside, California (site). The site currently consists of vacant, undeveloped land. KA Enterprises is considering purchasing the site for redevelopment for commercial or retail purposes. Site assessment activities for this report were conducted between August 17, 2017 and August 23, 2017.

In summary, the following findings and conclusions were noted:

- From at least 1966 through the present, the site has consisted of vacant land. From at least 1966 through 2005, Sycamore Canyon Boulevard bisected the subject property and by 2009, the configuration of Sycamore Canyon Boulevard was altered to be located immediately west of the site, as it is currently. Underground municipal utility pipelines are located through the site in the vicinity of the former alignment of Sycamore Canyon Boulevard. Based on the type of pipelines (i.e. municipal utilities), these features would not be considered an environmental concern to the site.
- The site is located in a hilly area at the base of the Box Springs Mountains. Alluvial deposits overlie fractured bedrock. There was no readily available information regarding depth to groundwater for the site or on properties within the general site vicinity. Groundwater is expected to traverse through fractured bedrock at an unknown depth. Direction of flow is expected to follow surface topography away from the Box Springs Mountains in a southwesterly direction.
- The site consists of vacant land; therefore, asbestos-containing building materials (ACMs) and lead based paint (LBP) are not present.
- No other on- or off-site environmental concerns were noted.

Ardent has performed this Phase I ESA in general conformance with the scope and limitations of the American Society for Testing and Materials (ASTM) Practice E 1527-13, ASTM Practice E 2600-15, and the Environmental Protection Agency (EPA) Standards and Practices for All Appropriate Inquiry (AAI), Final Rule (40 CFR, Part 312), for the property located on the northeast corner of the intersection of Central Avenue and Sycamore Canyon Boulevard in the city of Riverside, California. Any limitations or exceptions encountered during completion of this report are stated in Section 1.4. Based on this Phase I ESA, no evidence or indication of recognized environmental conditions (RECs), or conditions indicative of releases or threatened releases of hazardous substances on, at, in, or to the site has been revealed. Based on the results of this assessment, Ardent has no recommendations for further investigations at this time.

1 INTRODUCTION

Ardent Environmental Group, Inc. (Ardent) was retained by KA Enterprises to perform a Phase I Environmental Site Assessment (ESA) of the property located on the northeast corner of the intersection of Central Avenue and Sycamore Canyon Boulevard in the city of Riverside, California (site; Figure 1). Work was competed in general accordance with the proposal dated April 12, 2017 between KA Enterprises and Ardent. The site currently contains vacant, undeveloped land. KA Enterprises is considering purchasing the site for redevelopment for commercial or retail purposes. The following sections identify the purpose, the involved parties, the scope of work, and the limitations and exceptions associated with the Phase I ESA.

1.1 Purpose of Phase I ESA

In accordance with the American Society for Testing and Materials (ASTM) E 1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM Standard E 1527-13), the objective of the Phase I ESA was to identify, to the extent feasible pursuant to ASTM Standard E 1527-13, recognized environmental conditions (RECs), which are defined by ASTM as "…the presence or likely presence of any hazardous substance or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment."

The United States Environmental Protection Agency ("USEPA" or "EPA") has stated that ASTM Standard E 1527-13, is consistent with the Standards and Practices for All Appropriate Inquires (AAI), Final Rule (40 Code of Federal Regulations [CFR], Part 312) and is compliant with the statutory criteria for all appropriate inquires. All appropriate inquires, as defined in the AAI Final Rule, must be conducted by persons seeking the landowner liability protections under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) prior to acquiring a property or seeking or receiving federal Brownfields grants under the authorities of CERCLA. The purpose of AAI, as defined in the AAI Final Rule, was to identify releases and threatened releases of hazardous substances which cause or threaten to cause the incurrence of response costs.

As part of this Phase I ESA, Ardent also assessed whether a vapor encroachment condition (VEC) exists at the site. The VEC assessment was completed following the ASTM E 2600-

15 Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions (ASTM Standard E 2600-15). The objective of this work was to evaluate whether possible contaminants (e.g. VOCs) are present in soil and/or groundwater in the site vicinity which might pose a possible vapor intrusion into existing or future buildings at the site.

1.2 Involved Parties

Mr. Ricardo Munoz of Ardent conducted the historical research, site reconnaissance, regulatory inquiries, and document review. Mr. Paul Roberts, who meets the definition of an *environmental professional* as set forth in the AAI Final Rule, completed oversight and review.

1.3 Scope of Work

Ardent's scope of work for this Phase I ESA is consistent with ASTM Standard E1527-13 and E-2600-15 and included the activities listed below.

- **Review of User Provided Information** – Review of information regarding title and judicial records for environmental liens or activity and use limitations, recorded environmental liens, actual or specialized knowledge or commonly known information regarding environmental conditions at the site, the relationship of the purchase price of the property to the fair market value, readily available maps, environmental reports, and other environmental documents pertaining to the site, as available and obtained from the user/client.
- **Records Review** – Acquisition and review of records, including federal, state, tribal, and local regulatory agency databases, for the site and for properties located within a specified radius of the site; local regulatory agency files for the site and selected nearby properties of potential environmental concern; physical setting sources, including topographic maps, geologic maps, and geologic and hydrogeologic reference documents; and historic land use information including aerial photographs, historical fire insurance rate maps, building department records, and city directories, as necessary, that are reasonably ascertainable, publicly available, can be obtained within reasonable time and cost, and are practically reviewable.
- **Vapor Encroachment Condition (VEC)** – Review available regulatory and client provided data to assess Tier 1 non-numeric screening for the site. Ardent evaluated whether contaminants were present in soil and/or groundwater in the site vicinity which might pose a VEC at the site.
- **Site Reconnaissance** – Performance of a site reconnaissance is to visually observe the site and any structure(s) located on the site to the extent not obstructed by bodies of water, adjacent buildings, or other obstacles. The purpose of the site reconnaissance is to obtain information indicating the likelihood of identifying RECs in connection with the site, including the general site setting, site usage, use and storage of hazardous

materials and petroleum products, disposal of waste products and materials, sources of polychlorinated biphenyls (PCBs), and evidence of releases and possible risks of contamination from activities at adjacent properties.

- **Interviews** – Interviews with site representatives, including owners, occupants, and site managers, regarding the environmental condition of the site to the extent necessary and such persons are available. Interviews with state and/or local government officials as necessary.
- **Report** – Evaluation of the information and data obtained by the Phase I ESA process outlined above and preparation of this Phase I ESA report documenting findings and providing opinions and conclusions regarding possible environmental impacts and RECs at the site.

1.4 Limitations and Exceptions

The environmental services described in this report have been conducted in general accordance with current regulatory guidelines and the standard-of-care exercised by environmental consultants performing similar work in the project area. No warranty, expressed or implied, is made regarding the professional opinions presented in this report.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ardent should be contacted if the reader requires any additional information or has questions regarding the content, interpretations presented, or completeness of this document.

The findings, opinions, and conclusions are based on an analysis of the observed site conditions and the referenced literature. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the site or nearby properties. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ardent has no control. Ardent cannot warrant or guarantee that not finding indicators of any particular hazardous material means that this particular hazardous material or any other hazardous materials do not exist on the site. Additional research, including invasive testing, can reduce the uncertainty, but no techniques now commonly employed can eliminate the uncertainty altogether.

1.5 Special Terms and Conditions

As indicated in Section 13.1.5 of ASTM Standard E 1527-13, the following, which is not intended to be all inclusive, represents out-of-scope items with respect to a Phase I ESA: asbestos-containing materials (ACMs), radon, lead-based paint (LBP), lead in drinking water, wetlands, regulatory compliance, cultural and historic risk, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality unrelated to releases of hazardous substances or petroleum products into the environment, biological agents, and mold. As part of our agreement with the client, Ardent visually assessed site buildings (if present) for possible ACMs, LBP, and mold. In addition, ASTM Standard E 2600-15 supplements the ASTM Standard E 1527-13 to include evaluation of VEC using Tier 1 screening.

This study did not include an evaluation of geotechnical conditions or potential geologic hazards. In addition, Ardent did not address interpretations of zoning regulations, building code requirements, or property title issues.

1.6 User Reliance

This report may be relied upon and is intended exclusively for use by the client. Any use or reuse of the findings, opinions, and/or conclusions of this report by parties other than the foregoing parties is undertaken at said parties' sole risk.

1.7 Physical Limitations

No physical limitations were encountered during the completion of this Phase I ESA report.

1.8 Data Gaps

No significant data gaps were noted during the preparation of this Phase I ESA report.

2 GENERAL SITE CHARACTERISTICS

The following sections describe the location and the current uses of the site and adjacent properties. A site location map is presented as Figure 1 and a site vicinity map is presented as Figure 2. Selected photographs of the site and surrounding properties are provided in Appendix A.

2.1 Location and Legal Description

The site is located on the northeast corner of the intersection of Central Avenue and Sycamore Canyon Boulevard, in the city of Riverside, California (Figure 2). No addresses or Tax Assessor's Parcel Number (APN) have been assigned to the site.

The site is bound to the west by Sycamore Canyon Boulevard; to the south by Central Avenue; to the east by a swatch of land owned by Caltrans; and to the north by the Moreno Valley Freeway. The Moreno Valley Freeway is a section of highway where the State Route 60 (SR-60) and the Interstate 215 Freeway (I-215) conjoin. A description of the site boundary was obtained during the site reconnaissance and information provided by the client.

2.2 Site Description and Current Site Uses/Operations

The following paragraphs present a description of the site, the activities being conducted on-site, the heating and cooling systems utilized in the site building, the sewage disposal system, and the potable water provider for the site, if any.

2.2.1 Site Description

The site is an irregular-shaped property that comprises approximately 2-acres. The site is currently vacant, undeveloped land (Figure 2).

2.2.2 Occupants

The site is currently unoccupied.

2.2.3 Heating and Cooling Systems

No heating or cooling systems are present at the site. Future heating and cooling systems will likely be powered by natural gas and/or electricity provided by a public utility provider.

2.2.4 Sewage Disposal/Septic Systems

No sewage disposal or septic systems are present at the site. Future sewage disposal will likely be connected to the municipal sewer systems.

2.2.5 Potable Water

No groundwater wells or potable water are present on-site. Future potable water will likely be supplied by a municipal water provider.

2.3 Adjacent Properties

In general, the site vicinity is vacant land and used for residential purposes (Figure 2). The site is situated between Sycamore Canyon Boulevard, Central Avenue, and Caltrans land. In the immediate vicinity of the site is the “Exit 30B” off-ramp from the southbound Moreno Valley Freeway, the Moreno Valley Freeway, and vacant lands. Further south of the site are single-family residences. Aboveground electrical power lines are located immediately northwest of the site and traverse in a westerly direction along Sycamore Canyon Boulevard.

No aboveground storage tanks (ASTs), evidence of underground storage tanks (USTs), or large quantities of possible hazardous materials or wastes were noted being stored by off-site facilities along the site property line. In general, these adjacent properties would not be considered an environmental concern to the site.

3 USER PROVIDED INFORMATION

The following sections summarize information provided by the user to assist the environmental professional in identifying the possibility of RECs in connection with the site, and to fulfill the user’s responsibilities in accordance with Section 6 of ASTM Standard E 1527-13. A copy of the user questionnaire is presented in Appendix B. The questionnaire was completed by Mr. Eugene Marini of KA Enterprises.

3.1 Current Title Information

A current Preliminary Title Report was not provided to Ardent for review.

3.2 Environmental Liens or Activity and Use Limitations

Information regarding environmental liens or activity and use limitations (AULs) was not provided to Ardent. Mr. Marini was not aware of any environmental liens or AULs against the site that are filed or recorded under federal, state, or local law.

3.3 Specialized Knowledge

Mr. Marini indicated that, for purposes of this assessment, the client has no specialized knowledge or experience pertaining to the site or the adjacent properties that is material to RECs in connection with the site.

3.4 Commonly Known or Reasonably Ascertainable Information

Mr. Marini is not aware of commonly known or reasonably ascertainable information pertaining to the site.

3.5 Valuation Reduction for Environmental Issues

In a transaction involving the purchase of a parcel of commercial real estate, the user shall consider the relationship of the purchase price of the property to fair market value of the property if the property was not affected by hazardous substances or petroleum products. Mr. Marini indicated that the purchase price reflects fair market value.

3.6 Reason for Performing Phase I ESA

Ardent was retained by KA Enterprises to perform the Phase I ESA as part of its real estate due diligence activities for acquisition of the property.

3.7 Other User Provided Information

No environmental reports were provided to Ardent by KA Enterprises.

4 PHYSICAL SETTING

The following sections include discussions of topographic, geologic, and hydrogeologic conditions in the vicinity of the site, based upon our document review and our visual reconnaissance of the site and adjacent areas.

4.1 Site Topography

Based on the review of the United States Geological Survey (USGS) 7.5 Minute Series, Riverside, California, Topographic Quadrangle Map dated 2012, the site has an elevation of approximately 1,340 feet above mean sea level (msl) and slopes to the southwest.

4.2 Geology

The site is located in the eastern portion of the Peninsular Ranges geomorphic province of southern California. This geomorphic province varies in width from 30 to 100 miles and extends 125 miles, from the Transverse Ranges and the Los Angeles Basin south into Baja Mexico. In general, the province consists of rugged mountains underlain by Mesozoic-age igneous and metamorphic rocks to the east and a dissected coastal plain underlain by Cretaceous- and Tertiary- age sediments to the west.

The site is located in the city of Riverside, which lies on granitic bedrock known as the Perris Block. Materials are characterized by Pliocene to Pleistocene alluvium ranging in thickness from 200 to 2,000 feet. The site is locally located in a hilly area at the base of the Box Springs Mountains where alluvial deposits overlie fractured bedrock.

4.3 Oil and Gas Maps

Based on a review of the Division of Oil, Gas, and Geothermal Resources (DOGGR) on-line well finder, the site does not lie within an activity oil field and no oil or natural gas wells have been drilled on-site or in the immediate site vicinity.

4.4 Site Hydrology

The following sections discuss the site hydrology in terms of both surface waters and groundwater.

4.4.1 Surface Waters

No natural water bodies are located on the site. An unnamed stream channel is located approximately 400 feet south to southwest of the site and beyond Central Avenue. This unlined channel traverses away from the Box Springs Mountains in a westerly direction. This stream channel is shown on the topographical maps as a blue-line.

4.4.2 Groundwater

No groundwater information was provided for the site in regulatory records or files. Ardent researched information of close-by properties undergoing groundwater investigations on the State Water Resources Control Board (SWRCB) GeoTracker website. There was no readily available information regarding depth to groundwater for the site or on properties within the general site vicinity. Groundwater is expected to traverse through fractured bedrock at an unknown depth. Direction of flow is expected to follow surface topography away from the Box Springs Mountains in a southwesterly direction.

5 HISTORICAL LAND USE

Ardent conducted a historical land use record search for both the site and surrounding areas. This included a review of one or more of the following sources that were found to be both reasonably ascertainable and useful for the purposes of this Phase I ESA: historical aerial photographs,

historical fire insurance maps, historical city directories, building permits and plans, topographic maps, property tax records, zoning/land use records, and a review of a prior environmental assessment report regarding the site.

5.1 Summary of Historical Land Use of the Property

From at least 1966 through the present, the site has consisted of vacant land. From at least 1966 through 2005, Sycamore Canyon Boulevard bisected the subject property and by 2009, the configuration of Sycamore Canyon Boulevard was altered to be located immediately west of the site, as it is currently.

5.2 Summary of Historical Land Use of Adjoining Properties

The site vicinity has been vacant land or used for residential purposes from at least 1955. The Moreno Valley Freeway, located north and northeast of the site has been present since at least 1955.

5.3 Fire Insurance Rate Maps

The site is currently undeveloped land; no historical structures or buildings have been constructed on the site or in the immediate site vicinity. Sanborn Fire Insurance Rate Maps (Sanborn maps) were developed by Sanborn for the fire insurance business. The maps were developed to evaluate building designs for fire insurance coverage. The Sanborn maps present the building types, construction details, and possible uses. These maps, when available, are sometimes useful to determine chemical uses on a property. Due to the fact that no structures have been built on the site and the location of the property away from urban development, historical Sanborn maps are not available for this property.

5.4 Historical Aerial Photographs

Historical aerial photographs for selected years between 1966 and 2012 were reviewed from NETR's historic aerial database. The following presents a summary of our review.

- **1966, 1977, 1978, 1994, 2002 and 2005** – The site is vacant and Sycamore Canyon Boulevard bisected the property in a north to south direction. The Moreno Valley Freeway is depicted in its current configuration. Along the southern boundary, Central Avenue stopped at Sycamore Canyon Boulevard. The site vicinity is mostly vacant, with the exception of some residential buildings sparsely located immediately west of the site and to the south of the site. By 1978, Central Avenue extended west of Sycamore Canyon Boulevard, in its current configuration. By 2002, the residential buildings to the west were removed.

- **2009, 2010, and 2012 –** Sometime after 2005 and before 2009, Sycamore Canyon Boulevard was redirected in its current configuration. The remaining properties in the site vicinity appeared as they did during the site reconnaissance.

5.5 Building Department

The City of Riverside Building and Safety Department (RBSD) maintains building permits for the site and surrounding properties. Ardent inquired with the RBSD as to whether an address had been issued to the subject property. According to the RBSD, no addresses have been issued. According to the KA Enterprises, the County of Riverside has not assigned an APN to the site.

5.6 City Directories

The site and site vicinity has historically been vacant, undeveloped land and has not been occupied by businesses or structures. City directories are not available for this property or the surrounding land.

As noted in Section 5.4, Sycamore Canyon Boulevard historically bisected the property in a north to south direction, prior to being realigned to its current configuration. During completion of the site reconnaissance, markings associated with a natural gas pipeline and vertical vent lines (possibly for sewer or storm drains) were noted in this former street location. Based on this information, underground utilities are located through the site in the location of the former alignment of Sycamore Canyon Boulevard. Based on the type of underground pipelines (municipal utilities), these features would not be considered an environmental concern to the site.

5.7 Historical Topographic Maps

Historical topographic maps for the site were reviewed from NETR's historic aerial database. The maps provided for the site were dated 1901, 1905, 1911, 1927, 1939, 1942, 1955, 1960, 1962, 1969, 1974, 1980, and 1984. No structures were noted on-site on the topographic maps dating from 1901 to 1984. From at least 1955 to present day, the topographic maps depicted the Moreno Valley Freeway. From at least 1955 to 1962, four buildings were noted immediately west of the site and one building south of the site. Topographic maps from 1969 to 1984 depicted only two buildings immediately west of the site and more buildings south of the site.

5.8 Interviews

Interviews were conducted with site personnel (e.g., past and present owners, operators, and/or occupants) by Ardent because the land is and has been historically unoccupied.

5.8.1 Interview with Owner

The owner was not available to be interviewed during this assessment.

5.8.2 Interview with Site Manager

No Site Manager was available to be interviewed. Ardent interviewed Mr. Eugene Marini of KA Enterprises regarding the site. Mr. Marini indicated that no APN number had been issued to the site by the County of Riverside, and was unaware of any environmental concerns related to the site or properties in the site vicinity.

5.8.3 Interviews with Occupant

The site contains no occupants, and therefore, no occupants could be interviewed.

5.8.4 Interviews with Local Government Officials

Local government officials were interviewed during completion of this Phase I ESA. Information obtained is presented throughout this report.

5.8.5 Interviews with Others

No other interviews were completed.

5.9 Previous Reports and Documents

No previous environmental reports or documents were provided by the client or obtained in regulatory files during completion of this Phase I ESA.

6 SITE RECONNAISSANCE

The site and site vicinity reconnaissance was performed by Ardent on August 21, 2017. The site reconnaissance involved a walking tour of the site and visual observations of adjoining properties. At the time of the site reconnaissance, the weather was sunny and there were no weather related obstructions at the site. Selected photographs taken during these activities are included in Appendix A. At the time of the site reconnaissance, the site was vacant undeveloped land sporadically covered with dry vegetation (Figure 2).

6.1 Use and Storage of Hazardous Substances and Petroleum Products

No use or storage of hazardous substances or petroleum products were noted at the site.

6.2 Storage and Disposal of Hazardous Wastes

No storage or disposal of hazardous wastes were observed during the site reconnaissance.

6.3 Unidentified Substance Containers

No unidentified substance containers were observed during the site reconnaissance.

6.4 ASTs and USTs

No evidence of ASTs or USTs were observed during the site reconnaissance.

6.5 Evidence of Releases

No evidence of chemical releases on the site, such as odors, stressed vegetation, stains, leaks, pools of liquids, and spills, were observed during the site reconnaissance.

6.6 PCBs

Historically, PCBs (a group of hazardous substances and suspected human carcinogens) were widely used as an additive in cooling oils for electrical components. Typical sources of PCBs can include electrical transformers. No electrical transformers were noted.

6.7 Suspect ACM

The manufacture of most ACM was phased out in the 1970s, ending in 1980. Previously manufactured ACM that were in stock continued to be used through approximately 1981. Some non-friable ACM are still manufactured. In general, buildings constructed after 1981 have a negligible potential to contain friable ACM and a low potential for most non-friable ACM. No structures or buildings have been built on the site, therefore, ACM are not present.

6.8 LBP

The manufacture of LBP was phased out in approximately 1978. No structures or buildings have been built on the site, therefore, LBP are not present.

6.9 Indications of Water Damage or Mold Growth

There are no buildings on the site, therefore, no visual indications of water damage or visible mold growth were noted.

6.10 Wastewater Systems

No wastewater systems were observed during the site reconnaissance.

6.11 Stormwater Systems

No stormwater drains were noted at the site.

6.12 Wells

No groundwater wells (i.e. monitoring, production, etc.) were noted or reportedly used at the site.

6.13 Other Subsurface Structures

No other subsurface structures, such as clarifiers, sumps, or pit were observed. It should be noted that a natural gas pipeline marker was noted in the approximate center of the site indicating that a natural gas line might be present in a north/south direction. This feature would not be considered an environmental concern to the site.

6.14 Other Issues

No other on- or off-site issues of environmental concern were noted.

7 ENVIRONMENTAL DATABASE SEARCH

A computerized environmental information database search was performed by Environmental Data Resources Inc. (EDR), of Shelton, Connecticut, for this Phase I ESA on August 17, 2017. The database search included federal, state, local, and tribal databases. A summary of the environmental databases searched, their corresponding search radii, and number of noted facilities of environmental concern is presented in Appendix C. In addition, a description of the assumptions and approach to the database search is also provided in Appendix C. The review was conducted to evaluate whether the site or properties within the vicinity of the site have been reported as having experienced significant unauthorized releases of hazardous substances or other events with potentially adverse environmental effects.

No unmapped properties, due to poor or inadequate address information, were identified in the database report. The following paragraphs describe the databases that contain noted properties of environmental concern, and include a discussion of the regulatory status of the facilities and potential environmental impact to the subject site.

7.1 Federal National Priorities List (NPL): Distance Searched – 1 mile

The NPL is the USEPA's database of uncontrolled or abandoned hazardous waste properties identified for priority remedial actions under the Superfund program. This database includes proposed NPL listings.

Neither the site nor properties within a 1 mile radius were listed on this database.

7.2 Federal Delisted NPL: Distance Searched – 1 mile

This database contains delisted NPL properties under the Superfund program. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the USEPA uses to delete properties from the NPL. In accordance with 40 Code of Federal Regulations (CFR) 300.425. (e), properties may be deleted from the NPL where no further response is appropriate.

Neither the site nor properties within a 1 mile radius were listed on this database.

7.3 Federal Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) List: Distance Searched – 0.5 mile

The CERCLIS database has been replaced by the Superfund Enterprise Management System (SEMS) database, which tracks hazardous waste sites and remedial activities performed in support of the EPA's Superfund Program. This database also includes properties listed on the SEMS-ARCHIVE database for facilities with statuses of No Further Remedial Action Planned (NFRAP).

Neither the site nor properties within a 0.5-mile radius were listed on these databases.

7.4 Federal Corrective Action Report (CORRACTS): Distance Searched – 1 mile

The USEPA maintains this database of Resource Conservation and Recovery Act (RCRA) facilities that are undergoing corrective action. A corrective action order is issued when

there has been a release of hazardous waste or constituents into the environment from a RCRA facility.

Neither the site nor properties within a 1-mile radius were listed on this database.

7.5 Federal Resource Conservation and Recovery Act (RCRA) Treatment, Storage, and Disposal (TSD) Facilities List: Distance Searched – 0.5 mile

The RCRA TSD database (non-CORRACTS) is a compilation by the EPA of facilities that report generation, storage, transportation, treatment, or disposal of hazardous waste.

Neither the site nor properties within a 0.5-mile radius were listed on this database.

7.6 Federal RCRA Generators List: Distance Searched – Site and Adjoining Properties

This list identifies sites that generate hazardous waste as defined by RCRA. Inclusion on this list is for permitting purposes and is not indicative of a release.

Neither the site nor adjoining properties were listed on this database.

7.7 Federal Institutional Control/Engineering Control Registries: Distance Searched – Site

These lists identify properties with engineering and/or institutional controls. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or affect human health. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on the site. Deed restrictions are generally required as part of the institutional controls.

The site was not listed on this database.

7.8 Federal Emergency Response Notification System (ERNS) List: Distance Searched – Site

The ERNS database, maintained by the USEPA, contains information on reported releases of oil and hazardous substances.

The site was not listed on this database.

7.9 Federal Brownfield List: Distance Searched – 0.5 mile

The USEPA Brownfield database, entitled Targeted Brownfield's Assessments (TBA), lists properties for which the USEPA is providing funding and/or technical support for environmental assessments and investigations. The objective of the TBA is to promote cleanup and redevelopment of undesirable properties with environmental issues.

Neither the site nor properties within a 0.5-mile radius were listed on this database.

7.10 State Calsites Database (Calsites) or State-Equivalent CERCLIS: Distance Searched – 1 mile

The Calsites database, also known as the State-equivalent CERCLIS, is maintained by the Cal-EPA Department of Toxic Substance Control (DTSC). This database contains information on AWP and both known and potentially contaminated properties. These properties are presented by EDR on the EnviroStor databases.

Neither the site nor properties within a 1-mile radius were listed on this database.

7.11 State Solid Waste Landfill Sites (SWLF): Distance Searched – 0.5 mile

The SWLF database consists of open and closed solid waste disposal facilities and transfer stations. The data comes from the Integrated Waste Management Board's Solid Waste Information System (SWIS) and the SWRCB Waste Management Unit Database (WMUD) database.

Neither the site nor properties within a 0.5-mile radius were listed on this database.

7.12 State Leaking Underground Storage Tank (LUST) Lists: Distance Searched – 0.5 mile

The LUST information system is obtained from by the SWRCB and the RWQCB.

Neither the site nor properties within a 0.5-mile radius were listed on this database.

7.13 State Underground Storage Tank (UST) and Aboveground Storage Tank (AST) Registration List: Distance Searched – Site and Adjoining Properties

UST and AST databases are provided by the SWRCB. Inclusion on these lists is for permitting purposes and is not indicative of a release.

Neither the site nor adjoining properties were listed on this database.

7.14 State Voluntary Cleanup Programs (VCPs): Distance Searched – 0.5 mile

The State VCP database lists low threat level properties with either confirmed or unconfirmed releases. Project proponents have requested that the DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Neither the site nor properties within a 0.5-mile radius were listed on this database.

7.15 Indian Reservations: Distance Searched – 1 mile

This list depicts Indian administered lands of the United States that have an area equal to or greater than 640-acres. No Indian Reservations were listed within a 1-mile radius from the site. Due to the lack of Indian Reservations within 1-mile of the site, other tribal database listings required by ASTM and AAI were deemed not applicable. These listings would include tribal-equivalent NPL, CERCLIS, Landfill and/or Solid Waste Disposal, LUST, UST and AST Registrations, Institutional Control/Engineering Control Registries, VCPs, and Brownfields.

Neither the site nor properties within a 1-mile radius were listed on this database.

7.16 Other Non-ASTM and AAI Database: Distance Searched – Site

Other databases were included in the EDR report, but are not required by ASTM or AAI. Based on our review, the site is not was listed on these databases.

8 REGULATORY RECORDS REVIEW

The RWQCB, DTSC, South Coast Air Quality Management District (SCAQMD), and County of Riverside Department of Environmental Health (DEH) are lead regulatory agencies for permitting and regulating USTs, ASTs, LUST cases, and facilities that use, store, or generate hazardous waste or hazardous materials. Ardent was able to use the site location to research public records on the RWQCB and DTSC on-line databases because these agencies use property locations as noted on a map to file information. SCAQMD and DEH use addresses or APNs to file its information. Since the site has not been assigned an address or APN, no records were obtained from these agencies.

8.1 Regional Water Quality Control Board, Santa Ana Region (RWQCB)

Ardent reviewed information on the SWRCB's GeoTracker website. The site was not listed.

8.2 Department of Toxic Substances Control (DTSC)

Ardent reviewed state and federal case file listings on the DTSC's EnviroStor website. The site was not listed.

9 VAPOR ENCROACHMENT CONDITION (VEC)

Ardent completed a VEC study for the site using Tier 1 criteria as recommended by ASTM E 2600-15. The Tier 1 screening identifies surrounding facilities that pose a possible vapor intrusion source to the site based on the results of the Phase I ESA investigations and certain criteria outlined by ASTM. These criteria include a certain distance from the target site (referred to by ASTM as within the "area of concern"); the types of chemicals used (referred to by ASTM as the "chemicals of concern"); and a plume test to determine if the plume associated with a source of contamination is close enough to the site to impact indoor air quality. Based on our review of regulatory records, files, databases, client furnished data, site reconnaissance activities, and former remediation efforts, the site would be considered a "low risk" for vapor intrusion.

10 FINDINGS, OPINIONS AND CONCLUSIONS

Based upon the results of this Phase I ESA the following findings, opinions and conclusions are provided.

10.1 Findings and Opinions

The following presents a summary of the findings and opinions associated with this Phase I ESA performed for the site, including known or suspect RECs, controlled RECs, and de minimus environmental conditions (i.e., conditions that generally do not present a material risk of harm to public health or the environment).

- From at least 1966 through the present, the site has consisted of vacant land. From at least 1966 through 2005, Sycamore Canyon Boulevard bisected the subject property and by 2009, the configuration of Sycamore Canyon Boulevard was altered to be located immediately west of the site, as it is currently. Underground municipal utility pipelines are located through the site in the vicinity of the former alignment of Sycamore Canyon Boulevard. Based on the type of pipelines (i.e. municipal utilities), these features would not be considered an environmental concern to the site.

- The site is located in a hilly area at the base of the Box Springs Mountains. Alluvial deposits overlie fractured bedrock. There was no readily available information regarding depth to groundwater for the site or on properties within the general site vicinity. Groundwater is expected to traverse through fractured bedrock at an unknown depth. Direction of flow is expected to follow surface topography away from the Box Springs Mountains in a southwesterly direction.
- The site consists of vacant land; therefore, ACMs and LBP are not present.
- No other on- or off-site environmental concerns were noted.

10.2 Conclusions

Ardent has performed this Phase I ESA and Document Review in general conformance with the scope and limitations of the ASTM Practice E 1527-13, ASTM Practice E 2600-15, and the EPA Standards and Practices for AAI, Final Rule (40 CFR, Part 312), for the property located on the northeast corner of the intersection of Central Avenue and Sycamore Canyon Boulevard in the city of Riverside, California. Any limitations or exceptions encountered during completion of this report are stated in Section 1.4. Based on this Phase I ESA, no evidence or indication of RECs, or conditions indicative of releases or threatened releases of hazardous substances on, at, in, or to the site has been revealed.

11 RECOMMENDATIONS

Based on the results of this assessment, Ardent has no recommendations for further investigations at this time.

12 SELECTED REFERENCES

Environmental Database Resources (EDR), 2017, Radius Map, dated August 17.

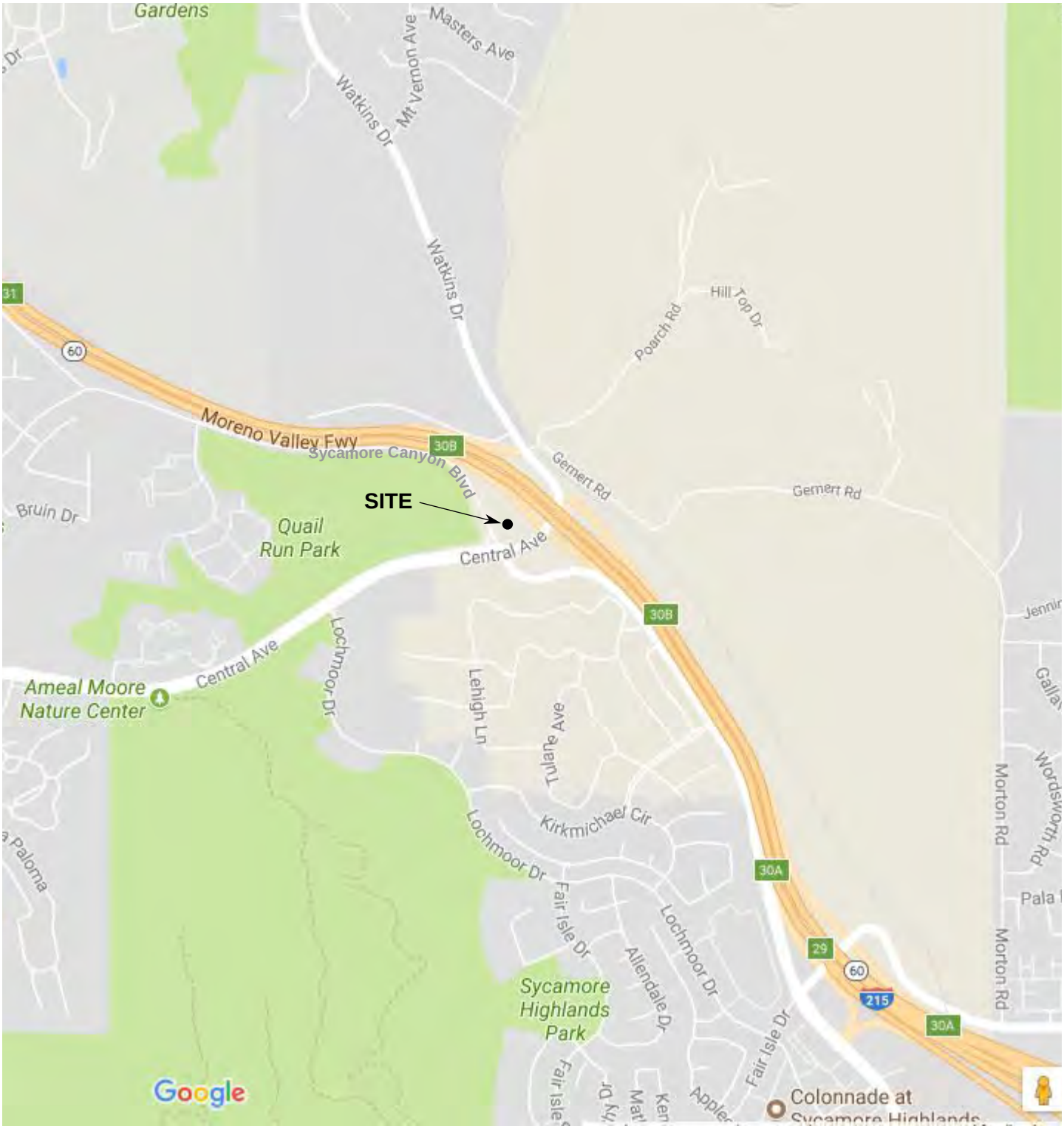
13 QUALIFICATIONS STATEMENT AND SIGNATURE OF ENVIRONMENTAL PROFESSIONAL

Mr. Paul Roberts states that the Phase I ESA was performed under his direct supervision, and that he has reviewed and approved the report, and the methods and procedures employed in the development of the report conform to the minimum industry standards. Mr. Roberts certifies that Ardent project personnel and subcontractors are properly licensed and/or certified to do the work described herein.

Pursuant to Paragraph 12.13 of the ASTM Standard E1527-13:

I declare that, to the best of my professional knowledge and belief, I meet the definition of *Environmental professional* as defined in §312.10 of 40 CFR 312. I have the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the site. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Paul Roberts
Principal Geologist



NO SCALE

NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

ARDENT ENVIRONMENTAL GROUP, INC.	PROJECT NO. **100873002**	**SITE LOCATION MAP**	FIGURE
	DATE **08/17**	NEC OF CENTRAL AVENUE AND SYCAMORE CANYON BOULEVARD RIVERSIDE, CALIFORNIA	1

1. Vacant Land

2. California Department of Transportation Land

LEGEND

Approximate Site Boundary

N

NO SCALE

NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

ARDENT ENVIRONMENTAL GROUP, INC.

PROJECT NO. 100873002	SITE VICINITY MAP	FIGURE
DATE 08/17	NEC OF CENTRAL AVENUE AND SYCAMORE CANYON BOULEVARD RIVERSIDE, CALIFORNIA	2

APPENDIX A

PHOTOGRAPHIC DOCUMENTATION

Photograph No. 1: The northern portion of the site, looking South.

Photograph No. 2: Eastern portion of the site, looking south.

Photograph No. 3: Southeast portion of the site, looking northwest.

Photograph No. 4: Southwestern portion of the site, looking northeast.

Photograph No. 5: Western portion of the site, looking south.

Photograph No. 6: A natural gas line located in the central portion of the site.

Photograph No. 7: Caltrans land and Moreno Valley Freeway, located immediately north and east of the site.

Photograph No. 8: Central Avenue located immediately south of the site.

Photograph No. 9: Sycamore Canyon Boulevard located immediately west of site.

APPENDIX B

USER PROVIDED INFORMATION

PHASE I ENVIRONMENTAL SITE ASSESSMENT (ESA)
USER QUESTIONNAIRE

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the "*Brownfields Amendments*"), the *user of the Phase I ESA* must provide the following information (if available) to the *environmental professional.* Failure to provide this information could result in a determination that "*all appropriate inquiry*" is not complete.

Project Information	
Facility Name and Address:	NEC of Central Ave & Sycamore canyon Blvd.
Reason for the Phase I ESA:	Entitlement
Type of Property:	Land
Site Owner and Contact Information:	KA Melrose llc c/o - Eugene Marini 5820 Oberlin Dr ste 201, San Diego CA 92121
Site Contact Name and Contact Information:	Eugene Marini 619 820 6180
Tax Assessors Parcel Number (APN):	N/A.

	Yes	No
1. Are you aware of any environmental cleanup liens against the subject property that are filed or recorded under federal, state, or local law?		/
2. Are you aware of any activity use limitations, such as engineering controls (engineered caps, liners, treatment methods, etc.), land use restrictions, or institutional controls (administrative measures restricting groundwater use, construction, or property use, etc.) that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state, or local law?		/
3. Do you have any specialized knowledge or experience related to the subject property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the subject property so that you would have specialized knowledge of the chemicals or processes used by this type of business?		/
4a. Does the purchase price being paid for the subject property reasonably reflect the fair market value of the subject property?	/	
4b. If you conclude that there is a difference in fair market price, have you considered whether the lower purchase price is because contamination is known or believed to be present at the *property*?		
5. Are you aware of any commonly known or reasonably ascertainable information about the subject property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as a user,		/
5 (a) Do you know of the past uses of the property?		/
5 (b) Do you know of any specific chemicals that are present or were once present on the subject property?		/
5 (c) Do you know of spills or other chemical releases that have taken place at the subject property?		/

5 (d) Do you know of any environmental cleanups that have taken place at the subject property?		✓
6. As the user of this ESA, based on your knowledge and experience related to the subject property, are there any obvious indicators that point to the presence or likely presence of contamination at the subject property?		✓

If you answered "yes" to any of the questions (except 4a) above, please provide more detail below, or attach additional information to this document:

Name and title of person completing questionnaire: (Please Print)	
Eugene Marini, Authorized Manager	
Signature of person completing questionnaire:	Date:
	8/18/17

APPENDIX C

ENVIRONMENTAL DATABASE REPORT

Central Avenue / Sycamore Canyon Boulevard
Central Avenue / Sycamore Canyon Boulevard
Riverside, CA 92507

Inquiry Number: 5025469.2s
August 17, 2017

The EDR Radius Map™ Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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GEOCHECK ADDENDUM

GeoCheck - Not Requested

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

CENTRAL AVENUE / SYCAMORE CANYON BOULEVARD
RIVERSIDE, CA 92507

COORDINATES

Latitude (North):	33.9588240 - 33˚ 57' 31.76''
Longitude (West):	117.3109830 - 117˚ 18' 39.53''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	471266.8
UTM Y (Meters):	3757439.8
Elevation:	1378 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5641312 RIVERSIDE EAST, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140603
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
CENTRAL AVENUE / SYCAMORE CANYON BOULEVARD
RIVERSIDE, CA 92507

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ..... National Priority List
Proposed NPL ..... Proposed National Priority List Sites
NPL LIENS ..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ..... National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ..... Federal Facility Site Information listing
SEMS ..... Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ..... Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small Quantity Generators
RCRA-CESQG ..... RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ..... Land Use Control Information System
US ENG CONTROLS ..... Engineering Controls Sites List

EXECUTIVE SUMMARY

US INST CONTROL..... Sites with Institutional Controls

Federal ERNS list

ERNS..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE..... State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR..... EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF..... Solid Waste Information System

State and tribal leaking storage tank lists

LUST..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land
SLIC..... Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST..... Underground Storage Tank Listing
UST..... Active UST Facilities
AST..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP..... Voluntary Cleanup Program Properties
INDIAN VCP..... Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT..... Waste Management Unit Database
SWRCY..... Recycler Database
HAULERS..... Registered Waste Tire Haulers Listing
INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands
ODI..... Open Dump Inventory
DEBRIS REGION 9..... Torres Martinez Reservation Illegal Dump Site Locations

EXECUTIVE SUMMARY

IHS OPEN DUMPS ..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ..... Delisted National Clandestine Laboratory Register
HIST Cal-Sites ..... Historical Calsites Database
SCH ..... School Property Evaluation Program
CDL ..... Clandestine Drug Labs
Toxic Pits ..... Toxic Pits Cleanup Act Sites
US CDL ..... National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

SWEEPS UST ..... SWEEPS UST Listing
HIST UST ..... Hazardous Substance Storage Container Database
CA FID UST ..... Facility Inventory Database

Local Land Records

LIENS ..... Environmental Liens Listing
LIENS 2 ..... CERCLA Lien Information
DEED ..... Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System
CHMIRS ..... California Hazardous Material Incident Report System
LDS ..... Land Disposal Sites Listing
MCS ..... Military Cleanup Sites Listing
SPILLS 90 ..... SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR ..... RCRA - Non Generators / No Longer Regulated
FUDS ..... Formerly Used Defense Sites
DOD ..... Department of Defense Sites
SCRD DRYCLEANERS ..... State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ..... Financial Assurance Information
EPA WATCH LIST ..... EPA WATCH LIST
2020 COR ACTION ..... 2020 Corrective Action Program List
TSCA ..... Toxic Substances Control Act
TRIS ..... Toxic Chemical Release Inventory System
SSTS ..... Section 7 Tracking Systems
ROD ..... Records Of Decision
RMP ..... Risk Management Plans
RAATS ..... RCRA Administrative Action Tracking System
PRP ..... Potentially Responsible Parties
PADS ..... PCB Activity Database System
ICIS ..... Integrated Compliance Information System
FTTS ..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ..... Material Licensing Tracking System
COAL ASH DOE ..... Steam-Electric Plant Operation Data
COAL ASH EPA ..... Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ..... PCB Transformer Registration Database

EXECUTIVE SUMMARY

RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
UXO	Unexploded Ordnance Sites
ECHO	Enforcement & Compliance History Information
DOCKET HWC	Hazardous Waste Compliance Docket Listing
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
ICE	ICE
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historic Gas Stations
EDR Hist Cleaner	EDR Exclusive Historic Dry Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List
RGA LUST	Recovered Government Archive Leaking Underground Storage Tank

EXECUTIVE SUMMARY

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

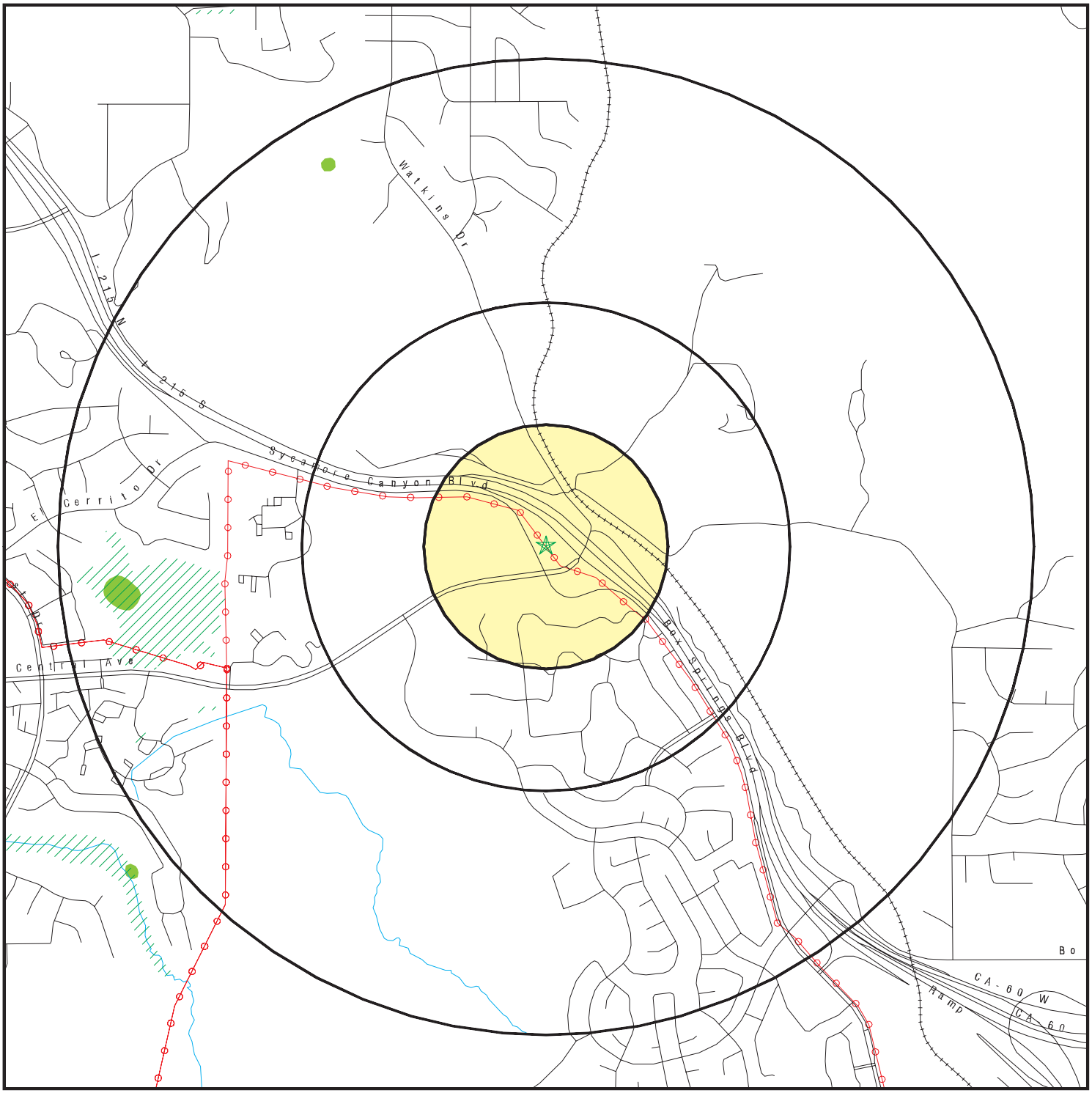
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 2 records.

Site Name	Database(s)
	CDL
	CDL

OVERVIEW MAP - 5025469.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

0 1/4 1/2 1 Miles

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Central Avenue / Sycamore Canyon Boulevard ADDRESS: Central Avenue / Sycamore Canyon Boulevard Riverside CA 92507 LAT/LONG: 33.958824 / 117.310983	CLIENT: Ardent Environmental Group CONTACT: Ricardo Munoz INQUIRY #: 5025469.2s DATE: August 17, 2017 3:11 pm

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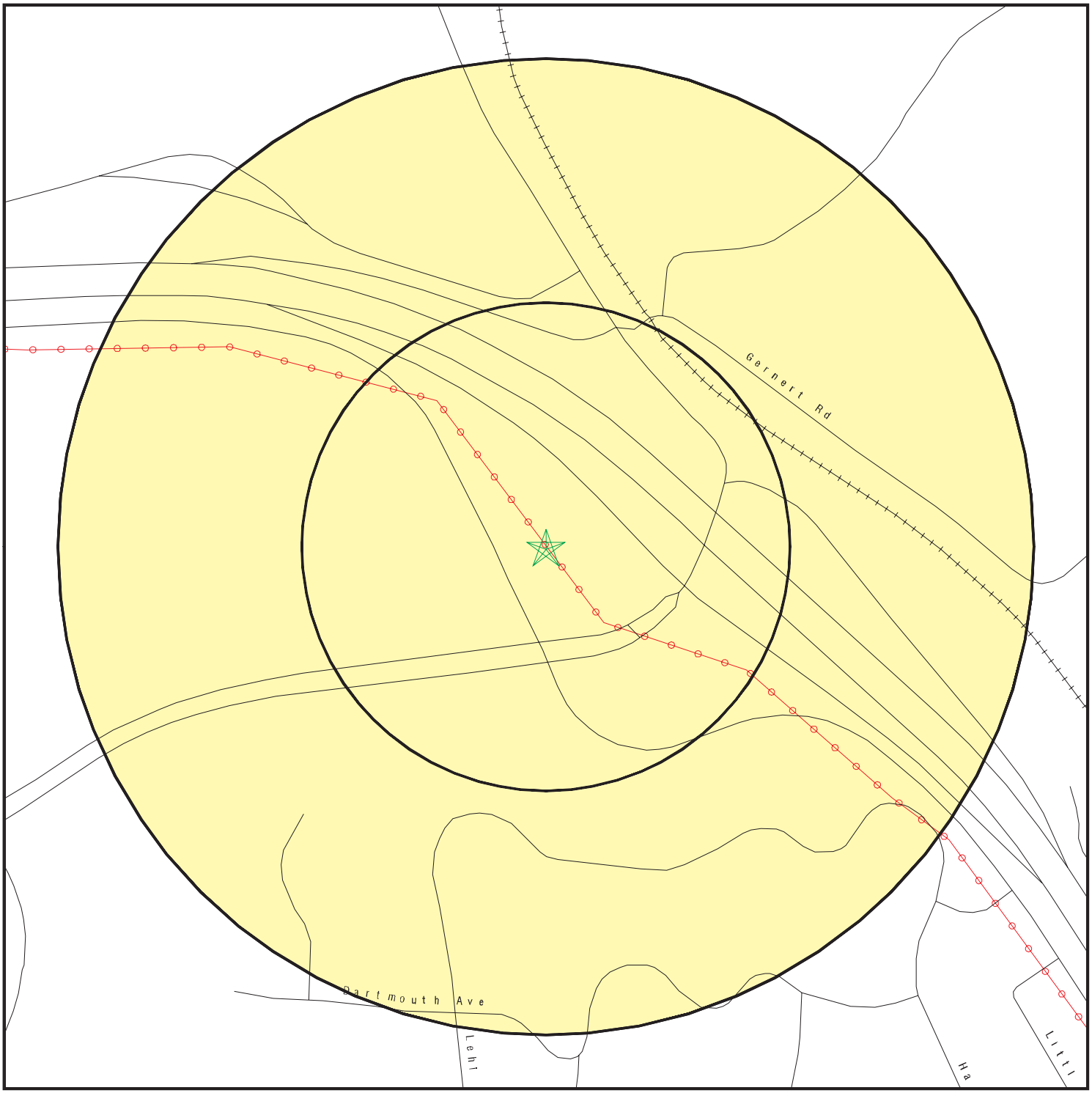
DETAIL MAP - 5025469.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Central Avenue / Sycamore Canyon Boulevard ADDRESS: Central Avenue / Sycamore Canyon Boulevard Riverside CA 92507 LAT/LONG: 33.958824 / 117.310983	CLIENT: Ardent Environmental Group CONTACT: Ricardo Munoz INQUIRY #: 5025469.2s DATE: August 17, 2017 3:13 pm

Copyright © 2017 EDR, Inc. © 2015 TomTom Rel. 2015.

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
ICE	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	0	0	0	0	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

Count: 2 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
RIVERSIDE	S107538951		CENTRAL AVENUE AND CHICAGO, IN		CDL
RIVERSIDE	S107538777		HILLTOP DR & CENTRAL		CDL

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/05/2017
Date Data Arrived at EDR: 04/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 21

Source: EPA
Telephone: N/A
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/05/2017
Date Data Arrived at EDR: 04/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 21

Source: EPA
Telephone: N/A
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/05/2017	Source: EPA
Date Data Arrived at EDR: 04/21/2017	Telephone: N/A
Date Made Active in Reports: 05/12/2017	Last EDR Contact: 07/07/2017
Number of Days to Update: 21	Next Scheduled EDR Contact: 10/16/2017
	Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016	Source: Environmental Protection Agency
Date Data Arrived at EDR: 01/05/2017	Telephone: 703-603-8704
Date Made Active in Reports: 04/07/2017	Last EDR Contact: 07/07/2017
Number of Days to Update: 92	Next Scheduled EDR Contact: 10/16/2017
	Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/07/2017	Source: EPA
Date Data Arrived at EDR: 04/19/2017	Telephone: 800-424-9346
Date Made Active in Reports: 05/05/2017	Last EDR Contact: 07/21/2017
Number of Days to Update: 16	Next Scheduled EDR Contact: 10/30/2017
	Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 01/04/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 93

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 101

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/31/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 101

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/31/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/26/2016
Date Data Arrived at EDR: 09/29/2016
Date Made Active in Reports: 11/11/2016
Number of Days to Update: 43

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/15/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 76

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/17/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Semi-Annually

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/07/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/06/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/17/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 09/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/14/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 03/12/2017
Date Data Arrived at EDR: 03/16/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 57

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/14/2017
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/07/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Semi-Annually

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 10/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Semi-Annually

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/17/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/06/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 06/27/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 01/03/2017
Date Data Arrived at EDR: 01/04/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 57

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 03/02/2017
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/20/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 05/31/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 76

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/24/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 02/09/2017
Date Data Arrived at EDR: 03/08/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 93

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 54

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 08/14/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/09/2017
Date Data Arrived at EDR: 03/08/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 93

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/31/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 67

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 03/06/2017
Date Data Arrived at EDR: 03/07/2017
Date Made Active in Reports: 04/21/2017
Number of Days to Update: 45

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/02/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/18/2014
Date Data Arrived at EDR: 03/18/2014
Date Made Active in Reports: 04/24/2014
Number of Days to Update: 37

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/26/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/10/2017
Number of Days to Update: 65

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 06/06/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 37

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/06/2016
Date Data Arrived at EDR: 01/25/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 105

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 07/26/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 49

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 02/24/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/12/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/14/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/19/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/15/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 11/24/2015
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 133

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/26/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 11/25/2013
Date Data Arrived at EDR: 12/12/2013
Date Made Active in Reports: 02/24/2014
Number of Days to Update: 74

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2017
Date Data Arrived at EDR: 02/09/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/24/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 08/08/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 01/20/2016
Date Data Arrived at EDR: 04/28/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 127

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/19/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/19/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 06/05/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/05/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/04/2017
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 35

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/12/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 11/18/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 77

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/24/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/26/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/11/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 12/23/2016
Date Data Arrived at EDR: 12/27/2016
Date Made Active in Reports: 02/17/2017
Number of Days to Update: 52

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 12/05/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 38

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 05/31/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing
This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/31/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 06/02/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/14/2017
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 21

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/04/2017
Date Data Arrived at EDR: 04/07/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 35

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 06/07/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 06/02/2016
Date Data Arrived at EDR: 06/03/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 91

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 03/19/2017
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 06/07/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 10/25/2015
Date Data Arrived at EDR: 01/29/2016
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 67

Source: Department of Defense
Telephone: 571-373-0407
Last EDR Contact: 07/17/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/22/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 79

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 64

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 42

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 07/13/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Annually

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 147

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/23/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 05/01/2017
Date Data Arrived at EDR: 05/03/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 104

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 67

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 05/16/2017
Date Data Arrived at EDR: 05/19/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 88

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 10/12/2016
Date Made Active in Reports: 12/15/2016
Number of Days to Update: 64

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/12/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 11/21/2016
Date Data Arrived at EDR: 11/22/2016
Date Made Active in Reports: 01/23/2017
Number of Days to Update: 62

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 11/21/2016
Date Data Arrived at EDR: 11/22/2016
Date Made Active in Reports: 01/23/2017
Number of Days to Update: 62

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/11/2017
Date Data Arrived at EDR: 04/13/2017
Date Made Active in Reports: 04/26/2017
Number of Days to Update: 13

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/12/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/12/2016
Date Data Arrived at EDR: 09/14/2016
Date Made Active in Reports: 10/14/2016
Number of Days to Update: 30

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Varies

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 12/02/2016
Date Data Arrived at EDR: 12/06/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 86

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 06/06/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 11/15/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 107

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/17/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 12/06/2016
Date Data Arrived at EDR: 12/06/2016
Date Made Active in Reports: 03/03/2017
Number of Days to Update: 87

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 06/07/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 12/16/2016
Date Data Arrived at EDR: 12/22/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 70

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 06/16/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 01/20/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water board?s review found that more than one-third of the region?s active disposal pits are operating without permission.

Date of Government Version: 04/15/2015
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/23/2015
Number of Days to Update: 67

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 07/14/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 06/27/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/10/2017
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 31

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/10/2017
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 21

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List

Cupa Facility List

Date of Government Version: 06/20/2017
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 49

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 06/16/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 04/25/2017
Date Data Arrived at EDR: 04/27/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 104

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 06/27/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 02/23/2017
Date Data Arrived at EDR: 02/24/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 77

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 05/26/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 58

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 07/31/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 05/02/2017
Date Data Arrived at EDR: 05/04/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 92

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 06/19/2017
Date Data Arrived at EDR: 06/20/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 50

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 07/31/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/30/2017
Date Data Arrived at EDR: 07/05/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 30

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 12/02/2016
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 111

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 03/20/2017
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 57

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

IMPERIAL COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 04/24/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 101

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 06/08/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 56

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 06/02/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 02/10/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 81

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 03/06/2017
Date Data Arrived at EDR: 03/07/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 71

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 05/09/2017
Date Data Arrived at EDR: 05/11/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 90

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 07/17/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/13/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 101

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 06/16/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 11/18/2016
Date Made Active in Reports: 01/23/2017
Number of Days to Update: 66

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/17/2017
Date Data Arrived at EDR: 04/18/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 14

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 07/18/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2016
Date Data Arrived at EDR: 01/26/2016
Date Made Active in Reports: 03/22/2016
Number of Days to Update: 56

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/13/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 03/29/2016
Date Data Arrived at EDR: 04/06/2016
Date Made Active in Reports: 06/13/2016
Number of Days to Update: 68

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 07/17/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/17/2017
Date Data Arrived at EDR: 01/18/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 112

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 07/13/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 01/10/2017
Date Data Arrived at EDR: 01/13/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 110

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 06/01/2017
Date Data Arrived at EDR: 06/02/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 63

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 03/31/2017
Date Data Arrived at EDR: 04/06/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 27

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 02/22/2017
Date Data Arrived at EDR: 02/23/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 83

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 07/13/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List
CUPA Facility List

Date of Government Version: 02/21/2017
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 76

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 08/08/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 06/22/2017
Date Data Arrived at EDR: 06/23/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 47

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 03/15/2017
Date Data Arrived at EDR: 03/16/2017
Date Made Active in Reports: 05/09/2017
Number of Days to Update: 54

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 05/08/2017
Date Data Arrived at EDR: 05/09/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 92

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/06/2017
Date Data Arrived at EDR: 02/10/2017
Date Made Active in Reports: 04/21/2017
Number of Days to Update: 70

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 11/04/2016
Date Data Arrived at EDR: 11/11/2016
Date Made Active in Reports: 01/23/2017
Number of Days to Update: 73

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/06/2017
Date Data Arrived at EDR: 02/07/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 85

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/09/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 09/02/2016
Date Data Arrived at EDR: 09/06/2016
Date Made Active in Reports: 10/14/2016
Number of Days to Update: 38

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 06/02/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 06/19/2017
Date Data Arrived at EDR: 07/05/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 35

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/18/2017
Date Data Arrived at EDR: 04/20/2017
Date Made Active in Reports: 04/21/2017
Number of Days to Update: 1

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/19/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/19/2017
Date Data Arrived at EDR: 01/25/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 98

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/19/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/06/2017
Date Data Arrived at EDR: 04/04/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 127

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/06/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 11/08/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 56

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/06/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 11/30/2016
Date Data Arrived at EDR: 02/09/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 105

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 12/09/2016
Date Data Arrived at EDR: 12/13/2016
Date Made Active in Reports: 03/03/2017
Number of Days to Update: 80

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/07/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 69

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 06/07/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Quarterly

Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2015
Date Data Arrived at EDR: 11/07/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 58

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 06/05/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 02/28/2017
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 62

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/21/2017
Date Data Arrived at EDR: 03/23/2017
Date Made Active in Reports: 05/09/2017
Number of Days to Update: 47

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 06/16/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/16/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 54

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 06/02/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 03/15/2017
Date Data Arrived at EDR: 04/07/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 33

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/15/2017
Date Data Arrived at EDR: 04/07/2017
Date Made Active in Reports: 04/21/2017
Number of Days to Update: 14

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 02/22/2017
Date Data Arrived at EDR: 02/23/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 89

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 05/04/2017
Date Data Arrived at EDR: 05/08/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 80

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 11/29/2016
Date Data Arrived at EDR: 12/21/2016
Date Made Active in Reports: 12/22/2016
Number of Days to Update: 1

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/15/2017
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 47

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 06/27/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 43

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 01/04/2017
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 55

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 05/10/2017
Date Data Arrived at EDR: 05/16/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 85

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 07/17/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 12/02/2016
Date Data Arrived at EDR: 12/06/2016
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 35

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 06/02/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA Facility List
Cupa facilities

Date of Government Version: 05/01/2017
Date Data Arrived at EDR: 05/08/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 93

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 04/24/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

TULARE COUNTY:

CUPA Facility List
Cupa program facilities

Date of Government Version: 01/05/2017
Date Data Arrived at EDR: 02/10/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 104

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 04/27/2017
Date Data Arrived at EDR: 04/27/2017
Date Made Active in Reports: 08/10/2017
Number of Days to Update: 105

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/27/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 103

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 07/24/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 09/26/2016
Date Data Arrived at EDR: 10/27/2016
Date Made Active in Reports: 01/24/2017
Number of Days to Update: 89

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/24/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/27/2017
Date Data Arrived at EDR: 03/15/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 03/31/2017
Date Data Arrived at EDR: 04/06/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 27

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 01/30/2017
Date Data Arrived at EDR: 01/31/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 112

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 45

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/15/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 107

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 07/10/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/30/2017
Date Data Arrived at EDR: 02/01/2017
Date Made Active in Reports: 02/13/2017
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 07/22/2016
Date Made Active in Reports: 11/22/2016
Number of Days to Update: 123

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/17/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 06/19/2015
Date Made Active in Reports: 07/15/2015
Number of Days to Update: 26

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/13/2017
Date Made Active in Reports: 07/14/2017
Number of Days to Update: 92

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/12/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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APPENDIX D

RESUMES

RESUME OF PAUL A. ROBERTS
Principal Geologist

EDUCATION

Bachelor of Science, Geology, 1987, California State University, Fullerton, California

REGISTRATION AND CERTIFICATIONS

Professional Geologist, California PG 6897
Registered Geologist, Arizona RG 42445
Ventura County Well Inspector
OSHA 40-Hour Health and Safety Training (with annual updates)
OSHA 8-Hour Health and Safety Supervisor Training

EMPLOYMENT HISTORY

1986-1996 – Applied Geosciences Inc. (environmental consulting)
1996-1998 – ATC Associates (environmental consulting)
1998-2007 – Ninyo & Moore (environmental consulting)
2007-present – Ardent Environmental Group, Inc. (environmental consulting)

PROFESSIONAL EXPERIENCE AND RESPONSIBILITIES

As a Principal Geologist for Ardent Environmental Group, Inc., Mr. Roberts conducts and coordinates high-profile hydrogeologic and geologic field evaluations. Mr. Roberts also supervises staff- and project-level geologists, engineers, and scientists to complete the installation of groundwater monitoring wells and soil and groundwater remediation systems, as well as completing pilot tests and feasibility studies for remedial system design. Mr. Roberts is very familiar with mud- and air-rotary, sonic, direct-push, and hollow stem auger drilling techniques, and interprets geophysical data and soil physical analyses to design water well construction. As part of these tasks, Mr. Roberts interacts with clients, attorneys, and agency representatives. The following presents a partial list of projects supervised and/or completed by Mr. Roberts.

- **Water Replenishment District of Southern California (District), Santa Fe Springs:** California Professional Geologist retained to log and sample deep borings in preparation to install nested groundwater monitoring wells as part of the Central Basin Groundwater Contamination Study. The work was completed to assist the United States Geological Survey (USGS) and the District to find mergence zones or pathways where known volatile organic compound (VOC)-impacted shallow groundwater could be migrating into deeper water supply aquifers. The work included drilling pilot borings using mud-rotary drilling methods to depths of approximately 518 feet below the ground surface (bgs). During drilling activities, Mr. Roberts monitored drilling conditions, logged cuttings and collected soil samples for lithological interpretation. Following drilling activities, downhole geophysical equipment, including suspension velocity measurements, resistivity, spontaneous potential and natural gamma logging, and caliper and natural gamma logging, was used to further assess lithological conditions. Based on these data, Mr. Roberts assisted representatives from the USGS and District to design and oversee installation of 10 groundwater monitoring wells. Following installation, the wells were developed and sampled.

- **Former Ashland Chemical Plant, Santa Fe Springs:** Principal Geologist retained to log and sample deep borings for the installation of groundwater monitoring, extraction, and injection wells used to characterize and remediate VOC impacted groundwater associated with a former chemical plant. Sonic, mud-rotary, and hollow stem auger drilling methods were used to drill pilot borings to depths of up to 407 feet bgs. Hydropunch sampling results and soil physical analyses were used to design deep nested groundwater monitoring and remediation wells. Well development and sampling were also completed.

- **Former Optical Lens Manufacturing Facility, Costa Mesa:** Mr. Roberts is the Project Coordinator for an on-going VOC soil and groundwater investigation/remediation effort associated with a former optical lens manufacturing facility. The investigations are being completed under the direction and oversight of the Department of Toxic Substances Control (DTSC) as part of the regional Costa Mesa Site Discovery Project. Investigations have included the installation and sampling of groundwater monitoring wells, soil investigations and characterization, indoor air monitoring, and remedial design of a soil vapor extraction system (VES).

- **Former CENCO Refinery Properties, Santa Fe Springs**: Mr. Roberts supervised and coordinated the environmental activities associated with the acquisition and redevelopment of two properties formerly occupied by the CENCO Refinery. These properties, located immediately east and southeast of the main refinery, were used by CENCO and others for product storage and oil recycling. Oil field production and oil well drilling waste disposal was also historically associated with this land. Mr. Roberts worked with the City of Santa Fe Springs Fire Department and DTSC to investigate historical environmental issues; mitigate petroleum hydrocarbon and polychlorinated biphenyl (PCB)-impacted soil through on-site management by the installation of an impermeable cap (referred to as the "PCB-Capped Area") or by excavation; removal of underground storage tanks (USTs); methane gas assessment, mitigation design and implementation, and monitoring; groundwater well video logging and abandonment; and oil well abandonment. Currently, Mr. Roberts completes annual inspections and 5-year reviews of the PCB-Capped Area and supervises the annual monitoring of methane gas beneath the buildings.

- **Former Nissan North America Corporate Headquarters, Carson:** Project Geologist to oversee the characterization of petroleum hydrocarbon-impacted soil and groundwater associated with a release from a fuel UST. Mr. Roberts oversaw the installation of 15 groundwater monitoring wells and four vapor extraction wells. Following completion of a soil vapor extraction pilot test, Mr. Roberts designed and implemented a VES which successfully remediated the impacted soil. Groundwater remediation was completed using in-situ air stripping techniques.

- **Northwest Pipe Company Property, Jurupa Valley; Commerce Casino, Commerce; Rock-Lomita Property, Torrance; Former Ball Glass Plant, Torrance; and BMW of Riverside, Riverside:** Principal Geologist managing and coordinating environmental characterization of petroleum hydrocarbon or VOC-impacted soil associated with releases from historical manufacturing activities or USTs at a number of properties throughout Southern California. Tasks included the installation of soil remediation systems, completion of pilot studies, and the design and implementation of full-scale SVE systems. These systems were operated until effluent soil vapor concentrations and/or the results of confirmation soil samples met residential or commercial standards. During these operations,

Mr. Roberts interacted with lead regulatory agencies including the Regional Water Quality Control Board, DTSC, or local fire departments. Most of these facilities also included the installation and monitoring of groundwater monitoring wells. Some of these systems are on-going.

- **Port of Los Angeles:** Project Geologist managing several environmental projects for the Port of Los Angeles (POLA) under an on-call contract. Project Geologist interacting with POLA personnel regarding environmental issues associated with land purchases, tenant audits, and on-call remediation. Projects have involved removal of underground storage tanks at the Yang Ming Terminal and continued groundwater monitoring, and the implementation of a corrosion study at a potential automobile storage yard in the Port of Los Angeles.

- **Alameda Corridor Transportation Authority:** Project Geologist managing numerous environmental projects under an on-call remediation services contract. Projects have involved remediation of petroleum pipelines and impacted soil discovered during construction activities of the Alameda Corridor. One project involved dredging metal-impacted soil from the Port of Los Angeles, where Mr. Roberts acted as the liaison between POLA and ACTA representatives.

- **Riverside County Transportation Commission (RCTC):** Project Manager for several projects for RCTC. On one occasion, RCTC discovered impacted soil and a groundwater well during redevelopment of a property in Corona. As not to delay grading activities, Mr. Roberts successfully obtained an expedited groundwater well destruction permit with Riverside County, profiled the soil for excavation and disposal, and abandoned the well. The property was subsequently developed with a Metrolink station with minimal delays.

- **Jack in the Box and Qdoba Restaurants:** Since 1991, Mr. Roberts has acted as Project Geologist managing numerous Phase I Environmental Site Assessments and other environmental issues regarding real estate transactions for Jack in the Box Inc. Since most of the properties are corner parcels which contained historical gasoline stations, Mr. Roberts would subsequently manage and conduct Phase II Subsurface Investigations to assess whether impacted soil and/or groundwater exists at the site and, if present, characterize the extent of the contaminants. In June 2012, Jack in the Box Inc. and Qdoba Restaurants (owned by Jack in the Box Inc.) awarded Ardent Environmental Group, Inc. an on-call environmental management contract for all Jack in the Box and Qdoba properties throughout the United States. Mr. Roberts is the Project Manager for this contract which includes completing Preliminary Environmental Reviews of possible property acquisitions, completing and managing Phase I and Phase II Environmental Site Assessments and asbestos surveys, and on-call consultation regarding environmental issues and concerns.

ASSOCIATIONS

The Geological Society of America

RESUME OF RICARDO MUNOZ
Staff Geologist

EDUCATION

Bachelor of Science, Earth Science concentration in Environmental Geology, 2016, University of California, Santa Cruz

REGISTRATION AND CERTIFICATIONS

Grade 1 Water Treatment Operator Certification

EMPLOYMENT HISTORY

2017- present – Ardent Environmental Group, Inc. (environmental consulting)

PROFESSIONAL EXPERIENCE AND RESPONSIBILITIES

Mr. Munoz has a strong background in geology, chemistry and GIS which provides support in completing a variety of field and office tasks during environmental assessments, site characterization, and remediation projects. Tasks include development of work plans, drilling and sampling soil borings, vapor well installation and sampling, research and review of regulatory records and historical land use records, directing subcontractors, data evaluation, technical report preparation, and drafting. Ms. Munoz' project experience includes:

- **Phase I Environmental Site Assessment:** Staff Geologist for Phase I Environmental Site Assessment reports throughout Southern California. Report preparation includes site reconnaissance activities involving visual site inspection, research and review of regulatory records and historical land use records, and identification of potential environmental concerns and/or impacts to the site.

- **Phase II Site Characterization:** Staff Geologist for projects involving the advancement of soil borings by a variety of drilling methods to assess the nature, magnitude, and extent of soil contamination. These duties also include conducting soil gas surveys to assess vapor concentrations of volatile organic compounds for human health risks.

ASSOCIATIONS

American Geophysical Union
Geoscience Alliance

APPENDIX G

HYDROLOGY AND HYDRAULICS REPORT

HYDROLOGY
and
HYDRAULICS REPORT

for
KA Enterprises Mega Mart

Prepared for:
City of Riverside
Public Works- Engineering
3900 Main Street- 4th Floor
Riverside, CA 92522

Project Site Address
Northeast Corner of
Sycamore Canyon Blvd & Central Ave
Riverside, CA

Study Prepared by:
Omega Engineering Consultants
4340 Viewridge Ave Suite B
San Diego, CA 92123
(858) 634-8620

Preparation Date
April 6, 2018

Patric de Boer **RCE 83583**
Registration Expires **3-31-2019**

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SITE AND PROJECT DESCRIPTION

This Hydrology and Hydraulics report has been prepared as part of the Preliminary Grading Plan set for the project located at the Northeast Corner of Sycamore Canyon Blvd and Central Ave, Riverside, CA. The project site is currently a vacant lot adjacent to the State Highway 60 off-ramp. The project proposes to regrade the entire site and build a restaurant and a gas station with an adjacent car-wash. The proposed design implements several bioretention areas and an associated storm drain network.

The site drainage basin is located in the Santa Ana Hydrologic Area of the Middle Santa Ana River Hydrologic Unit of the Riverside Hydraulic Region (801.27). See Figure No. 1 for the vicinity map. See Figure No. 2 for the existing drainage limits. See Figure No. 3 for the proposed drainage limits.

METHODOLOGY

This drainage report has been prepared in accordance with current County of Riverside regulations and procedures. All of the proposed pipes and facilities have been designed to intercept and convey the 100-year storm. The Modified Rational Method was used to compute the anticipated runoff. See the attached calculations for particulars. The following references have been used in preparation of this report:

(1) Handbook of Hydraulics, E.F. Brater & H.W. King, 6th Ed., 1976.
(2) Modern Sewer Design, American Iron & Steel Institute, 1st Ed., 1980.
(3) County of Riverside Hydrology Manual, 1978

EXISTING SITE CONDITIONS:

The existing site consists of an irregular-shaped vacant lot. The site has been previously mass graded. A soil stockpile is located in the central area of the site and a slope is present along the westerly edge of the property which slopes downward toward Sycamore Canyon Boulevard. The ground surface conditions consists of artificial fill with several scattered trees on the easterly portion and on the westerly portion consists of exposed soil with native grass and shrubs along the periphery.

The existing drainage condition is overland flow starting from the northeasterly edge and flowing towards the westerly slope of the property adjacent to Sycamore Canyon Boulevard. The runoff continues draining across Sycamore Canyon Boulevards and sheet flows at the corner of Central Avenue on a gutter. It then continues to flow 2,250 feet away from the proposed development into an existing storm drain inlet.

DEVELOPED SITE CONDITIONS:

The project proposes to regrade the entire site and build a restaurant and a gas station with an attached car-wash. The proposed development foot print will be approximately 95,000 square feet with an increase of impervious area from 0% to 65%. Onsite drainage patterns will be modified but the ultimate discharge point will remain the same. Four biofiltration systems shall

take majority of the onsite runoff and have enough ponding depth for a high intensity storm. Each bioretention basin will have a 4" flow control orifice and the drainage from each bioretention basin shall confluence and discharge at the southeasterly corner of the proposed site via an existing 18" RCP drop inlet.

EXISTING RUNOFF ANALYSIS:

The Rational Method was used for calculating existing peak flow rates for the 10 and 100-year storms. Analysis of the existing condition is represented by a single basin. All of the existing site drains via overland flow to a single outlet point at the southeasterly corner on Sycamore Canyon Boulevard and Central Avenue.

Basin #	Area (ac)	Intensity (in/hr)	Runoff Coeff. (C)	Time of Conc. (T_c)	Peak 100-year (Q_{100})
EX-1	2.19	2.84	0.87	9.25 mins	5.41 cfs
-	-			-	-
-	-			-	-

The time of concentration was calculated using the Riverside County Hydrology Manual nomograph (plate D-3). Intensities were estimated using the values found in the hydrology manual on plate 4.1 (included as appendix 3 of this report and the runoff coefficient was found via the equation on plate D-3).

See the attached calculations for details.

DEVELOPED RUNOFF ANALYSIS:

The developed site calculations divide the site into 6 separate basins (A-1, A-2, A-3, A-4, A-5 and A-6). All basin drains to a confluence point located at the northerly corner of the site. The runoff then discharges into an existing 18" RCP pipe that runs along Central Avenue. Basin A-5 and A-6 are Self-Retaining areas.

Basin #	Area (ac)	Intensity (in/hr)	Runoff Coeff (C)	Time of Conc. (T_c)	*Peak 100-year (Q_{100})	**Peak 100-year (Q_{100})
A-1	0.22	3.55	0.89	6.0 mins	0.70 cfs	0.56 cfs
A-2	0.47	3.26	0.88	7.0 mins	1.35 cfs	0.68 cfs
A-3	0.12	3.92	0.88	5.0 mins	0.41 cfs	0.35 cfs
A-4	0.85	3.92	0.88	5.0 mins	2.93 cfs	1.24 cfs
A-5	0.32	3.92	0.82	5.0 mins	1.03 cfs	1.03 cfs
A-6	0.21	3.92	0.86	5.0 mins	0.71 cfs	0.71 cfs

*Pre- Bioretention Mitigation
**Post- Bioretention Mitigation

The confluenced 100 year flow for all the basins was found to be **6.93 cfs** without mitigation from storage in the bioretention areas. The runoff for a 100-year storm using 4 bioretention facilities with orifice control reduces the flow to **3.65 cfs.**

The proposed development increases the overall impervious area. However, with the use of orifice control in the bioretention facilities, it decreases the amount of runoff leaving the site compared to the existing runoff condition.

The detention and flow control calculations have been included in the appendix 4.0 of this report.

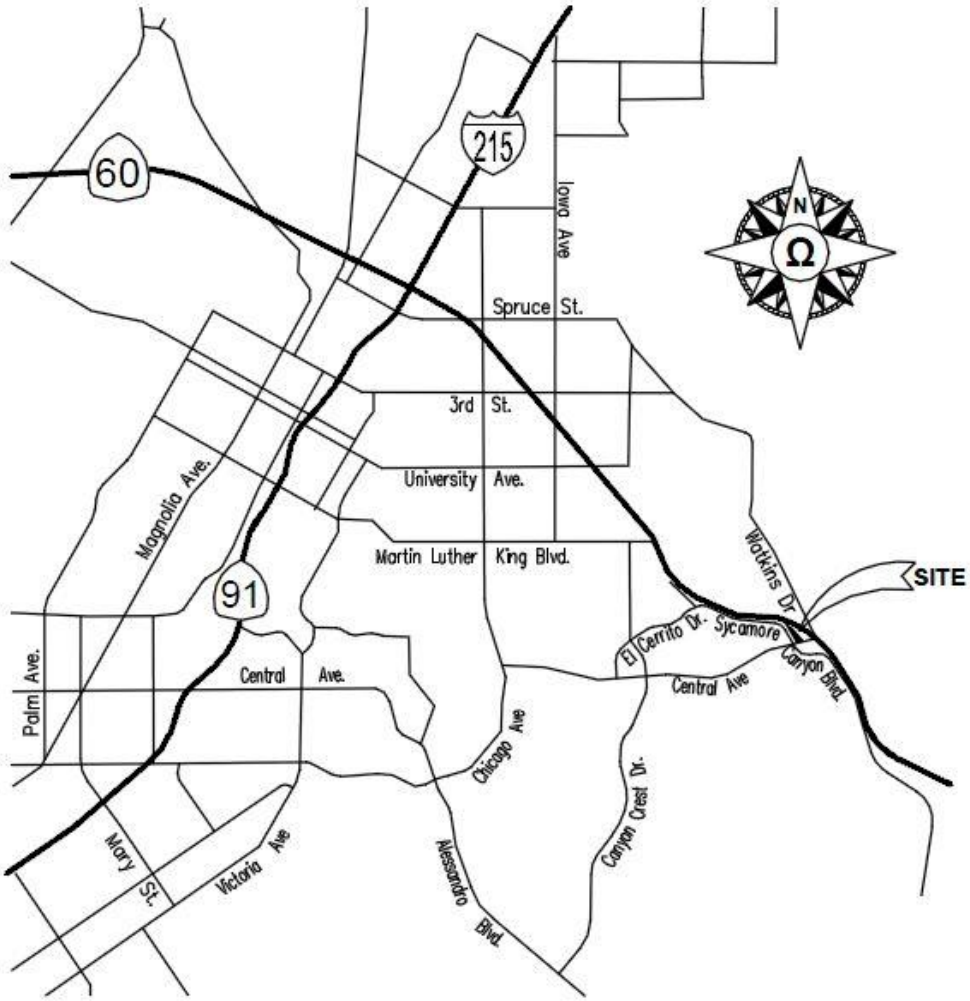
RESULTS AND CONCLUSIONS

The proposed development of the site shall result in an increase of peak runoff volume and flow rate for a 100 year storm event due to the increase of impervious area. However, this increase in rate and peak volume shall be mitigated through the use of orifice flow control and storage in the bioretention facilities. The result will be a proposed discharge that is less than the existing discharge condition.

It is the opinion of Omega Engineering Consultants that this project will not negatively effect the downstream waterways and receiving water bodies. A Project Specific Water Quality Management Plan has been prepared to discuss the water quality impacts for the proposed development.

VICINITY MAP

NO SCALE



EXISTING HYDROLOGY EXHIBIT
KA ENTERPRISES MEGA MART

BASIN DATA			
BASIN	AREA (ac)	IMPERVIOUS %	Q_{100}(cfs)
EX-1	2.19	0.0%	5.35

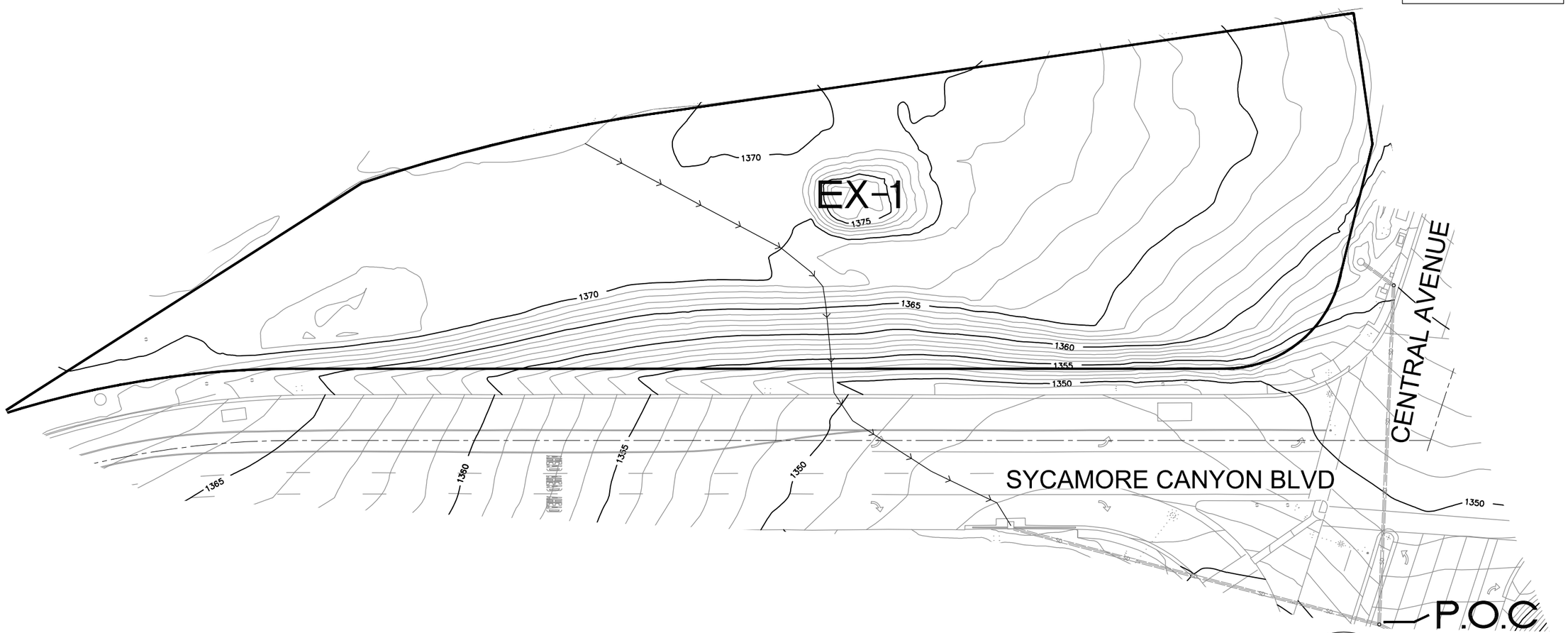
LEGEND:

AREA LIMITS

DRAINAGE DIRECTION ARROW

BASIN NUMBER ..... EX-#

PERVIOUS AREA



GRAPHICAL SCALE: 1" = 60'

0 30 60 120

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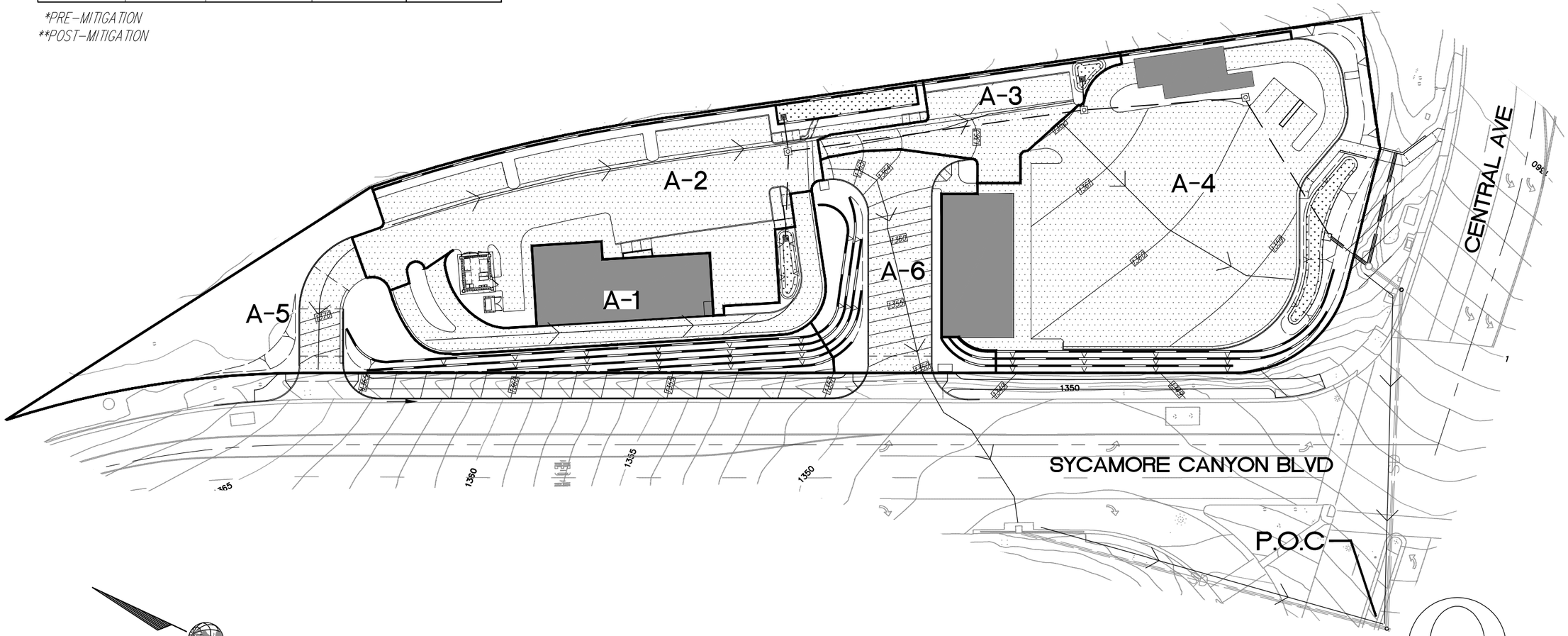
PROPOSED HYDROLOGY EXHIBIT
KA ENTERPRISES MEGA MART

BASIN DATA				
BASIN	AREA (ac)	IMPERVIOUS %	*Q_{100}(cfs)	**Q_{100}(cfs)
A-1	0.22	89%	0.70	0.56
A-2	0.47	82%	1.35	0.68
A-3	0.12	82%	0.41	0.35
A-4	0.85	76%	2.93	1.24
A-5	0.32	13%	1.03	1.03
A-6	0.21	58%	0.71	0.71

*PRE-MITIGATION
**POST-MITIGATION

LEGEND:

AREA LIMITS
DRAINAGE DIRECTION ARROW
BASIN NUMBER A-#
PERVIOUS AREA
IMPERVIOUS AREA
BIOFILTRATION AREA



GRAPHICAL SCALE: 1" = 60'

0 30 60 120 180

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Sycamore Canyon Blvd and Central Avenue

10-YEAR STORM RATIONAL METHOD STUDY

Drainage Area	Soil & Development	A Acres	I in/hr.	C	ΔQ cfs	∑Q	Slope	Section	V fps	L ft.	T min	∑T	Remarks
EX-1	Type C Soil	2.19	1.99	0.85	3.70								
			Total Existing		**3.70**								
A-1	Type C Soil	0.22	2.48	0.88	0.48								
A-2	Type C Soil	0.47	2.28	0.87	0.93								
						1.34							**CP-1 = (A-1 : A-2)**
A-3	Type C Soil	0.12	2.75	0.88	0.29								
						1.63							**CP-2 = (CP-1 : A-3)**
A-4	Type C Soil	0.85	2.75	0.87	2.03								
						3.67							**CP-3 = (CP-2 : A-4)**
A-5	Type C Soil	0.32	2.75	0.79	0.70								
A-6	Type C Soil	0.21	2.75	0.84	0.49								
						1.18							**CP-4 = (A-5 : A-6)**
			Total Proposed		**4.85 cfs Pre Mitigation**								**P.O.C = (CP-3 : CP-4)**

Sycamore Canyon Blvd and Central Avenue

10-YEAR STORM RATIONAL METHOD STUDY WITH FLOW CONTROL

Drainage Area	Soil & Development	A Acres	I in/hr.	C	ΔQ cfs	∑Q	Slope	Section	V fps	L ft.	T min	∑T	Remarks
EX-1	Type C Soil	2.19	1.99	0.85	3.70								
			Total Existing		**3.70**								
A-1	Type C Soil	0.22	2.48	0.88	0.38								
A-2	Type C Soil	0.47	2.28	0.87	0.58								
						0.92							**CP-1 = (A-1 : A-2)**
A-3	Type C Soil	0.12	2.75	0.88	0.27								
						1.06							**CP-2 = (CP-1 : A-3)**
A-4	Type C Soil	0.85	2.75	0.87	0.77								
						1.83							**CP-3 = (CP-2 : A-4)**
A-5	Type C Soil	0.32	2.75	0.79	0.70								
A-6	Type C Soil	0.21	2.75	0.84	0.49								
						1.19							**CP-4 = (A-5 : A-6)**
			Total Proposed		**2.606 cfs Post-Mitigation**								**P.O.C = (CP-3 : CP-4)**

Sycamore Canyon Blvd and Central Avenue

100-YEAR STORM RATIONAL METHOD STUDY

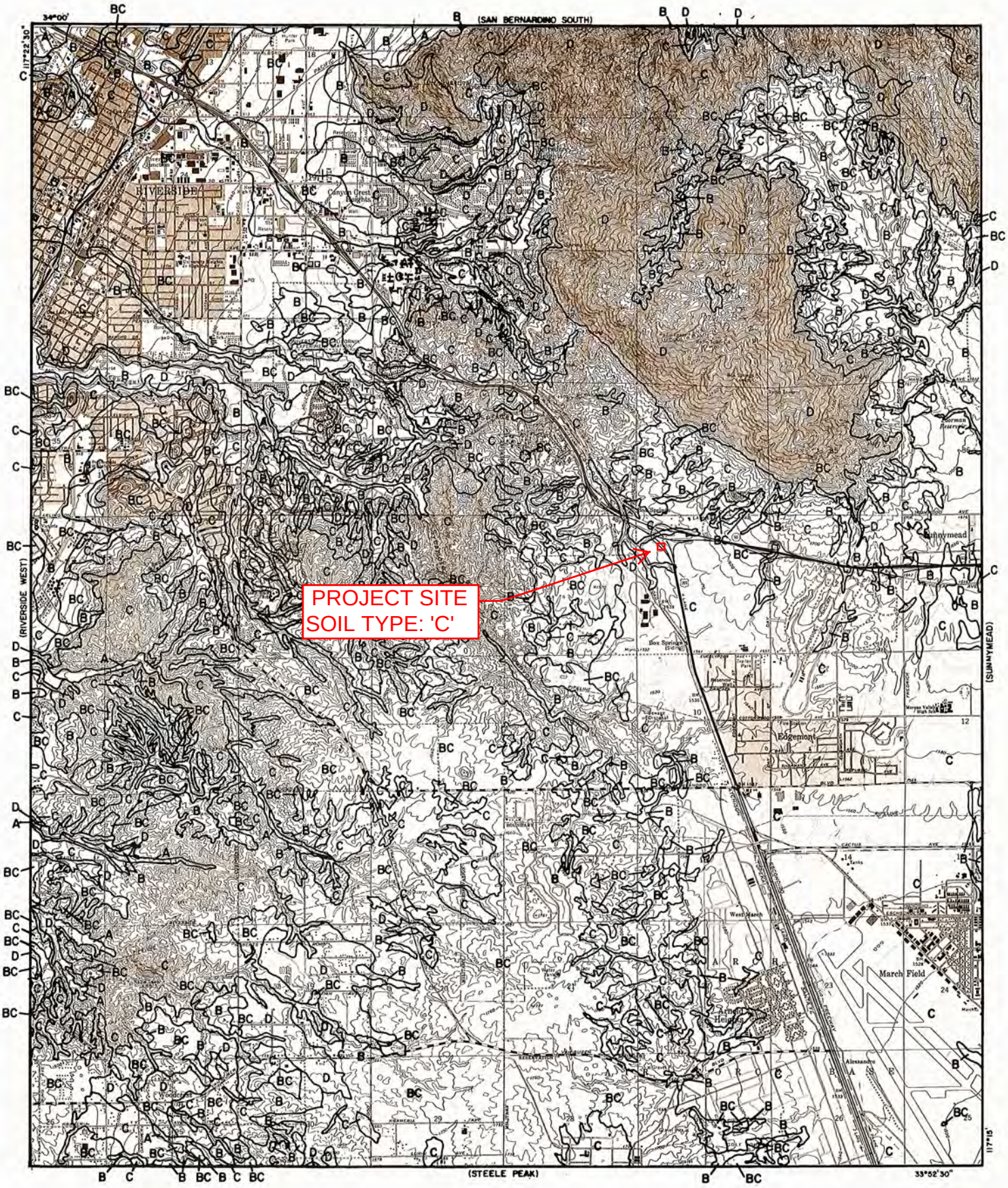
Drainage Area	Soil & Development	A Acres	I in/hr.	C	ΔQ cfs	∑Q	Slope	Section	V fps	L ft.	T min	∑T	Remarks
EX-1	Type C Soil	2.19	2.84	0.87	5.41								
			Total Existing		5.41								
A-1	Type C Soil	0.22	3.55	0.89	0.70								
A-2	Type C Soil	0.47	3.26	0.88	1.35								
						1.85							**CP-1 = (A-1 : A-2)**
A-3	Type C Soil	0.12	3.92	0.88	0.41								
						2.26							**CP-2 = (CP-1 : A-3)**
A-4	Type C Soil	0.85	3.92	0.88	2.93								
						5.20							**CP-3 = (CP-2 : A-4)**
A-5	Type C Soil	0.32	3.92	0.82	1.03								
A-6	Type C Soil	0.21	3.92	0.86	0.71								
						6.93							**CP-4 = (A-5 : A-6)**
			Total Proposed		**6.93 cfs Pre-Mitigation**								**P.O.C = (CP-3 : CP-4)**

Sycamore Canyon Blvd and Central Avenue

100-YEAR STORM RATIONAL METHOD STUDY WITH FLOW CONTROL

Drainage Area	Soil & Development	A Acres	I in/hr.	C	ΔQ cfs	∑Q	Slope	Section	V fps	L ft.	T min	∑T	Remarks
EX-1	Type C Soil	2.19	2.84	0.87	5.41								
			Total Existing		**5.54**								
A-1	Type C Soil	0.22	3.55	0.89	0.560								
A-2	Type C Soil	0.47	3.26	0.88	0.681								
						1.211							**CP-1 = (A-1 : A-2)**
A-3	Type C Soil	0.12	3.92	0.88	0.353								
						1.515							**CP-2 = (CP-1 : A-3)**
A-4	Type C Soil	0.85	3.92	0.88	1.244								
						2.716							**CP-3 = (CP-2 : A-4)**
A-5	Type C Soil	0.32	3.92	0.82	1.030								
A-6	Type C Soil	0.21	3.92	0.86	0.71								
						1.74							**CP-4 = (A-5 : A-6)**
			Total Proposed		**3.650 cfs Post-Mitigation**								**P.O.C = (CP-3 : CP-4)**

APPENDICES:



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC & WCD

HYDROLOGY MANUAL

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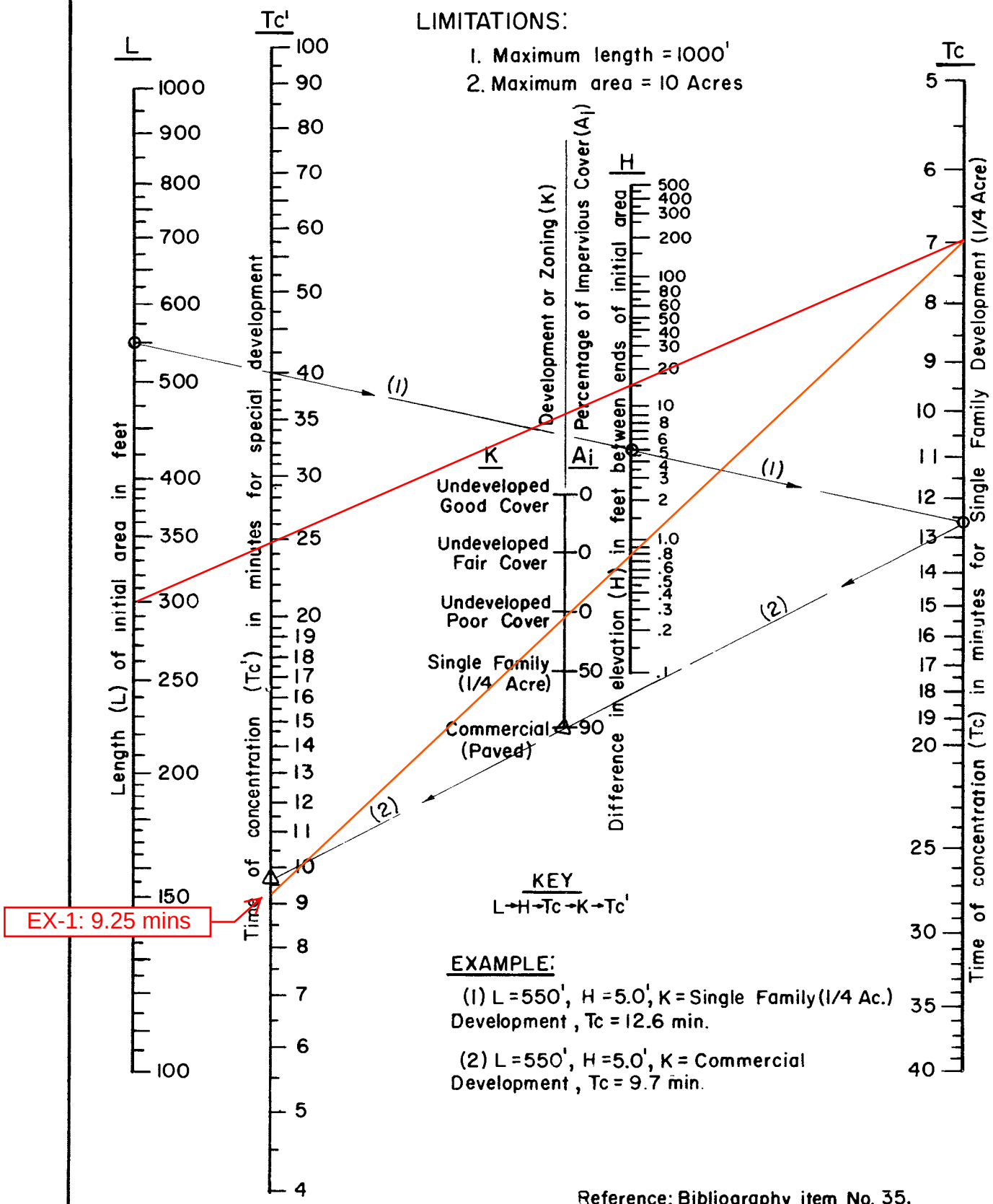
HYDROLOGIC SOILS GROUP MAP FOR RIVERSIDE–EAST

PLATE C–1.16

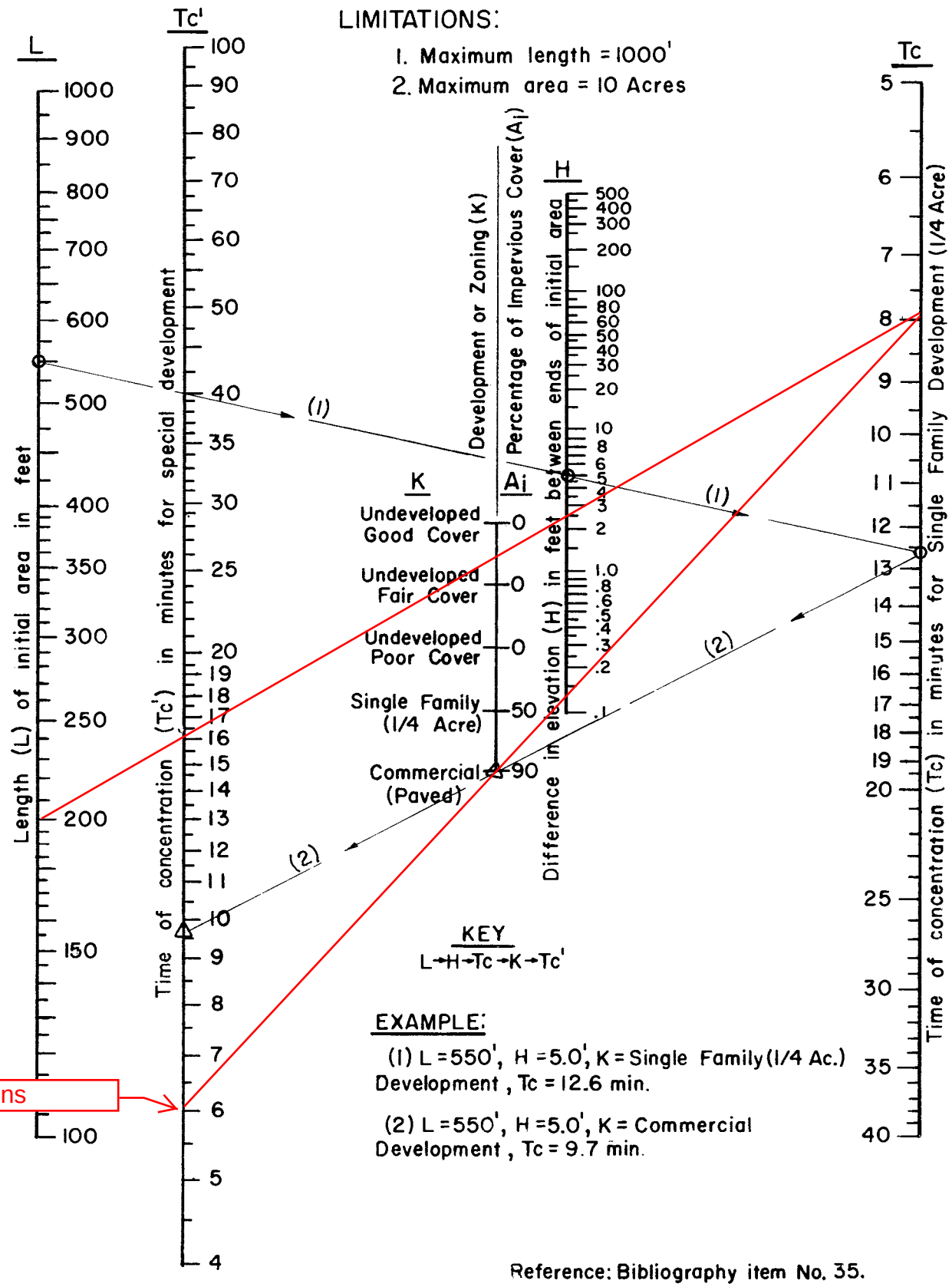


Reference: Bibliography item No. 35.

RCFC & WCD

HYDROLOGY MANUAL

TIME OF CONCENTRATION FOR INITIAL SUBAREA



LIMITATIONS:

1. Maximum length = 1000'
2. Maximum area = 10 Acres

EXAMPLE:

(1) L = 550', H = 5.0', K = Single Family (1/4 Ac.) Development, Tc = 12.6 min.

(2) L = 550', H = 5.0', K = Commercial Development, Tc = 9.7 min.

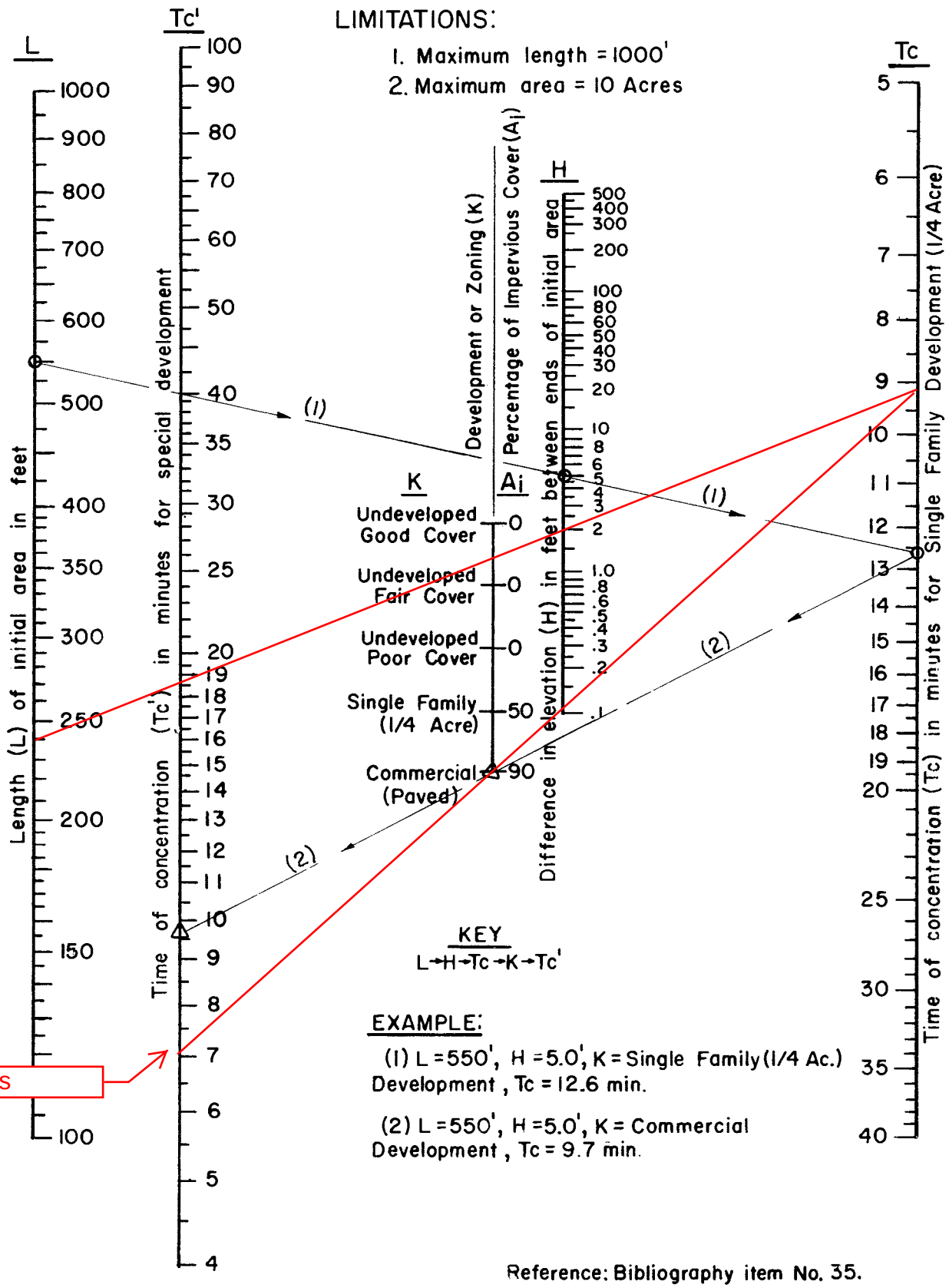
A-1: 6 mins

Reference: Bibliography item No. 35.

RCFC & WCD

HYDROLOGY MANUAL

TIME OF CONCENTRATION FOR INITIAL SUBAREA



LIMITATIONS:

1. Maximum length = 1000'
2. Maximum area = 10 Acres

EXAMPLE:

(1) L = 550', H = 5.0', K = Single Family (1/4 Ac.) Development, Tc = 12.6 min.

(2) L = 550', H = 5.0', K = Commercial Development, Tc = 9.7 min.

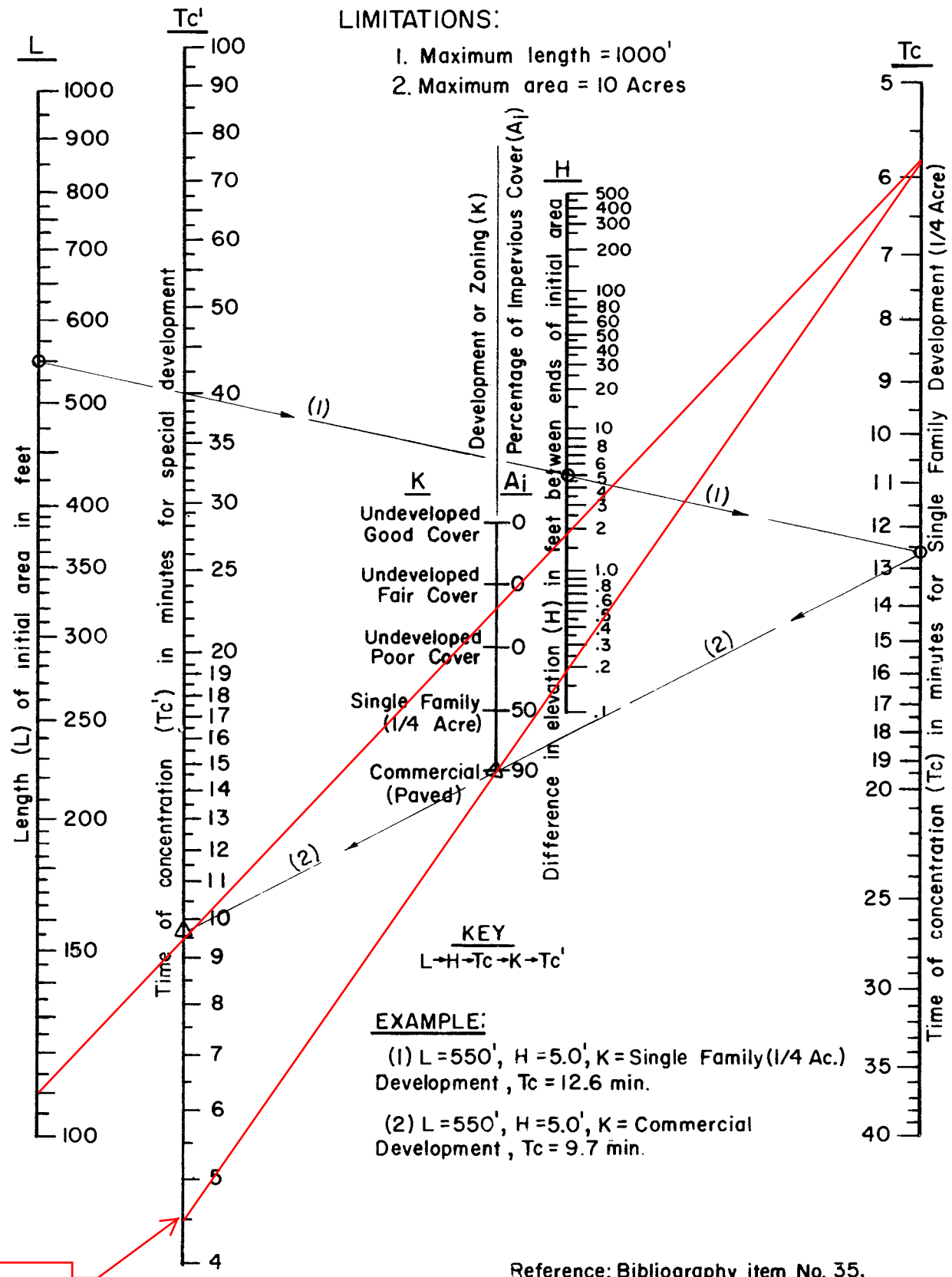
A-2: 7 mins

Reference: Bibliography item No. 35.

RCFC & WCD

HYDROLOGY MANUAL

TIME OF CONCENTRATION FOR INITIAL SUBAREA



LIMITATIONS:

1. Maximum length = 1000'
2. Maximum area = 10 Acres

EXAMPLE:

(1) L = 550', H = 5.0', K = Single Family (1/4 Ac.) Development, Tc = 12.6 min.

(2) L = 550', H = 5.0', K = Commercial Development, Tc = 9.7 min.

A-3: 4.5 mins

Reference: Bibliography item No. 35.

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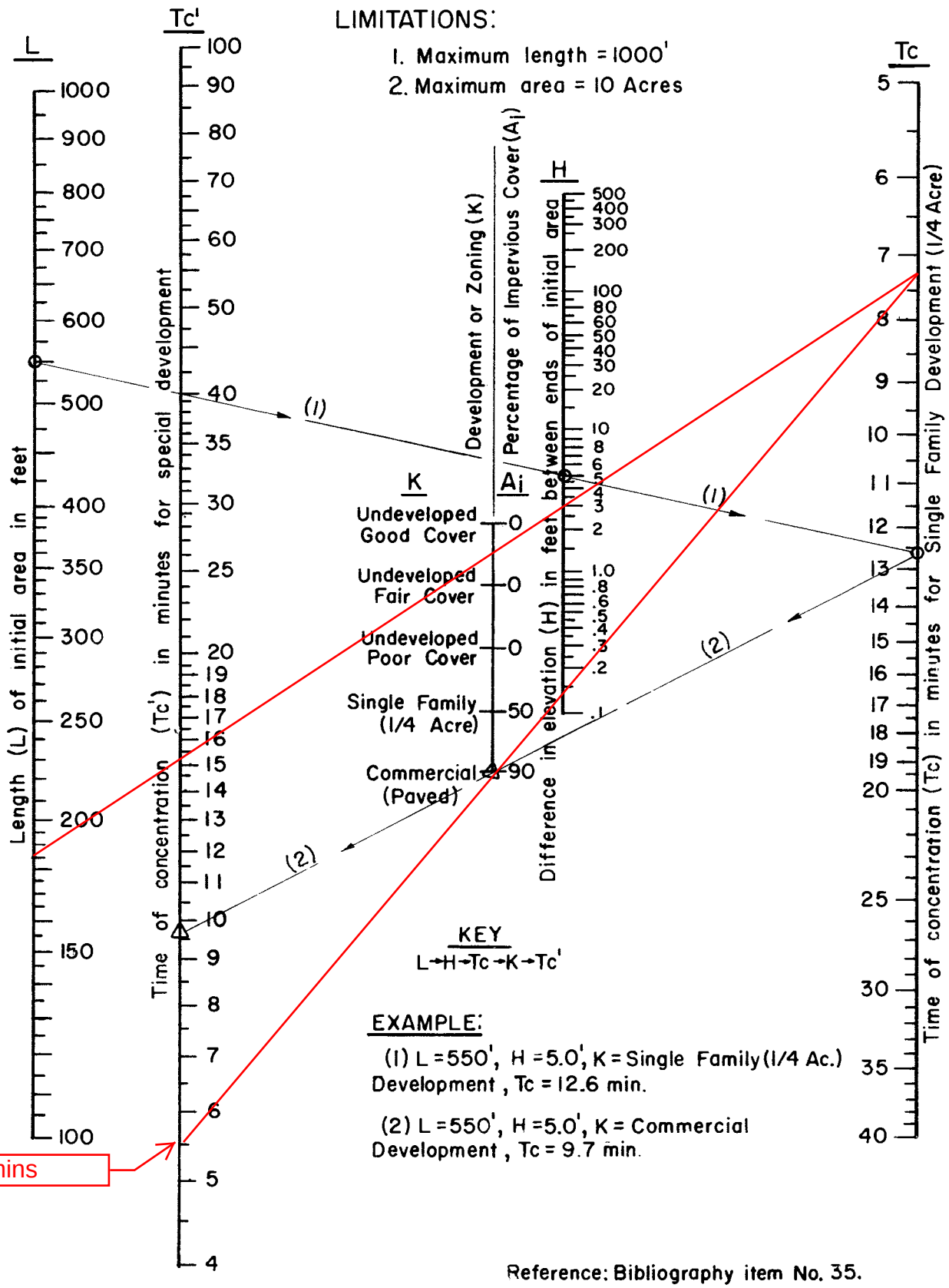
HYDROLOGY MANUAL

TIME OF CONCENTRATION FOR INITIAL SUBAREA



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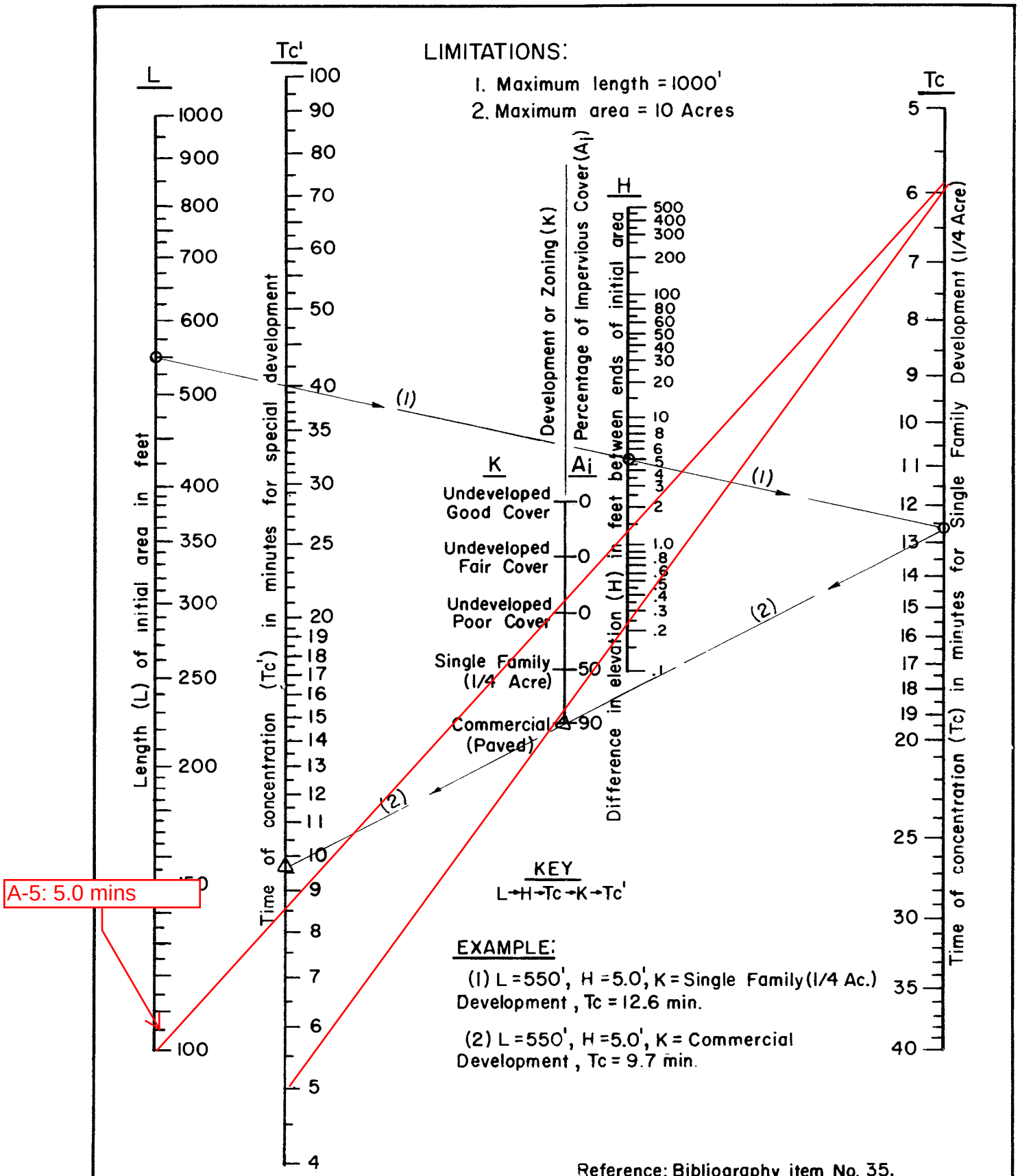
RCFC & WCD

HYDROLOGY MANUAL

TIME OF CONCENTRATION FOR INITIAL SUBAREA



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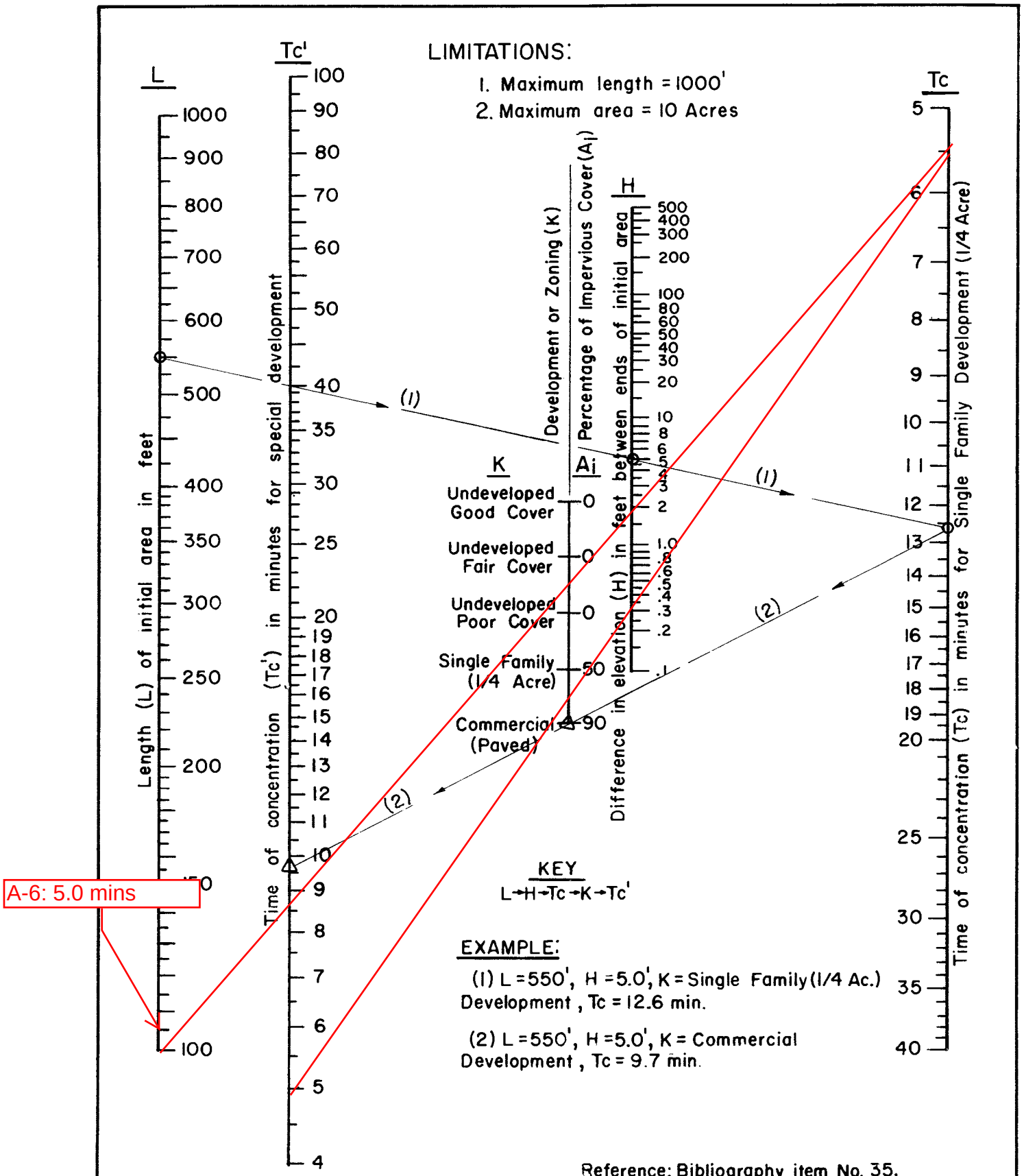
RCFC & WCD

HYDROLOGY MANUAL

TIME OF CONCENTRATION FOR INITIAL SUBAREA



Reference: Bibliography item No. 35.

RCFC & WCD

HYDROLOGY MANUAL

TIME OF CONCENTRATION FOR INITIAL SUBAREA

A-3, A-4, A-5 & A-6

A-1

A-2

EX-1

RAINFALL INTENSITY—INCHES PER HOUR

RIVERSIDE			RIVERSIDE (FOOTHILL AREAS)			RUBIDOUX			SAN JACINTO			SUN CITY		
DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 100 YEAR	DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 100 YEAR	DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 100 YEAR	DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 100 YEAR	DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 100 YEAR
5	2.75	3.92	5	3.14	4.71	5	3.18	4.71	5	2.81	4.16	5	3.25	4.85
6	2.48	3.55	6	2.84	4.26	6	2.87	4.26	6	2.56	3.79	6	2.95	4.40
7	2.28	3.26	7	2.61	3.91	7	2.64	3.91	7	2.37	3.51	7	2.72	4.06
8	2.12	3.03	8	2.42	3.63	8	2.45	3.63	8	2.22	3.29	8	2.53	3.78
9	1.99	2.84	9	2.27	3.41	9	2.30	3.41	9	2.09	3.10	9	2.38	3.55
10	1.88	2.68	10	2.14	3.21	10	2.17	3.21	10	1.98	2.94	10	2.25	3.36
11	1.78	2.54	11	2.03	3.05	11	2.06	3.05	11	1.89	2.80	11	2.14	3.19
12	1.70	2.42	12	1.94	2.91	12	1.96	2.91	12	1.81	2.68	12	2.04	3.05
13	1.62	2.32	13	1.86	2.78	13	1.88	2.78	13	1.74	2.58	13	1.96	2.92
14	1.56	2.23	14	1.78	2.67	14	1.80	2.67	14	1.68	2.48	14	1.88	2.81
15	1.50	2.14	15	1.71	2.57	15	1.74	2.57	15	1.62	2.40	15	1.81	2.71
16	1.45	2.07	16	1.66	2.48	16	1.68	2.48	16	1.57	2.32	16	1.75	2.62
17	1.40	2.00	17	1.60	2.40	17	1.62	2.40	17	1.52	2.25	17	1.70	2.54
18	1.36	1.94	18	1.55	2.33	18	1.57	2.33	18	1.48	2.19	18	1.65	2.46
19	1.32	1.88	19	1.51	2.26	19	1.52	2.26	19	1.44	2.13	19	1.60	2.39
20	1.28	1.83	20	1.46	2.20	20	1.48	2.20	20	1.40	2.08	20	1.56	2.33
22	1.22	1.74	22	1.39	2.08	22	1.41	2.08	22	1.34	1.98	22	1.48	2.21
24	1.16	1.66	24	1.32	1.99	24	1.34	1.99	24	1.28	1.90	24	1.41	2.11
26	1.11	1.58	26	1.27	1.90	26	1.28	1.90	26	1.23	1.82	26	1.36	2.03
28	1.06	1.52	28	1.22	1.82	28	1.23	1.82	28	1.19	1.76	28	1.30	1.95
30	1.02	1.46	30	1.17	1.76	30	1.19	1.76	30	1.15	1.70	30	1.26	1.88
32	.99	1.41	32	1.13	1.70	32	1.14	1.70	32	1.11	1.64	32	1.21	1.81
34	.96	1.37	34	1.09	1.64	34	1.11	1.64	34	1.08	1.59	34	1.18	1.76
36	.93	1.32	36	1.06	1.59	36	1.07	1.59	36	1.05	1.55	36	1.14	1.70
38	.90	1.29	38	1.03	1.54	38	1.04	1.54	38	1.02	1.51	38	1.11	1.66
40	.87	1.25	40	1.00	1.50	40	1.01	1.50	40	.99	1.47	40	1.08	1.61
45	.82	1.17	45	.94	1.41	45	.95	1.41	45	.94	1.39	45	1.01	1.51
50	.77	1.11	50	.88	1.33	50	.90	1.33	50	.89	1.31	50	.96	1.43
55	.73	1.05	55	.84	1.26	55	.85	1.26	55	.85	1.25	55	.91	1.36
60	.70	1.00	60	.80	1.20	60	.81	1.20	60	.81	1.20	60	.87	1.30
65	.67	.96	65	.77	1.15	65	.78	1.15	65	.78	1.15	65	.83	1.25
70	.64	.92	70	.73	1.10	70	.74	1.10	70	.75	1.11	70	.80	1.20
75	.62	.88	75	.71	1.06	75	.72	1.06	75	.72	1.07	75	.77	1.15
80	.60	.85	80	.68	1.02	80	.69	1.02	80	.70	1.04	80	.75	1.12
85	.58	.83	85	.66	.99	85	.67	.99	85	.68	1.01	85	.72	1.08
SLOPE = .550			SLOPE = .550			SLOPE = .550			SLOPE = .500			SLOPE = .530		

RCFC & WCD

HYDROLOGY MANUAL

STANDARD INTENSITY-DURATION CURVES DATA

PLATE D-4.1 (5 of 6)

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

EXISTING PROJECT TYPICAL COVER TYPE

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HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREAS

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
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Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
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	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
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Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

PROPOSED PROJECT TYPICAL COVER TYPE

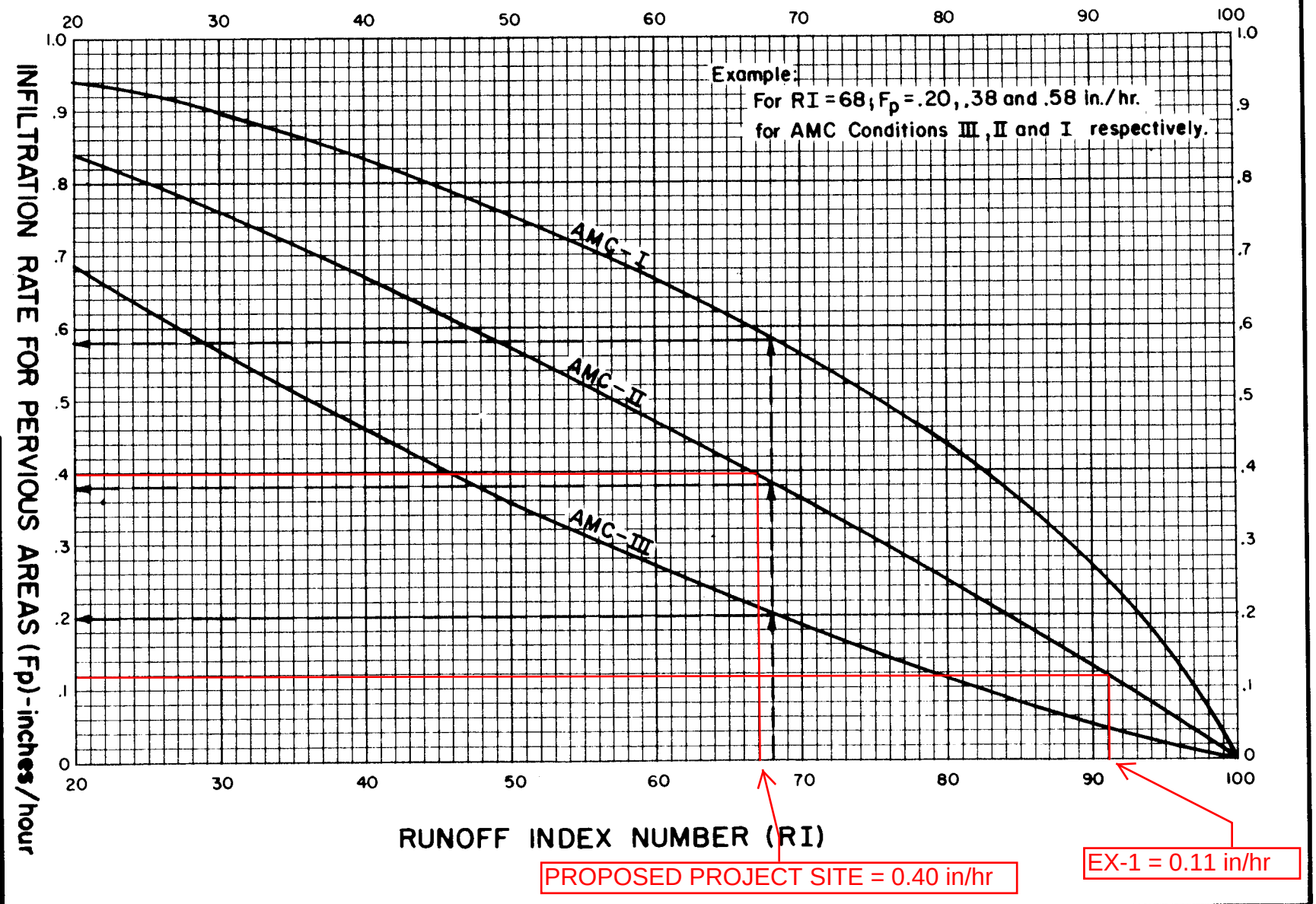
RCFC & WCD

HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREAS

NOTES:

1. R.I. Number-Infiltration relationships are derived from rainfall-runoff relationships in Bibliography item No. 36.



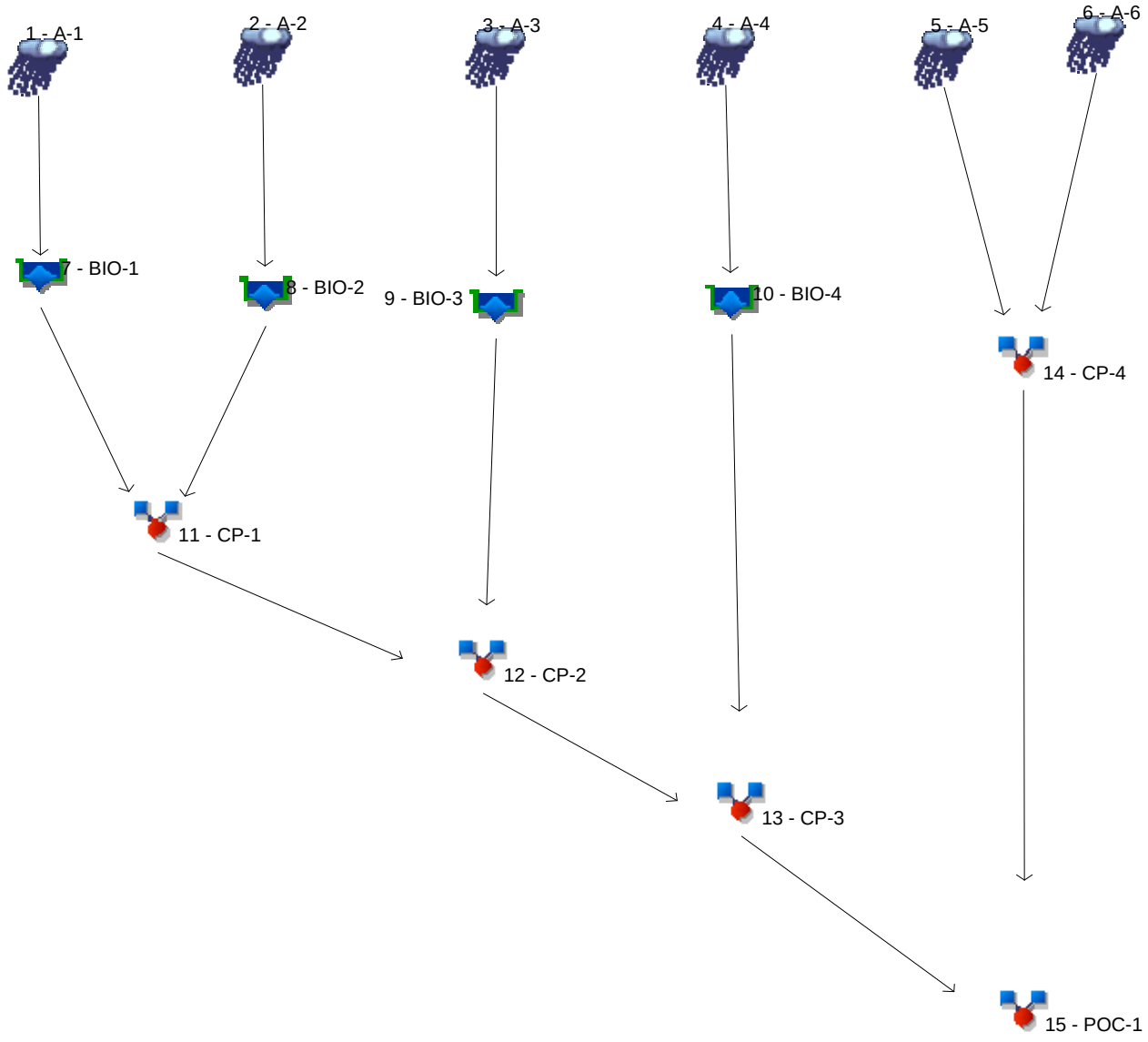
RCFC & WCD

HYDROLOGY MANUAL

INFILTRATION RATE FOR PERVIOUS AREAS VERSUS RUNOFF INDEX NUMBERS

Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5



Legend

Hyd.	Origin	Description
1	Manual	A-1
2	Manual	A-2
3	Manual	A-3
4	Manual	A-4
5	Manual	A-5
6	Manual	A-6
7	Reservoir	BIO-1
8	Reservoir	BIO-2
9	Reservoir	BIO-3
10	Reservoir	BIO-4
11	Combine	CP-1
12	Combine	CP-2
13	Combine	CP-3
14	Combine	CP-4
15	Combine	POC-1

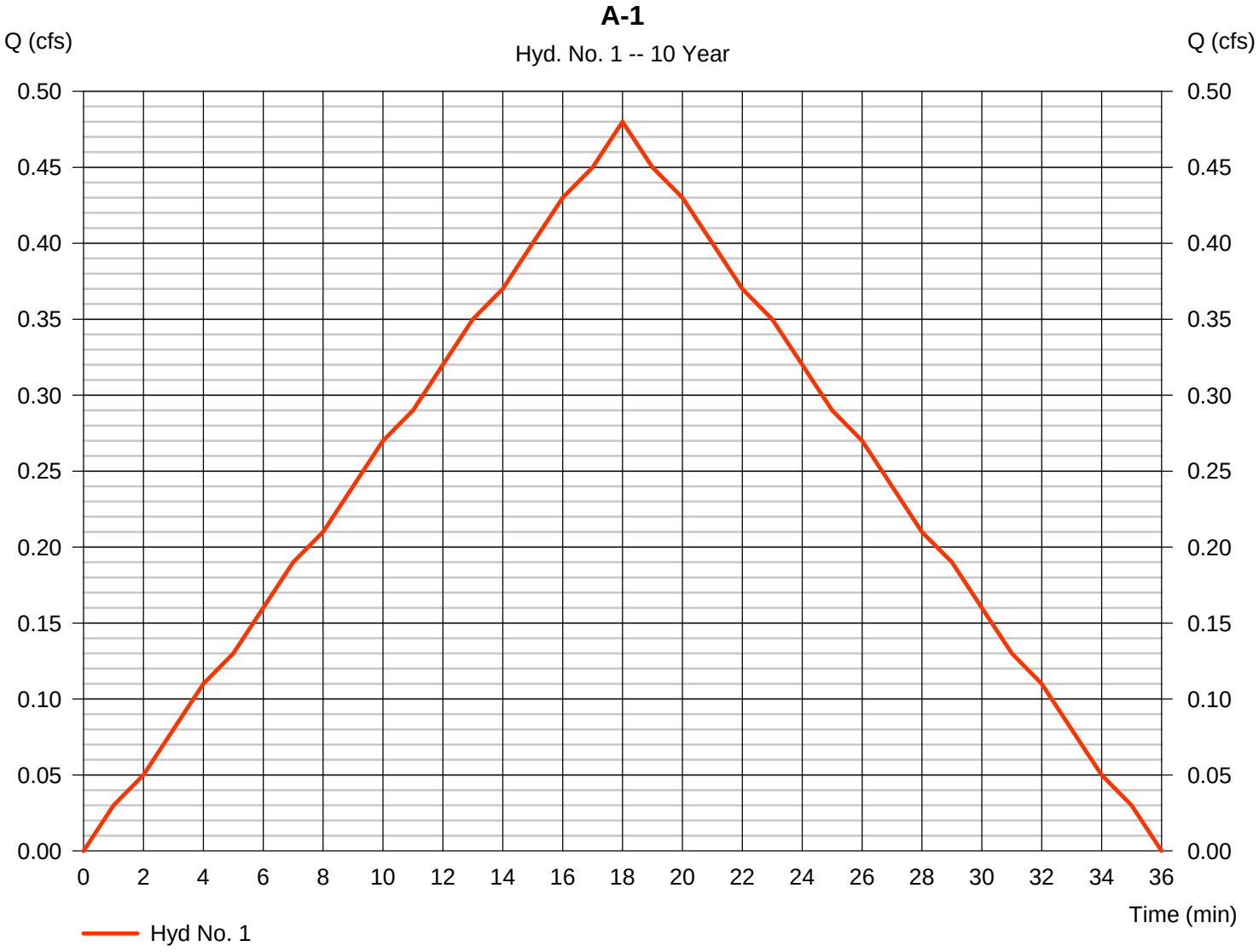
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 1

A-1

Hydrograph type	= Manual	Peak discharge	= 0.480 cfs
Storm frequency	= 10 yrs	Time to peak	= 18 min
Time interval	= 1 min	Hyd. volume	= 518 cuft



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 2

A-2

Hydrograph type	= Manual	Peak discharge	= 0.930 cfs
Storm frequency	= 10 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 1,172 cuft

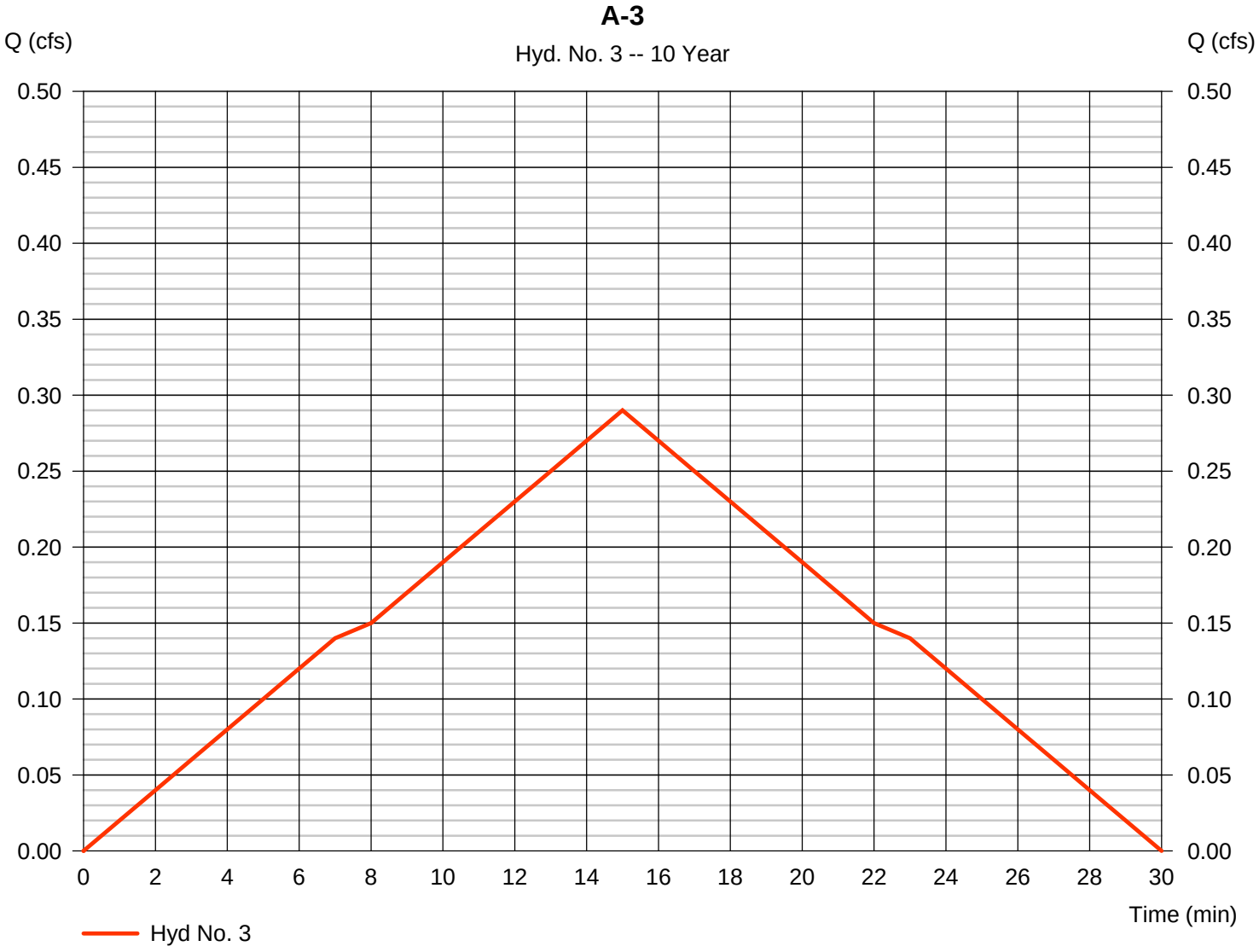
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 3

A-3

Hydrograph type	= Manual	Peak discharge	= 0.290 cfs
Storm frequency	= 10 yrs	Time to peak	= 15 min
Time interval	= 1 min	Hyd. volume	= 261 cuft



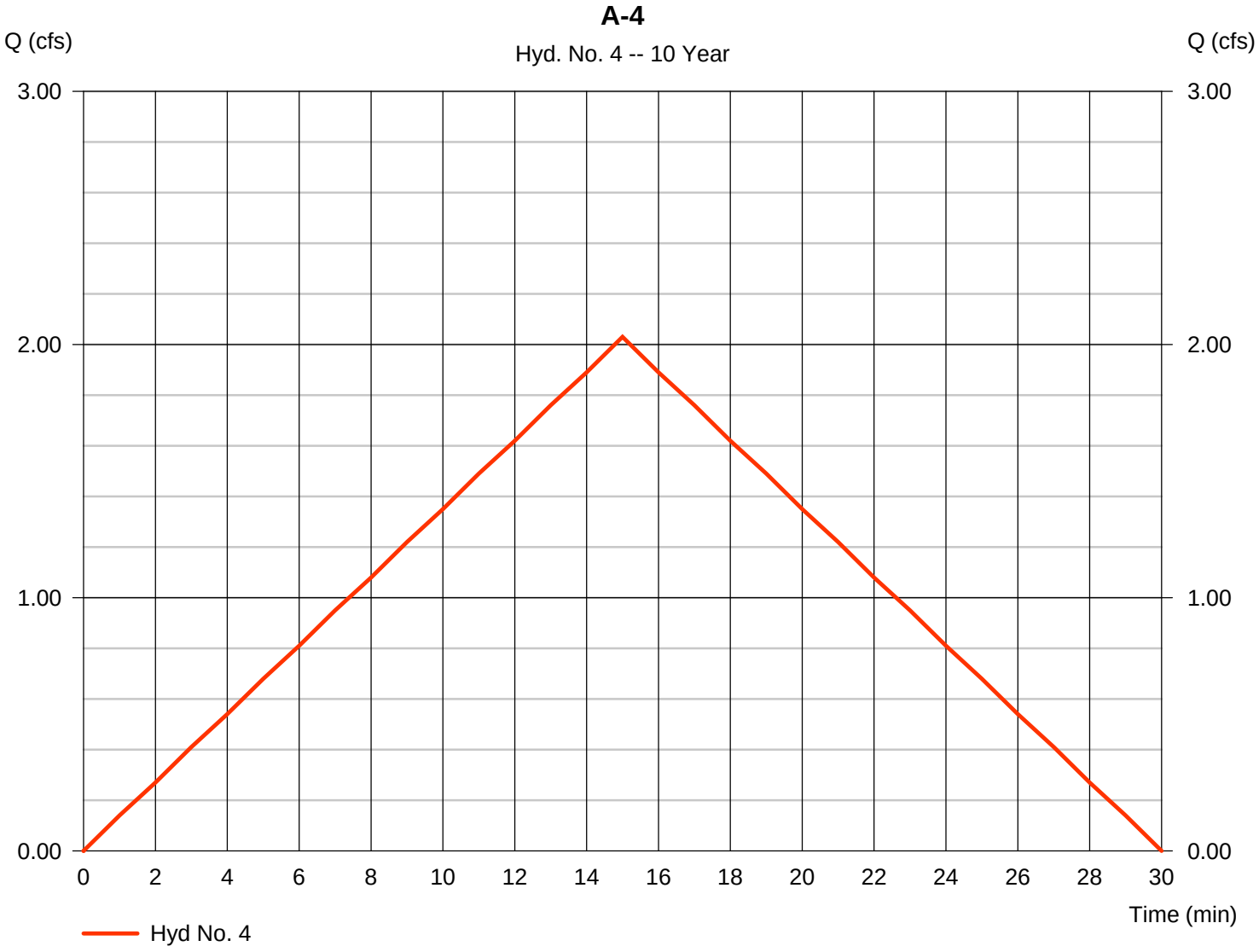
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 4

A-4

Hydrograph type	= Manual	Peak discharge	= 2.030 cfs
Storm frequency	= 10 yrs	Time to peak	= 15 min
Time interval	= 1 min	Hyd. volume	= 1,827 cuft



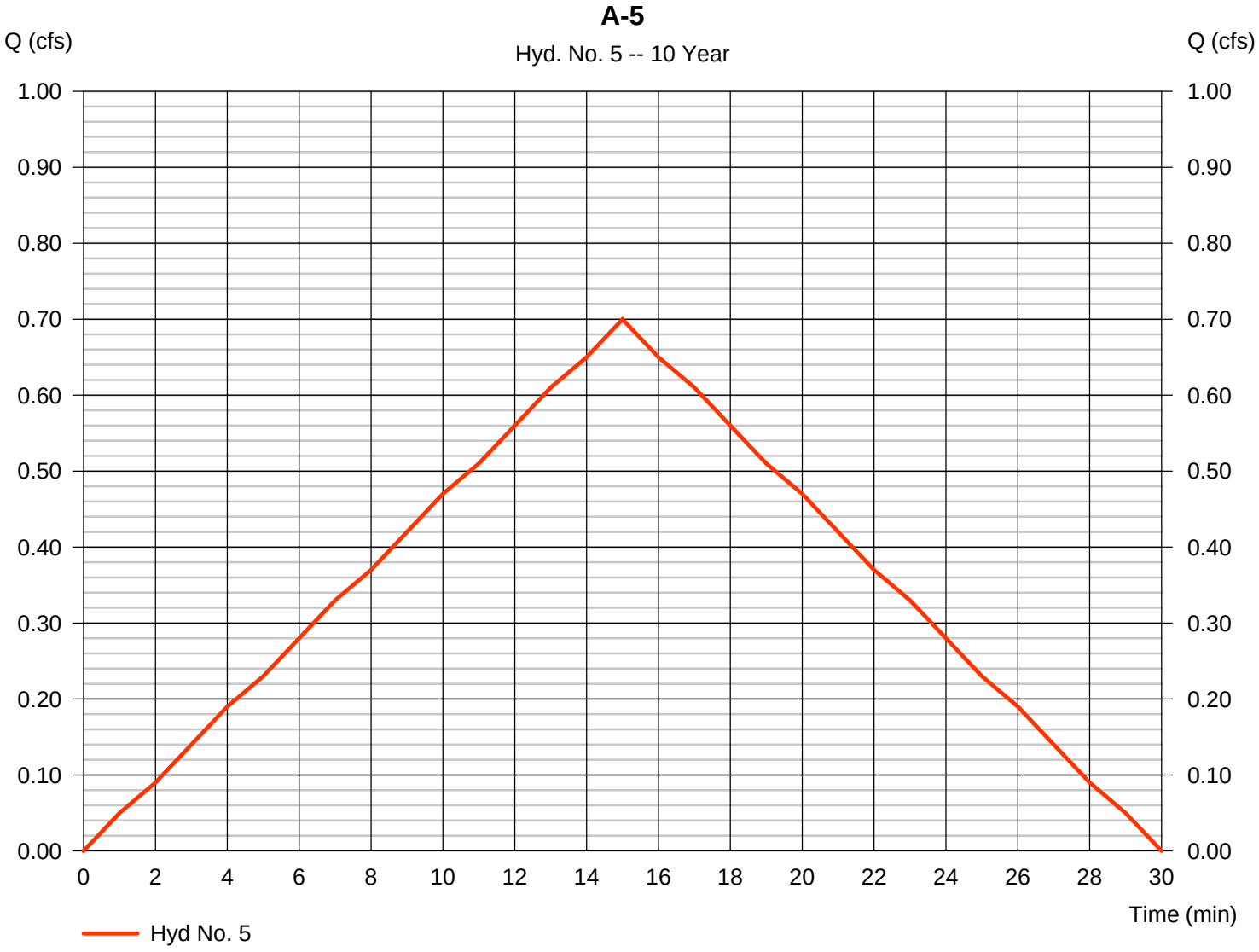
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 5

A-5

Hydrograph type	= Manual	Peak discharge	= 0.700 cfs
Storm frequency	= 10 yrs	Time to peak	= 15 min
Time interval	= 1 min	Hyd. volume	= 630 cuft



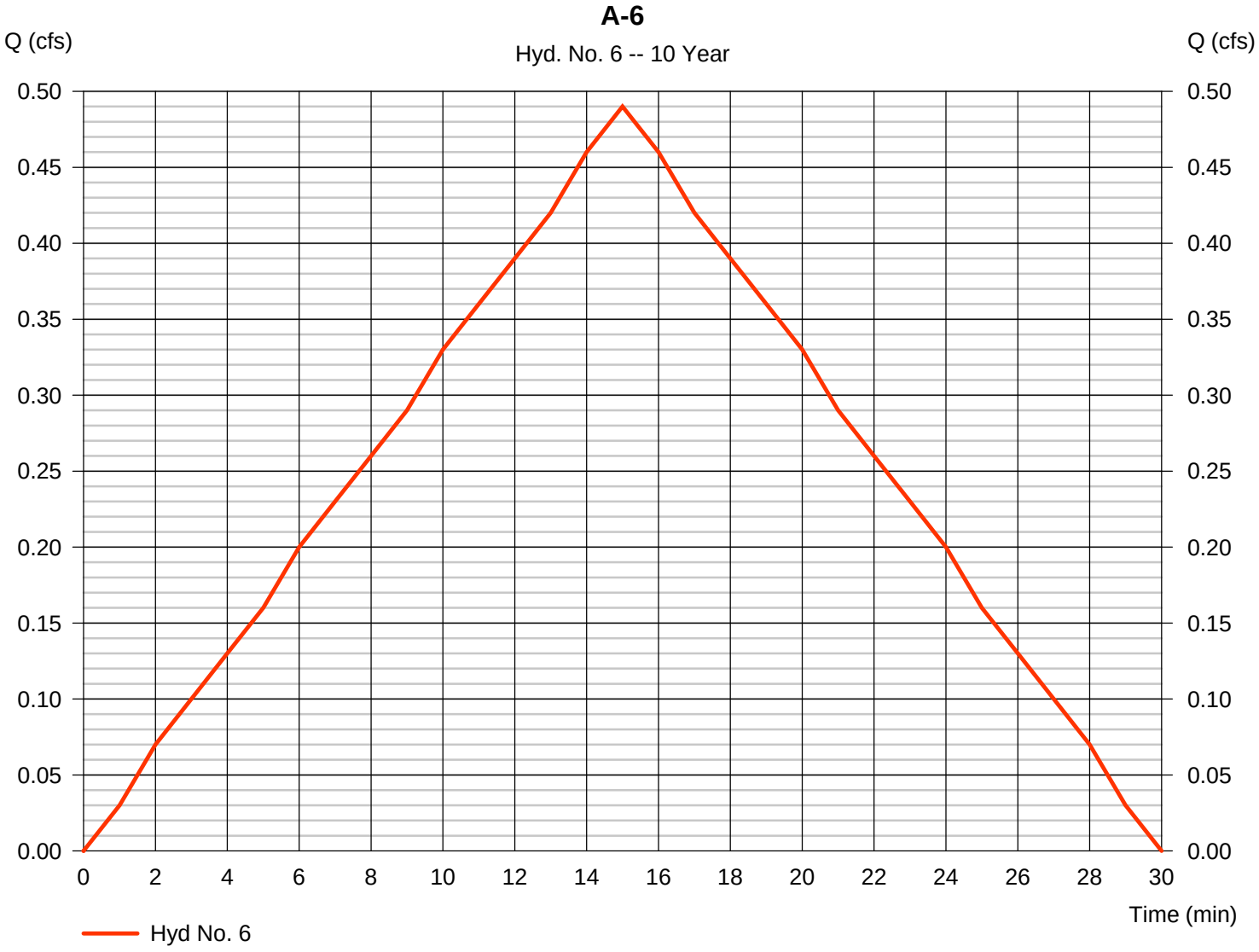
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 6

A-6

Hydrograph type	= Manual	Peak discharge	= 0.490 cfs
Storm frequency	= 10 yrs	Time to peak	= 15 min
Time interval	= 1 min	Hyd. volume	= 441 cuft



Hydrograph Report

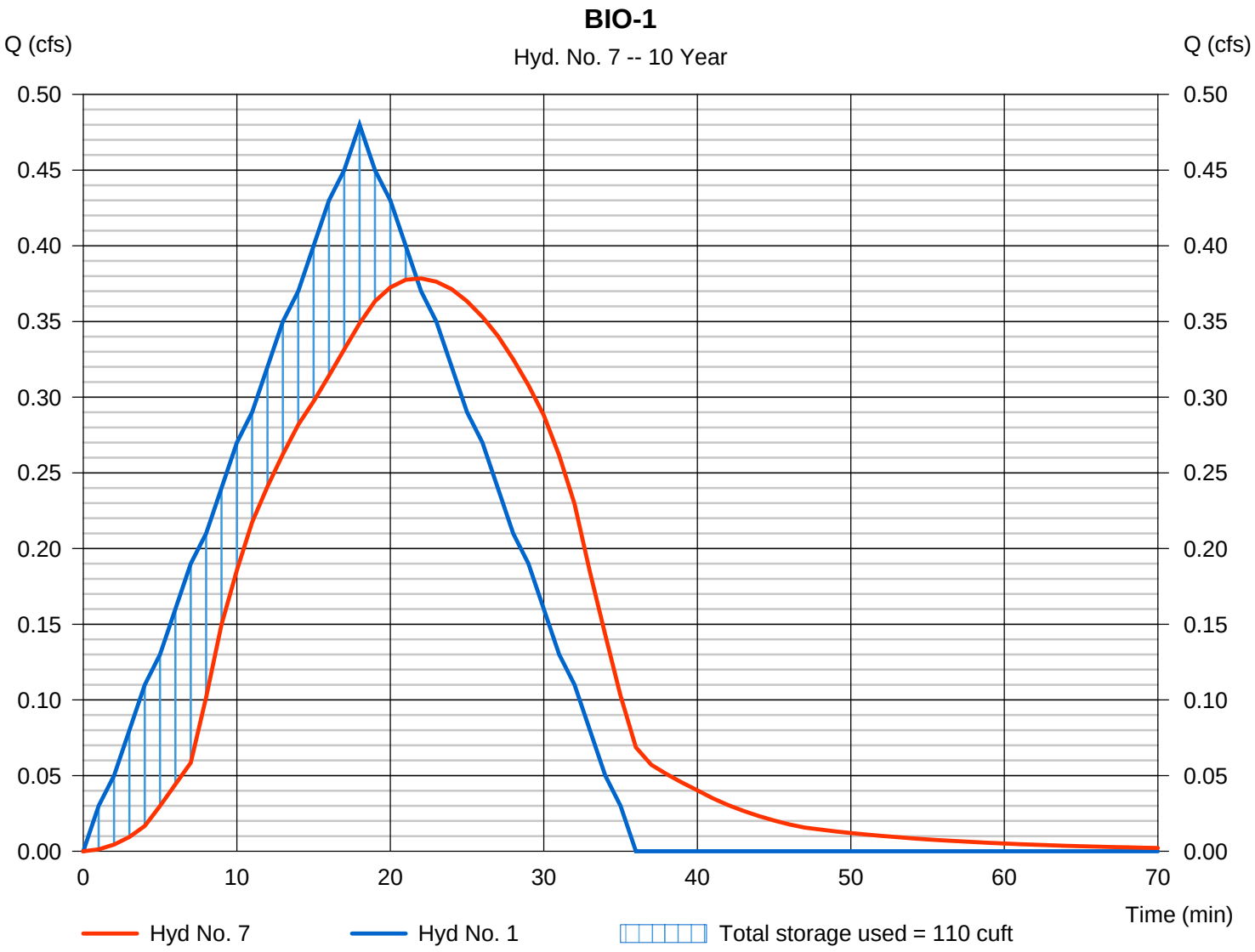
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 7

BIO-1

Hydrograph type	= Reservoir	Peak discharge	= 0.378 cfs
Storm frequency	= 10 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 518 cuft
Inflow hyd. No.	= 1 - A-1	Max. Elevation	= 100.98 ft
Reservoir name	= BIO-1	Max. Storage	= 110 cuft

Storage Indication method used.



Hydrograph Report

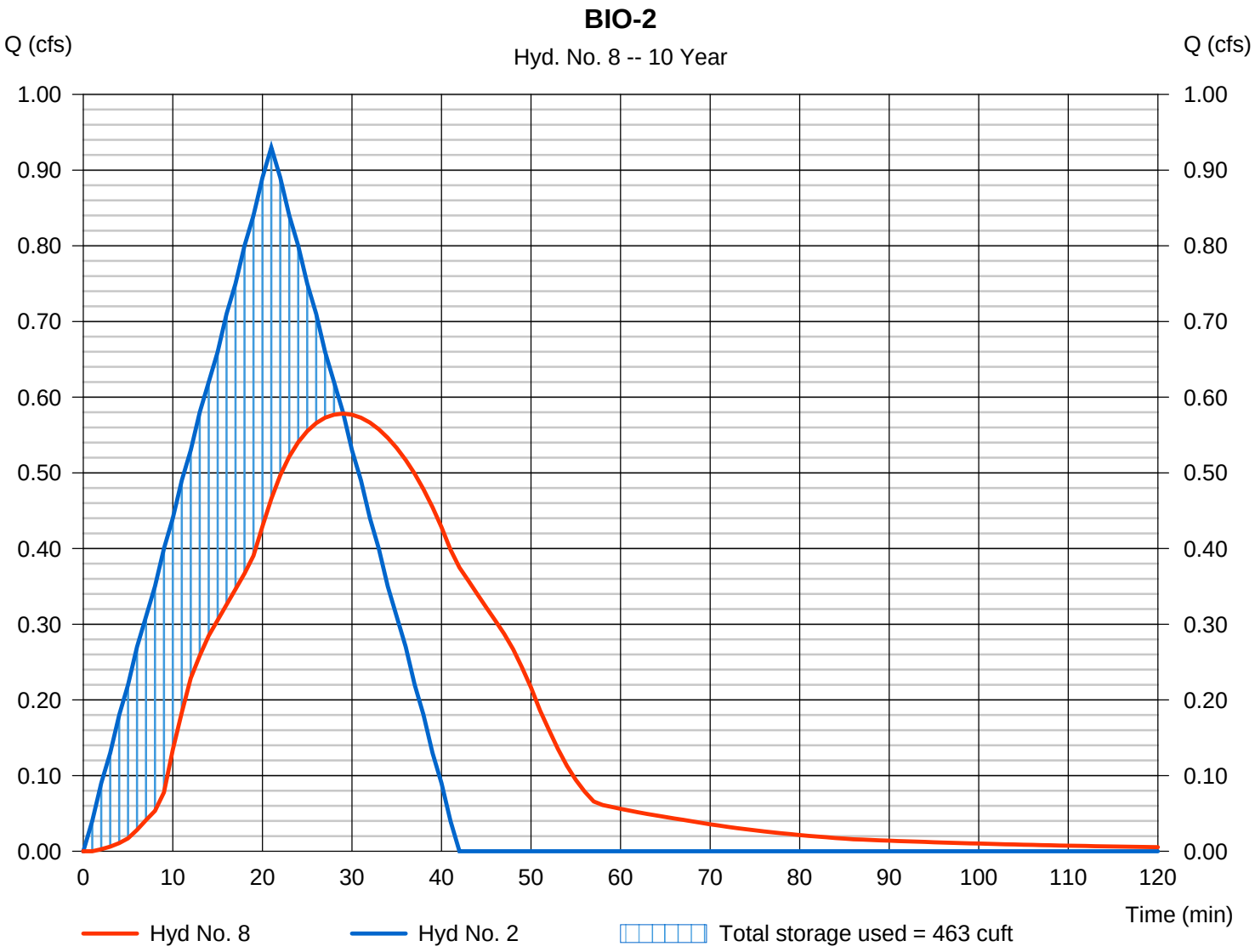
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 8

BIO-2

Hydrograph type	=	Reservoir	Peak discharge	=	0.578 cfs
Storm frequency	=	10 yrs	Time to peak	=	29 min
Time interval	=	1 min	Hyd. volume	=	1,170 cuft
Inflow hyd. No.	=	2 - A-2	Max. Elevation	=	102.06 ft
Reservoir name	=	BIO-2	Max. Storage	=	463 cuft

Storage Indication method used.



Hydrograph Report

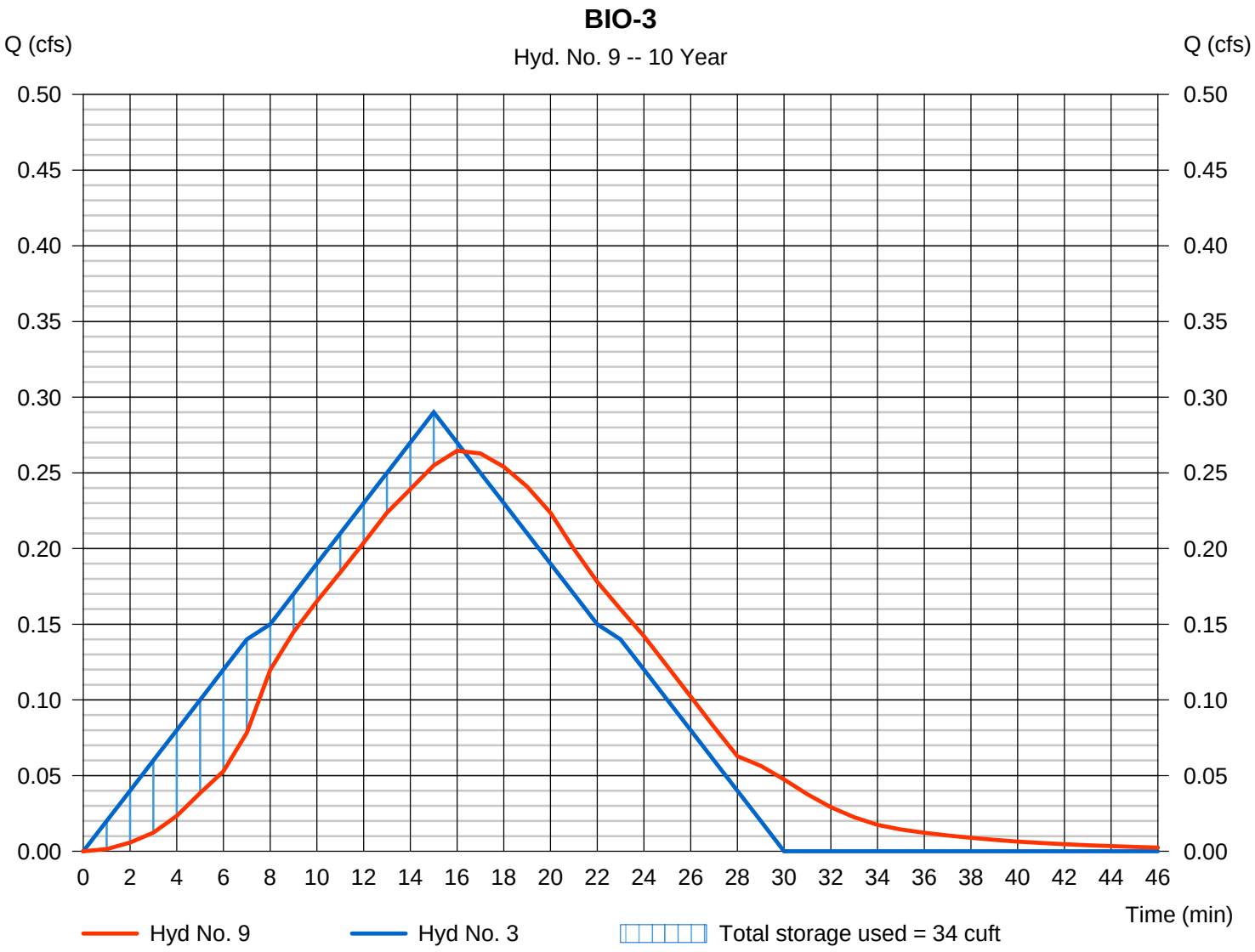
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 9

BIO-3

Hydrograph type	= Reservoir	Peak discharge	= 0.265 cfs
Storm frequency	= 10 yrs	Time to peak	= 16 min
Time interval	= 1 min	Hyd. volume	= 261 cuft
Inflow hyd. No.	= 3 - A-3	Max. Elevation	= 100.58 ft
Reservoir name	= BIO-3	Max. Storage	= 34 cuft

Storage Indication method used.



Hydrograph Report

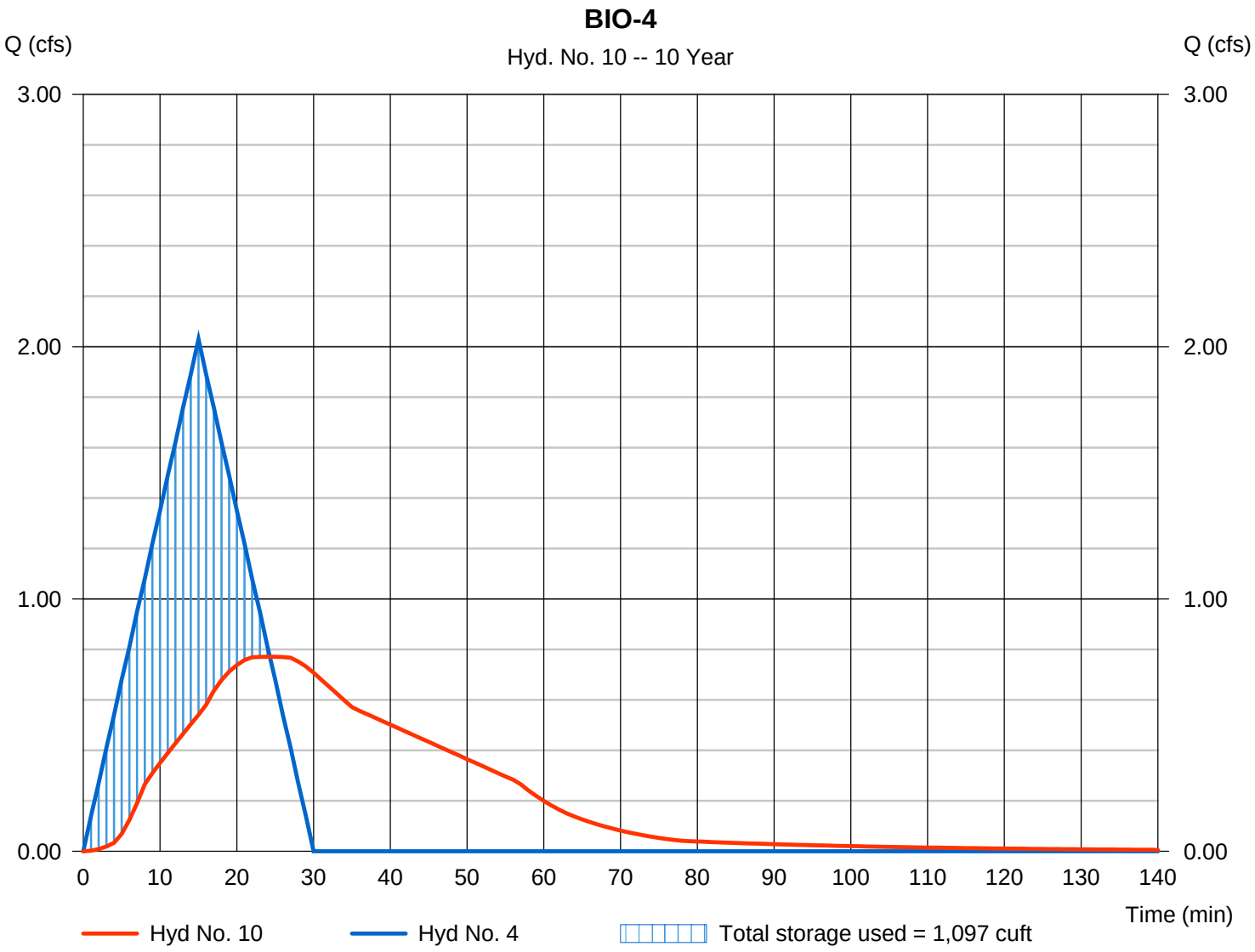
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 10

BIO-4

Hydrograph type	= Reservoir	Peak discharge	= 0.771 cfs
Storm frequency	= 10 yrs	Time to peak	= 24 min
Time interval	= 1 min	Hyd. volume	= 1,825 cuft
Inflow hyd. No.	= 4 - A-4	Max. Elevation	= 103.54 ft
Reservoir name	= BIO-4	Max. Storage	= 1,097 cuft

Storage Indication method used.



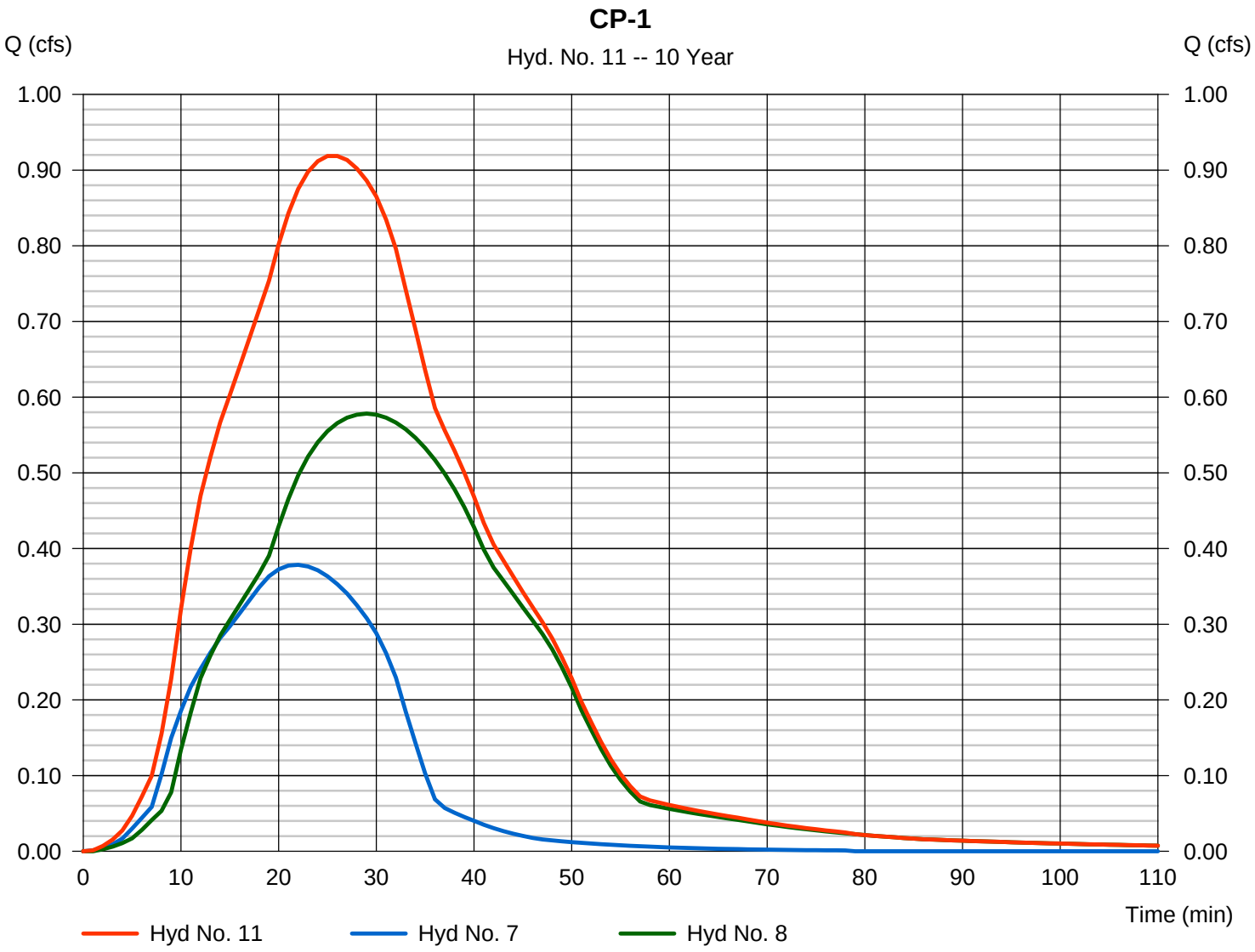
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 11

CP-1

Hydrograph type	=	Combine	Peak discharge	=	0.919 cfs
Storm frequency	=	10 yrs	Time to peak	=	26 min
Time interval	=	1 min	Hyd. volume	=	1,688 cuft
Inflow hyds.	=	7, 8	Contrib. drain. area	=	0.000 ac



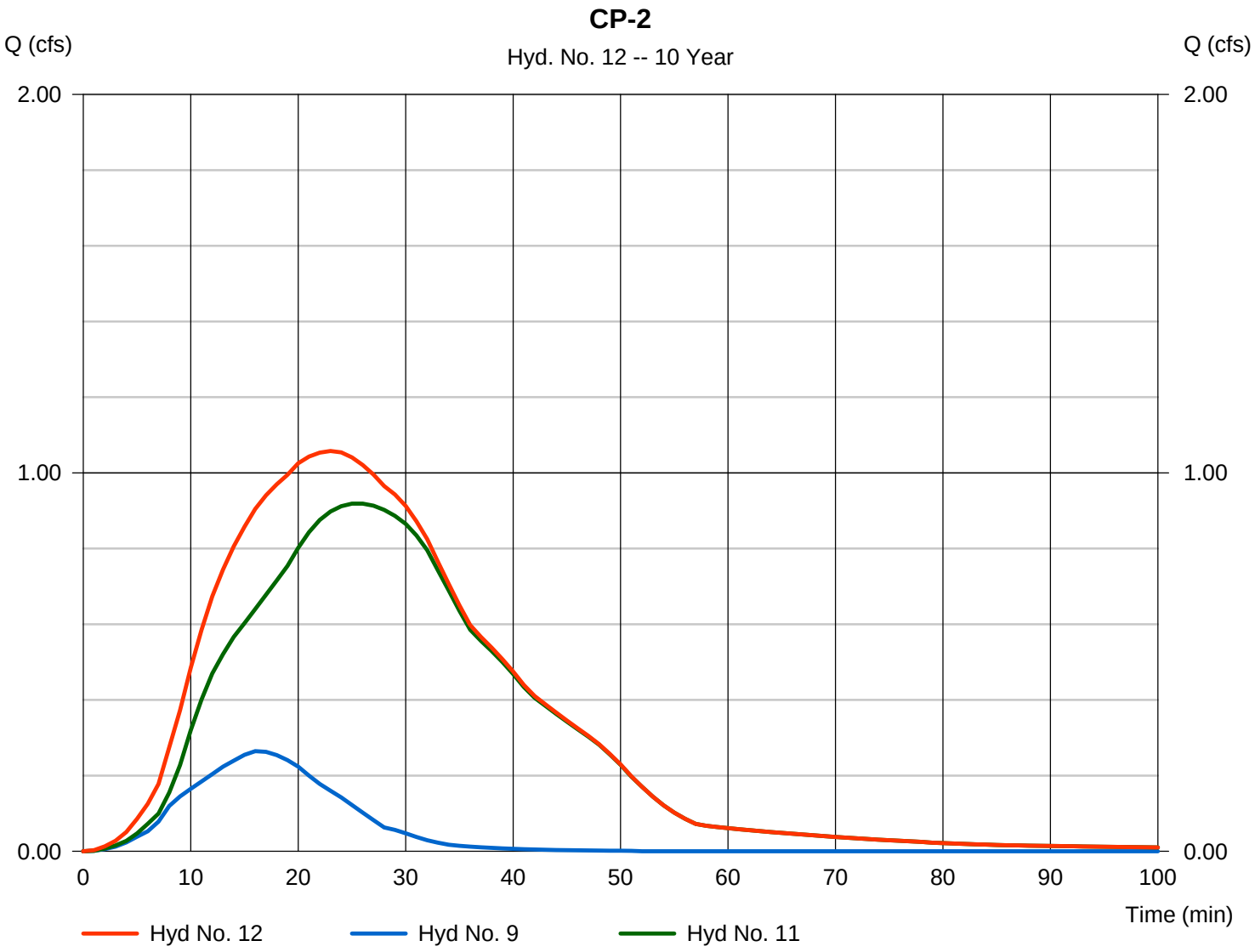
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 12

CP-2

Hydrograph type	= Combine	Peak discharge	= 1.058 cfs
Storm frequency	= 10 yrs	Time to peak	= 23 min
Time interval	= 1 min	Hyd. volume	= 1,948 cuft
Inflow hyds.	= 9, 11	Contrib. drain. area	= 0.000 ac



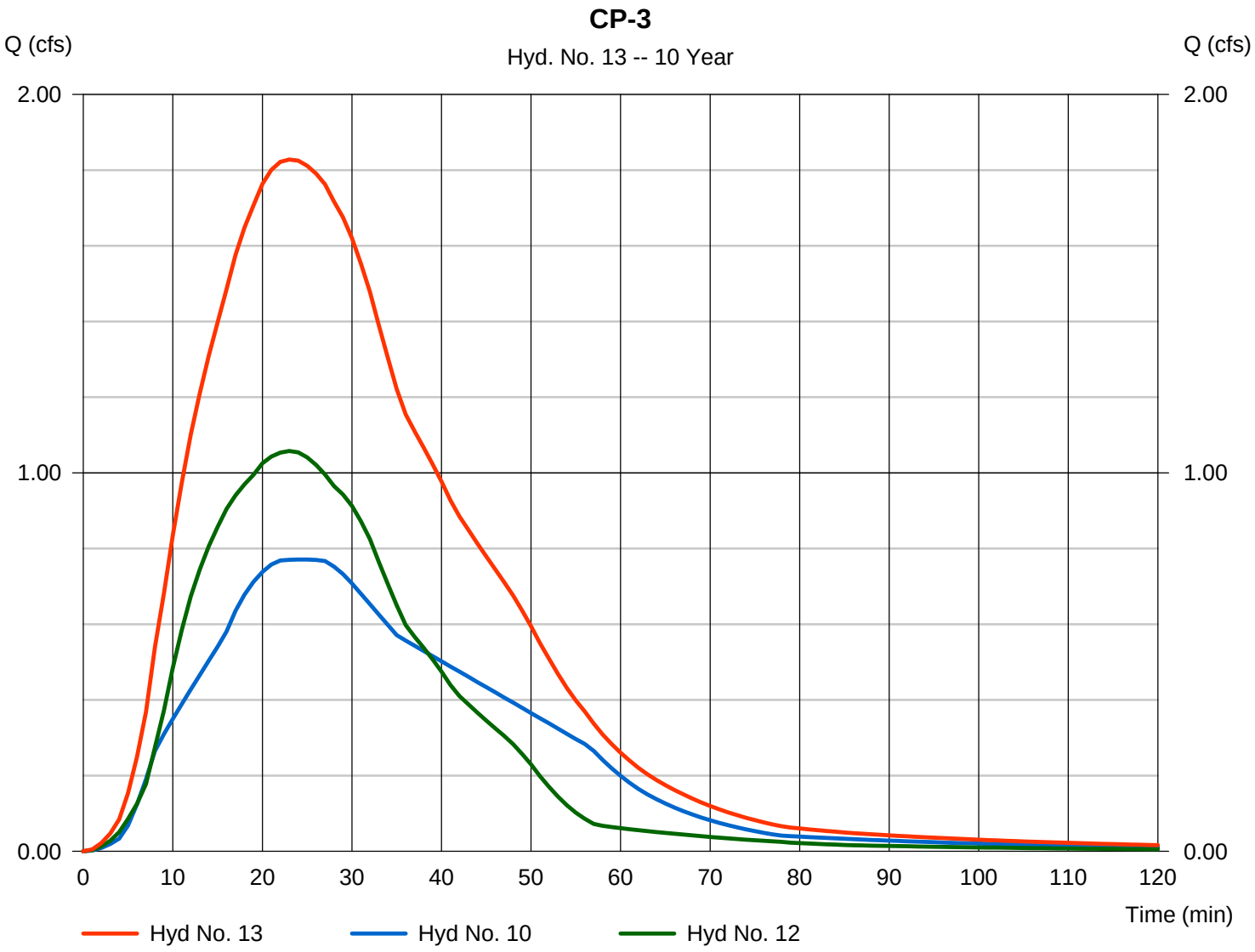
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 13

CP-3

Hydrograph type	=	Combine	Peak discharge	=	1.828 cfs
Storm frequency	=	10 yrs	Time to peak	=	23 min
Time interval	=	1 min	Hyd. volume	=	3,773 cuft
Inflow hyds.	=	10, 12	Contrib. drain. area	=	0.000 ac



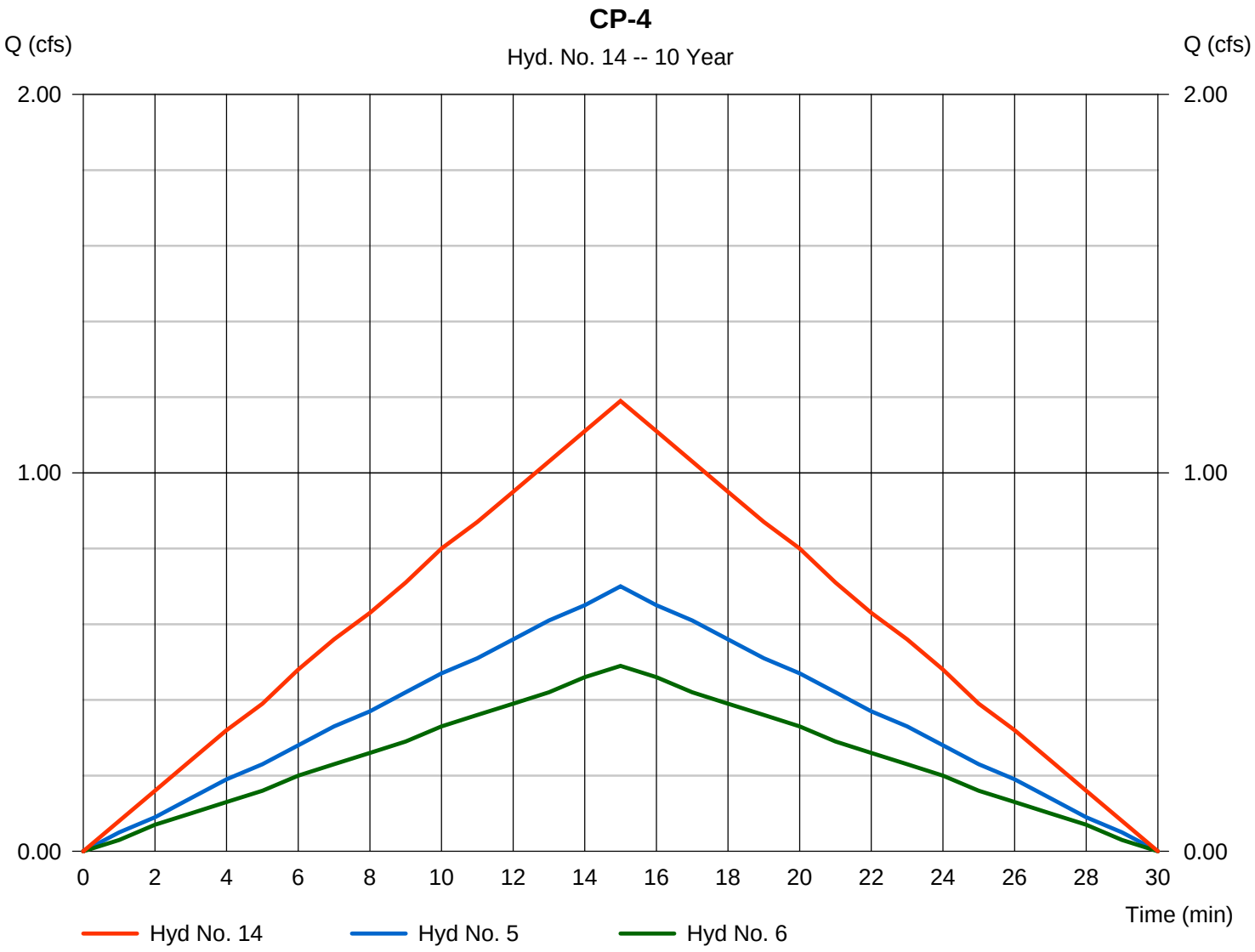
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 14

CP-4

Hydrograph type	=	Combine	Peak discharge	=	1.190 cfs
Storm frequency	=	10 yrs	Time to peak	=	15 min
Time interval	=	1 min	Hyd. volume	=	1,071 cuft
Inflow hyds.	=	5, 6	Contrib. drain. area	=	0.000 ac



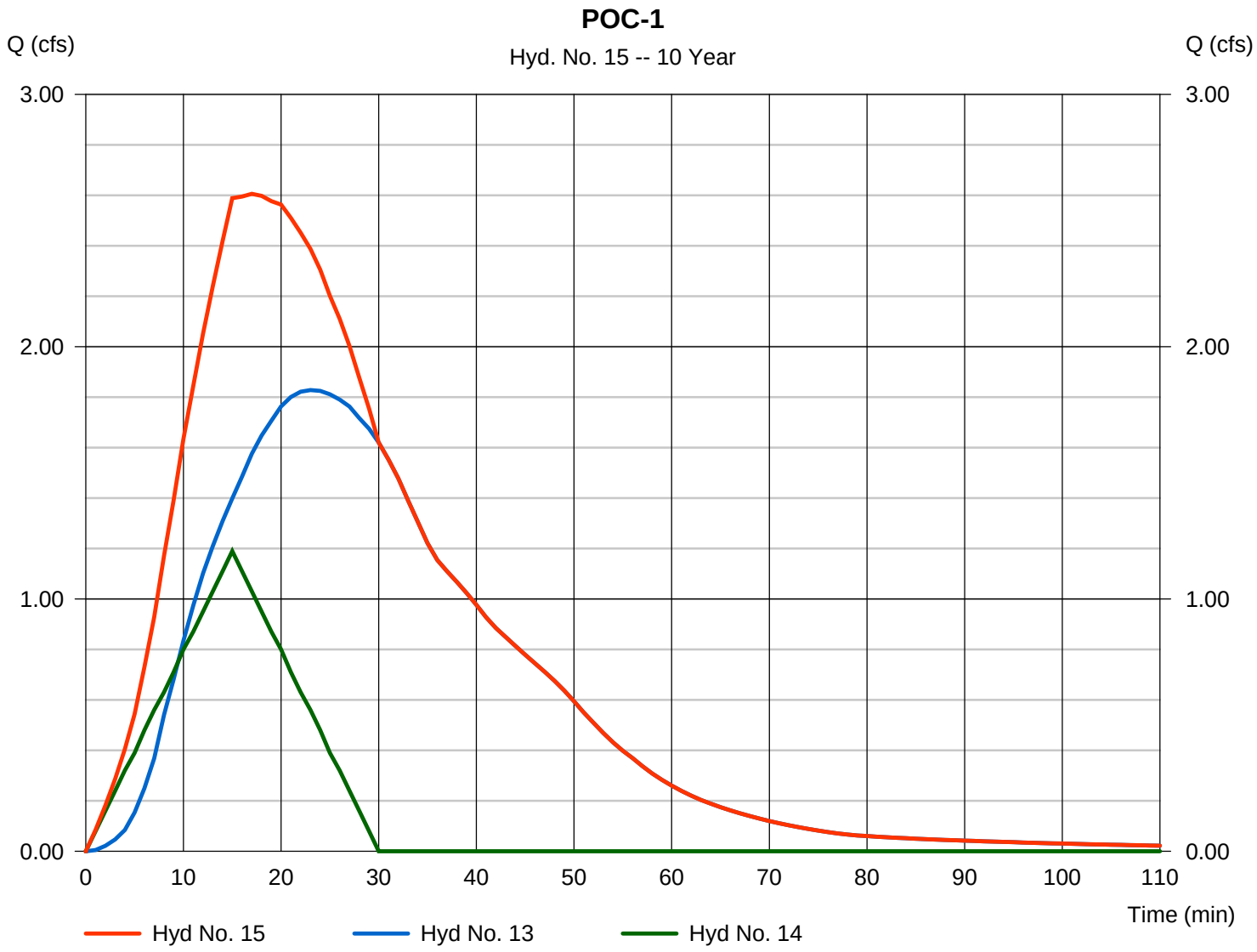
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 15

POC-1

Hydrograph type	= Combine	Peak discharge	= 2.606 cfs
Storm frequency	= 10 yrs	Time to peak	= 17 min
Time interval	= 1 min	Hyd. volume	= 4,844 cuft
Inflow hyds.	= 13, 14	Contrib. drain. area	= 0.000 ac



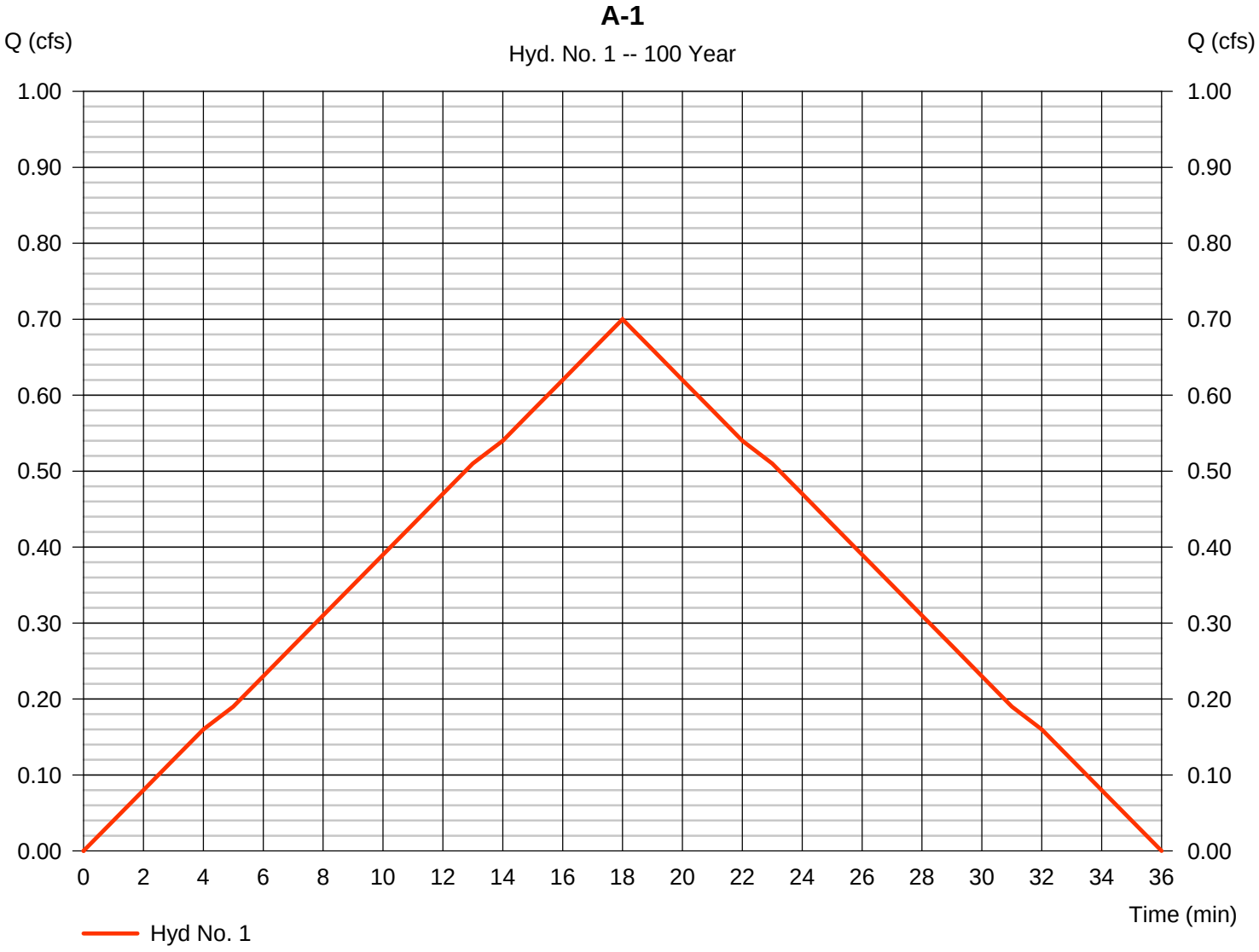
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 1

A-1

Hydrograph type	= Manual	Peak discharge	= 0.700 cfs
Storm frequency	= 100 yrs	Time to peak	= 18 min
Time interval	= 1 min	Hyd. volume	= 756 cuft



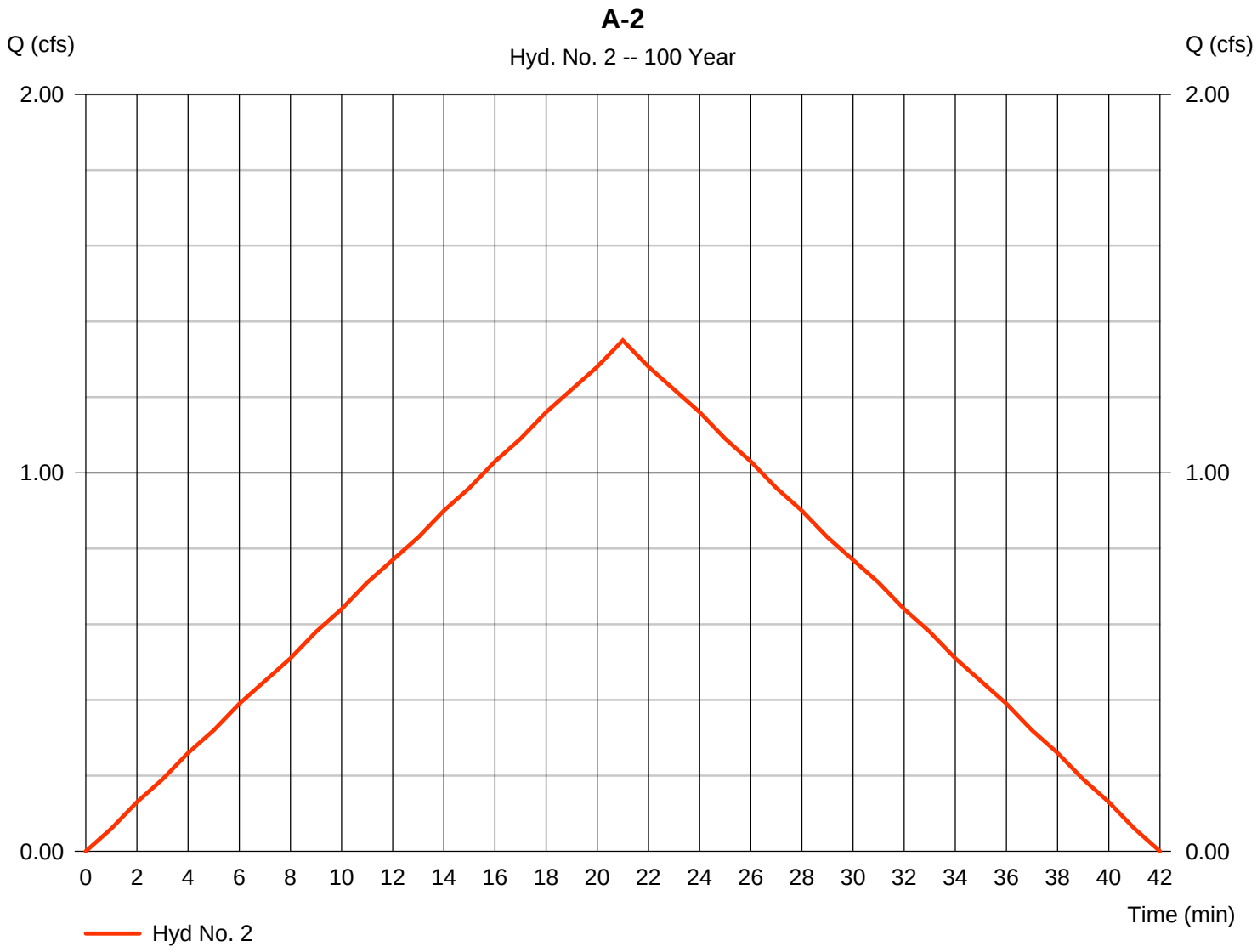
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 2

A-2

Hydrograph type	= Manual	Peak discharge	= 1.350 cfs
Storm frequency	= 100 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 1,699 cuft



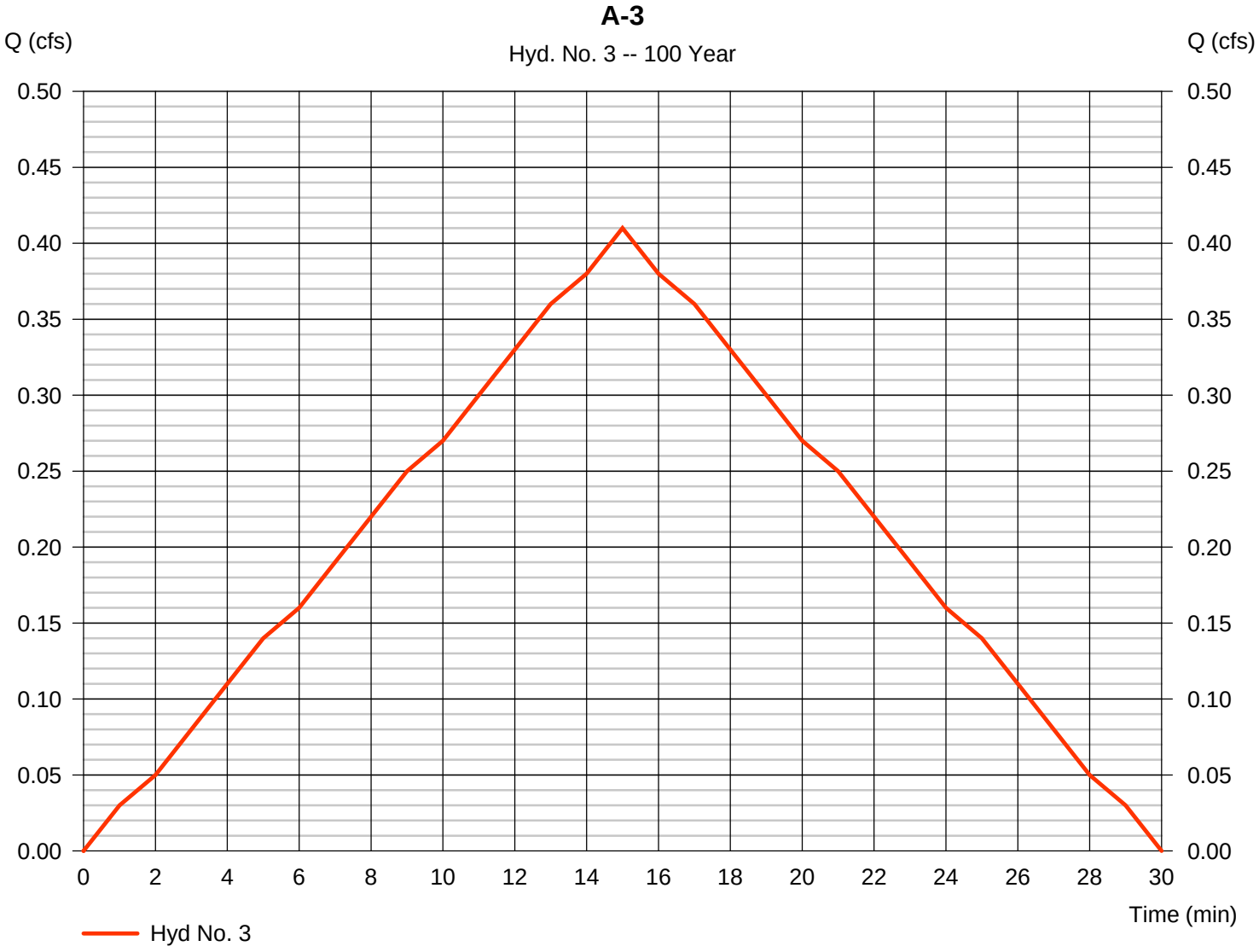
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 3

A-3

Hydrograph type	= Manual	Peak discharge	= 0.410 cfs
Storm frequency	= 100 yrs	Time to peak	= 15 min
Time interval	= 1 min	Hyd. volume	= 369 cuft



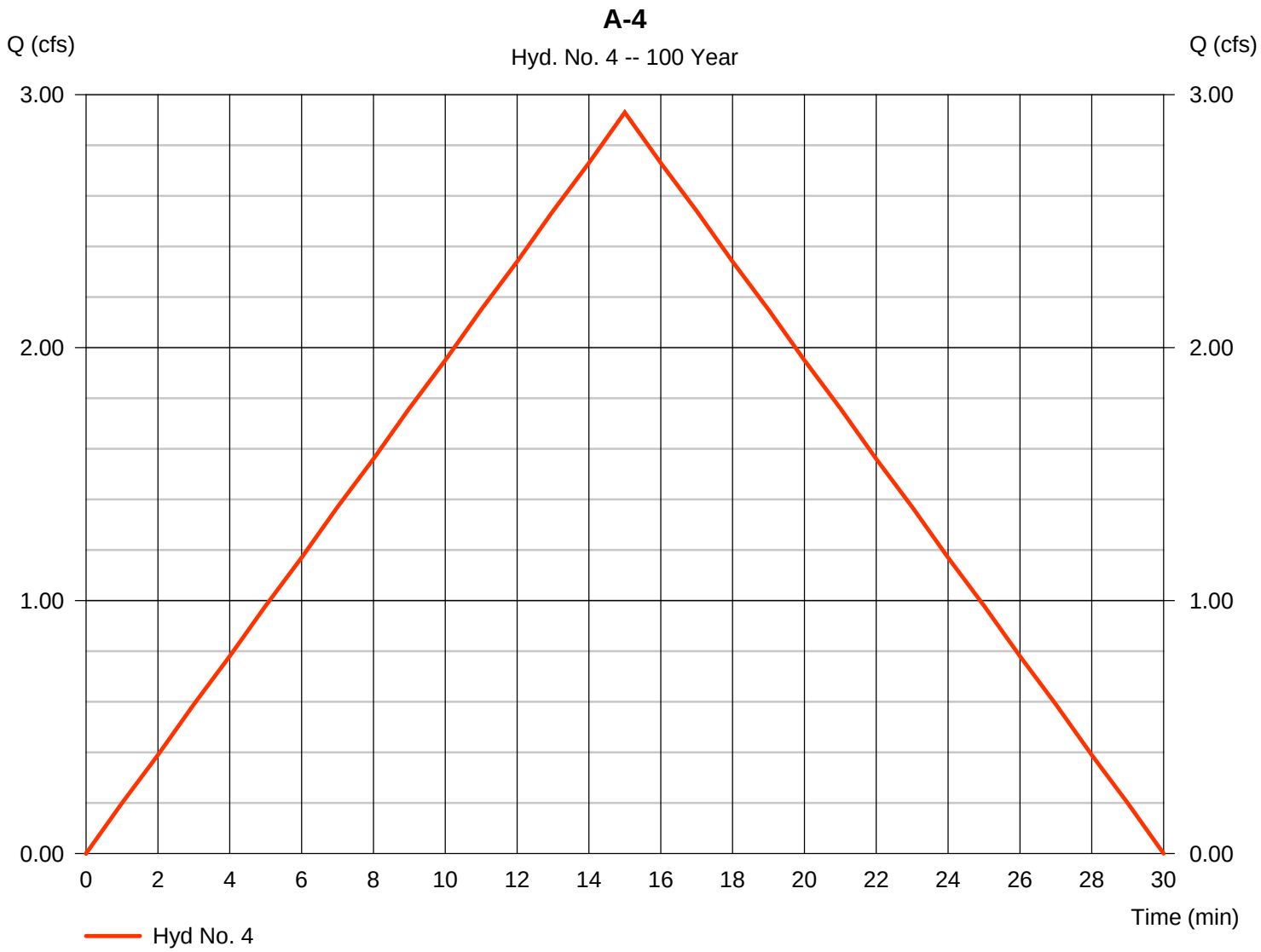
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 4

A-4

Hydrograph type	= Manual	Peak discharge	= 2.930 cfs
Storm frequency	= 100 yrs	Time to peak	= 15 min
Time interval	= 1 min	Hyd. volume	= 2,637 cuft



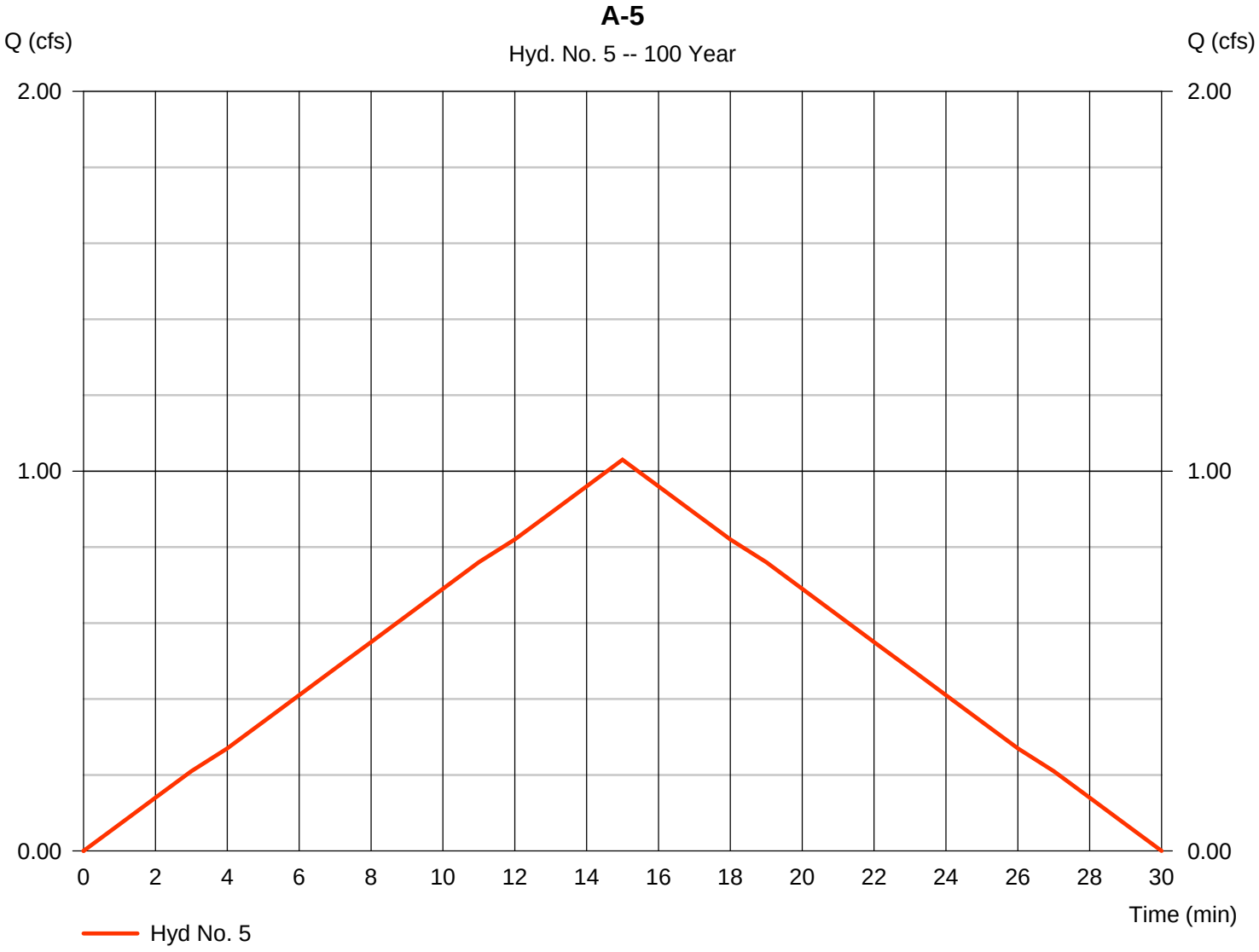
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 5

A-5

Hydrograph type	= Manual	Peak discharge	= 1.030 cfs
Storm frequency	= 100 yrs	Time to peak	= 15 min
Time interval	= 1 min	Hyd. volume	= 927 cuft



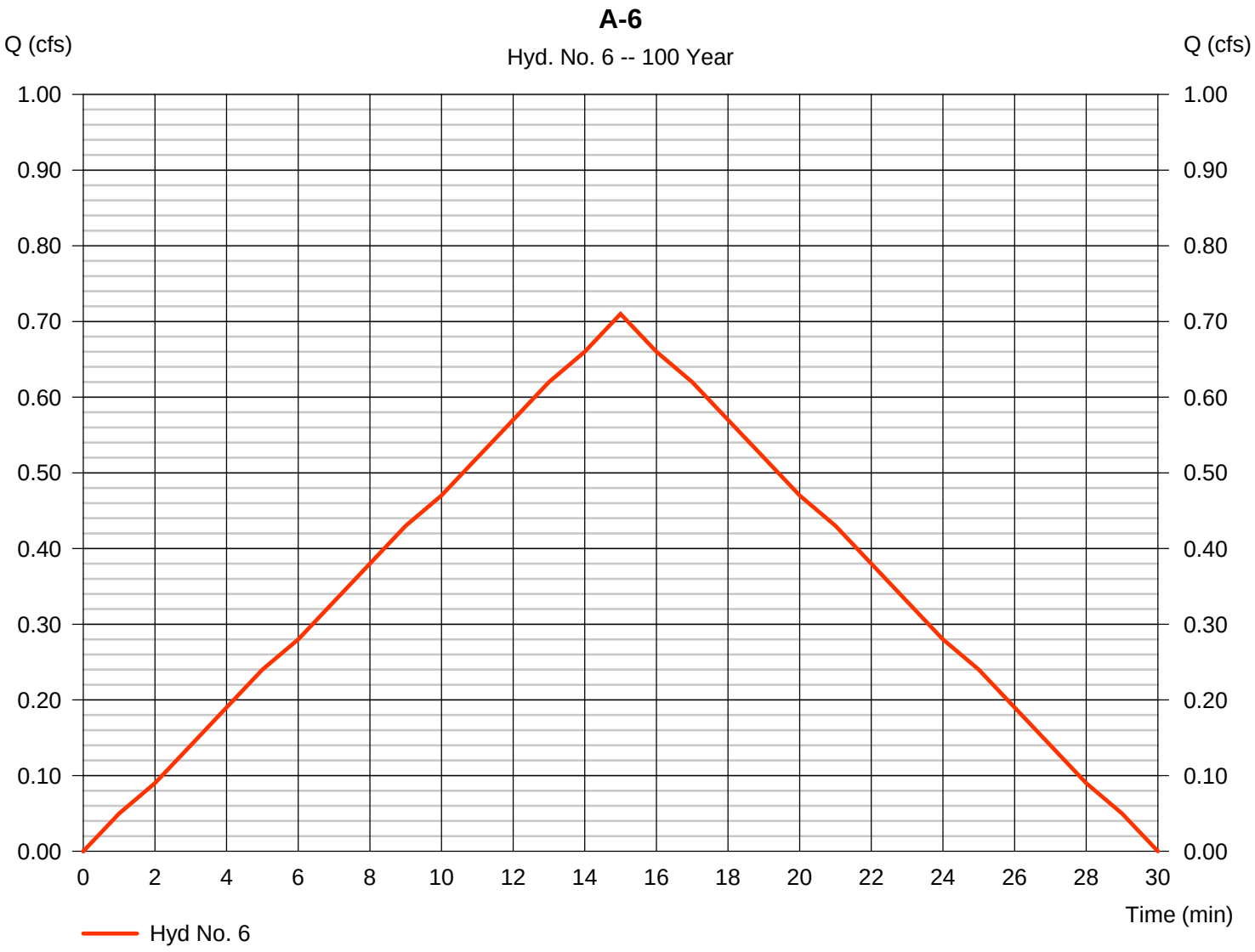
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 6

A-6

Hydrograph type	= Manual	Peak discharge	= 0.710 cfs
Storm frequency	= 100 yrs	Time to peak	= 15 min
Time interval	= 1 min	Hyd. volume	= 639 cuft



Hydrograph Report

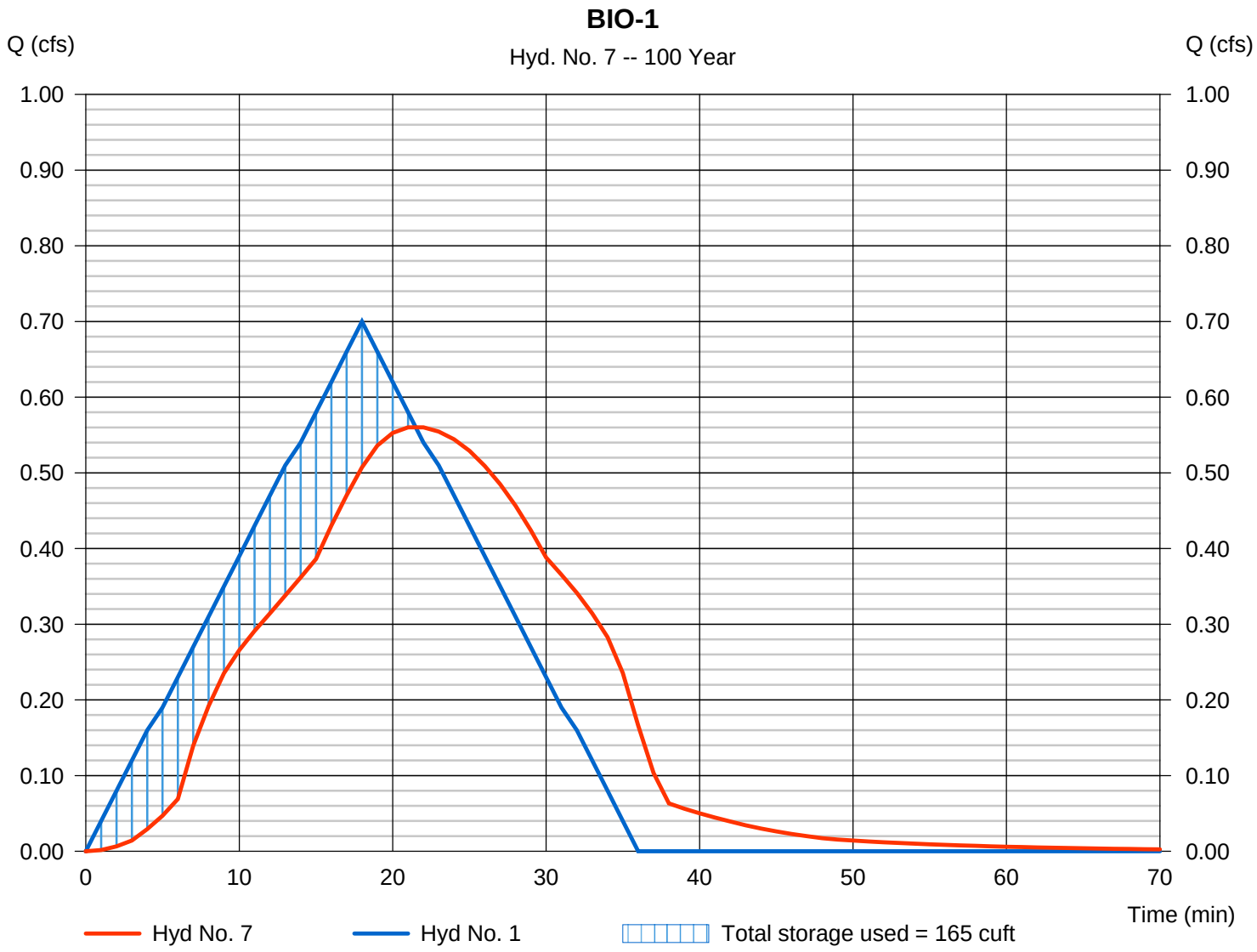
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 7

BIO-1

Hydrograph type	= Reservoir	Peak discharge	= 0.560 cfs
Storm frequency	= 100 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 755 cuft
Inflow hyd. No.	= 1 - A-1	Max. Elevation	= 101.95 ft
Reservoir name	= BIO-1	Max. Storage	= 165 cuft

Storage Indication method used.



Hydrograph Report

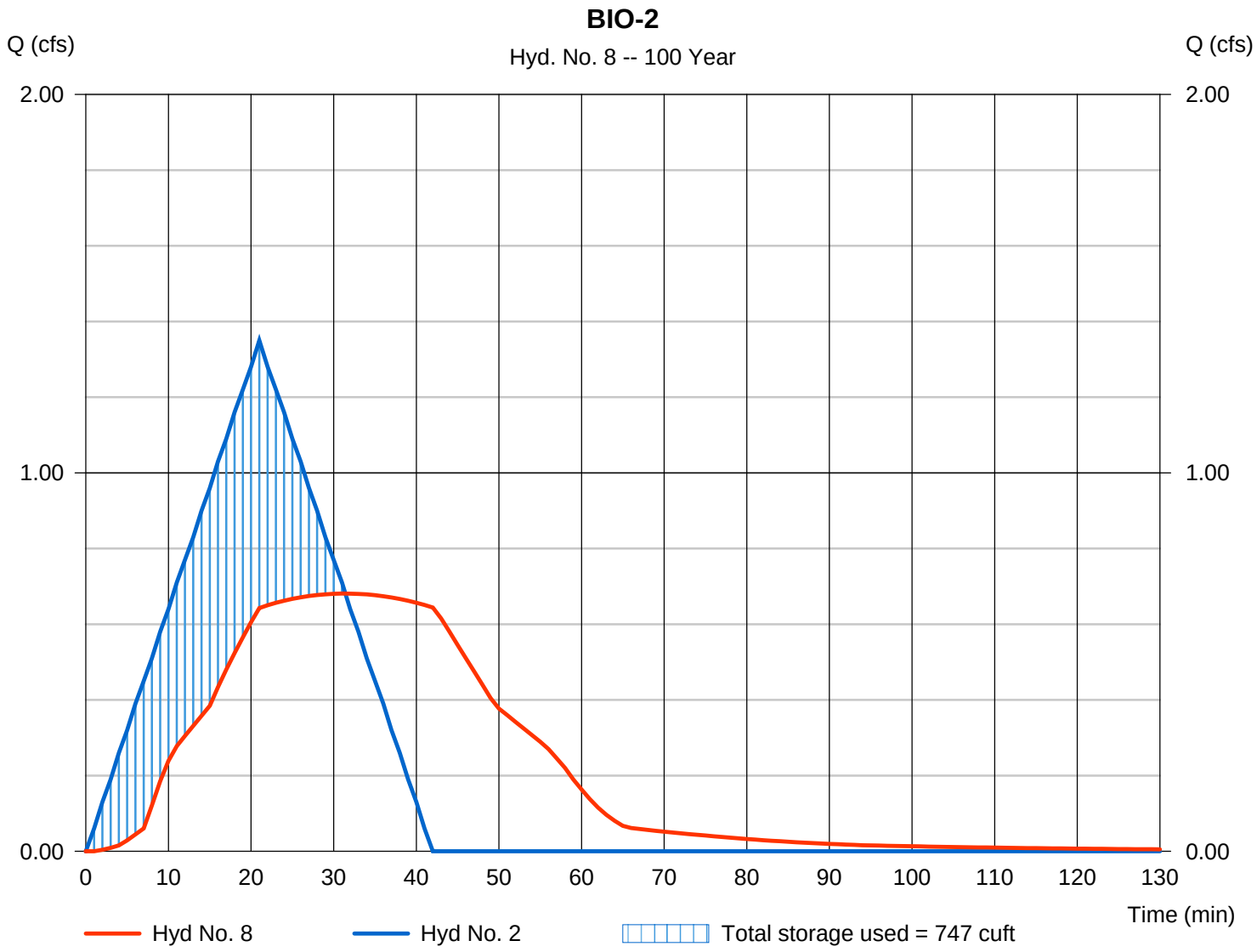
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 8

BIO-2

Hydrograph type	= Reservoir	Peak discharge	= 0.681 cfs
Storm frequency	= 100 yrs	Time to peak	= 31 min
Time interval	= 1 min	Hyd. volume	= 1,697 cuft
Inflow hyd. No.	= 2 - A-2	Max. Elevation	= 102.79 ft
Reservoir name	= BIO-2	Max. Storage	= 747 cuft

Storage Indication method used.



Hydrograph Report

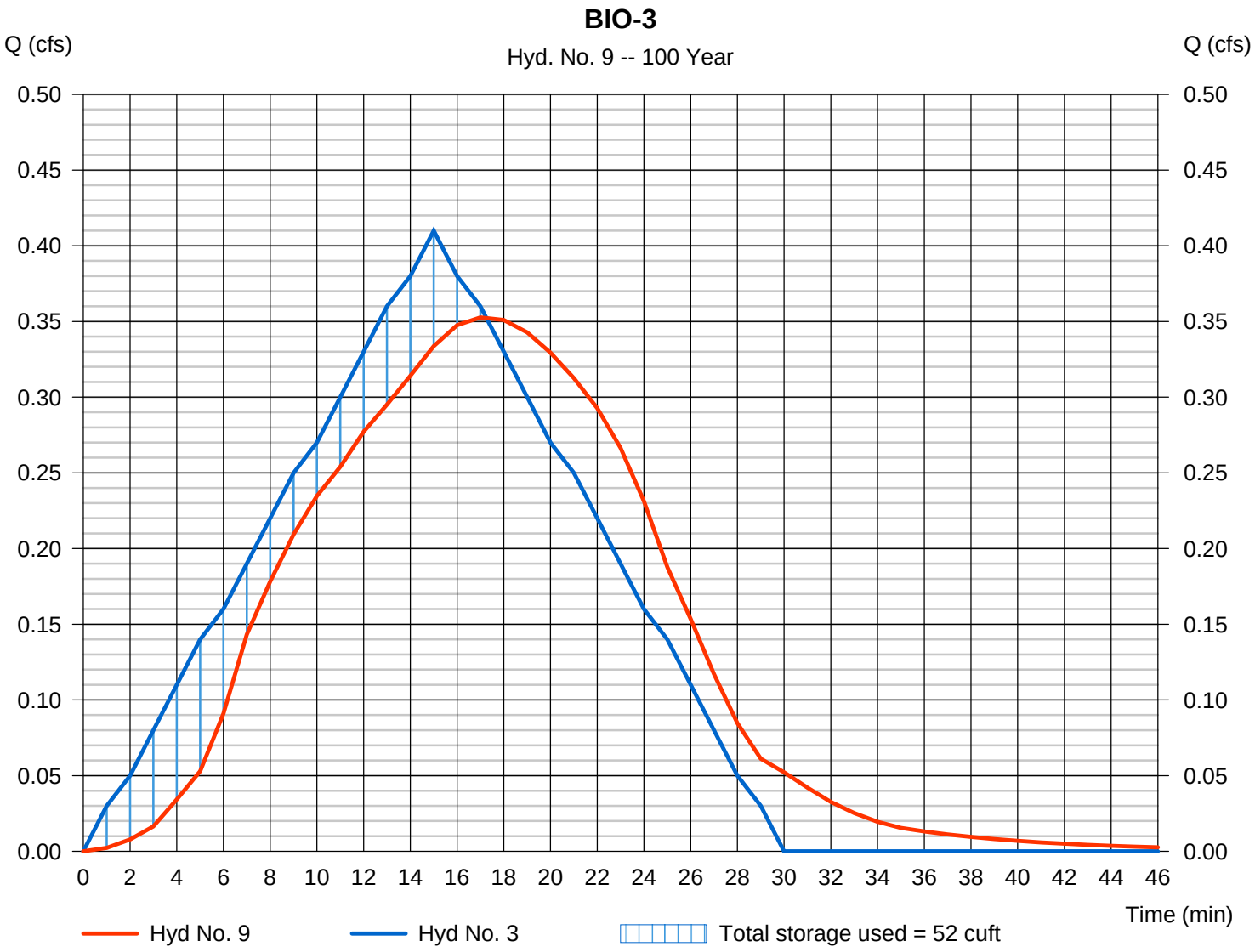
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 9

BIO-3

Hydrograph type	= Reservoir	Peak discharge	= 0.353 cfs
Storm frequency	= 100 yrs	Time to peak	= 17 min
Time interval	= 1 min	Hyd. volume	= 369 cuft
Inflow hyd. No.	= 3 - A-3	Max. Elevation	= 100.88 ft
Reservoir name	= BIO-3	Max. Storage	= 52 cuft

Storage Indication method used.



Hydrograph Report

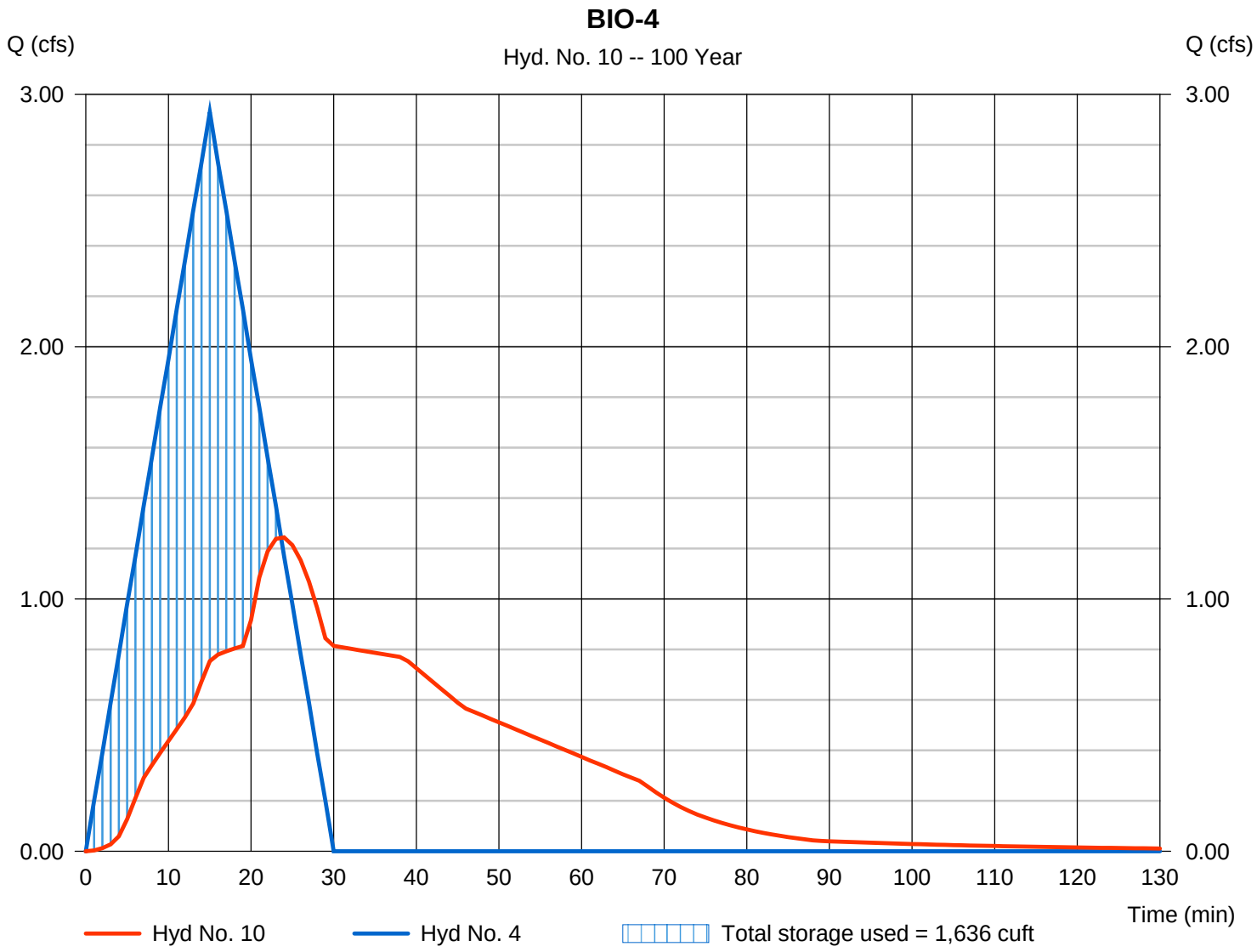
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 10

BIO-4

Hydrograph type	= Reservoir	Peak discharge	= 1.244 cfs
Storm frequency	= 100 yrs	Time to peak	= 24 min
Time interval	= 1 min	Hyd. volume	= 2,635 cuft
Inflow hyd. No.	= 4 - A-4	Max. Elevation	= 104.09 ft
Reservoir name	= BIO-4	Max. Storage	= 1,636 cuft

Storage Indication method used.



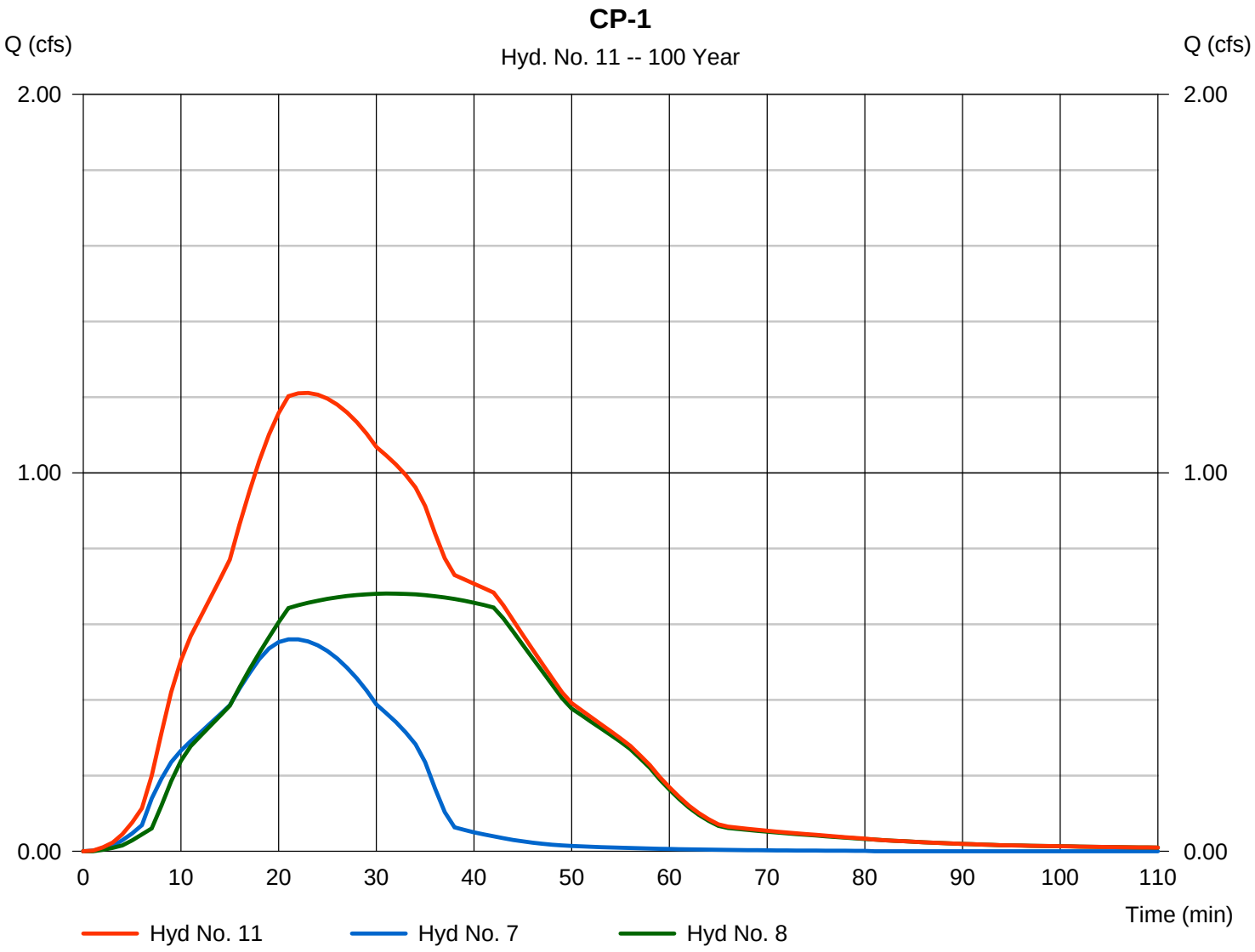
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 11

CP-1

Hydrograph type	= Combine	Peak discharge	= 1.211 cfs
Storm frequency	= 100 yrs	Time to peak	= 23 min
Time interval	= 1 min	Hyd. volume	= 2,452 cuft
Inflow hyds.	= 7, 8	Contrib. drain. area	= 0.000 ac



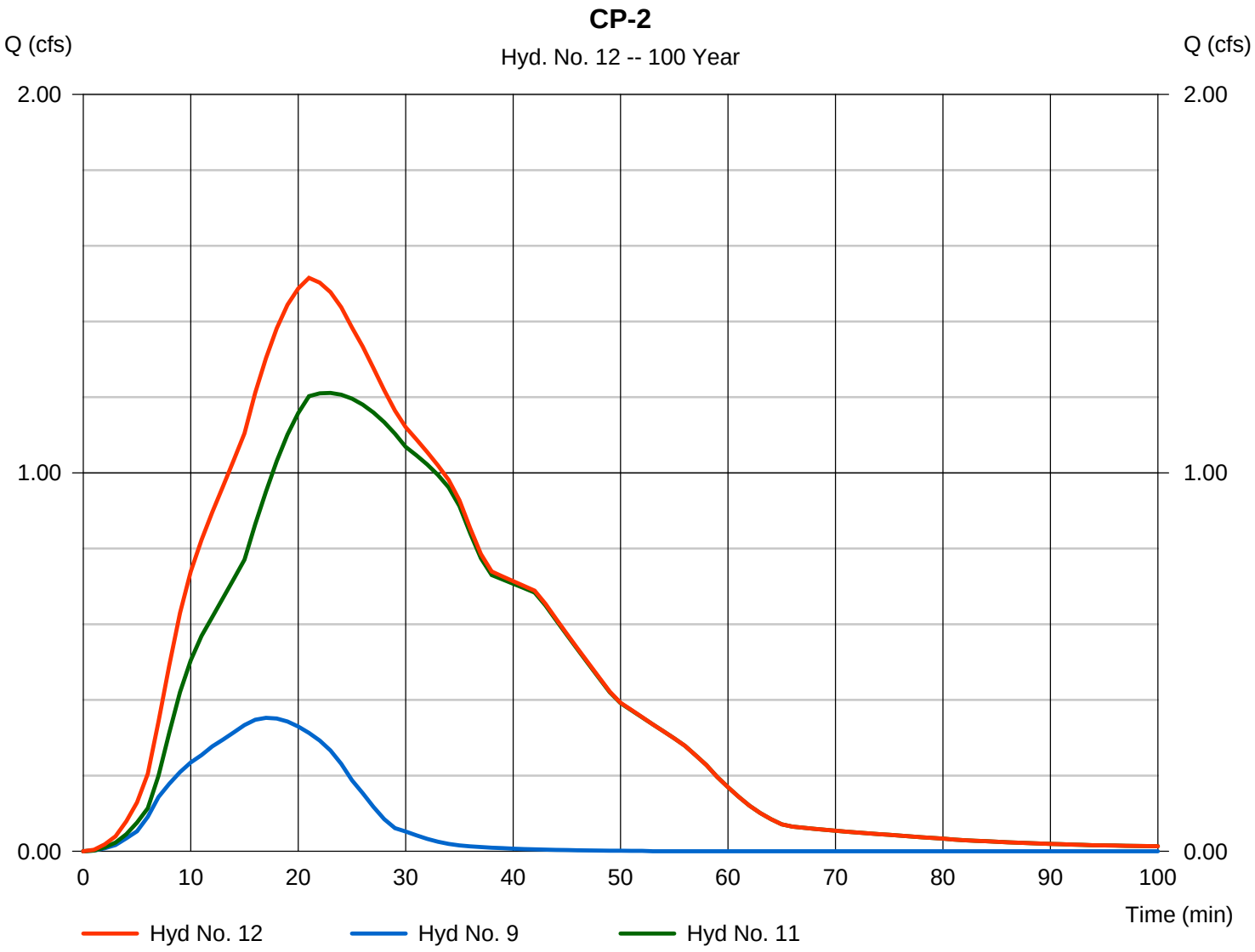
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 12

CP-2

Hydrograph type	= Combine	Peak discharge	= 1.515 cfs
Storm frequency	= 100 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 2,821 cuft
Inflow hyds.	= 9, 11	Contrib. drain. area	= 0.000 ac



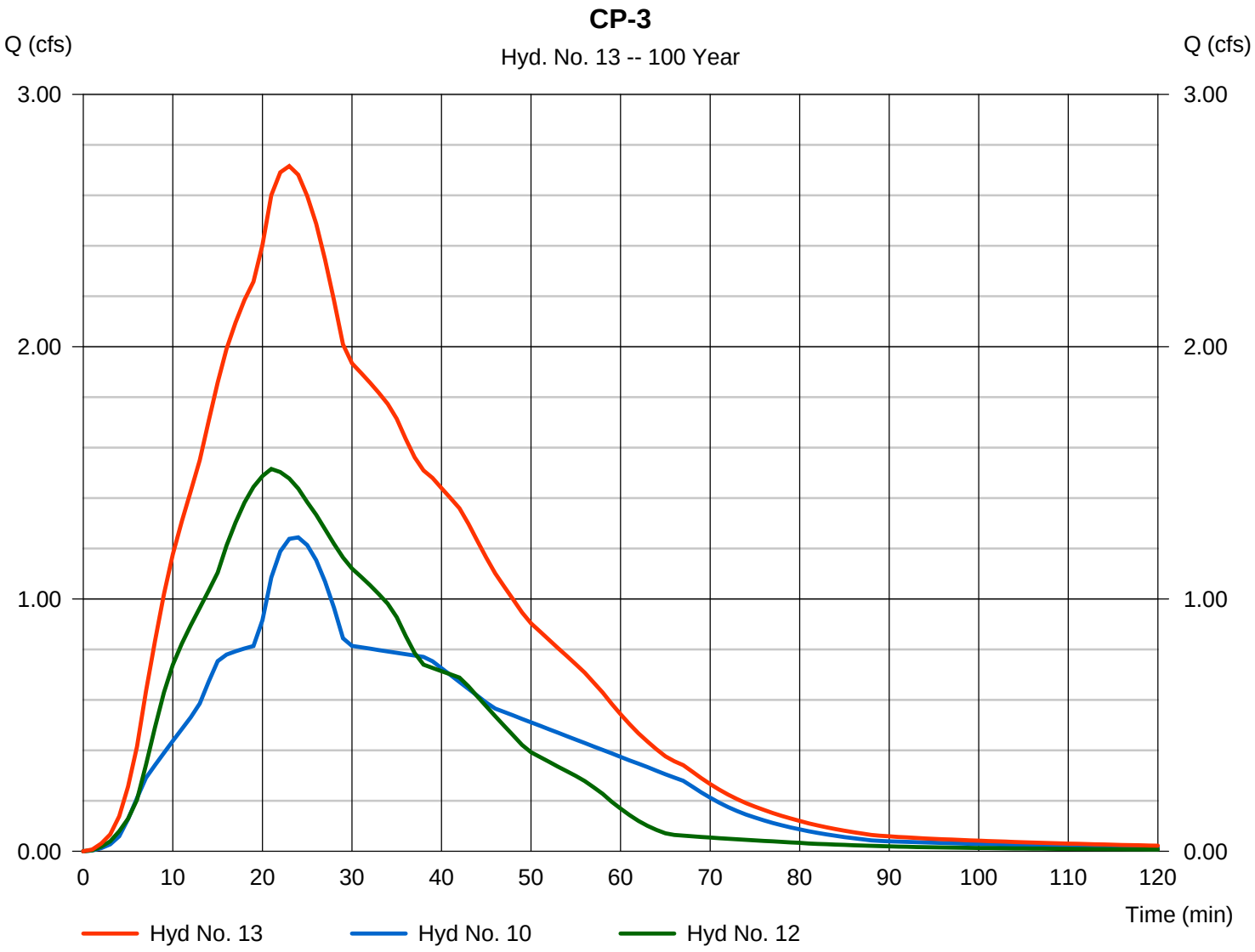
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 13

CP-3

Hydrograph type	=	Combine	Peak discharge	=	2.716 cfs
Storm frequency	=	100 yrs	Time to peak	=	23 min
Time interval	=	1 min	Hyd. volume	=	5,456 cuft
Inflow hyds.	=	10, 12	Contrib. drain. area	=	0.000 ac



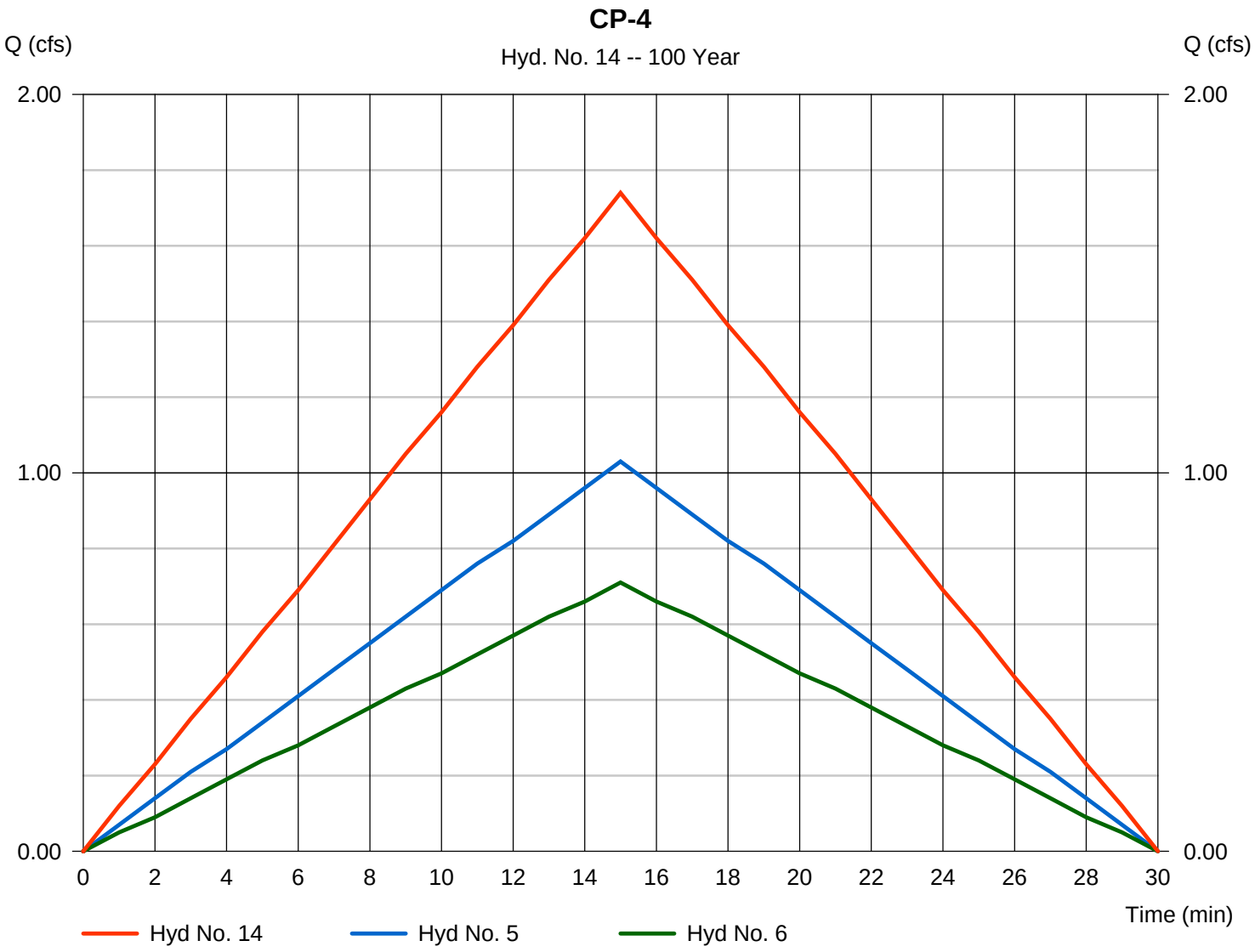
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 14

CP-4

Hydrograph type	=	Combine	Peak discharge	=	1.740 cfs
Storm frequency	=	100 yrs	Time to peak	=	15 min
Time interval	=	1 min	Hyd. volume	=	1,566 cuft
Inflow hyds.	=	5, 6	Contrib. drain. area	=	0.000 ac



Hydrograph Report

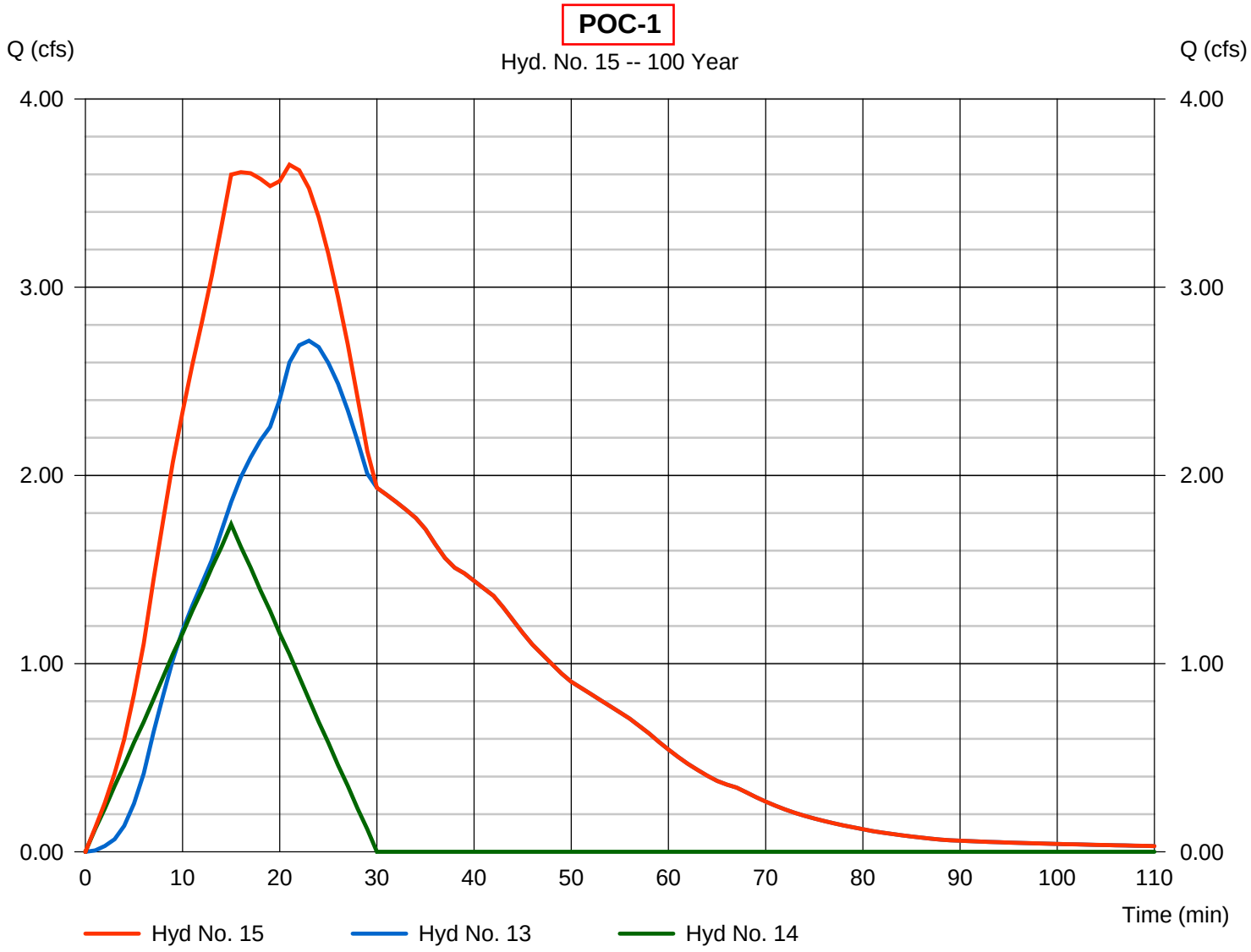
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 04 / 3 / 2018

Hyd. No. 15

POC-1

Hydrograph type	=	Combine	Peak discharge	=	3.650 cfs
Storm frequency	=	100 yrs	Time to peak	=	21 min
Time interval	=	1 min	Hyd. volume	=	7,022 cuft
Inflow hyds.	=	13, 14	Contrib. drain. area	=	0.000 ac

POST MITIGATION
FOR 100-YR STORM



APPENDIX H

WATER QUALITY MANAGEMENT PLAN

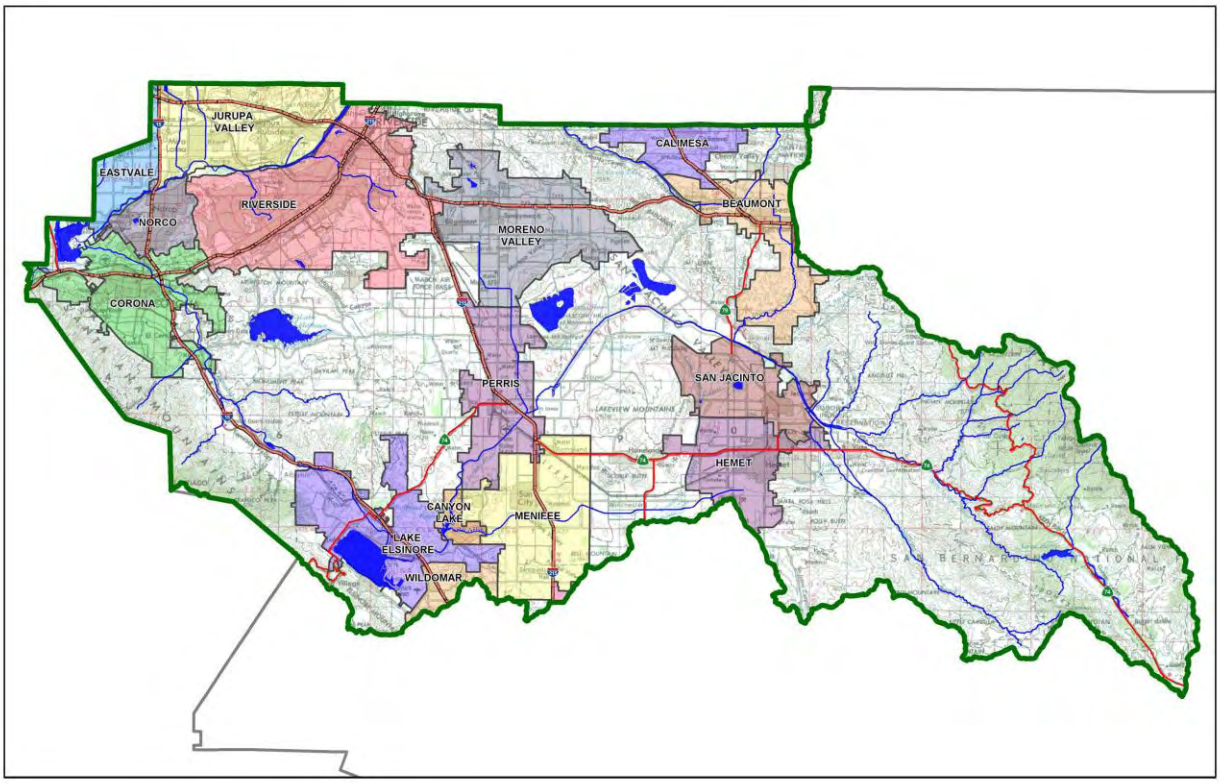
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: KA Enterprises Mega Mart

Development No: PW18-0099

Design Review/Case No: P18-0028(R2), P18-0029(VC), P18-0030(VC-S), P18-0031, 32 (CUP), P18-0033(DR), P18-0034(PM)



Contact Information: Patric de Boer, PE
Project Engineer
patric@omega-consultants.com
858-634-8620

☒ **Preliminary**
☐ **Final**

Original Date Prepared: 01/08/2017

Revision Date(s):

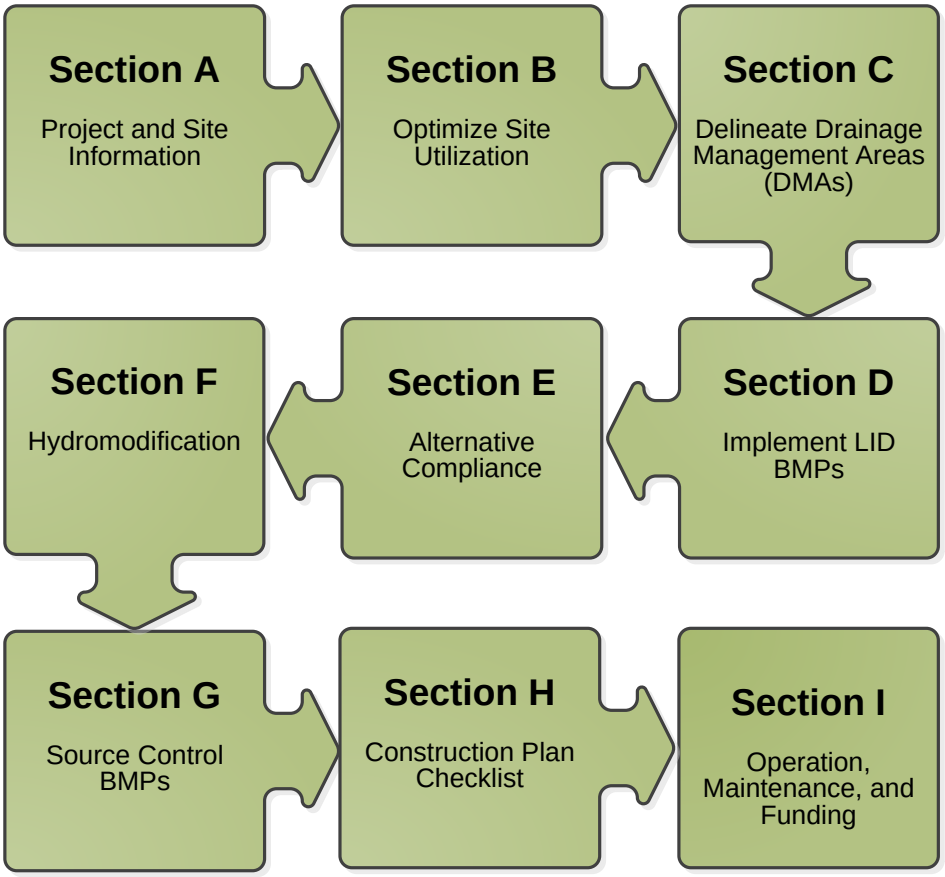
Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**
Template revised June 30, 2016

Prepared for: KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, CA 92123

Prepared by:
Omega Engineering Consultants, Inc
4340 Viewridge Ave, Suite B
San Diego, CA

A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for KA Enterprises by Omega Engineering Consultants, Inc for the KA Enterprise Mega Mart.

This WQMP is intended to comply with the requirements of **City of Riverside** for **R9-2010-0016** which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under **The City of Riverside** Water Quality Ordinance (Municipal Code Section **14.12.316**).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	Date
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure:

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Commercial (Convenience Store/Restaurant)
Planning Area:	N/A
Community Name:	City of Riverside
Development Name:	KA Enterprise Mega Mart
PROJECT LOCATION	
Latitude & Longitude (DMS): 33°57'32''N , 117°18'39''W	
Project Watershed and Sub-Watershed: Santa Ana Watershed and Middle Santa Ana Watershed	
Gross Acres: 2.19 acres APN(s): 256-050-007	
Map Book and Page No.:	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Commercial Use
Proposed or Potential SIC Code(s)	3312
Area of Impervious Project Footprint (SF)	Vacant Lot
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	61,680 sf
Does the project consist of offsite road improvements?	☐ Y ☒ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y ☒ N
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the Project limits Footprint (SF)	0 sf
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	
What is the Water Quality Design Storm Depth for the project?	0.62 in

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling
- BMP Locations (Lat/Long)

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Santa Ana River, Reach 3	Copper, Lead, and Pathogens	AGR, GWR, RARE, REC1, REC2, WILD, WARM	N/A
Santa Ana River, Reach 4	Pathogens	GWR, REC1, REC2, WARM, WILD	N/A

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)*	☐ Y	☐ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, constraints might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. Opportunities might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Consideration of "highest and best use" of the discharge should also be considered. For example, Lake Elsinore is evaporating faster than runoff from natural precipitation can recharge it. Requiring infiltration of 85% of runoff events for projects tributary to Lake Elsinore would only exacerbate current water quality problems associated with Pollutant concentration due to lake water evaporation. In cases where rainfall events have low potential to recharge Lake Elsinore (i.e. no hydraulic connection between groundwater to Lake Elsinore, or other factors), requiring infiltration of Urban Runoff from projects is counterproductive to the overall watershed goals. Project proponents, in these cases, would be allowed to discharge Urban Runoff, provided they used equally effective filtration-based BMPs.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

No natural drainage patterns exist on the project site as the entire site has been previous disturbed and mass graded.

Did you identify and protect existing vegetation? If so, how? If not, why?

The entire site has been previously disturbed. No significant vegetation exists on site.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

The site has been previously mass graded and the artificial fill materials according to the Storm Water Infiltration letter prepared by Southern California Geotechnical, is prone to collapse when inundated with water. The site is also prone for water to laterally migrate creating additional hydrostatic pressures on the

proposed structures. According to the Storm Water Infiltration Letter, infiltration is not recommended at this site.

Did you identify and minimize impervious area? If so, how? If not, why?

All impervious areas have been identified on the WQMP site plan included with this report. All design aspects that required to be impervious were designed to occupy the smallest foot print and maximizing landscape areas while still meeting the intent of design.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

Runoff will not be directed to the adjacent pervious areas since infiltration is infeasible. However, all other runoff from impervious areas will be directed to one of the four biofiltration areas.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1][2]	Area (Sq. Ft.)	DMA Type
DMA-1	Roof, Paving & Landscaping	9,518	Type 'D': Area drains to BMP-1
DMA-2	Paving and Landscaping	20,417	Type 'D': Area drains to BMP-2
DMA-3	Paving and Landscaping	5,128	Type 'D': Area drains to BMP-3
DMA-4	Roof, Paving & Landscaping	36,928	Type 'D': Area drains to BMP-4
DMA-5	Paving and Landscaping	14,055	Type 'C': Area drains to Self-Retaining Areas
DMA-6	Paving and Landscaping	9,199	Type 'C': Area drains to Self-Retaining Areas

[1]Reference Table 2-1 in the WQMP Guidance Document to populate this column
[2]If multi-surface provide back-up

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
N/A	N/A	N/A	N/A

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]
N/A	N/A	N/A	N/A	N/A	N/A	N/A
-	-	-	-	-	-	-
-	--	-	-	-	-	-

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Impervious fraction	Product	DMA name /ID	Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]		[D]	[C]/[D]
DMA-5	14,055	Driveway	0.13	1,827	DMA-5	12,228	0.15
DMA-6	9,199	Driveway	0.58	5,335	DMA-6	3,864	1.38
-	-	-	-	-			
-	-	-	-	-			

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA-1	BMP-1
DMA-2	BMP-2
DMA-3	BMP-3
DMA-4	BMP-4

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site; proceed to section D.3

If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?	X	
If Yes, list affected DMAs: All DMAs		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?		X
If Yes, list affected DMAs:		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

**REFER TO GEOTECHNICAL REPORT- STORMWATER INFILTRATION INFEASIBILITY LETTER (APPENDIX 3)

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies*:*

N/A- Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☐The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If none of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: **0.70 acres**

Type of Landscaping (Conservation Design or Active Turf): **Conservation Design**

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: **1.48 acres (Roof & Paving Areas)**

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: **0.81**

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: **0.14 acres**

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
1.20	**0.7**

***Harvesting Stormwater runoff is not feasible for irrigation**

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: ***100***

Project Type: ***Commercial***

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: ***1.48 acres***

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-2 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: ***201***

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: ***297***

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)
297	100

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

N/A

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: ***N/A***

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: ***N/A***

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-4 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-4: ***N/A***

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: ***N/A***

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the projected average daily use (Step 1) to the minimum required non-potable use (Step 4).

Minimum required non-potable use (Step 4)	Projected average daily use (Step 1)
N/A	**N/A**

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment per Section 3.4.2 of the WQMP Guidance Document.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☒ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA-1	☐	☐	☒	☒	☐
DMA-2	☐	☐	☒	☒	☐
DMA-3	☐	☐	☒	☒	☐
DMA-4	☐	☐	☒	☒	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

N/A

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First, calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second, design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BMP-1*		
	[A]		[B]	[C]	[A] x [C]			
DMA-1	*9,518*	*Mixed*	*0.92*	*0.76*	*7,234*	*Design Storm Depth (in)*	*Design Capture Volume,* $\mathbf{V_{BMP}}$ *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
	A_T = 9,518				Σ= 7,234 [D]	0.62 [E]	[F] = 374	[G] = 375

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BMP-2*		
	[A]		[B]	[C]	[A] x [C]			
DMA-2	*20,417*	*Mixed*	*0.87*	*0.69*	*14,047*	*Design Storm Depth (in)*	*Design Capture Volume,* $\mathbf{V_{BMP}}$ *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
	A_T = 20,417				Σ= 14,047[D]	0.62	[F] = 726	1,018 [G]

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BMP-3*		
	[A]		[B]	[C]	[A] x [C]			
DMA-3	*5,128*	*Mixed*	*0.87*	*0.69*	*3,528*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
	A_T = 5,128				Σ= 3,528 [D]	0.62	[F] = 182	191 [G]

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BMP-4*		
	[A]		[B]	[C]	[A] x [C]			
DMA-4	*36,928*	*Mixed*	*0.83*	*0.64*	*23,474*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
	A_T = 36,928				Σ= 23,474 [D]	0.62	[F] = 1213	1250 [G]

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

N/A

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P(2)
☒ Commercial/Industrial Development	P(3)	P	P(1)	P(1)	P(5)	P(1)	P	P
☒ Automotive Repair Shops	N	P	N	N	P(4, 5)	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☐ Parking Lots (>5,000 ft^2)	P(6)	P	P(1)	P(1)	P(4)	P(1)	P	P
☒ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☒	☒	☒	☒	☒	☒	☒	☒

P = Potential
N = Not Potential
(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected
(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected
(3) A potential Pollutant is land use involving animal waste
(4) Specifically petroleum hydrocarbons
(5) Specifically solvents
(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
N/A	N/A
Total Credit Percentage[1]	

[1]Cannot Exceed 50%
[2]Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	**DMA Area (square feet)**	**Post-Project Surface Type**	**Effective Impervious Fraction, I_f**	**DMA Runoff Factor**	**DMA Area x Runoff Factor**		***Enter BMP Name / Identifier Here***		
	[A]		[B]	[C]	[A] x [C]				
						Design Storm Depth (in)	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is for Flow-Based Treatment Control BMPs [E] = .2, for Volume-Based Control Treatment BMPs, [E] obtained from Exhibit A in the WQMP Guidance Document
[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12
[H] is from the Total Credit Percentage as Calculated from Table E.2 above
[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
N/a	N/a	N/a

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration			
Volume (Cubic Feet)			

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Susceptibility Maps.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

INSERT TEXT HERE

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

-Refer to Appendix 7 for calculations and analysis indicating the post-development for a 2-year storm event mimics the pre-development storm water runoff condition.

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On-site Storm Drain Inlets	Mark all inlets with the words "Only Rain Down the Storm Drain" or Similar	-Maintain and periodically repaint or replace inlet markings. -Provide stormwater pollution prevention information to new site owners, lessees, or operators. -Apply applicable operational BMPs from fact sheet SC-44 -Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to strom drains or to store or deposit

		materials so as to create a potential discharge to storm drains.”
Landscape/Outdoor Pesticide Use	Final landscape plans will accomplish all of the following. -Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. -Where landscaped areas are used to retain or detain stromwater, specify plants that are tolerant of saturated soil conditions. -Use pert resistant plants when applicable -Currently a graded lot so preservation of existing is limited.	-Maintain landscaping using minimum or no pesticides. -Apply applicable operational BMPs in “What you should know for landscape and gardening” -Provide Integrated pest management information to new owners, lessees, and operators.
Food Service	-Describe the location and features of the designated cleaning area. -Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	- State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post “no hazardous materials” signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control material available on site. See Fact Sheet SC-34, “ Waste Handling and Disposal” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
Refuse areas	-State that signs will be posted on or near dumpsters with the words “Do not dump hazardous materials here” or similar -Final plan for refuse handling will be provided in final WQMP	With final WQMP, explanation will be given on providing adequate number of receptacles and performing operational BMPs

Vehicle and Equipment Cleaning	-If a car wash area is not provided, describe any measures taken to discourage on –site car washing and explain how these will be enforced.	-Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. Refer to "Outdoor Cleaning activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://recflood.org /stormwater/
Fuel Dispensing Areas		-The property owner shall dry sweep the fueling area routinely. -See the Fact Sheet SD-30, Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
Fire Sprinkler Test Water	Provide means to drain fire sprinkler test water to sewer	Test water disposed per CASQA fact sheet SC-41
Roofing, Gutter, and Trim	Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	
Plazas, sidewalks, and parking lots.		Sweep plazas, sidewalks, and parking lots regularly to percent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
BMP-1	BMP-1	Preliminary Grading – Sheet 2 and 3
BMP-2	BMP-2	Preliminary Grading – Sheet 2 and 3
BMP-3	BMP-3	Preliminary Grading – Sheet 2 and 3
BMP-4	BMP-4	Preliminary Grading – Sheet 2 and 3

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism:

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

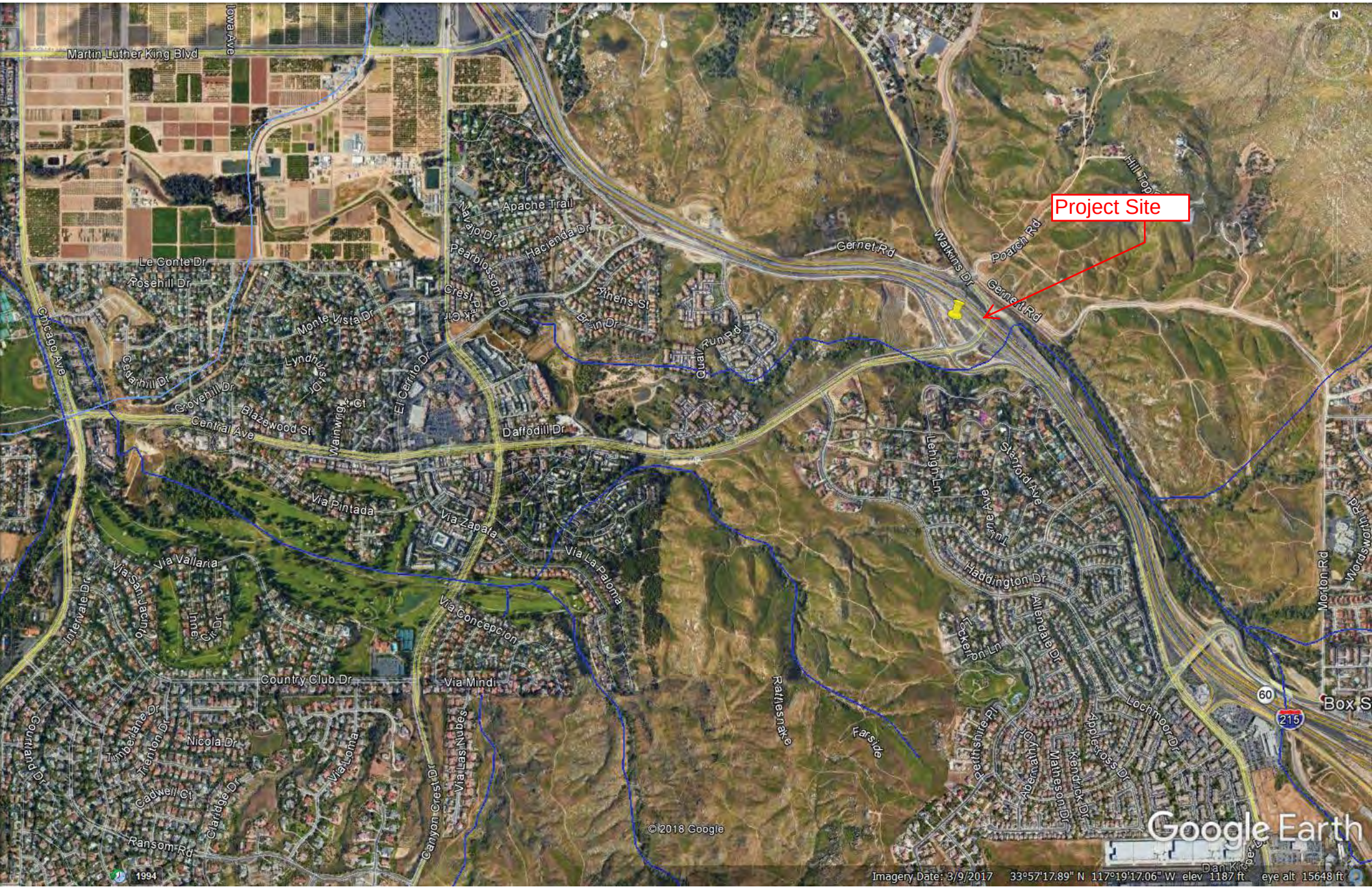
☐ Y ☒ N

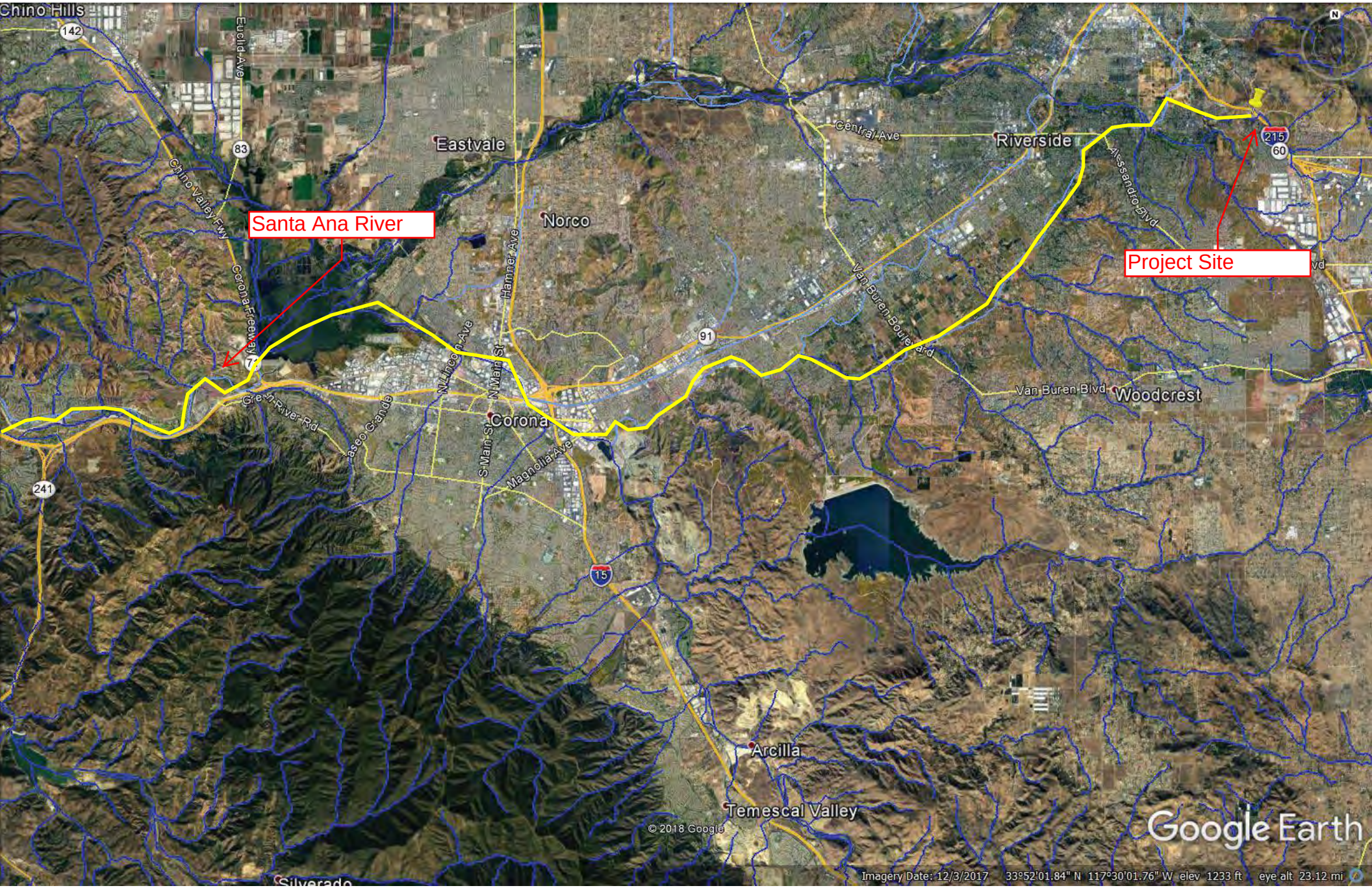
Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

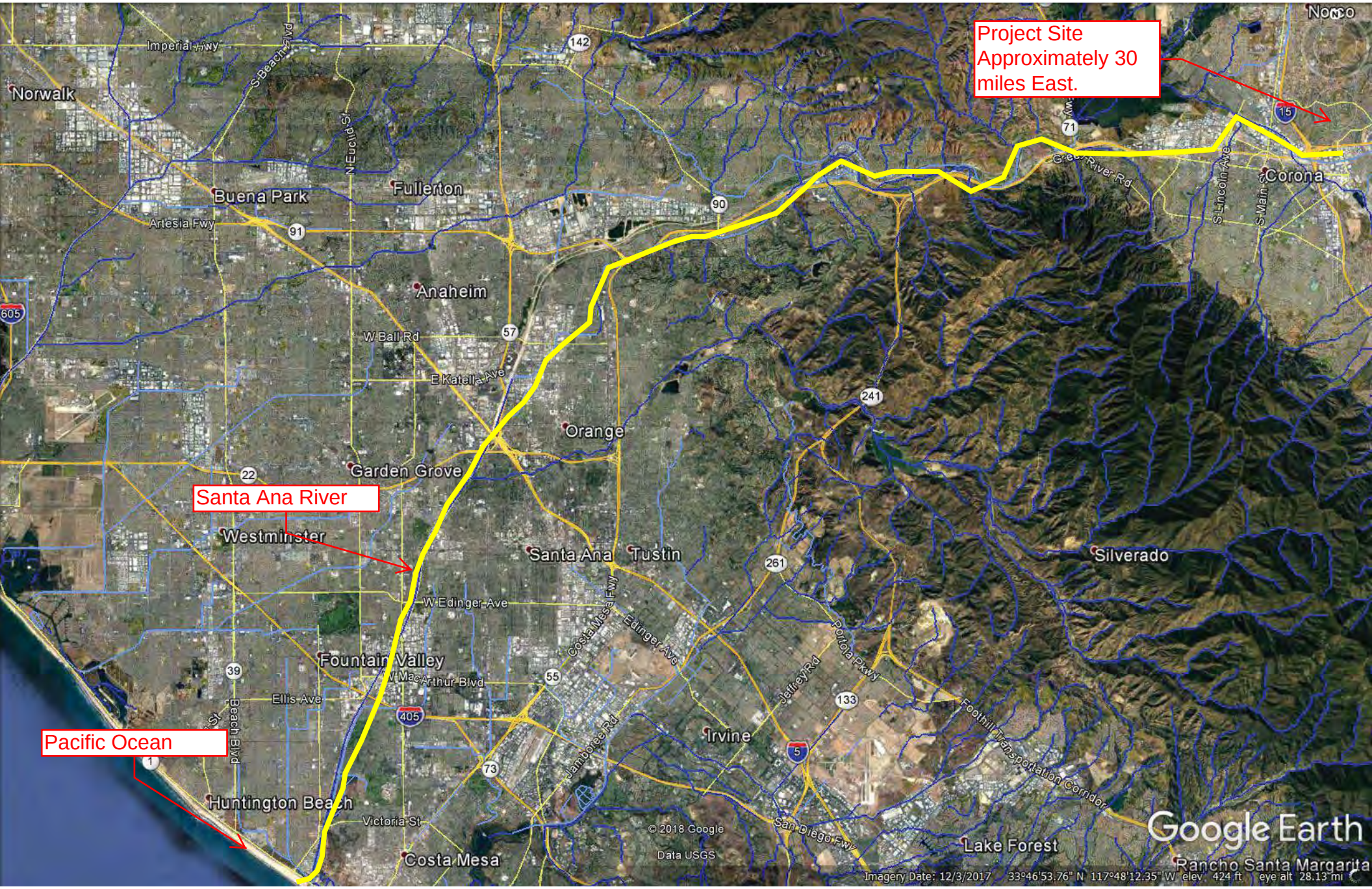
Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

SEE MAP POCKET FOR WQMP SITE PLAN


Project Site
Martin Luther King Blvd
Lomita Ave
Apache Trail
Navajo Dr
Hacienda Dr
Pearblossom Dr
Crest Park Cir
Athens St
Brain Dr
Quail Run Rd
Gernet Rd
Watkins Dr
Poarch Rd
Hill Top
Le Conte Dr
Rosehill Dr
Chicago Ave
Monte Vista Dr
Lyndhurst Dr
Cedarhill Dr
Grovehill Dr
Blazewood St
Central Ave
Wainwright Ct
El Cerrito Dr
Daffodill Dr
Via Pintada
Via Zapata
Via La Paloma
Via Vallarta
Via San Jacinto
Interwale Dr
Inns Cir Dr
Via Concepcion
Country Club Dr
Via Mindi
Courtland Dr
Timberlane Dr
Trenton Dr
Nicola Dr
Via Loma
Cadwell Ct
Claridge Dr
Ransom Rd
Canyon Crest Dr
Via Las Nubes
Rattlesnake
Larkside
Lehigh Ln
Stanford Ave
Tulane Ave
Haddington Dr
Tackerton Ln
Allendale Dr
Perthshire Pl
Abernathy Dr
Matheson Dr
Kendrick Dr
Applecross Dr
Lochmoor Dr
Morton Rd
Wordsworth Rd
60
215
Box S
Dan Kiley
© 2018 Google
Google Earth
1994
Imagery Date: 3/9/2017 33°57'17.89" N 117°19'17.06" W elev 1187 ft eye alt 15648 ft


Santa Ana River
Project Site
Chino Hills
Eastvale
Norco
Riverside
Corona
Woodcrest
Arcilla
Temescal Valley
Silverado
Euclid Ave
Chino Valley Fwy
Corona Freeway
Hamner Ave
N Lincoln Ave
N Main St
S Main St
Magnolia Ave
Green River Rd
Paseo Grande
Central Ave
Van Buren Boulevard
Van Buren Blvd
Alessandro Blvd
142
83
91
7
241
15
215
60
© 2018 Google
Google Earth
Imagery Date: 12/3/2017 33°52'01.84" N 117°30'01.76" W elev 1233 ft eye alt 23.12 mi


Project Site
Approximately 30
miles East.
Santa Ana River
Pacific Ocean
Norwalk
Buena Park
Fullerton
Anaheim
Orange
Garden Grove
Westminster
Santa Ana
Tustin
Silverado
Fountain Valley
Irvine
Huntington Beach
Costa Mesa
Lake Forest
Corona
Norco
Rancho Santa Margarita
Imperial Hwy
Artesia Fwy
W Ball Rd
E Katella Ave
W Edinger Ave
W MacArthur Blvd
Ellis Ave
Victoria St
Edinger Ave
Costa Mesa Fwy
Jamboree Rd
Jeffrey Rd
Portola Pkwy
Foothill Transportation Corridor
San Diego Fwy
Green River Rd
S Lincoln Ave
S Main St
N Euclid St
S Beach Blvd
Beach Blvd
© 2018 Google
Data USGS
Google Earth
Imagery Date: 12/3/2017 33°46'53.76" N 117°48'12.35" W elev 424 ft eye alt 28.13 mi

Appendix 2: Construction Plans

Grading and Drainage Plans

APPLICABLE PRELIMINARY GRADING PLAN SHEETS HAVE BEEN INCLUDED IN MAP POCKET

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

GEOTECHNICAL INVESTIGATION
PROPOSED RETAIL DEVELOPMENT

NEC Sycamore Canyon Boulevard and Central Avenue
Riverside, California
For
KA Enterprises

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

December 11, 2017

KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, California 92121

Attention: Mr. Eugene Marini

Project No.: **17G134-3**

Subject: **Geotechnical Investigation**
Proposed Retail Development
NEC Sycamore Canyon Boulevard and Central Avenue
Riverside, California

Gentlemen:

In accordance with your request, we have conducted a geotechnical investigation at the subject site. We are pleased to present this report summarizing the conclusions and recommendations developed from our investigation.

We sincerely appreciate the opportunity to be of service on this project. We look forward to providing additional consulting services during the course of the project. If we may be of further assistance in any manner, please contact our office.

Respectfully Submitted,

SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

Daniel W. Nielsen, RCE 77915
Project Engineer

Daryl R. Kas, CEG 2467
Project Geologist

Robert G. Trazo, M.Sc., GE 2655
Principal Engineer

Distribution: (1) Addressee

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1.0 EXECUTIVE SUMMARY

Presented below is a brief summary of the conclusions and recommendations of this investigation. Since this summary is not all inclusive, it should be read in complete context with the entire report.

Site Preparation

- Initial site preparation should include stripping of any surficial vegetation. The surficial vegetation, weeds, grasses, shrubs and any organic soils should be properly disposed of off-site.
- Artificial fill soils were encountered at several of the boring and all of the trench locations, extending from the ground surface to depths of 1 to 9½± feet. Bedrock was encountered at the ground surface and beneath the fill soils at all of the boring and trench locations.
- The fill soils possess occasional to extensive debris content and possess varying strengths. In addition, the existing fill soils are considered to represent undocumented fill. These soils, in their present condition, are not considered suitable for support of the foundation loads of the new structures.
- Remedial grading is recommended to be performed within the new building pad areas. The existing soils within the building pad areas should be overexcavated to a depth of 2 feet below existing grade and to a depth of 2 feet below proposed pad grade, whichever is greater. All existing artificial fill materials should also be removed from the new building pad areas. The soils within the proposed foundation influence zones should be overexcavated to a depth of at least 2 feet below proposed foundation bearing grades.
- After overexcavation has been completed, the resulting subgrade soils should be evaluated by the geotechnical engineer to identify any additional soils that should be overexcavated, moisture conditioned, and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. The previously excavated soils may then be replaced as compacted structural fill.
- The new parking area subgrade soils are recommended to be scarified to a depth of 12± inches, thoroughly moisture conditioned and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density.

Building Foundations

- Conventional shallow foundations, supported in newly placed compacted fill.
- 2,500 lbs/ft^2 maximum allowable soil bearing pressure.
- Reinforcement consisting of at least two (2) No. 5 rebars (1 top and 1 bottom) in strip footings. Additional reinforcement may be necessary for structural considerations.

Building Floor Slab

- Conventional Slab-on-Grade, 5 inches thick.
- Minimum reinforcement not required for geotechnical considerations assuming a very low expansion index pad. The actual floor slab reinforcement should be determined by the structural engineer, based upon the imposed loading.

Pavements

ASPHALT PAVEMENTS (R = 40)		
Materials	**Thickness (inches)**	
	Auto Parking and Drive Lanes (TI = 4.0 to 5.0)	Truck Traffic (TI = 6.0)
Asphalt Concrete	3	3½
Aggregate Base	4	6
Compacted Subgrade	12	12

PORTLAND CEMENT CONCRETE PAVEMENTS		
Materials	**Thickness (inches)**	
	Autos Parking and Drive Lanes (TI = 4.0 & 5.0)	Truck Traffic (TI = 6.0)
PCC	5	5½
Compacted Subgrade (95% minimum compaction)	12	12

2.0 SCOPE OF SERVICES

The scope of services performed for this project was in general accordance with our Proposal No. 17P350, dated September 25, 2017. The scope of services included a visual site reconnaissance, subsurface exploration, field and laboratory testing, and geotechnical engineering analysis to provide criteria for preparing the design of the building foundations, building floor slabs, and parking lot pavements along with site preparation recommendations and construction considerations for the proposed development. The evaluation of the environmental aspects of this site was beyond the scope of services for this geotechnical investigation.

3.0 SITE AND PROJECT DESCRIPTION

3.1 Site Conditions

The subject site is located at the northeast corner of Sycamore Canyon Boulevard and Central Avenue in Riverside, California. The site is bounded to the north and east by the Central Avenue off-ramp of the eastbound Moreno Valley Freeway (Highway 60), to the south by Central Avenue, and to the west by Sycamore Canyon Boulevard. The general location of the site is illustrated on the Site Location Map, included as Plate 1 of this report.

The subject site consists of several irregular-shaped contiguous parcels which total 2.5± acres in size. The site is currently vacant and undeveloped except for a cell phone tower located near the north corner of the site. A soil stockpile, approximately 50 feet in diameter and 6 to 8 feet in height, is located in the central area of the site. A slope is present along the western property line which descends downward toward Sycamore Canyon Boulevard. The height of the slope ranges from approximately 3 to 15± feet with an inclination of approximately 2h:1v. The ground surface consists of exposed soil with sparse native grass and weed growth and exposed soil with moderate to heavy grass and weed growth on the existing slope.

Topographical information for the subject site was obtained from a map provided by Omega Engineering Consultants, Inc., the project civil engineer. The site topography ranges from 1370± feet mean sea level (msl) in the northern area of the site to 1353± feet msl in the southwestern corner of the site. The maximum elevation differential across the site is approximately 17 feet.

3.2 Proposed Development

Based on a conceptual grading plan prepared by Omega Engineering Consultants, Inc., the site will be developed with a convenience store and a restaurant building. The convenience store will be located in the south-central region of the site and will be 3,200± ft² in size. A fuel island and canopy structure will be constructed south of the convenience store and a car wash building will be located in the southeastern area of the site. The restaurant building will be located in the north-central area of the site and will be 3,800± ft² in size. A drive-thru lane will be constructed along the northern, western, and southern sides of the restaurant. The buildings will be surrounded by asphaltic concrete pavements in the parking and drive areas, Portland cement concrete pavements in the drive-thru lanes, concrete flatwork, and limited areas of landscape planters. A slope will be constructed along the northern portion of the western property line. The slope will be approximately 6 feet in height and have an inclination of 2h:1v. Retailing walls will also be located in the western portion of the site. The northern wall will range from 1 to 13± feet in height and the southern wall will range from 2 to 12½± feet in height. A retaining wall will also be constructed along the southern portion of the eastern property line. This retaining wall will range from 1 to 7± feet in height.

Detailed structural information has not been provided. It is assumed that the new buildings will be single -story structures of wood frame or masonry block construction and supported on

conventional shallow foundations with concrete slab-on-grade floors. Based on the assumed construction, maximum column and wall loads are expected to be on the order of 30 kips and 1 to 3 kips per linear foot, respectively.

No significant amounts of below grade construction, such as basements or crawl spaces, are expected to be included in the proposed development. Based on the conceptual grading plan provided to our office, cuts of up to 8± feet and fills of up to 8± feet are expected to be necessary to achieve the proposed site grades.

3.3 Previous Studies

Southern California Geotechnical, Inc. (SCG) previously performed two investigations for the subject site. The results of the previous investigations are documented in the reports referenced below:

> Results of Limited Geotechnical Reconnaissance and Research, Proposed Retail Development, Northeast Corner of Sycamore Canyon Boulevard and Central Avenue, Riverside, California, prepared by Southern California Geotechnical, Inc. (SCG) for KA Enterprises, SCG Project No. 17G134-1, dated April 10, 2017.

SCG performed visual reconnaissance and performed research of the available geologic literature for this site. Our observations and the results of this study are presented in the report referenced above. As part of this study, an SCG certified engineering geologist (CEG) conducted a site reconnaissance. No subsurface exploration was performed as part of this study. Bedrock materials were observed at the ground surface in limited areas along the southern property line and on a portion of the surface of the slope along the western property line. In addition, bedrock materials were observed beneath the surficial soils at a couple locations in the central area of the site. SCG reported that the site was likely underlain by Val Verde Formation tonalite bedrock. SCG recommended that a geophysical rippability study be performed at the subject site.

> Seismic Refraction Study, Proposed Retail Development, Northeast Corner of Sycamore Canyon Boulevard and Central Avenue, Riverside, California, prepared by SCG for KA Enterprises, SCG Project No. 17G134-2, dated April 25, 2017.

SCG previously performed a seismic refraction study at the subject site. Four (4) 150-foot long seismic refraction lines were performed at the site. SCG concluded that the very weathered tonalite bedrock was considered marginally rippable to depths of 7 to 30 feet. However, SCG did indicate that if deeper cuts were expected, blasting would be expected in any areas where less weathered bedrock materials would be encountered.

4.0 SUBSURFACE EXPLORATION

4.1 Scope of Exploration/Sampling Methods

The subsurface exploration conducted for this project consisted of five (5) soil borings drilled to depths of 10 to 25± feet below existing site grades and six (6) trenches excavated to depths of 4 to 15± feet below currently existing site grades. All of the borings and trenches were logged during drilling and trenching by our engineering geology personnel.

The trenches were excavated using a track mounted excavator equipped with a 24-inch wide bucket. All of the borings were advanced with hollow-stem augers, by a conventional truck-mounted drilling rig. Representative bulk and relatively undisturbed soil samples were taken during drilling and trenching. Relatively undisturbed samples were taken with a split barrel "California Sampler" containing a series of one inch long, 2.416± inch diameter brass rings. This sampling method is described in ASTM Test Method D-3550. Relatively undisturbed samples were also taken using a 1.4± inch inside diameter split spoon sampler, in general accordance with ASTM D-1586. Both of these samplers are driven into the ground with successive blows of a 140-pound weight falling 30 inches. The blow counts obtained during driving are recorded for further analysis. Bulk samples were collected in plastic bags to retain their original moisture content. The relatively undisturbed ring samples were placed in molded plastic sleeves that were then sealed and transported to our laboratory.

The approximate locations of the borings and trenches are indicated on the Boring and Trench Location Plan, included as Plate 2 in Appendix A of this report. The Boring Logs and Trench Logs, which illustrate the conditions encountered at the boring and trench locations, as well as the results of some of the laboratory testing, are included in Appendix B.

4.2 Geotechnical Conditions

Artificial Fill

Artificial fill soils were encountered at the ground surface at three (3) of the boring locations and all of the trench locations extending to depths of 1 to 9½± feet below the existing site grades. The fill soils generally consist of silty fine to coarse sands with varying amounts of gravel content. Construction debris including concrete, asphalt, tile, metal, plastic, and rebar were observed within Trench Nos. T-3, T-4, and T-5. The construction debris ranged in size from 1-inch to 4-feet. The fill soils possess abundant debris content, variable strengths and a disturbed appearance, resulting in their classification as fill.

Alluvium

Native alluvial soil were encountered beneath the fill soils at Trench No T-6 and Boring No. B-4. The native soils extended to depths of 12 to 13± feet below the existing site grades. The alluvial soils consist of loose to medium dense silty fine to medium sands and silty fine to coarse sands.

Val Verde Tonalite

Val Verde Formation Tonalite bedrock was encountered at the ground surface or beneath the fill or alluvium at all of the boring and trench locations. The bedrock materials encountered throughout the site consists of dense to very dense, light brown to dark gray brown fine to coarse grained tonalite, jointed, weathered and friable. Gouge filled joints were observed at Trench Nos. T-2 and T-3. Joints with no gouge were observed at Trench No. T-5. The bedrock was generally massive.

Groundwater

Free water was not encountered during excavation of any of the borings or trenches. Based on the lack of any water within the borings and trenches, and the moisture contents of the recovered soil samples, the static groundwater table is considered to have existed at a depth in excess of 25± feet at the time of the subsurface exploration.

As part of our research, we reviewed available groundwater data in order to determine the historic high groundwater level for the site. The primary reference used to determine the groundwater depths in this area is the California Department of Water Resources website, http://www.water.ca.gov/waterdatalibrary/. However, there are no wells within 1 mile of the subject site.

4.3 Geologic Conditions

Regional geologic conditions were obtained from the Preliminary Geologic Map of the Riverside East 7.5 Minute Quadrangle, Riverside County, California, published by the California Geological Survey (CGS) by Morton and Cox, 1997. This map indicates that the site is underlain by Cretaceous age Val Verde Formation tonalite (Map Symbol Kvt). The Val Verde Formation is described as gray, weathered, relatively homogeneous, massive, medium- to coarse-grained tonalite. A portion of this map, indicating the location of the subject site, is included as Plate 3 in Appendix A.

Based on the materials encountered in the exploratory borings and trenches, it is our opinion the site is underlain by Val Verde Tonalite. Bedrock was encountered at all of the boring and trench locations. The bedrock consists of dense to very dense, fine to coarse grained, jointed, weathered tonalite of the Val Verde formation. The geologic conditions at the site are consistent with the mapped geologic conditions.

5.0 LABORATORY TESTING

The soil samples recovered from the subsurface exploration were returned to our laboratory for further testing to determine selected physical and engineering properties of the soils. The tests are briefly discussed below. It should be noted that the test results are specific to the actual samples tested, and variations could be expected at other locations and depths.

Classification

All recovered soil samples were classified using the Unified Soil Classification System (USCS), in accordance with ASTM D-2488. The field identifications were then supplemented with additional visual classifications and/or by laboratory testing. The USCS classifications are shown on the Boring and Trench Logs and are periodically referenced throughout this report.

Density and Moisture Content

The density has been determined for selected relatively undisturbed ring samples. These densities were determined in general accordance with the method presented in ASTM D-2937. The results are recorded as dry unit weight in pounds per cubic foot. The moisture contents are determined in accordance with ASTM D-2216, and are expressed as a percentage of the dry weight. These test results are presented on the Boring and Trench Logs.

Consolidation

Selected soil samples from our previous geotechnical investigation have been tested to determine their consolidation potential, in accordance with ASTM D-2435. The testing apparatus is designed to accept either natural or remolded samples in a one-inch high ring, approximately 2.416 inches in diameter. Each sample is then loaded incrementally in a geometric progression and the resulting deflection is recorded at selected time intervals. Porous stones are in contact with the top and bottom of the sample to permit the addition or release of pore water. The samples are typically inundated with water at an intermediate load to determine their potential for collapse or heave. The results of the consolidation testing are plotted on Plates C-1 through C-8 in the Appendix of this report.

Maximum Dry Density and Optimum Moisture Content

Representative bulk samples were tested for their maximum dry densities and optimum moisture contents. The results have been obtained using the Modified Proctor procedure, per ASTM D-1557. These tests are generally used to compare the in-situ densities of undisturbed field samples, and for later compaction testing. Additional testing of other soil type or soil mixes may be necessary at a later date. The results of the testing are plotted on Plates C-9 and C-10 in Appendix C of this report.

Soluble Sulfates

Representative samples of the near-surface soils were submitted to a subcontracted analytical laboratory for determination of soluble sulfate content. Soluble sulfates are naturally present in

soils, and if the concentration is high enough, can result in degradation of concrete which comes into contact with these soils. The results of the soluble sulfate testing are presented below, and are discussed further in a subsequent section of this report.

Sample Identification	Soluble Sulfates (%)	ACI Classification
B-2 @ 0 to 5 feet	0.005	Negligible
B-4 @ 0 to 5 feet	0.008	Negligible

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our review, field exploration, laboratory testing and geotechnical analysis, the proposed development is considered feasible from a geotechnical standpoint. The recommendations contained in this report should be taken into the design, construction, and grading considerations.

The recommendations are contingent upon all grading and foundation construction activities being monitored by the geotechnical engineer of record. The recommendations are provided with the assumption that an adequate program of client consultation, construction monitoring, and testing will be performed during the final design and construction phases to verify compliance with these recommendations. Maintaining Southern California Geotechnical, Inc., (SCG) as the geotechnical consultant from the beginning to the end of the project will provide continuity of services. The geotechnical engineering firm providing testing and observation services shall assume the responsibility of Geotechnical Engineer of Record.

The Grading Guide Specifications, included as Appendix D, should be considered part of this report, and should be incorporated into the project specifications. The contractor and/or owner of the development should bring to the attention of the geotechnical engineer any conditions that differ from those stated in this report, or which may be detrimental for the development.

6.1 Seismic Design Considerations

The subject site is located in an area which is subject to strong ground motions due to earthquakes. The performance of a site specific seismic hazards analysis was beyond the scope of this investigation. However, numerous faults capable of producing significant ground motions are located near the subject site. Due to economic considerations, it is not generally considered reasonable to design a structure that is not susceptible to earthquake damage. Therefore, significant damage to structures may be unavoidable during large earthquakes. The proposed structures should, however, be designed to resist structural collapse and thereby provide reasonable protection from serious injury, catastrophic property damage and loss of life.

Faulting and Seismicity

Research of available maps indicates that the subject site is not located within an Alquist-Priolo Earthquake Fault Zone. Furthermore, SCG did not identify any evidence of faulting during the geotechnical investigation. Therefore, the possibility of significant fault rupture on the site is considered to be low.

The potential for other geologic hazards such as seismically induced settlement, lateral spreading, tsunamis, inundation, seiches, flooding, and subsidence affecting the site is considered low.

Seismic Design Parameters

Based on standards in place at the time of this report, the proposed development is expected to be designed in accordance with the requirements of the 2016 edition of the California Building Code (CBC). The CBC provides procedures for earthquake resistant structural design that include considerations for on-site soil conditions, occupancy, and the configurations of the structures including the structural system and height. The seismic design parameters presented below are based on the soil profile and the proximity of known faults with respect to the subject site.

The 2016 CBC Seismic Design Parameters have been generated using U.S. Seismic Design Maps, a web-based software application developed by the United States Geological Survey. This software application, available at the USGS web site, calculates seismic design parameters in accordance with the 2016 CBC, utilizing a database of deterministic site accelerations at 0.01 degree intervals. The table below is a compilation of the data provided by the USGS application. A copy of the output generated from this program is included in Appendix E of this report. A copy of the Design Response Spectrum, as generated by the USGS application is also included in Appendix E. Based on this output, the following parameters may be utilized for the subject site:

2016 CBC SEISMIC DESIGN PARAMETERS

Parameter		Value
Mapped Spectral Acceleration at 0.2 sec Period	S_S	1.500
Mapped Spectral Acceleration at 1.0 sec Period	S_1	0.611
Site Class	---	C
Site Modified Spectral Acceleration at 0.2 sec Period	S_{MS}	1.500
Site Modified Spectral Acceleration at 1.0 sec Period	S_{M1}	0.794
Design Spectral Acceleration at 0.2 sec Period	S_{DS}	1.000
Design Spectral Acceleration at 1.0 sec Period	S_{D1}	0.529

Liquefaction

Liquefaction is the loss of strength in generally cohesionless, saturated soils when the pore-water pressure induced in the soil by a seismic event becomes equal to or exceeds the overburden pressure. The primary factors which influence the potential for liquefaction include groundwater table elevation, soil type and grain size characteristics, relative density of the soil, initial confining pressure, and intensity and duration of ground shaking. The depth within which the occurrence of liquefaction may impact surface improvements is generally identified as the upper 50 feet below the existing ground surface. Liquefaction potential is greater in saturated, loose, poorly graded fine sands with a mean (d_{50}) grain size in the range of 0.075 to 0.2 mm (Seed and Idriss, 1971). Clayey (cohesive) soils or soils which possess clay particles (d<0.005mm) in excess of 20 percent (Seed and Idriss, 1982) are generally not considered to be susceptible to liquefaction, nor are those soils which are above the historic static groundwater table.

Based on mapping performed by the California Geological Survey (CGS) the subject site is not located within a designated liquefaction hazard zone. In addition, the subsurface conditions encountered at the boring and trench locations are not considered to be conducive to liquefaction. Based on the mapping performed by CGS and the conditions encountered at the boring locations, liquefaction is not considered to be a design concern for this project.

6.2 Geotechnical Design Considerations

General

The subject site is underlain by artificial fill soils, extending to depths of up to 9½± feet. All of the fill soils on site are considered to be undocumented fill since the fill soils were not placed under engineering controlled conditions. The fill soils possess extensive debris content, variable strengths, and based on the results of laboratory testing, are highly collapsible. Therefore, remedial grading is recomended to overexcavate and recompact these soils.

The most significant geotechnical design consideration that will impact the proposed development is the excavation characteristics of the bedrock that underlies the subject site. Bedrock was encountered at the ground surface, and beneath the fill and native alluvial soils, where present. Based on conditions encountered at the boring, trench, and seismic refraction line locations, the bedrock is considered marginally rippable within the depths of the expected cut depths. Gouge filled joints were observed at two of the trench locations. If the gouge filled joints are exposed during the grading operation, an engineering geologist or geotechnical engineer should evaluate the gouge filled joints to determine the appropriate remediation, if necessary.

Another geotechnical design consideration is the differing support conditions of engineered fill and bedrock at foundation bearing surfaces. A portion of the near-surface bedrock is recommended to be overexcavated and recompacted as structural fill in order to provide more uniform support characteristics for the proposed structures.

Potential Surcharge Loads

Based on our review of the preliminary grading plan, the proposed restaurant building will be located near the proposed retaining wall along the western property line. The restaurant building foundation may induce a surcharge load on the western retaining wall if the retaining wall is located within the foundation influence zone of the building foundations. For the purpose of detrmining the surcharge potential, the foundation influence zone is considered to be the area within a 1h:1v projection downward from the bottom of the building foundation. Therefore, in order to avoid potential surcharge of the retaining wall, we recommend that the building foundation along the western wall be placed at a depth such that the retaining wall is not located within the foundation influence zone.

Settlement

The recommended remedial grading will remove all of the existing undocumented fill, as well as a portion of the near-surface bedrock, and replace them as compacted fill soils. The underlying

bedrock is not considered to be susceptible to significant settlement from the foundation loads of the proposed structures. Provided that the recommended remedial grading is completed, the post-construction static settlement of the proposed structure is expected to be within tolerable limits.

Expansion

The near-surface soils generally consist of silty sands and tonalite bedrock. These materials have been visually classified as very low to non-expansive. Therefore, no design considerations related to expansive soils are considered warranted for this site.

Shrinkage/Subsidence

Removal and recompaction of the fill soils is estimated to result in an average shrinkage of 12 to 16 percent. Excavation of the bedrock and placement as compacted fill is estimated to result in bulking of 0 to 5 percent.

No significant subsidence is expected to occur in excavations that are underlain by bedrock materials.

These estimates are based on previous experience and the subsurface conditions encountered at the trench and boring locations. The actual amount of subsidence is expected to be variable and will be dependent on the type of machinery used, repetitions of use, and dynamic effects, all of which are difficult to assess precisely.

Grading and Foundation Plan Review

This report was prepared in consideration of the preliminary grading plan that was provided to our office. However, foundation plans were not available at the time of this report. It is therefore recommended that we be provided with copies of precise grading and preliminary foundation plans, when they become available, for review with regard to the conclusions, recommendations, and assumptions contained within this report.

6.3 Site Grading Recommendations

The grading recommendations presented below are based on the subsurface conditions encountered at the boring and trench locations and our understanding of the proposed development. We recommend that all grading activities be completed in accordance with the Grading Guide Specifications included as Appendix D of this report, unless superseded by site-specific recommendations presented below.

Site Stripping and Demolition

Initial site stripping should include removal of any surficial vegetation. This should include any weeds, grasses, and shrubs. The actual extent of site stripping should be determined in the field by the geotechnical engineer, based on the organic content and stability of the materials encountered.

Treatment of Existing Soils: Building Pads

Remedial grading should be performed within the proposed building areas in order to remove all existing fill soils. Based on conditions encountered at the boring and trench locations, the existing materials within the proposed building pad areas are recommended to be overexcavated to a depth of at least 2 feet below proposed building pad subgrade elevation and to a depth of at least 2 feet below existing grade, whichever is greater. **The depth of the overexcavation should also extend to a depth sufficient to remove all undocumented fill soils**. The undocumented fill soils at extend to depths up to 9½± feet. Additional overexcavation should be performed within the influence zones of the new foundations, to provide for a new layer of compacted structural fill extending to a depth of at least 2 feet below proposed bearing grades. In areas of cut/fill transitions, it is recommended that grading be performed in order to remove and replace a portion of the bedrock as compacted structural fill. This grading is considered warranted, in order to soften the transition from the fill soils to the bedrock, thereby reducing the potential for excessive future settlements.

The overexcavation areas should extend at least 5 feet beyond the building and foundation perimeters, and to an extent equal to the depth of fill below the new foundations. If the proposed structure incorporates any exterior columns (such as for a canopy or overhang) the area of overexcavation should also encompass these areas.

Following completion of the overexcavation, the subgrade soils and/or bedrock materials within the building areas should be evaluated by the geotechnical engineer to verify their suitability to serve as the structural fill subgrade, as well as to support the foundation loads of the new structures. This evaluation should include proofrolling and probing to identify any soft, loose or otherwise unstable soils that must be removed. Some localized areas of deeper excavation may be required if additional fill materials or loose, porous, or low density native soils are encountered at the base of the overexcavation.

After a suitable overexcavation subgrade has been achieved, the exposed soils and/or bedrock materials should be scarified to a depth of at least 12 inches, thoroughly moisture conditioned, and recompacted. Overexcavation bottoms should be thoroughly moisture conditioned to achieve a moisture content of 0 to 4 percent above the optimum moisture content, extending to a depth of 18 to 24 inches below the overexcavation subgrade. The previously excavated soils may then be replaced as compacted structural fill.

Treatment of Existing Soils: Cut and Fill Slopes

New cut and fill slopes will be constructed around the perimeter of the project. Maximum heights of cut and fill slopes are indicated on the plan to be 6± feet. All slopes should be at an inclination of 2h:1v. A keyway should be excavated at the toe of new fill slopes which are not located in fill areas. The keyway should be at least 15 feet in width and 3 feet deep. The recommended width of the keyway is based on 1½ times the width of typical grading equipment. If smaller equipment is utilized, a smaller keyway may be suitable, at the discretion of the geotechnical engineer. The base of the keyway should slope at least 1 foot downward into the slope. Following completion of the keyway cut, the subgrade soils should be evaluated by the geotechnical engineer to verify that the keyway is founded into competent materials. The resulting subgrade soils should then be scarified to a depth of 10 to 12 inches, moisture conditioned to 0 to 4 percent above optimum moisture content and recompacted. During

construction of the new fill slope, the existing slope should be benched in accordance with the detail presented on Plate D-4. Benches less than 4 feet in height may be used at the discretion of the geotechnical engineer.

Cut slopes in bedrock may be cut to grade, undercut and replaced as stability fills. Stability fills for cut slopes will provide a more uniform appearance and allow landscaping on the slope. A keyway should be excavated at the toe of any stability fill slope. The keyway should be at least 15 feet in width. The recommended width of the keyway is based on 1½ times the width of typical grading equipment. If smaller equipment is utilized, a smaller keyway may be suitable, at the discretion of the geotechnical engineer. Following completion of the keyway cut, the subgrade soils should be evaluated by the geotechnical engineer to verify that the keyway is founded into competent materials. The resulting subgrade soils should then be scarified to a depth of 10 to 12 inches, moisture conditioned to 0 to 4 percent above optimum moisture content and recompacted. During construction of the new fill slope, the existing slope should be benched in accordance with the detail presented on Plate D-5. Benches less than 4 feet in height may be used at the discretion of the geotechnical engineer.

Treatment of Existing Soils: Retaining Walls and Site Walls

The existing soils within the areas of proposed retaining and non-retaining site walls should be overexcavated to a depth of at least 2 feet below foundation bearing grade and replaced as compacted structural fill as discussed above for the proposed building pad. Any undocumented fill soils within any of these foundation influence areas should be removed in their entirety. The overexcavation should extend at least 5 feet beyond the foundation perimeters, and to an extent equal to the depth of fill below the new foundations. Please note that erection pads are considered to be part of the foundation system. These overexcavation recommendations apply to erection pads also. The overexcavation subgrade soils should be evaluated by the geotechnical engineer prior to scarifying, moisture conditioning, and recompacting the upper 12 inches of exposed subgrade soils, as discussed for the building areas. The previously excavated soils may then be replaced as compacted structural fill.

Treatment of Existing Soils: Parking Areas

Based on economic considerations, overexcavation of the existing near-surface existing soils in the new flatwork, parking and drive areas is not considered warranted, with the exception of areas where lower strength or unstable soils are identified by the geotechnical engineer during grading. Subgrade preparation in the new flatwork, parking and drive areas should initially consist of removal of all soils disturbed during stripping and demolition operations.

The geotechnical engineer should then evaluate the subgrade to identify any areas of additional unsuitable soils. Any such materials should be removed to a level of firm and unyielding soil. The exposed subgrade soils should then be scarified to a depth of 12± inches, moisture conditioned to 0 to 4 percent above the optimum moisture content, and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. Based on the presence of variable strength surficial soils throughout the site, it is expected that some isolated areas of additional overexcavation may be required to remove zones of lower strength, unsuitable soils.

The grading recommendations presented above for the proposed flatwork, parking and drive areas assume that the owner and/or developer can tolerate minor amounts of settlement within

the proposed flatwork, parking and drive areas. The grading recommendations presented above do not completely mitigate the extent of existing fill soils that may be present in the flatwork, parking and drive areas. As such, some settlement and associated pavement distress could occur. Typically, repair of such distressed areas involves significantly lower costs than completely mitigating these soils at the time of construction. If the owner cannot tolerate the risk of such settlements, the flatwork, parking and drive areas should be overexcavated to a depth of 2 feet below proposed pavement subgrade elevation, with the resulting soils replaced as compacted structural fill.

Fill Placement

- Fill soils should be placed in thin (6± inches), near-horizontal lifts, moisture conditioned to 0 to 4 percent above the optimum moisture content, and compacted.
- On-site soils may be used for fill provided they are cleaned of any debris to the satisfaction of the geotechnical engineer.
- All grading and fill placement activities should be completed in accordance with the requirements of the 2016 CBC and the grading code of the city of Riverside.
- All fill soils should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density. Fill soils should be well mixed.
- Compaction tests should be performed periodically by the geotechnical engineer as random verification of compaction and moisture content. These tests are intended to aid the contractor. Since the tests are taken at discrete locations and depths, they may not be indicative of the entire fill and therefore should not relieve the contractor of his responsibility to meet the job specifications.

Selective Grading and Oversized Material Placement

At several of the trench locations, the existing fill soils possess occasional to extensive amounts of cobble to boulder size debris. The presence of particles greater than 3 inches in diameter within the upper 1 to 3 feet of the building pad subgrade will impact the utility and foundation excavations. Depending on the depths of fills required within the proposed parking areas, it may be feasible to sort the on-site soils, placing the materials greater than 3 inches in diameter within the lower depths of the fills, and limiting the upper 1 to 3 feet of soils to materials less than 3 inches in size. Oversized materials could also be placed within the lower depths of the recommended overexcavations. In order to achieve this grading, it would likely be necessary to use rock buckets and/or rock sieves to separate the oversized materials from the remaining soil. Although such selective grading will facilitate further construction activities, it is not considered mandatory and a suitable subgrade could be achieved without such extensive sorting. However, in any case it is recommended that all materials greater than 6 inches in size be excluded from the upper 1 foot of the surface of any compacted fills. The placement of any oversized materials should be performed in accordance with the grading guide specifications included in Appendix D of this report. If disposal of oversized materials is required, rock blankets or windrows should be used and such areas should be observed during construction and placement by a representative of the geotechnical engineer.

Imported Structural Fill

All imported structural fill should consist of very low to non-expansive (EI < 20), well graded soils possessing at least 10 percent fines (that portion of the sample passing the No. 200 sieve).

Additional specifications for structural fill are presented in the Grading Guide Specifications, included as Appendix D.

Utility Trench Backfill

In general, all utility trench backfill should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density. Compacted trench backfill should conform to the requirements of the local grading code, and more restrictive requirements may be indicated by the city of Riverside. All utility trench backfills should be witnessed by the geotechnical engineer. The trench backfill soils should be compaction tested where possible; probed and visually evaluated elsewhere.

Utility trenches which parallel a footing, and extending below a 1h:1v plane projected from the outside edge of the footing should be backfilled with structural fill soils, compacted to at least 90 percent of the ASTM D-1557 standard. Pea gravel backfill should not be used for these trenches.

6.4 Construction Considerations

Excavation Considerations

The near surface soils generally consist of silty sands. These materials will be subject to caving within shallow excavations. Where caving occurs within shallow excavations, flattened excavation slopes may be sufficient to provide excavation stability. On a preliminary basis, temporary excavation slopes should be made no steeper than 2h:1v. Deeper excavations may require some form of external stabilization such as shoring or bracing. Maintaining adequate moisture content within the near-surface soils will improve excavation stability. All excavation activities on this site should be conducted in accordance with Cal-OSHA regulations

In addition, the soils from 7 to 30± feet below the existing site grades are considered marginally rippable with a single shank dozer. If any deeper cuts are proposed at this site to facilitate construction of the proposed buildings and improvements, localized blasting could be expected in areas where the less weathered bedrock materials are encountered.

Groundwater

Based on the conditions encountered in the trenches and borings, groundwater is not present within 25± feet of the ground surface. Based on the anticipated depth to groundwater, it is not expected that the groundwater will affect excavations for the foundations or utilities.

6.5 Foundation Design and Construction

Based on the preceding grading recommendations, it is assumed that the new building pads will be underlain by structural fill soils used to replace the existing fill and bedrock materials. These new structural fill soils are expected to extend to depths of at least 2 feet below proposed foundation bearing grade, underlain by 1± foot of additional soil or bedrock that has been

scarified, moisture conditioned, and recompacted. Based on this subsurface profile, the proposed structures may be supported on conventional shallow foundations.

Building Foundation Design Parameters

New square and rectangular footings may be designed as follows:

- Maximum, net allowable soil bearing pressure: 2,500 lbs/ft^2.
- Minimum wall/column footing width: 14 inches/24 inches.
- Minimum longitudinal steel reinforcement within strip footings: Two (2) No. 5 rebars (1 top and 1 bottom).
- Minimum foundation embedment: 12 inches into suitable structural fill soils, and at least 18 inches below adjacent grade.
- It is recommended that the perimeter building foundations be continuous across all exterior doorways. Any flatwork adjacent to the exterior doors should be doweled into the perimeter foundations in a manner determined by the structural engineer.

The allowable bearing pressures presented above may be increased by 1/3 when considering short duration wind or seismic loads. The minimum steel reinforcement recommended above is based on geotechnical considerations. Additional rigidity may be necessary for structural considerations. The actual design of the foundations should be determined by the structural engineer.

Foundation Construction

The foundation subgrade soils should be evaluated at the time of overexcavation, as discussed in Section 6.3 of this report. It is further recommended that the foundation subgrade soils be evaluated by the geotechnical engineer immediately prior to steel or concrete placement. Within the new building areas, soils suitable for direct foundation support should consist of newly placed structural fill, compacted to at least 90 percent of the ASTM D-1557 maximum dry density. Any unsuitable materials should be removed to a depth of suitable bearing compacted structural fill or competent bedrock materials, with the resulting excavations backfilled with compacted fill soils. As an alternative, lean concrete slurry (500 to 1,500 psi) may be used to backfill such isolated overexcavations.

The foundation subgrade soils should also be properly moisture conditioned to 0 to 4 percent of the Modified Proctor optimum, to a depth of at least 12 inches below bearing grade. **Since it is typically not feasible to increase the moisture content of the floor slab and foundation subgrade soils once rough grading has been completed, care should be taken to maintain the moisture content of the building pad subgrade soils throughout the construction process**.

Estimated Foundation Settlements

Post-construction total and differential settlements of shallow foundations designed and constructed in accordance with the previously presented recommendations are estimated to be less than 1.0 and 0.5 inches, respectively. Differential movements are expected to occur over a 30-foot span, thereby resulting in an angular distortion of less than 0.002 inches per inch.

Lateral Load Resistance

Lateral load resistance will be developed by a combination of friction acting at the base of foundations and slabs and the passive earth pressure developed by footings below grade. The following friction and passive pressure may be used to resist lateral forces:

- Passive Earth Pressure: 300 lbs/ft^3
- Friction Coefficient: 0.30

These are allowable values, and include a factor of safety. When combining friction and passive resistance, the passive pressure component should be reduced by one-third. These values assume that footings will be poured directly against compacted structural fill. The maximum allowable passive pressure is 2,500 lbs/ft^2.

6.6 Floor Slab Design and Construction

Subgrades which will support new floor slabs should be prepared in accordance with the recommendations contained in the ***Site Grading Recommendations*** section of this report. Based on the anticipated grading which will occur at this site, the floors of the new structures may be constructed as conventional slabs-on-grade supported on newly placed structural fill, extending to a depth of at least 2 feet below finished pad grade. Based on geotechnical considerations, the floor slab may be designed as follows:

- Minimum slab thickness: 5 inches.

- Minimum slab reinforcement: Not required for geotechnical considerations assuming a very low expansion index pad. The actual floor slab reinforcement should be determined by the structural engineer, based upon the imposed loading.

- If moisture sensitive floor coverings will be used, then minimum slab underlayment should consist of a moisture vapor barrier constructed below the entire slab area where the moisture sensitive floor coverings are expected. The moisture vapor barrier should meet or exceed the Class A rating as defined by ASTM E 1745-97 and have a permeance rating less than 0.01 perms as described in ASTM E 96-95 and ASTM E 154-88. The moisture vapor barrier should be properly constructed in accordance with all applicable manufacturer specifications. Given that a rock free subgrade is anticipated and that a capillary break is not required, sand below the barrier is not required. The need for sand and/or the amount of sand above the moisture vapor barrier should be specified by the structural engineer or concrete contractor. The selection of sand above the barrier is not a geotechnical engineering issue and hence outside our purview.

- Moisture condition the floor slab subgrade soils to 0 to 4 percent of the Modified Proctor optimum moisture content, to a depth of 12 inches. The moisture content of the floor slab subgrade soils should be verified by the geotechnical engineer within 24 hours prior to concrete placement.

- Proper concrete curing techniques should be utilized to reduce the potential for slab curling or the formation of excessive shrinkage cracks.

- The floor slab should be structurally connected to the foundations as detailed by the structural engineer.

The actual design of the floor slab should be completed by the structural engineer to verify adequate thickness and reinforcement.

6.7 Retaining Wall Design and Construction

Retaining walls are will be constructed along the western property line to heights up to 13± feet and along the eastern property line to heights up to 7± feet. The parameters recommended for use in the design of these walls are presented below.

Retaining Wall Design Parameters

Based on the soil conditions encountered at the boring locations, the following parameters may be used in the design of new retaining walls for this site. The following parameters assume that only the on-site soils will be utilized for retaining wall backfill. The on-site soils generally consist of silty fine to medium sands with varying gravel content. Based on their composition, the on-site soils have been assigned a friction angle of 30 degrees.

If desired, SCG could provide design parameters for an alternative select backfill material behind the retaining walls. The use of select backfill material could result in lower lateral earth pressures. In order to use the design parameters for the imported select fill, this material must be placed within the entire active failure wedge. This wedge is defined as extending from the heel of the retaining wall upwards at an angle of approximately 60° from horizontal. If select backfill material behind the retaining wall is desired, SCG should be contacted for supplementary recommendations.

RETAINING WALL DESIGN PARAMETERS

Design Parameter		**Soil Type** On-Site Sandy Soils
Internal Friction Angle (ϕ)		30°
Unit Weight		125 lbs/ft^3
Equivalent Fluid Pressure:	Active Condition (level backfill)	42 lbs/ft^3
	Active Condition (2h:1v backfill)	67 lbs/ft^3

	At-Rest Condition (level backfill)	63 lbs/ft^3

Regardless of the backfill type, the walls should be designed using a soil-footing coefficient of friction of 0.30 and an equivalent passive pressure of 300 lbs/ft^3. The structural engineer should incorporate appropriate factors of safety in the design of the retaining walls.

The active earth pressure may be used for the design of retaining walls that do not directly support structures or support soils that in turn support structures and which will be allowed to deflect. The at-rest earth pressure should be used for walls that will not be allowed to deflect such as those which will support foundation bearing soils, or which will support foundation loads directly.

Where the soils on the toe side of the retaining wall are not covered by a "hard" surface such as a structure or pavement, the upper 1 foot of soil should be neglected when calculating passive resistance due to the potential for the material to become disturbed or degraded during the life of the structure.

Seismic Lateral Earth Pressures

In accordance with the 2016 CBC, any retaining walls more than 6 feet in height must be designed for seismic lateral earth pressures. The recommended seismic pressure distribution is triangular in shape, with a maximum magnitude of 18H lbs/ft^2, where H is the overall height of the wall. The maximum pressure should be assumed to occur at the top of the wall, decreasing to 0 at the base of the wall. The seismic pressure distribution is based on the Mononobe-Okabe equation, utilizing a design acceleration of 0.38g. The 2016 CBC does not provide definitive guidance on determination of the design acceleration to be used in generating the seismic lateral earth pressure. In accordance with standard geotechnical practice, we have calculated the design acceleration as $^2/_3$ of the PGA_M.

Retaining Wall Foundation Design

The retaining wall foundations should be supported within newly placed compacted structural fill, extending to a depth of at least 2 feet below the proposed bearing grade. Foundations to support new retaining walls should be designed in accordance with the general Foundation Design Parameters presented in a previous section of this report.

Backfill Material

On-site soils may be used to backfill the retaining walls. However, all backfill material placed within 3 feet of the back wall face should have a particle size no greater than 3 inches. The retaining wall backfill materials should be well graded.

It is recommended that a minimum 1 foot thick layer of free-draining granular material (less than 5 percent passing the No. 200 sieve) be placed against the face of the retaining walls. This material should extend from the top of the retaining wall footing to within 1 foot of the ground surface on the back side of the retaining wall. This material should be approved by the geotechnical engineer. In lieu of the 1 foot thick layer of free-draining material, a properly installed prefabricated drainage composite such as the MiraDRAIN 6000XL (or approved

equivalent), which is specifically designed for use behind retaining walls, may be used. If the layer of free-draining material is not covered by an impermeable surface, such as a structure or pavement, a 12-inch thick layer of a low permeability soil should be placed over the backfill to reduce surface water migration to the underlying soils. The layer of free draining granular material should be separated from the backfill soils by a suitable geotextile, approved by the geotechnical engineer.

All retaining wall backfill should be placed and compacted under engineering controlled conditions in the necessary layer thicknesses to ensure an in-place density between 90 and 93 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D1557-91). Care should be taken to avoid over-compaction of the soils behind the retaining walls, and the use of heavy compaction equipment should be avoided.

Subsurface Drainage

As previously indicated, the retaining wall design parameters are based upon drained backfill conditions. Consequently, some form of permanent drainage system will be necessary in conjunction with the appropriate backfill material. Subsurface drainage may consist of either:

- A weep hole drainage system typically consisting of a series of 4-inch diameter holes in the wall situated slightly above the ground surface elevation on the exposed side of the wall and at an approximate 8-foot on-center spacing. The weep holes should include a 2 cubic foot pocket of open graded gravel, surrounded by an approved geotextile fabric, at each weep hole location.

- A 4-inch diameter perforated pipe surrounded by 2 cubic feet of gravel per linear foot of drain placed behind the wall, above the retaining wall footing. The gravel layer should be wrapped in a suitable geotextile fabric to reduce the potential for migration of fines. The footing drain should be extended to daylight or tied into a storm drainage system.

6.8 Pavement Design Parameters

Site preparation in the pavement area should be completed as previously recommended in the ***Site Grading Recommendations*** section of this report. The subsequent pavement recommendations assume proper drainage and construction monitoring, and are based on either PCA or CALTRANS design parameters for a twenty (20) year design period. However, these designs also assume a routine pavement maintenance program to obtain the anticipated 20-year pavement service life.

Pavement Subgrades

It is anticipated that the new pavements will be primarily supported on a layer of compacted structural fill, consisting of recompacted soil and bedrock materials. The on-site soils generally consist of silty sands with varying amounts of gravel. These soils are considered to possess good pavement support characteristics with estimated R-values of 40 to 50. Since R-value testing was not included in the scope of services for this project, the subsequent pavement design is based upon a conservatively assumed R-value of 40. Any fill material imported to the site should have support characteristics equal to or greater than that of the on-site soils and be placed and

compacted under engineering controlled conditions. It is recommended that R-value testing be performed after completion of rough grading. Depending upon the results of the R-value testing, it may be feasible to use thinner pavement sections in some areas of the site.

Asphaltic Concrete

Presented below are the recommended thicknesses for new flexible pavement structures consisting of asphaltic concrete over a granular base. The pavement designs are based on the traffic indices (TI's) indicated. The client and/or civil engineer should verify that these TI's are representative of the anticipated traffic volumes. If the client and/or civil engineer determine that the expected traffic volume will exceed the applicable traffic index, we should be contacted for supplementary recommendations. The design traffic indices equate to the following approximate daily traffic volumes over a 20 year design life, assuming six operational traffic days per week.

Traffic Index	No. of Heavy Trucks per Day
4.0	0
5.0	1
6.0	3

For the purpose of the traffic volumes indicated above, a truck is defined as a 5-axle tractor trailer unit with one 8-kip axle and two 32-kip tandem axles. All of the traffic indices allow for 1,000 automobiles per day.

ASPHALT PAVEMENTS (R = 40)		
Materials	**Thickness (inches)**	
	Auto Parking and Drive Lanes (TI = 4.0 to 5.0)	Light Truck Traffic (TI = 6.0)
Asphalt Concrete	3	3½
Aggregate Base	4	6
Compacted Subgrade	12	12

The aggregate base course should be compacted to at least 95 percent of the ASTM D-1557 maximum dry density. The asphaltic concrete should be compacted to at least 95 percent of the Marshall maximum density, as determined by ASTM D-2726. The aggregate base course may consist of crushed aggregate base (CAB) or crushed miscellaneous base (CMB), which is a recycled gravel, asphalt and concrete material. The gradation, R-Value, Sand Equivalent, and Percentage Wear of the CAB or CMB should comply with appropriate specifications contained in the current edition of the "Greenbook" Standard Specifications for Public Works Construction.

Portland Cement Concrete

The preparation of the subgrade soils within concrete pavement areas should be performed as previously described for proposed asphalt pavement areas. The minimum recommended thicknesses for the Portland Cement Concrete pavement sections are as follows:

PORTLAND CEMENT CONCRETE PAVEMENTS		
Materials	**Thickness (inches)**	
	Autos and Drive Lanes (TI = 4.0 & 5.0)	Light Truck Traffic TI = 6.0
PCC	5	5½
Compacted Subgrade (95% minimum compaction)	12	12

The concrete should have a 28-day compressive strength of at least 3,000 psi. The maximum joint spacing within all of the PCC pavements is recommended to be equal to or less than 30 times the pavement thickness. The actual joint spacing and reinforcing of the Portland cement concrete pavements should be determined by the structural engineer.

7.0 GENERAL COMMENTS

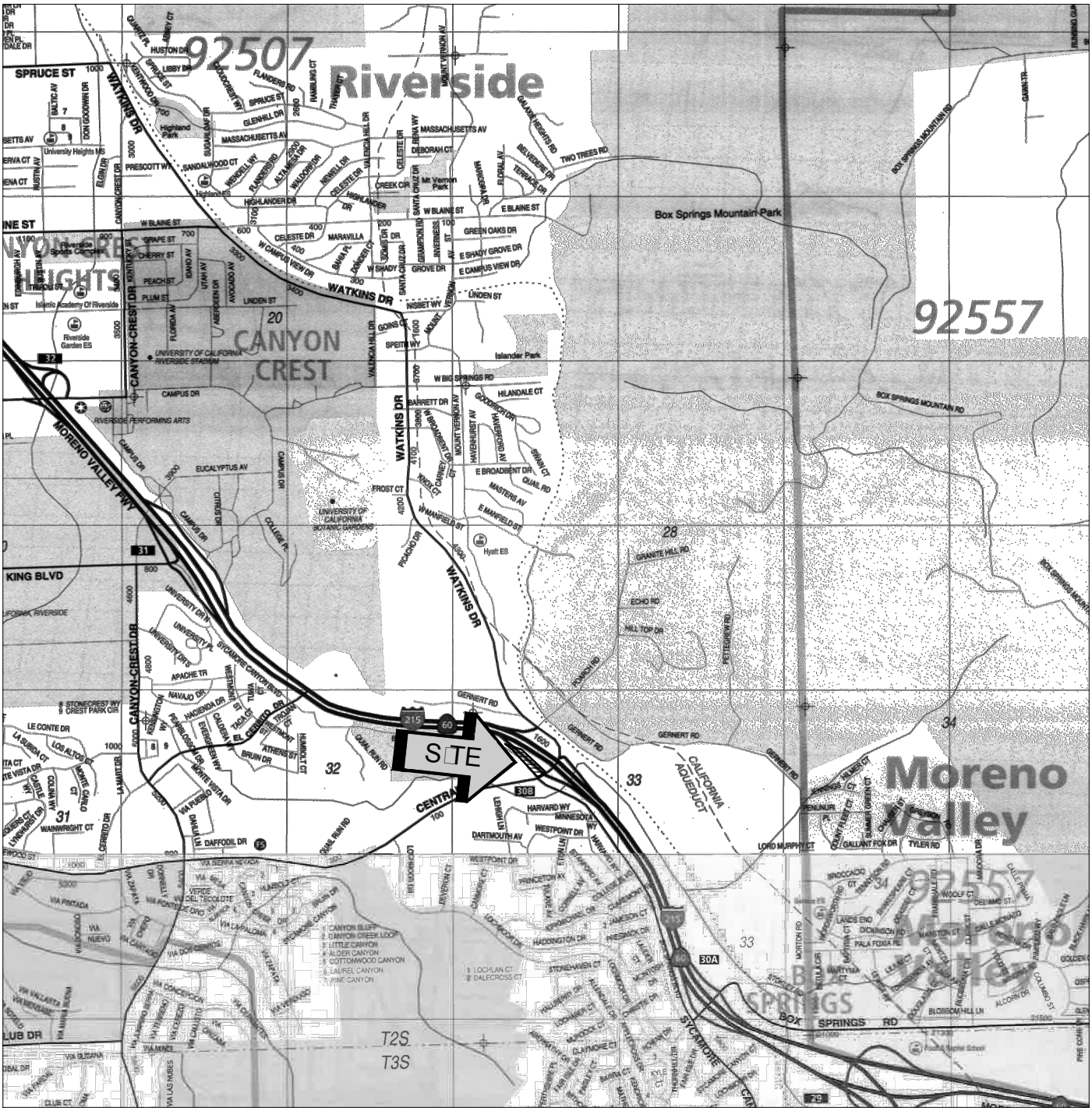
This report has been prepared as an instrument of service for use by the client, in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. This report may be provided to the contractor(s) and other design consultants to disclose information relative to the project. However, this report is not intended to be utilized as a specification in and of itself, without appropriate interpretation by the project architect, civil engineer, and/or structural engineer. The reproduction and distribution of this report must be authorized by the client and Southern California Geotechnical, Inc. Furthermore, any reliance on this report by an unauthorized third party is at such party's sole risk, and we accept no responsibility for damage or loss which may occur. The client(s)' reliance upon this report is subject to the Engineering Services Agreement, incorporated into our proposal for this project.

The analysis of this site was based on a subsurface profile interpolated from limited discrete soil samples. While the materials encountered in the project area are considered to be representative of the total area, some variations should be expected between boring locations and sample depths. If the conditions encountered during construction vary significantly from those detailed herein, we should be contacted immediately to determine if the conditions alter the recommendations contained herein.

This report has been based on assumed or provided characteristics of the proposed development. It is recommended that the owner, client, architect, structural engineer, and civil engineer carefully review these assumptions to ensure that they are consistent with the characteristics of the proposed development. If discrepancies exist, they should be brought to our attention to verify that they do not affect the conclusions and recommendations contained herein. We also recommend that the project plans and specifications be submitted to our office for review to verify that our recommendations have been correctly interpreted.

The analysis, conclusions, and recommendations contained within this report have been promulgated in accordance with generally accepted professional geotechnical engineering practice. No other warranty is implied or expressed.

APPENDIX A



SOURCE: RIVERSIDE COUNTY
THOMAS GUIDE

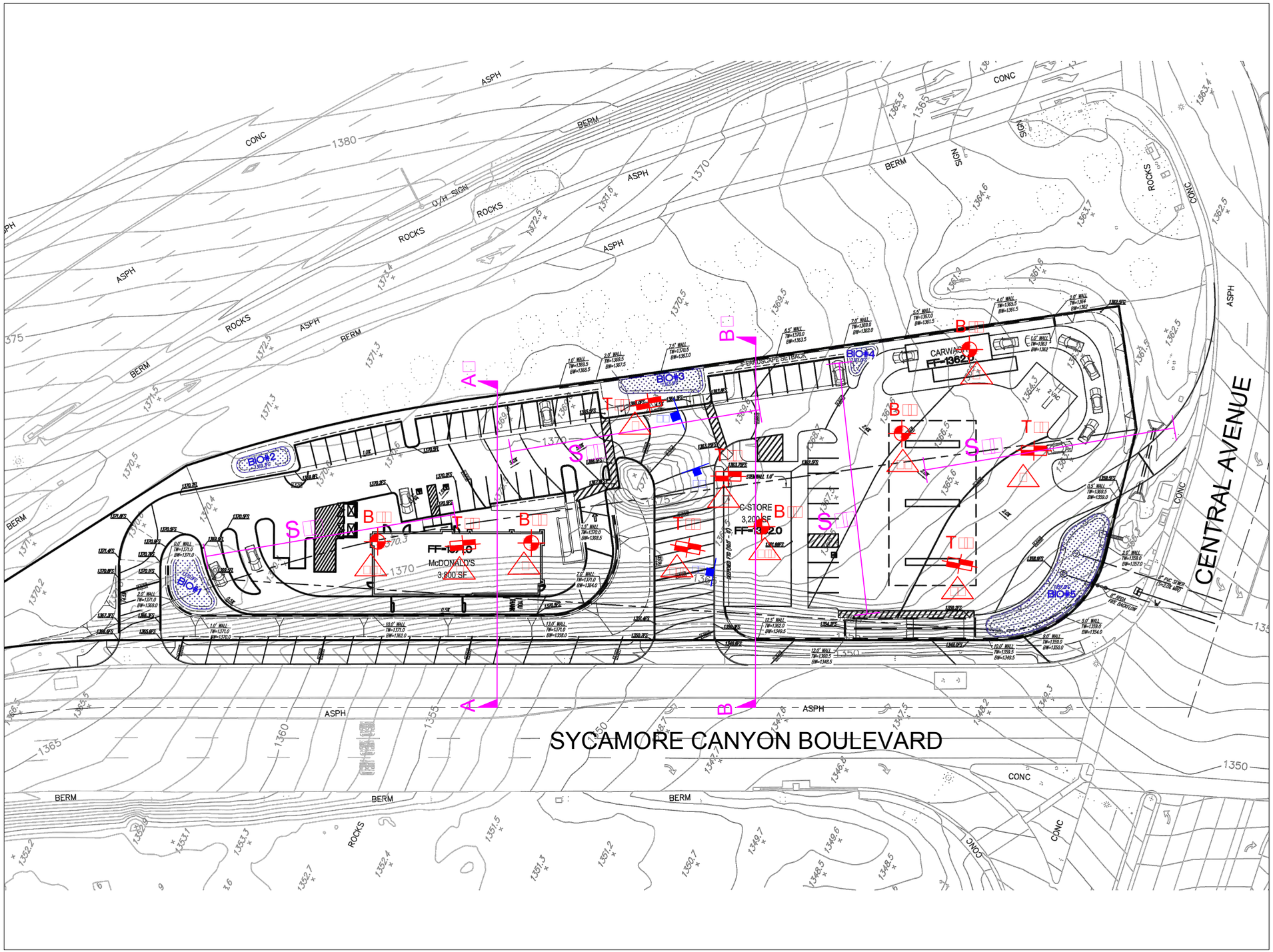
SITE LOCATION MAP

PROPOSED RETAIL DEVELOPMENT

RIVERSIDE, CALIFORNIA

SCALE: 1" = 1,000'	
DRAWN BY: CDR	
SCH PROJECT	
PLATE 1	

SOUTHERN CALIFORNIA GEOTECHNICAL



NORTH
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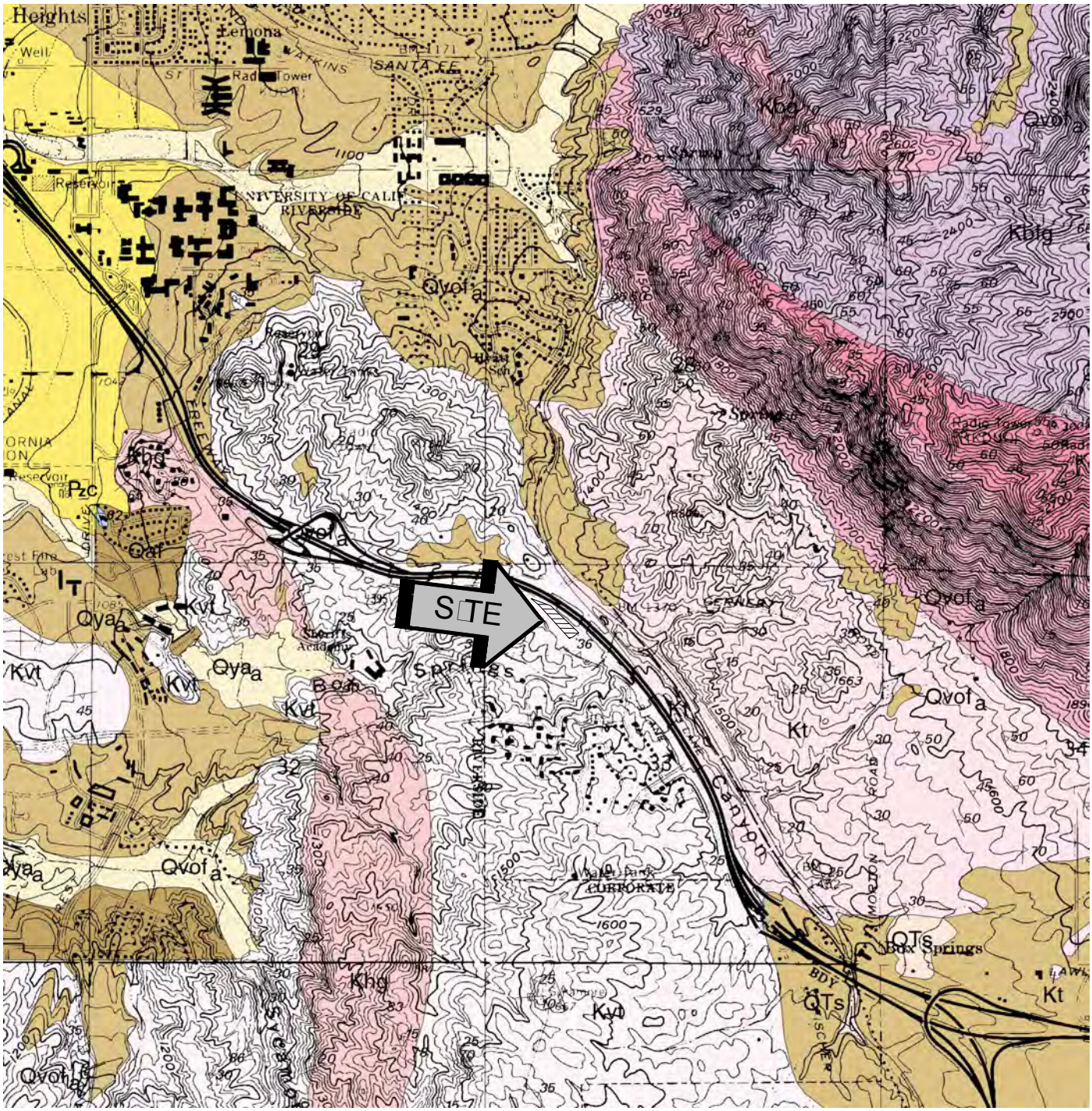
GEOTECHNICAL LEGEND

- A APPROXIMATE BORING LOCATION
- A APPROXIMATE TRENCH LOCATION
- POINTS
- ARTIFICIAL FILL DEPTH SHEET
- CROSS SECTION LINE
- PREVIOUS SEISMIC LINE
  SCH PROJECT NO

NOTE: BASE MAP PREPARED BY OMEGA ENGINEERING CONSULTANTS, INC.

BORING AND TRENCH LOCATION PLAN
PROPOSED RETAIL DEVELOPMENT
RIVERSIDE, CALIFORNIA
SCALE: 1" = 100'
DRAWN BY: CDR
SCH PROJECT
PLATE 1

SOUTHERN CALIFORNIA GEOTECHNICAL



DESCRIPTION OF MAP UNITS

Kvt

Val Verde tonalite—Gray-weathering, relatively homogeneous, massive- to well-foliated, medium- to coarse-grained, hypautomorphic-granular biotite-hornblende tonalite; principal rock type of Val Verde pluton. Contains subequal biotite and hornblende, quartz and plagioclase. Potassium feldspar generally less than two percent of rock. Where present, foliation typically strikes northwest and dips moderately to steeply northeast. Northern part of pluton contains younger, intermittently developed, northeast-striking foliation. In central part of pluton, tonalite is mostly massive, and contains few segregational masses of mesocratic to melanocratic tonalite. Elliptical- to pancake-shaped, meso-to melanocratic inclusions are common.

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GE□L□GIC MAP
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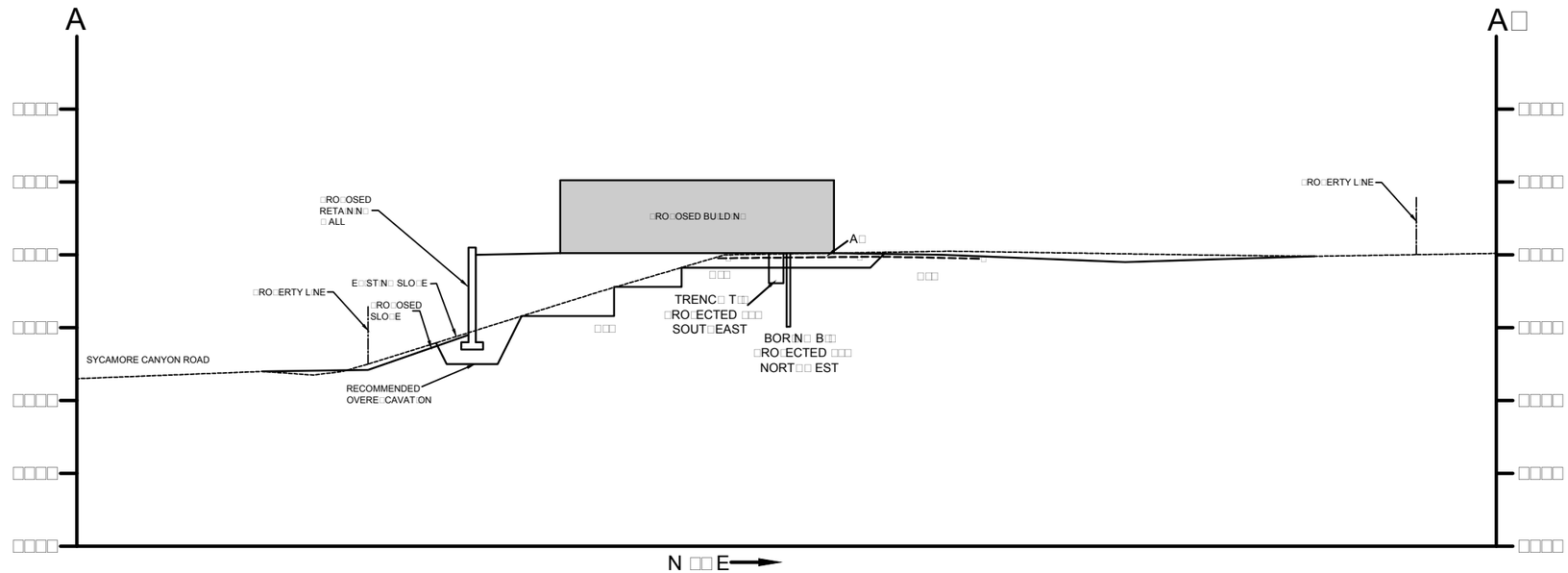
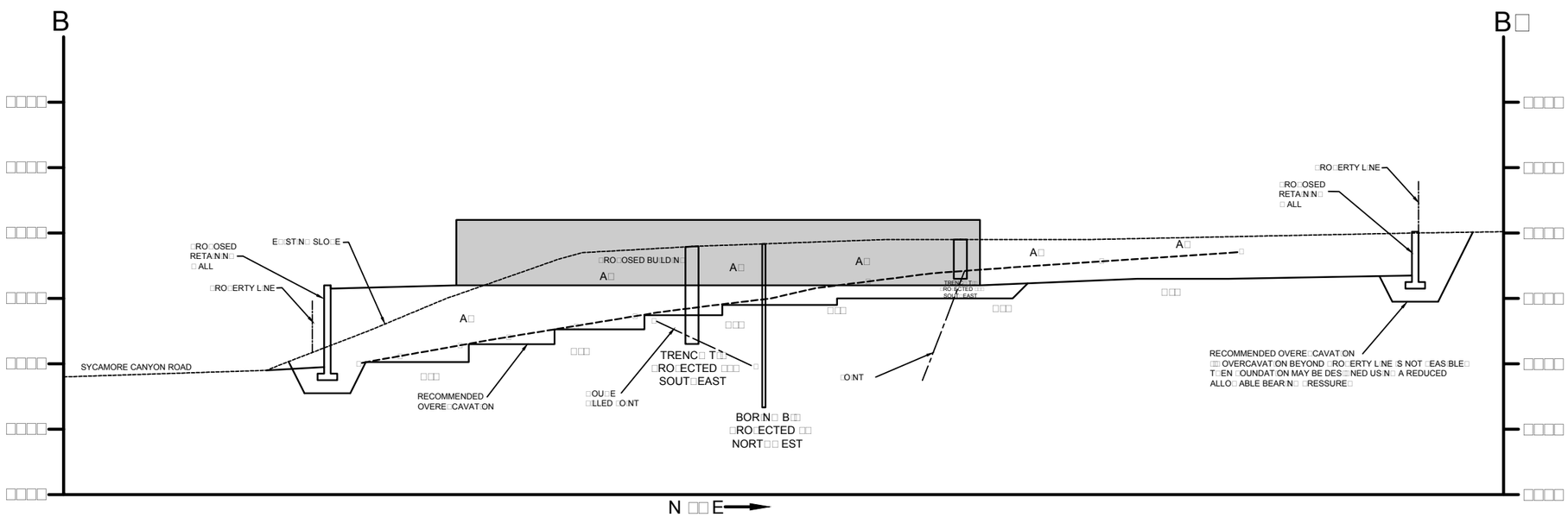
SOUTHERN CALIFORNIA GEOTECHNICAL





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SOUTHERN CALIFORNIA GEOTECHNICAL

APPENDIX B

BORING LOG LEGEND

SAMPLE TYPE	GRAPHICAL SYMBOL	SAMPLE DESCRIPTION
AUGER		SAMPLE COLLECTED FROM AUGER CUTTINGS, NO FIELD MEASUREMENT OF SOIL STRENGTH. (DISTURBED)
CORE		ROCK CORE SAMPLE: TYPICALLY TAKEN WITH A DIAMOND-TIPPED CORE BARREL. TYPICALLY USED ONLY IN HIGHLY CONSOLIDATED BEDROCK.
GRAB		SOIL SAMPLE TAKEN WITH NO SPECIALIZED EQUIPMENT, SUCH AS FROM A STOCKPILE OR THE GROUND SURFACE. (DISTURBED)
CS		CALIFORNIA SAMPLER: 2-1/2 INCH I.D. SPLIT BARREL SAMPLER, LINED WITH 1-INCH HIGH BRASS RINGS. DRIVEN WITH SPT HAMMER. (RELATIVELY UNDISTURBED)
NSR		NO RECOVERY: THE SAMPLING ATTEMPT DID NOT RESULT IN RECOVERY OF ANY SIGNIFICANT SOIL OR ROCK MATERIAL.
SPT		STANDARD PENETRATION TEST: SAMPLER IS A 1.4 INCH INSIDE DIAMETER SPLIT BARREL, DRIVEN 18 INCHES WITH THE SPT HAMMER. (DISTURBED)
SH		SHELBY TUBE: TAKEN WITH A THIN WALL SAMPLE TUBE, PUSHED INTO THE SOIL AND THEN EXTRACTED. (UNDISTURBED)
VANE		VANE SHEAR TEST: SOIL STRENGTH OBTAINED USING A 4 BLADED SHEAR DEVICE. TYPICALLY USED IN SOFT CLAYS-NO SAMPLE RECOVERED.

COLUMN DESCRIPTIONS

DEPTH: Distance in feet below the ground surface.

SAMPLE: Sample Type as depicted above.

BLOW COUNT: Number of blows required to advance the sampler 12 inches using a 140 lb hammer with a 30-inch drop. 50/3” indicates penetration refusal (>50 blows) at 3 inches. WH indicates that the weight of the hammer was sufficient to push the sampler 6 inches or more.

POCKET PEN.: Approximate shear strength of a cohesive soil sample as measured by pocket penetrometer.

GRAPHIC LOG: Graphic Soil Symbol as depicted on the following page.

DRY DENSITY: Dry density of an undisturbed or relatively undisturbed sample in lbs/ft^3.

MOISTURE CONTENT: Moisture content of a soil sample, expressed as a percentage of the dry weight.

LIQUID LIMIT: The moisture content above which a soil behaves as a liquid.

PLASTIC LIMIT: The moisture content above which a soil behaves as a plastic.

PASSING #200 SIEVE: The percentage of the sample finer than the #200 standard sieve.

UNCONFINED SHEAR: The shear strength of a cohesive soil sample, as measured in the unconfined state.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-1

JOB NO.: 17G134-3
PROJECT: Proposed Retail Development
LOCATION: Riverside, California

DRILLING DATE: 11/10/17
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Daryl Kas

WATER DEPTH: Dry
CAVE DEPTH: 9 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1370.5 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	UNCONFINED SHEAR (TSF)	COMMENTS
					FILL: Light Brown coarse Gravel, trace to little fine to coarse Sand, very dense-dry		1					
		67/10"			VAL VERDE FORMATION BEDROCK: Light Brown fine to coarse grained Tonalite Bedrock, friable, slightly weathered, very dense-dry	111	2					
5		100/6"				109	2					
		50/3"					2					
10		50/3"					1					
					Boring Terminated at 10'							

TBL 17G134.GPJ SOCALGEO.GDT 12/11/17

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-2

JOB NO.: 17G134-3
PROJECT: Proposed Retail Development
LOCATION: Riverside, California

DRILLING DATE: 11/10/17
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Daryl Kas

WATER DEPTH: Dry
CAVE DEPTH: 5.5 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1370.5 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	UNCONFINED SHEAR (TSF)	COMMENTS
		50/3"			VAL VERDE FORMATION BEDROCK: Light Gray fine to coarse grained Tonalite Bedrock, friable, slightly weathered, very dense-dry to damp		1					Disturbed Sample
		50/5"					1					
5												
		66/9"					3					
		50/2"										No Sample Recovered
10												
					Boring Terminated at 10'							

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SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-3

JOB NO.: 17G134-3
PROJECT: Proposed Retail Development
LOCATION: Riverside, California

DRILLING DATE: 11/10/17
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Daryl Kas

WATER DEPTH: Dry
CAVE DEPTH: 13.5 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1368 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	UNCONFINED SHEAR (TSF)	COMMENTS
	X	38			FILL: Gray Brown Silty fine to coarse Sand, trace fine Gravel, medium dense-damp	111	4					
	X	21				115	3					
5	X	28				108	4					
	X	6			FILL: Brown fine to coarse Sand, trace to little Silt, loose-damp	98	3					
	X	48			VAL VERDE FORMATION BEDROCK: Light Gray fine to coarse grained Tonalite Bedrock, friable, weathered, dense to very dense-dry	121	1					
10												
	X	50/3"					1					
15												
	X	50/4"					1					
20												
	X	50/3"					1					
25												
					Boring Terminated at 25'							

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SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-4

JOB NO.: 17G134-3
PROJECT: Proposed Retail Development
LOCATION: Riverside, California

DRILLING DATE: 11/10/17
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Daryl Kas

WATER DEPTH: Dry
CAVE DEPTH: 8.5 feet
READING TAKEN: At Completion

SURFACE ELEVATION: 1367 feet MSL

FIELD RESULTS					DESCRIPTION	LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG		DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	UNCONFINED SHEAR (TSF)	COMMENTS
	X	29			FILL: Brown Silty fine to coarse Sand, loose to medium dense-damp	106	4					
	X	10				103	5					
5	X	9				105	2					
	X	6			@ 7 to 8 feet, very loose to loose	94	5					
	X	7			ALLUVIUM: Brown Silty fine to medium Sand, little coarse Sand, loose-damp	93	4					
10												
					VAL VERDE FORMATION BEDROCK: Light Gray fine to coarse grained Tonalite Bedrock, friable, highly weathered, very dense-dry to damp							
	X	69/"				103	3					
15												
					Boring Terminated at 15'							

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SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-5

JOB NO.: 17G134-3
PROJECT: Proposed Retail Development
LOCATION: Riverside, California

DRILLING DATE: 11/10/17
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Daryl Kas

WATER DEPTH: Dry
CAVE DEPTH:
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1365.5 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	UNCONFINED SHEAR (TSF)	COMMENTS
	X	50/5"			VAL VERDE FORMATION BEDROCK: Light Gray Brown fine to coarse grained Tonalite Bedrock, friable, slightly weathered, very dense-dry		2					
	X	67/9"					2					
5	X	50/5"					2					
	X	50/4"					1					
10												
	X	50/5"					1					
15					Boring Terminated at 15'							

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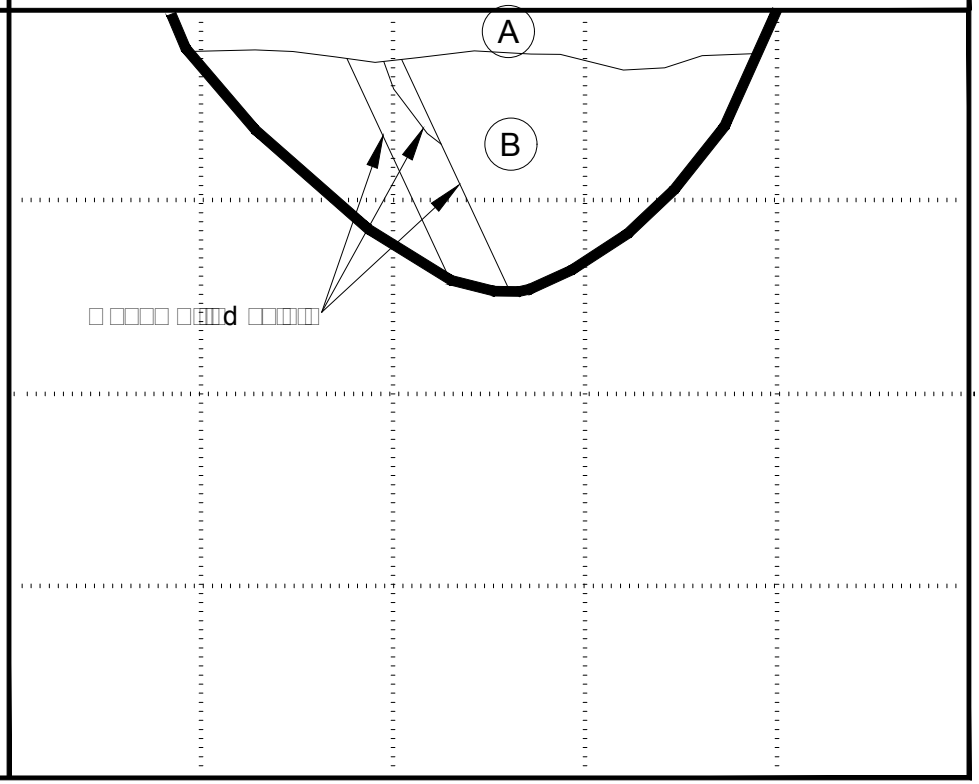

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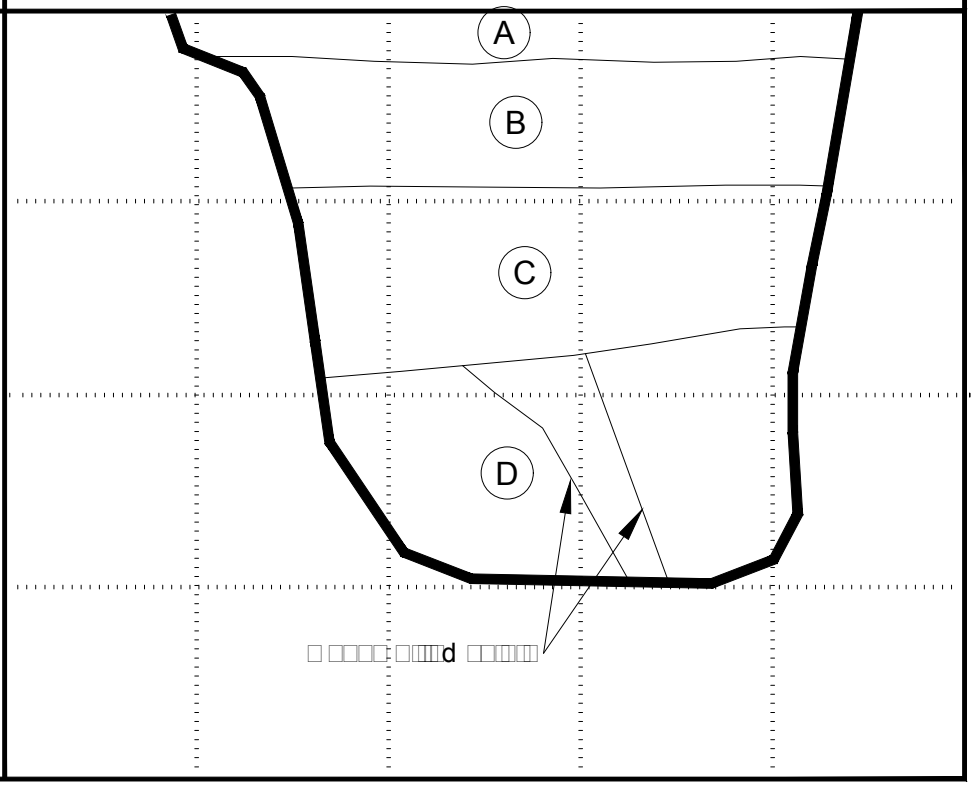

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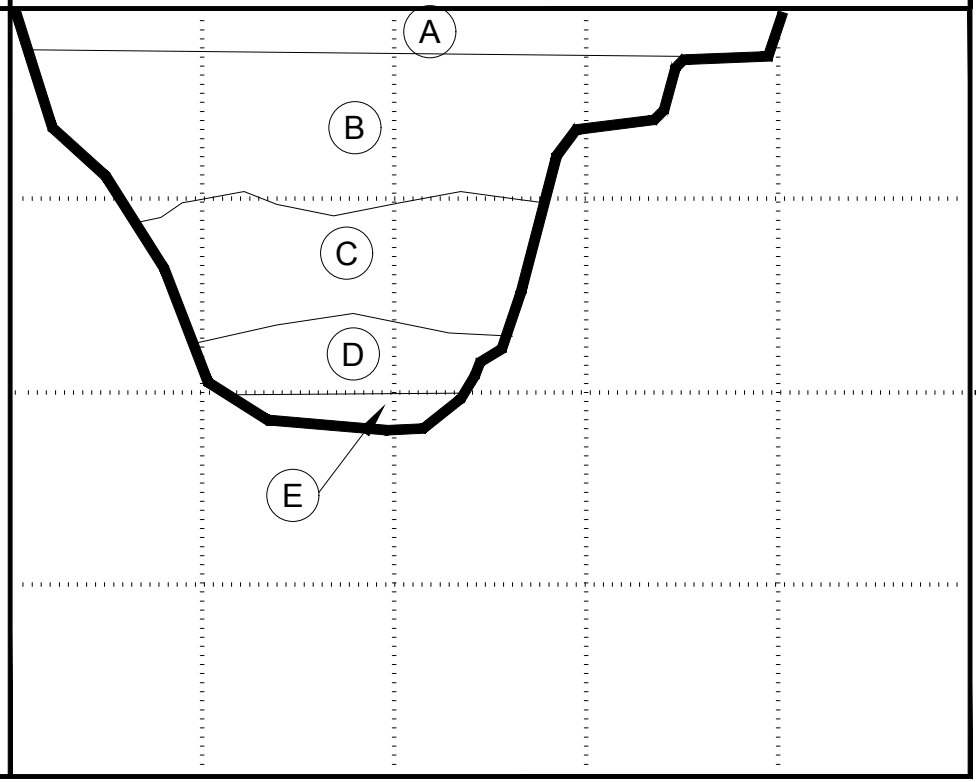

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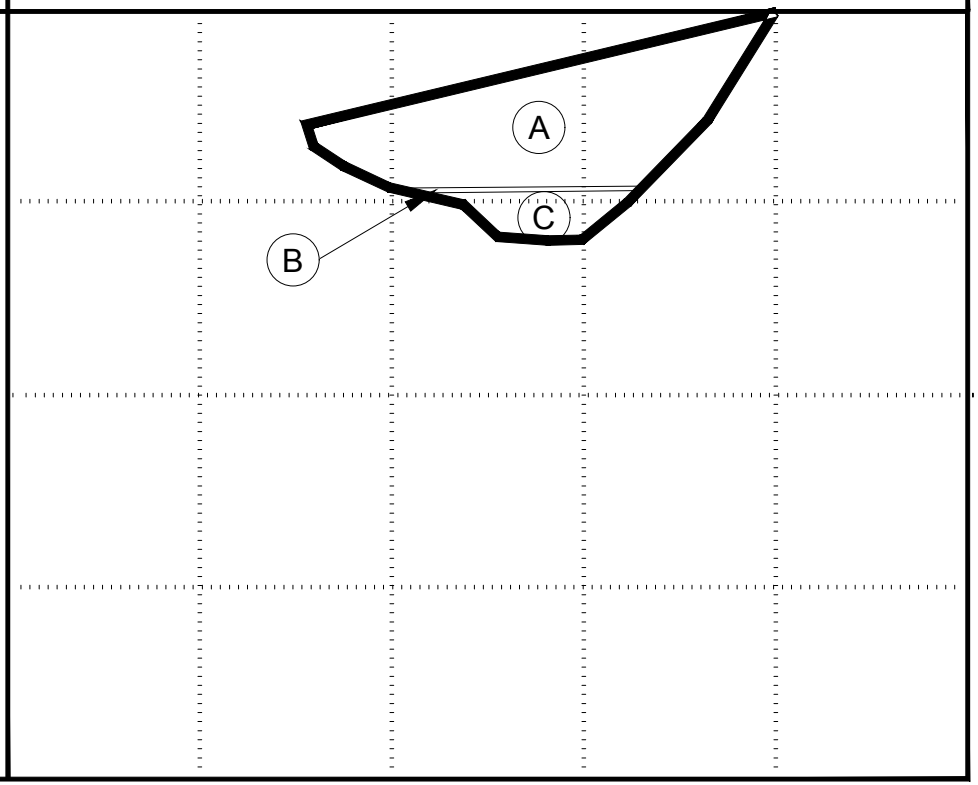

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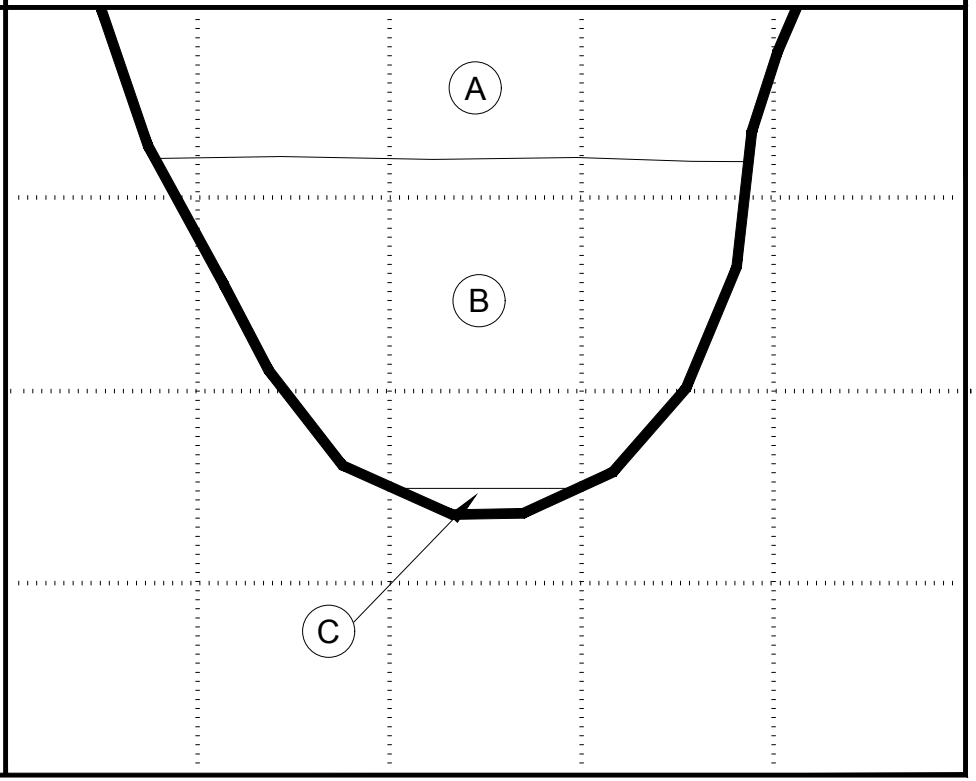

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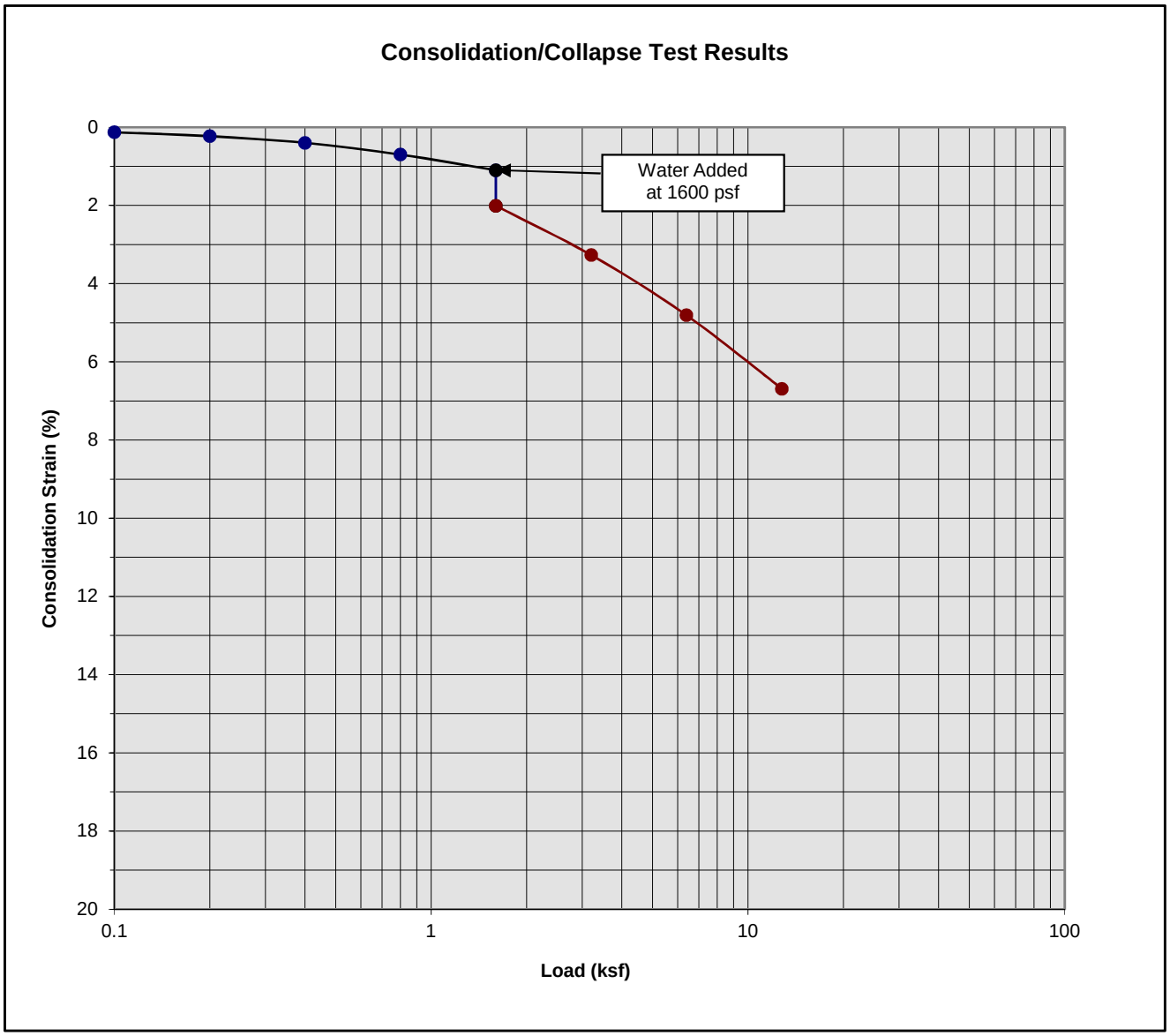
APPENDIX C



Classification: FILL: Gray Brown Silty fine to coarse Sand, trace fine Gravel

Boring Number:	B-3	Initial Moisture Content (%)	3
Sample Number:	---	Final Moisture Content (%)	11
Depth (ft)	3 to 4	Initial Dry Density (pcf)	115.7
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	124.4
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.91

Proposed Retail Development
Riverside, California
Project No. 17G134-3

PLATE C- 1

SOUTHERN CALIFORNIA GEOTECHNICAL
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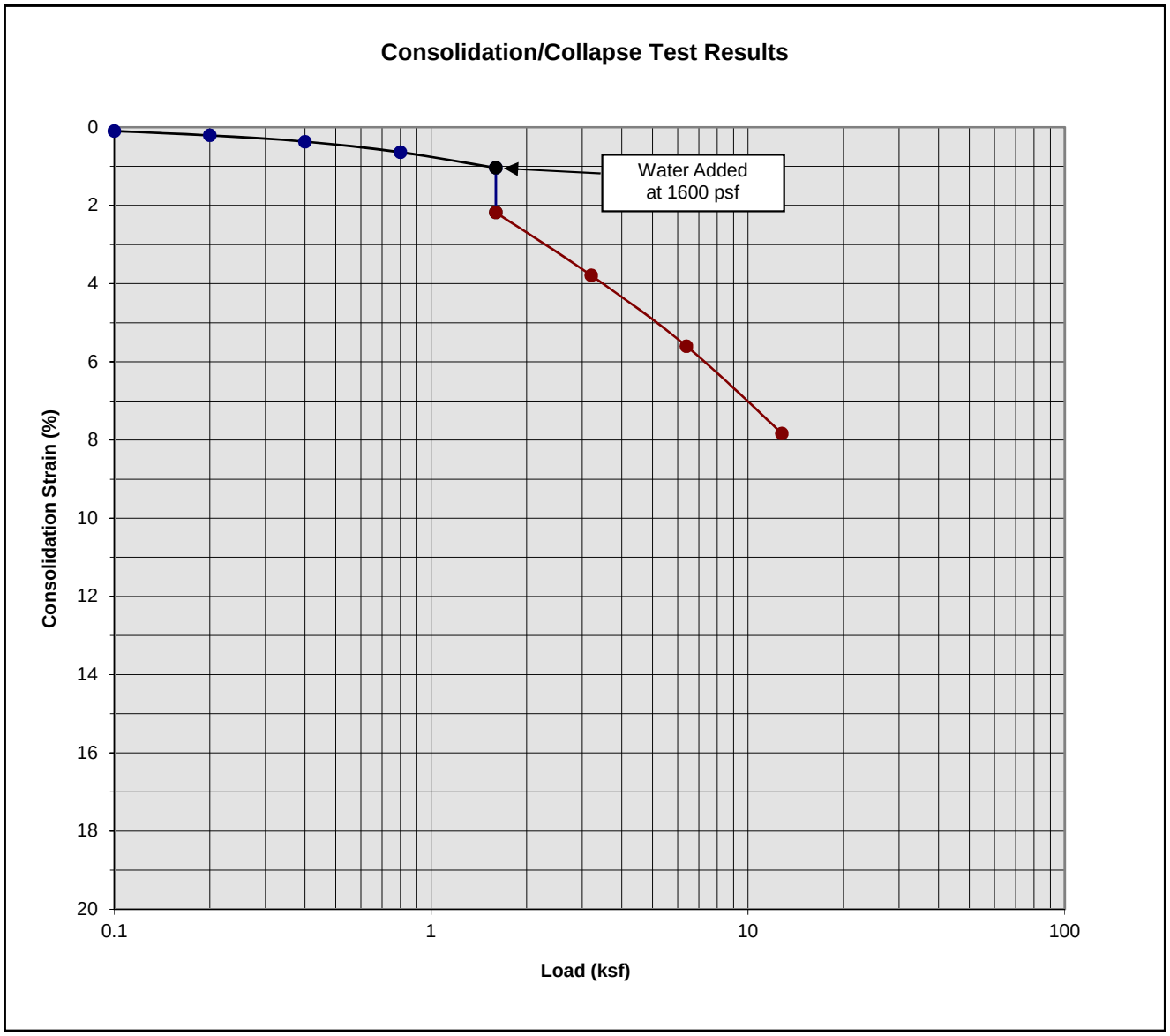
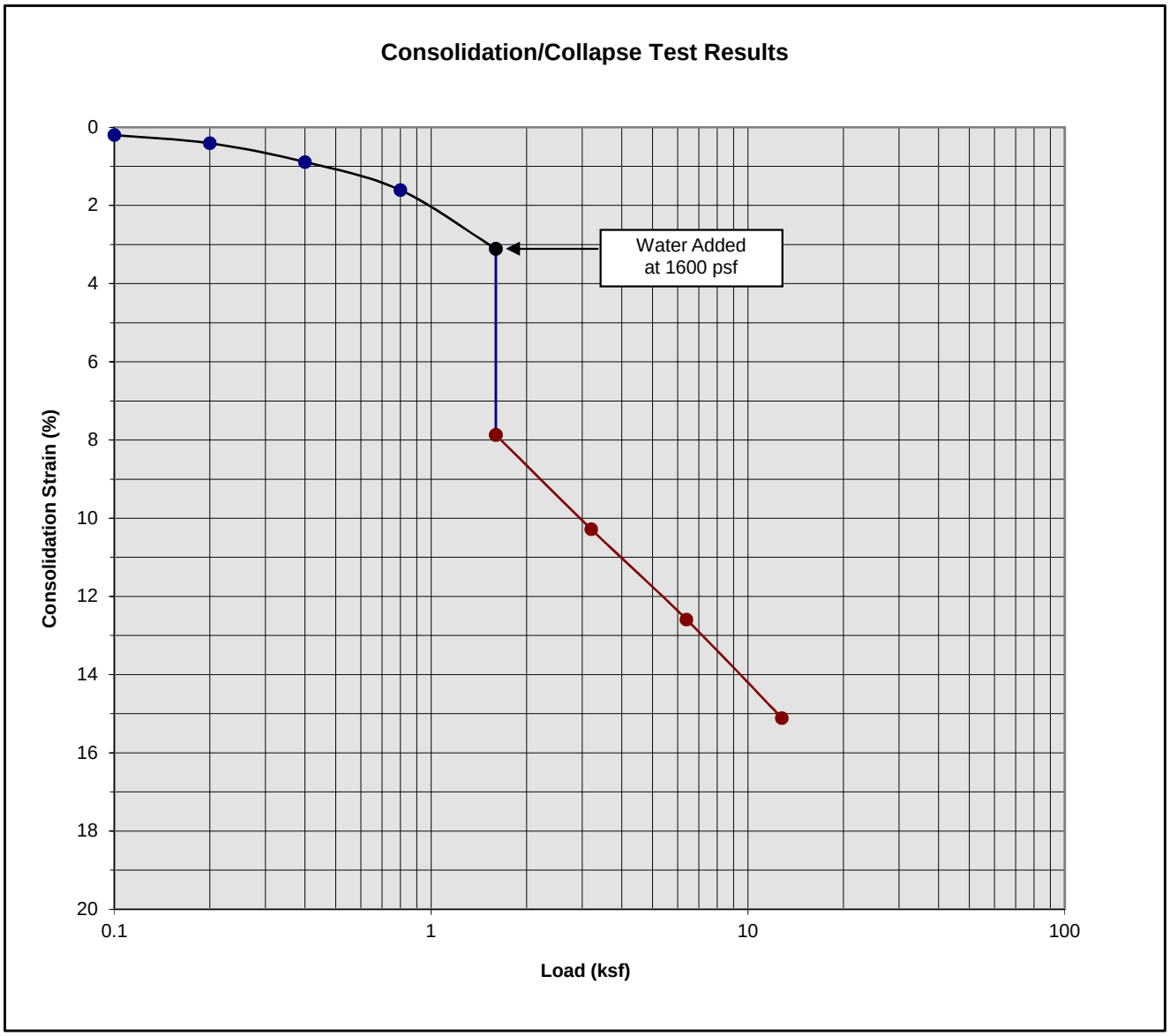


Classification: FILL: Gray Brown Silty fine to coarse Sand, trace fine Gravel

Boring Number:	B-3	Initial Moisture Content (%)	4
Sample Number:	---	Final Moisture Content (%)	12
Depth (ft)	5 to 6	Initial Dry Density (pcf)	108.7
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	118.3
Specimen Thickness (in)	1.0	Percent Collapse (%)	1.14

Proposed Retail Development
Riverside, California
Project No. 17G134-3
PLATE C- 2

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation



Classification: FILL: Brown fine to coarse Sand, trace to little Silt

Boring Number:	B-3	Initial Moisture Content (%)	3
Sample Number:	---	Final Moisture Content (%)	14
Depth (ft)	7 to 8	Initial Dry Density (pcf)	98.1
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	115.5
Specimen Thickness (in)	1.0	Percent Collapse (%)	4.76

Proposed Retail Development
Riverside, California
Project No. 17G134-3

PLATE C- 3

SOUTHERN CALIFORNIA GEOTECHNICAL
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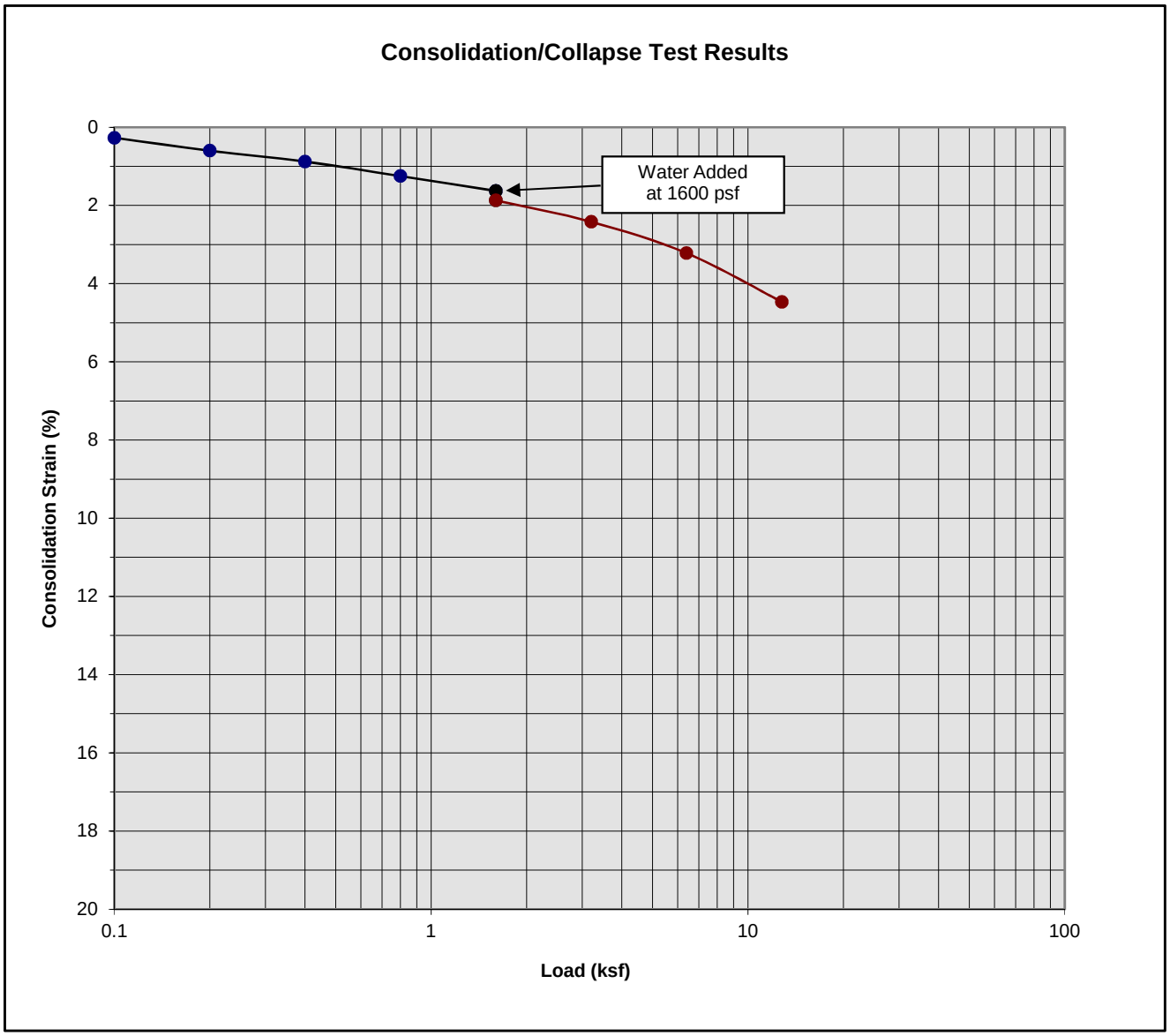

Classification: Light Gray fine to coarse grained Tonalite Bedrock

Boring Number:	B-3	Initial Moisture Content (%)	1
Sample Number:	---	Final Moisture Content (%)	12
Depth (ft)	9 to 10	Initial Dry Density (pcf)	120.4
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	125.4
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.24

Proposed Retail Development
Riverside, California
Project No. 17G134-3

PLATE C- 4

SOUTHERN CALIFORNIA GEOTECHNICAL
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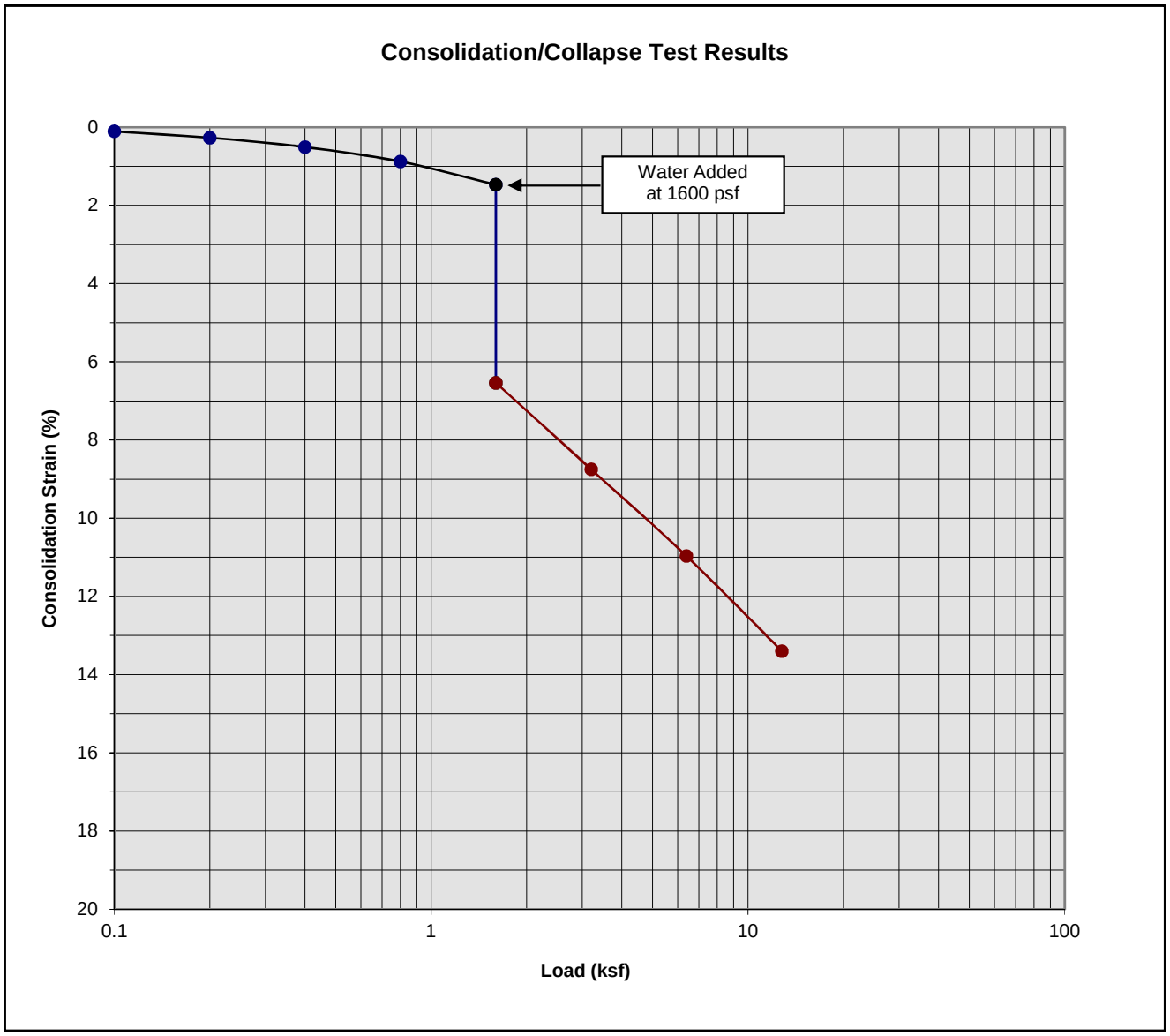

Classification: FILL: Brown Silty fine to coarse Sand

Boring Number:	B-4	Initial Moisture Content (%)	5
Sample Number:	---	Final Moisture Content (%)	12
Depth (ft)	3 to 4	Initial Dry Density (pcf)	103.5
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	122.6
Specimen Thickness (in)	1.0	Percent Collapse (%)	5.07

Proposed Retail Development
Riverside, California
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PLATE C- 5

SOUTHERN CALIFORNIA GEOTECHNICAL
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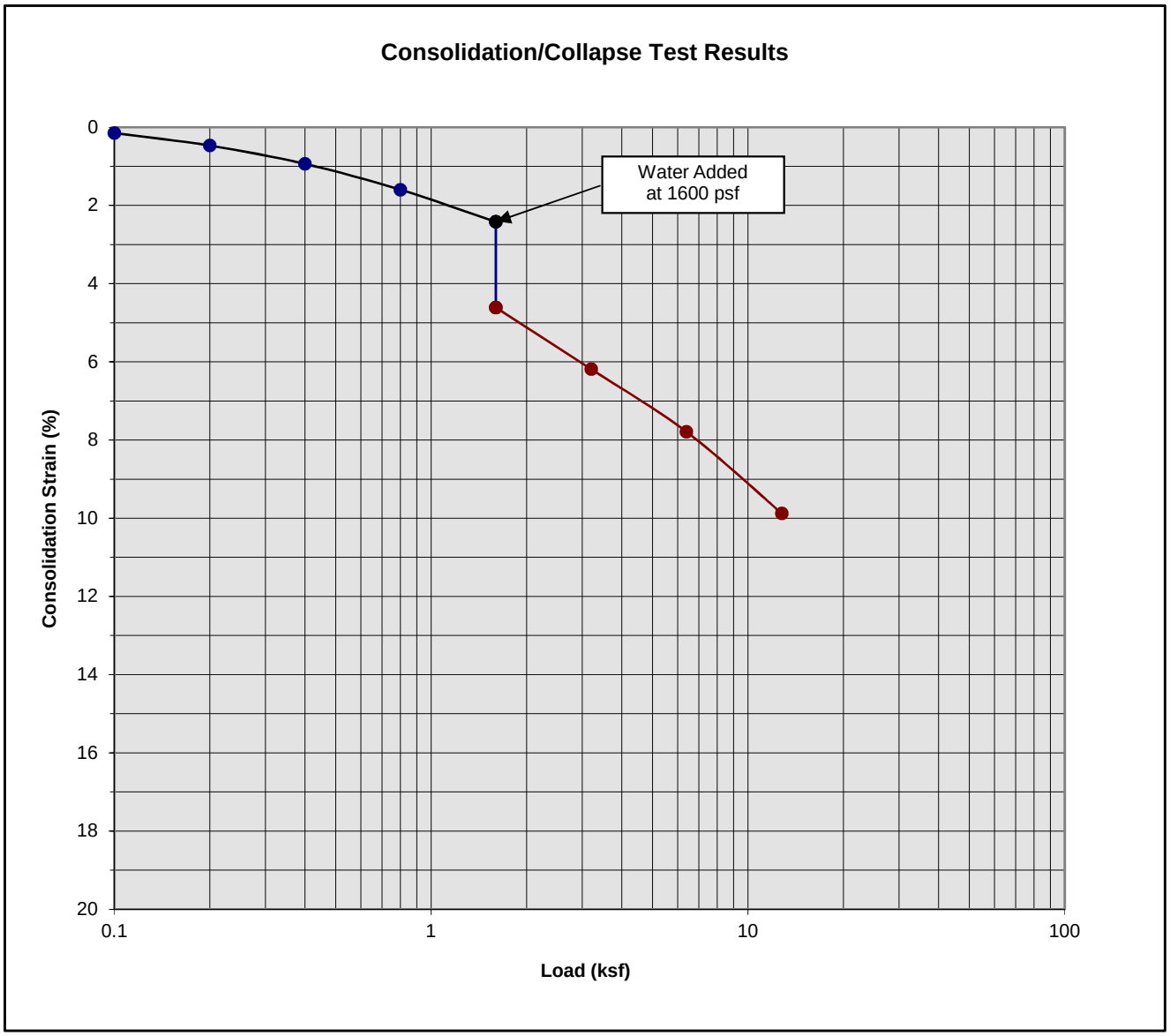

Classification: FILL: Brown Silty fine to coarse Sand

Boring Number:	B-4	Initial Moisture Content (%)	2
Sample Number:	---	Final Moisture Content (%)	11
Depth (ft)	5 to 6	Initial Dry Density (pcf)	105.7
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	119.1
Specimen Thickness (in)	1.0	Percent Collapse (%)	2.19

Proposed Retail Development
Riverside, California
Project No. 17G134-3

PLATE C- 6

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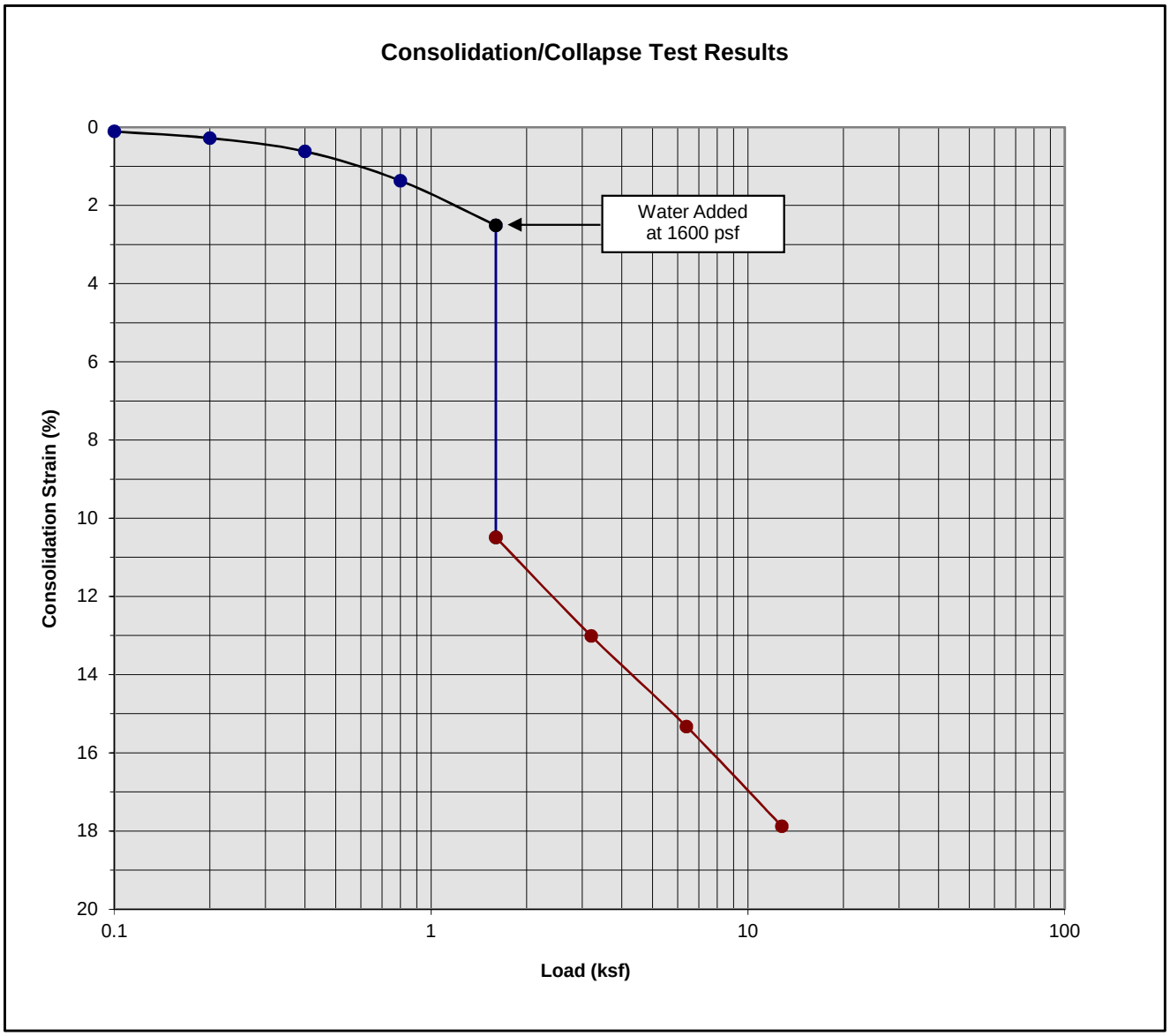

Classification: FILL: Brown Silty fine to coarse Sand

Boring Number:	B-4	Initial Moisture Content (%)	5
Sample Number:	---	Final Moisture Content (%)	13
Depth (ft)	7 to 8	Initial Dry Density (pcf)	95.1
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	118.2
Specimen Thickness (in)	1.0	Percent Collapse (%)	7.98

Proposed Retail Development
Riverside, California
Project No. 17G134-3

PLATE C- 7

SOUTHERN CALIFORNIA GEOTECHNICAL
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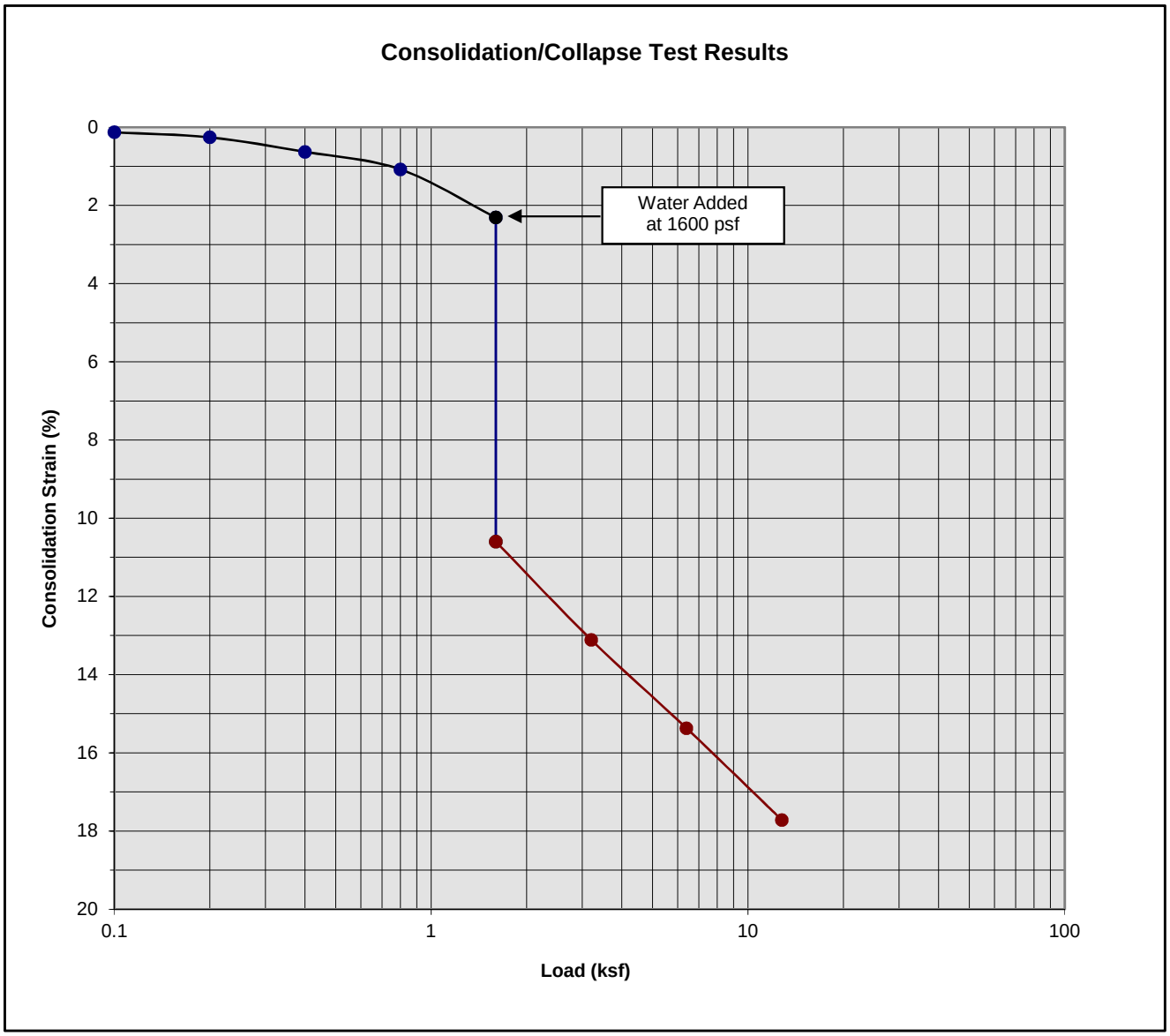

Classification: Brown Silty fine to medium Sand, little coarse Sand

Boring Number:	B-4	Initial Moisture Content (%)	4
Sample Number:	---	Final Moisture Content (%)	14
Depth (ft)	9 to 10	Initial Dry Density (pcf)	93.6
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	121.7
Specimen Thickness (in)	1.0	Percent Collapse (%)	8.29

Proposed Retail Development
Riverside, California
Project No. 17G134-3

PLATE C- 8

SOUTHERN CALIFORNIA GEOTECHNICAL
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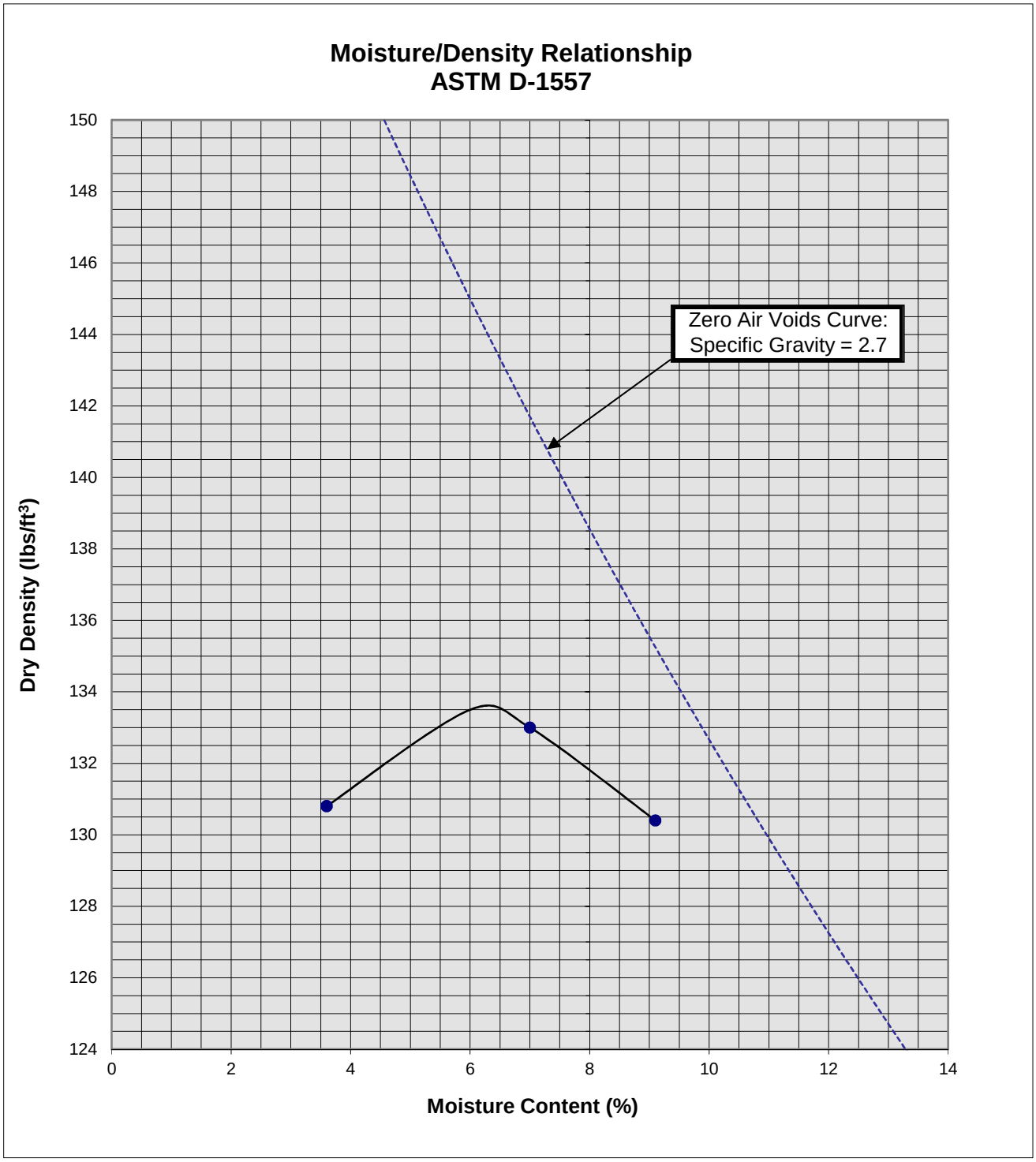
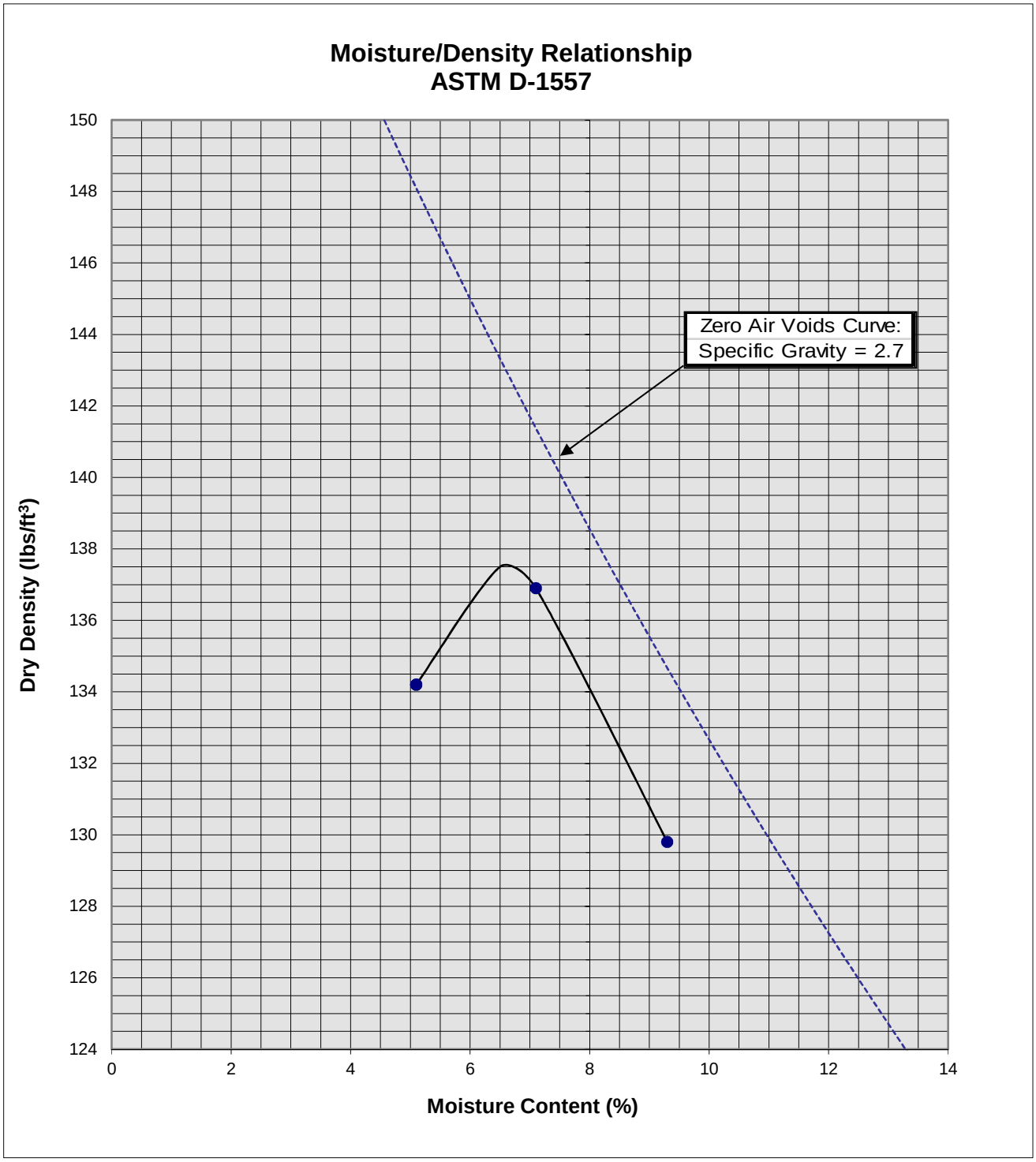


Soil ID Number	B-2 @ 0 to 5'
Optimum Moisture (%)	6
Maximum Dry Density (pcf)	133.5
Soil Classification	Derived from Crushed Bedrock: Light Gray fine to coarse Sand trace Gravel

Proposed Retail Development
Riverside, California
Project No. 17G134-3
PLATE C-9

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation



Soil ID Number	B-4 @ 0 to 5'
Optimum Moisture (%)	6.5
Maximum Dry Density (pcf)	137.5
Soil Classification	Brown Silty fine to coarse Sand

Proposed Retail Development
Riverside, California
Project No. 17G134-3
PLATE C-10

SOUTHERN CALIFORNIA GEOTECHNICAL
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APPENDIX D

GRADING GUIDE SPECIFICATIONS

These grading guide specifications are intended to provide typical procedures for grading operations. They are intended to supplement the recommendations contained in the geotechnical investigation report for this project. Should the recommendations in the geotechnical investigation report conflict with the grading guide specifications, the more site specific recommendations in the geotechnical investigation report will govern.

General

- The Earthwork Contractor is responsible for the satisfactory completion of all earthwork in accordance with the plans and geotechnical reports, and in accordance with city, county, and applicable building codes.

- The Geotechnical Engineer is the representative of the Owner/Builder for the purpose of implementing the report recommendations and guidelines. These duties are not intended to relieve the Earthwork Contractor of any responsibility to perform in a workman-like manner, nor is the Geotechnical Engineer to direct the grading equipment or personnel employed by the Contractor.

- The Earthwork Contractor is required to notify the Geotechnical Engineer of the anticipated work and schedule so that testing and inspections can be provided. If necessary, work may be stopped and redone if personnel have not been scheduled in advance.

- The Earthwork Contractor is required to have suitable and sufficient equipment on the job-site to process, moisture condition, mix and compact the amount of fill being placed to the approved compaction. In addition, suitable support equipment should be available to conform with recommendations and guidelines in this report.

- Canyon cleanouts, overexcavation areas, processed ground to receive fill, key excavations, subdrains and benches should be observed by the Geotechnical Engineer prior to placement of any fill. It is the Earthwork Contractor's responsibility to notify the Geotechnical Engineer of areas that are ready for inspection.

- Excavation, filling, and subgrade preparation should be performed in a manner and sequence that will provide drainage at all times and proper control of erosion. Precipitation, springs, and seepage water encountered shall be pumped or drained to provide a suitable working surface. The Geotechnical Engineer must be informed of springs or water seepage encountered during grading or foundation construction for possible revision to the recommended construction procedures and/or installation of subdrains.

Site Preparation

- The Earthwork Contractor is responsible for all clearing, grubbing, stripping and site preparation for the project in accordance with the recommendations of the Geotechnical Engineer.

- If any materials or areas are encountered by the Earthwork Contractor which are suspected of having toxic or environmentally sensitive contamination, the Geotechnical Engineer and Owner/Builder should be notified immediately.

- Major vegetation should be stripped and disposed of off-site. This includes trees, brush, heavy grasses and any materials considered unsuitable by the Geotechnical Engineer.

- Underground structures such as basements, cesspools or septic disposal systems, mining shafts, tunnels, wells and pipelines should be removed under the inspection of the Geotechnical Engineer and recommendations provided by the Geotechnical Engineer and/or city, county or state agencies. If such structures are known or found, the Geotechnical Engineer should be notified as soon as possible so that recommendations can be formulated.

- Any topsoil, slopewash, colluvium, alluvium and rock materials which are considered unsuitable by the Geotechnical Engineer should be removed prior to fill placement.

- Remaining voids created during site clearing caused by removal of trees, foundations basements, irrigation facilities, etc., should be excavated and filled with compacted fill.

- Subsequent to clearing and removals, areas to receive fill should be scarified to a depth of 10 to 12 inches, moisture conditioned and compacted

- The moisture condition of the processed ground should be at or slightly above the optimum moisture content as determined by the Geotechnical Engineer. Depending upon field conditions, this may require air drying or watering together with mixing and/or discing.

Compacted Fills

- Soil materials imported to or excavated on the property may be utilized in the fill, provided each material has been determined to be suitable in the opinion of the Geotechnical Engineer. Unless otherwise approved by the Geotechnical Engineer, all fill materials shall be free of deleterious, organic, or frozen matter, shall contain no chemicals that may result in the material being classified as “contaminated,” and shall be very low to non-expansive with a maximum expansion index (EI) of 50. The top 12 inches of the compacted fill should have a maximum particle size of 3 inches, and all underlying compacted fill material a maximum 6-inch particle size, except as noted below.

- All soils should be evaluated and tested by the Geotechnical Engineer. Materials with high expansion potential, low strength, poor gradation or containing organic materials may require removal from the site or selective placement and/or mixing to the satisfaction of the Geotechnical Engineer.

- Rock fragments or rocks less than 6 inches in their largest dimensions, or as otherwise determined by the Geotechnical Engineer, may be used in compacted fill, provided the distribution and placement is satisfactory in the opinion of the Geotechnical Engineer.

- Rock fragments or rocks greater than 12 inches should be taken off-site or placed in accordance with recommendations and in areas designated as suitable by the Geotechnical Engineer. These materials should be placed in accordance with Plate D-8 of these Grading Guide Specifications and in accordance with the following recommendations:

    - Rocks 12 inches or more in diameter should be placed in rows at least 15 feet apart, 15 feet from the edge of the fill, and 10 feet or more below subgrade. Spaces should be left between each rock fragment to provide for placement and compaction of soil around the fragments.

    - Fill materials consisting of soil meeting the minimum moisture content requirements and free of oversize material should be placed between and over the rows of rock or

concrete. Ample water and compactive effort should be applied to the fill materials as they are placed in order that all of the voids between each of the fragments are filled and compacted to the specified density.

- Subsequent rows of rocks should be placed such that they are not directly above a row placed in the previous lift of fill. A minimum 5-foot offset between rows is recommended.

- To facilitate future trenching, oversized material should not be placed within the range of foundation excavations, future utilities or other underground construction unless specifically approved by the soil engineer and the developer/owner representative.

- Fill materials approved by the Geotechnical Engineer should be placed in areas previously prepared to receive fill and in evenly placed, near horizontal layers at about 6 to 8 inches in loose thickness, or as otherwise determined by the Geotechnical Engineer for the project.

- Each layer should be moisture conditioned to optimum moisture content, or slightly above, as directed by the Geotechnical Engineer. After proper mixing and/or drying, to evenly distribute the moisture, the layers should be compacted to at least 90 percent of the maximum dry density in compliance with ASTM D-1557-78 unless otherwise indicated.

- Density and moisture content testing should be performed by the Geotechnical Engineer at random intervals and locations as determined by the Geotechnical Engineer. These tests are intended as an aid to the Earthwork Contractor, so he can evaluate his workmanship, equipment effectiveness and site conditions. The Earthwork Contractor is responsible for compaction as required by the Geotechnical Report(s) and governmental agencies.

- Fill areas unused for a period of time may require moisture conditioning, processing and recompaction prior to the start of additional filling. The Earthwork Contractor should notify the Geotechnical Engineer of his intent so that an evaluation can be made.

- Fill placed on ground sloping at a 5-to-1 inclination (horizontal-to-vertical) or steeper should be benched into bedrock or other suitable materials, as directed by the Geotechnical Engineer. Typical details of benching are illustrated on Plates D-2, D-4, and D-5.

- Cut/fill transition lots should have the cut portion overexcavated to a depth of at least 3 feet and rebuilt with fill (see Plate D-1), as determined by the Geotechnical Engineer.

- All cut lots should be inspected by the Geotechnical Engineer for fracturing and other bedrock conditions. If necessary, the pads should be overexcavated to a depth of 3 feet and rebuilt with a uniform, more cohesive soil type to impede moisture penetration.

- Cut portions of pad areas above buttresses or stabilizations should be overexcavated to a depth of 3 feet and rebuilt with uniform, more cohesive compacted fill to impede moisture penetration.

- Non-structural fill adjacent to structural fill should typically be placed in unison to provide lateral support. Backfill along walls must be placed and compacted with care to ensure that excessive unbalanced lateral pressures do not develop. The type of fill material placed adjacent to below grade walls must be properly tested and approved by the Geotechnical Engineer with consideration of the lateral earth pressure used in the design.

Foundations

- The foundation influence zone is defined as extending one foot horizontally from the outside edge of a footing, and proceeding downward at a ½ horizontal to 1 vertical (0.5:1) inclination.

- Where overexcavation beneath a footing subgrade is necessary, it should be conducted so as to encompass the entire foundation influence zone, as described above.

- Compacted fill adjacent to exterior footings should extend at least 12 inches above foundation bearing grade. Compacted fill within the interior of structures should extend to the floor subgrade elevation.

Fill Slopes

- The placement and compaction of fill described above applies to all fill slopes. Slope compaction should be accomplished by overfilling the slope, adequately compacting the fill in even layers, including the overfilled zone and cutting the slope back to expose the compacted core

- Slope compaction may also be achieved by backrolling the slope adequately every 2 to 4 vertical feet during the filling process as well as requiring the earth moving and compaction equipment to work close to the top of the slope. Upon completion of slope construction, the slope face should be compacted with a sheepsfoot connected to a sideboom and then grid rolled. This method of slope compaction should only be used if approved by the Geotechnical Engineer.

- Sandy soils lacking in adequate cohesion may be unstable for a finished slope condition and therefore should not be placed within 15 horizontal feet of the slope face.

- All fill slopes should be keyed into bedrock or other suitable material. Fill keys should be at least 15 feet wide and inclined at 2 percent into the slope. For slopes higher than 30 feet, the fill key width should be equal to one-half the height of the slope (see Plate D-5).

- All fill keys should be cleared of loose slough material prior to geotechnical inspection and should be approved by the Geotechnical Engineer and governmental agencies prior to filling.

- The cut portion of fill over cut slopes should be made first and inspected by the Geotechnical Engineer for possible stabilization requirements. The fill portion should be adequately keyed through all surficial soils and into bedrock or suitable material. Soils should be removed from the transition zone between the cut and fill portions (see Plate D-2).

Cut Slopes

- All cut slopes should be inspected by the Geotechnical Engineer to determine the need for stabilization. The Earthwork Contractor should notify the Geotechnical Engineer when slope cutting is in progress at intervals of 10 vertical feet. Failure to notify may result in a delay in recommendations.

- Cut slopes exposing loose, cohesionless sands should be reported to the Geotechnical Engineer for possible stabilization recommendations.

- All stabilization excavations should be cleared of loose slough material prior to geotechnical inspection. Stakes should be provided by the Civil Engineer to verify the location and dimensions of the key. A typical stabilization fill detail is shown on Plate D-5.

- Stabilization key excavations should be provided with subdrains. Typical subdrain details are shown on Plates D-6.

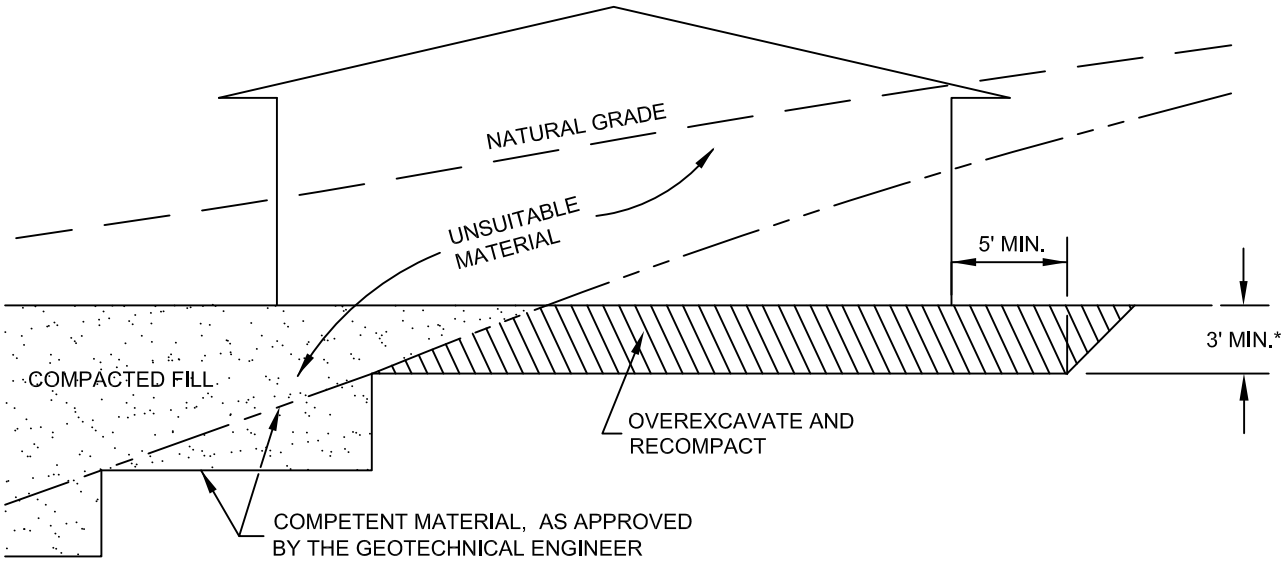
Subdrains

- Subdrains may be required in canyons and swales where fill placement is proposed. Typical subdrain details for canyons are shown on Plate D-3. Subdrains should be installed after approval of removals and before filling, as determined by the Soils Engineer.

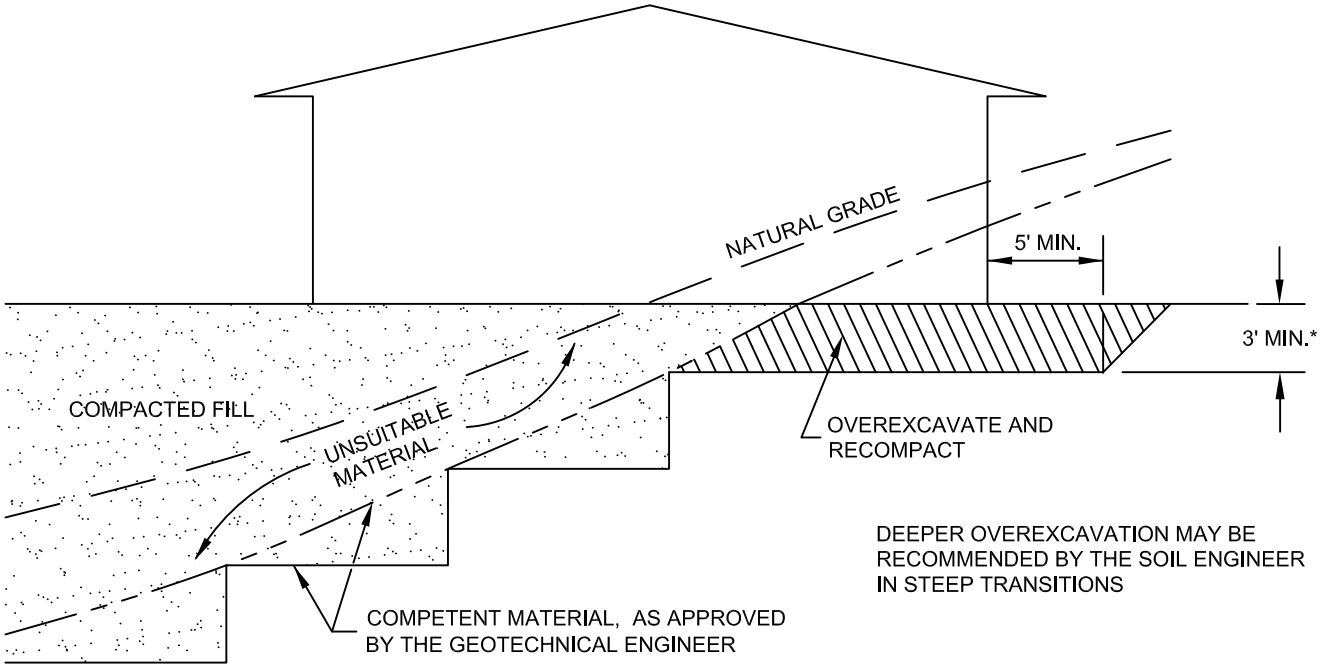
- Plastic pipe may be used for subdrains provided it is Schedule 40 or SDR 35 or equivalent. Pipe should be protected against breakage, typically by placement in a square-cut (backhoe) trench or as recommended by the manufacturer.

- Filter material for subdrains should conform to CALTRANS Specification 68-1.025 or as approved by the Geotechnical Engineer for the specific site conditions. Clean ¾-inch crushed rock may be used provided it is wrapped in an acceptable filter cloth and approved by the Geotechnical Engineer. Pipe diameters should be 6 inches for runs up to 500 feet and 8 inches for the downstream continuations of longer runs. Four-inch diameter pipe may be used in buttress and stabilization fills.

CUT LOT



CUT/FILL LOT (TRANSITION)



*SEE TEXT OF REPORT FOR SPECIFIC RECOMMENDATION.
ACTUAL DEPTH OF OVEREXCAVATION MAY BE GREATER.

TRANSITION LOT DETAIL

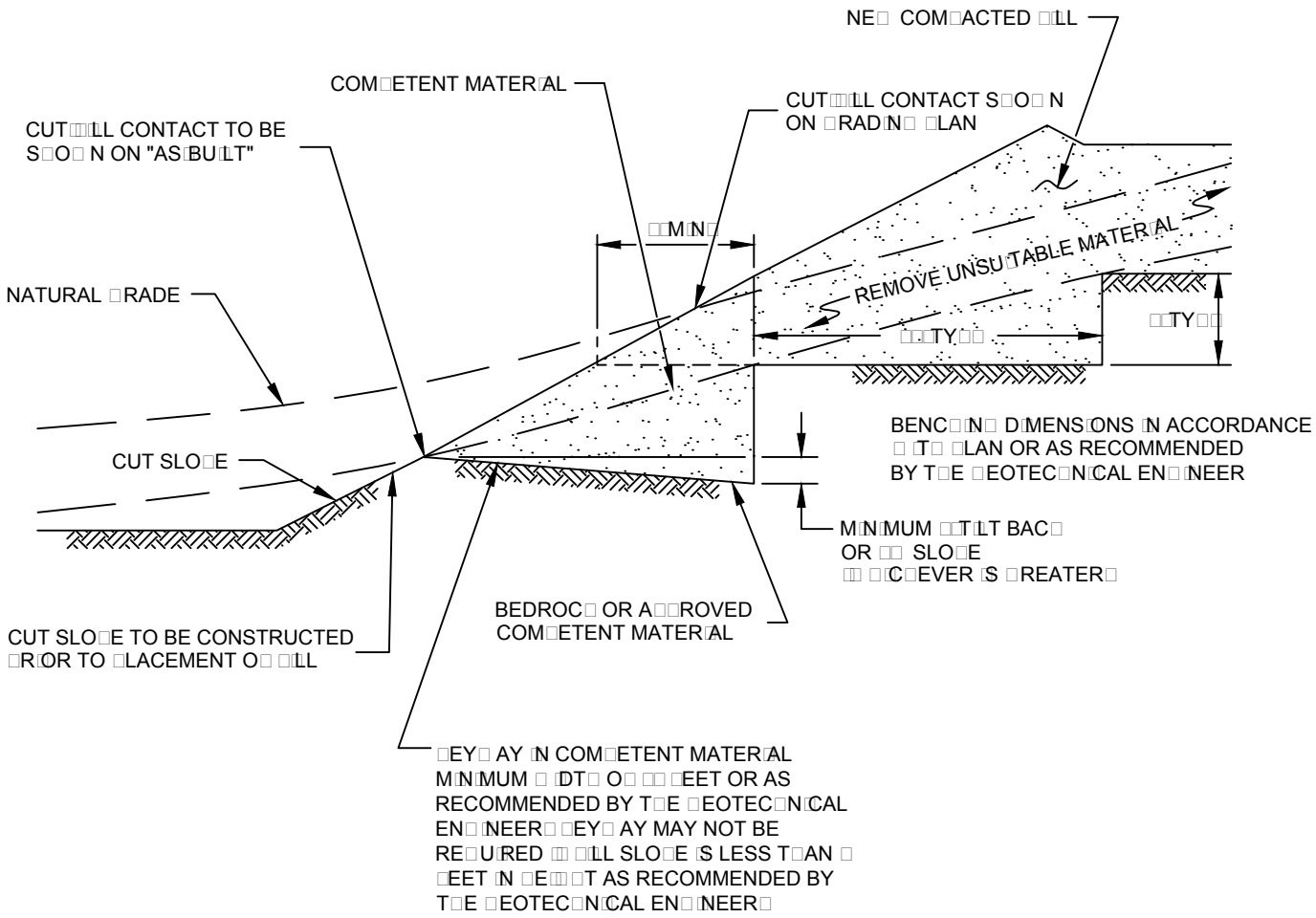
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

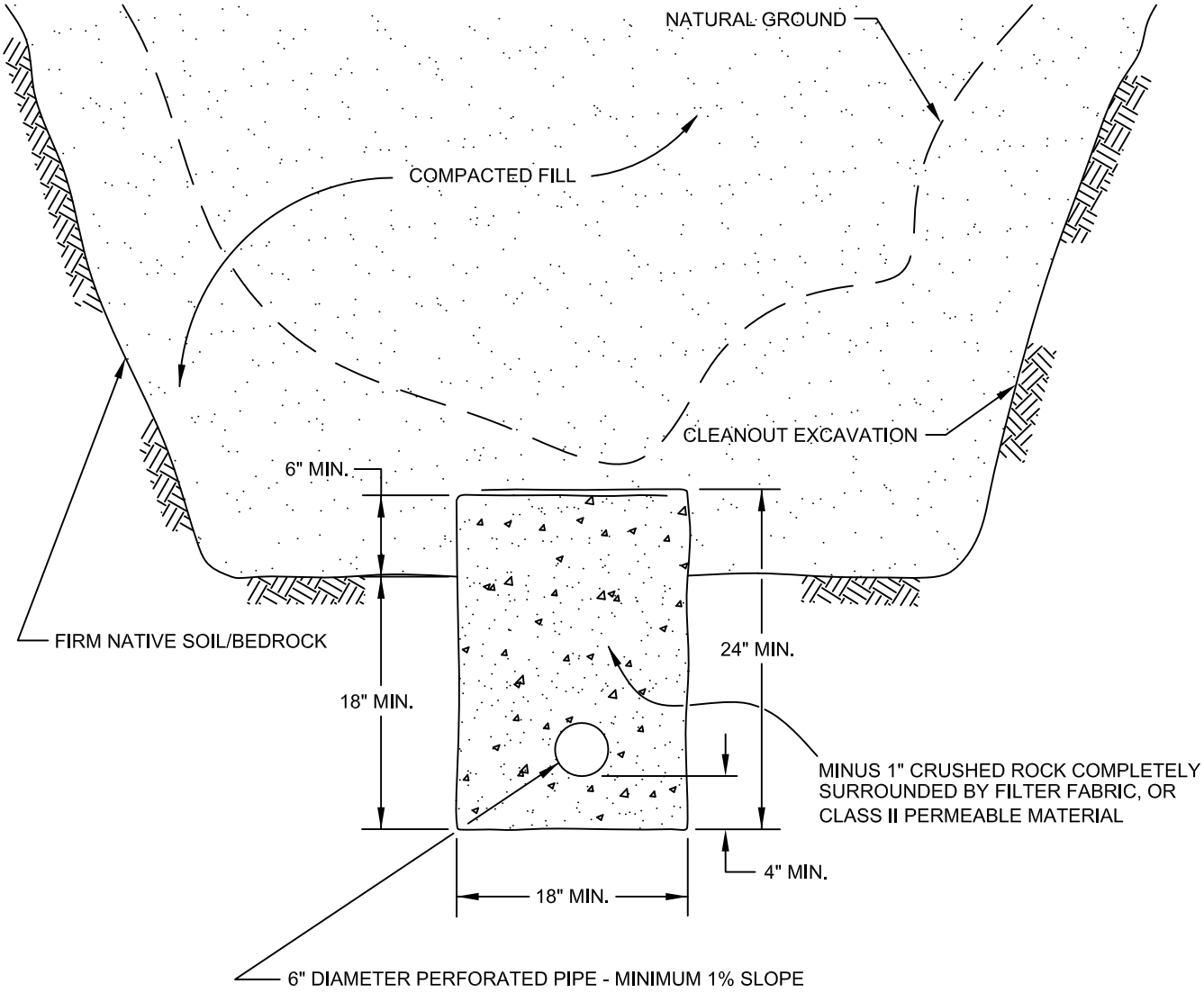
PLATE D-1

SOUTHERN CALIFORNIA GEOTECHNICAL



□ILL A□□□E C□T SL□PE DETAIL
□RAD□N□ □U□DE S□EC□□□CAT□ONS
NOT TO SCALE
DRA□ N□□AS C□□D□□□M
PLATE D-□

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



PIPE MATERIAL	DEPTH OF FILL OVER SUBDRAIN
ADS (CORRUGATED POLETHYLENE)	8
TRANSITE UNDERDRAIN	20
PVC OR ABS: SDR 35	35
SDR 21	100

SCHEMATIC ONLY
NOT TO SCALE

CANYON SUBDRAIN DETAIL

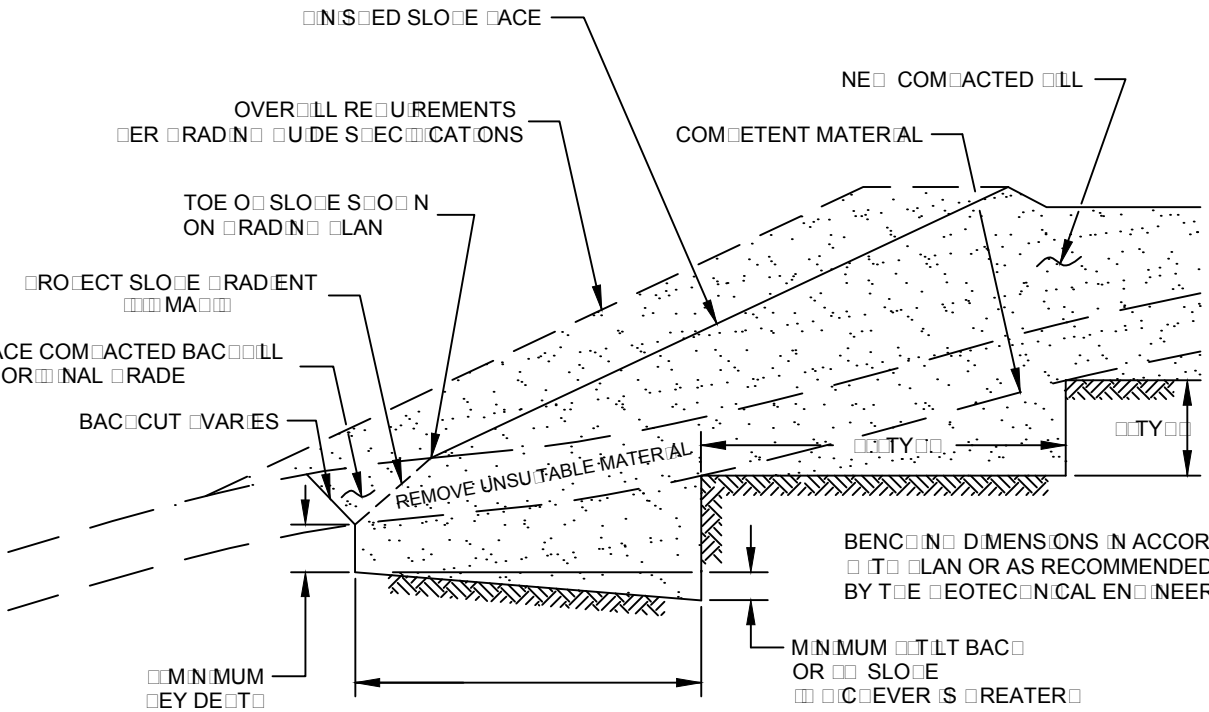
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-3

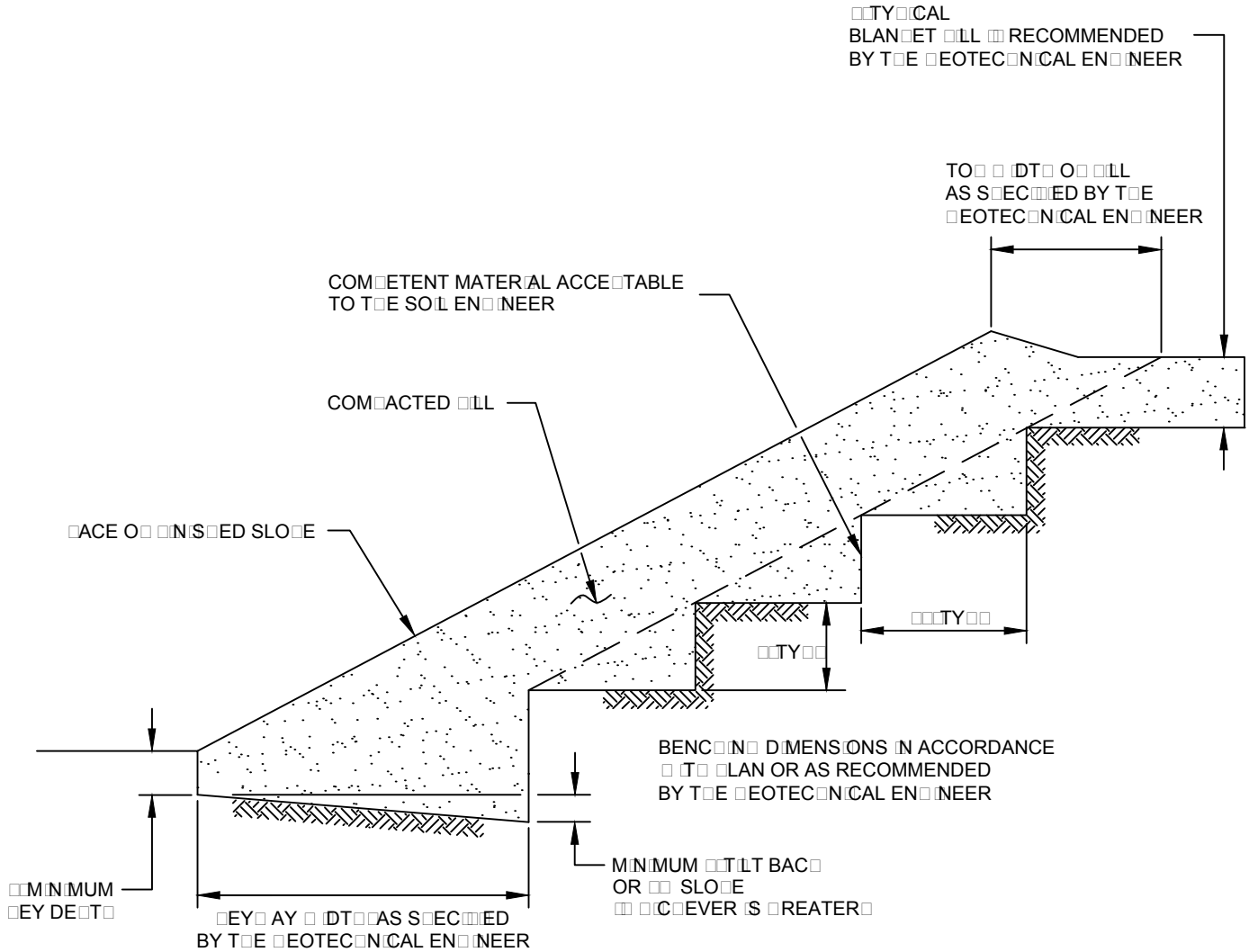
SOUTHERN CALIFORNIA GEOTECHNICAL



NOTE□
BENC□□N□ S□ALL BE RE□U□RED
□ □EN NATURAL SLO□ES ARE
E□UAL TO OR STEE□ER T□AN □□□
OR □ □EN RECOMMENDED BY
T□E □EOTEC□N□CAL EN□□NEER□

□ILL A□□ □E NAT□RAL SL□PE DETAIL
□RAD□N□ □U□DE S□EC□□CAT□ONS

NOT TO SCALE	SOUTHERN CALIFORNIA GEOTECHNICAL
DRA□ N□□AS C□□D□□□M	
PLATE D-□	



STABILIZATION FILL DETAIL

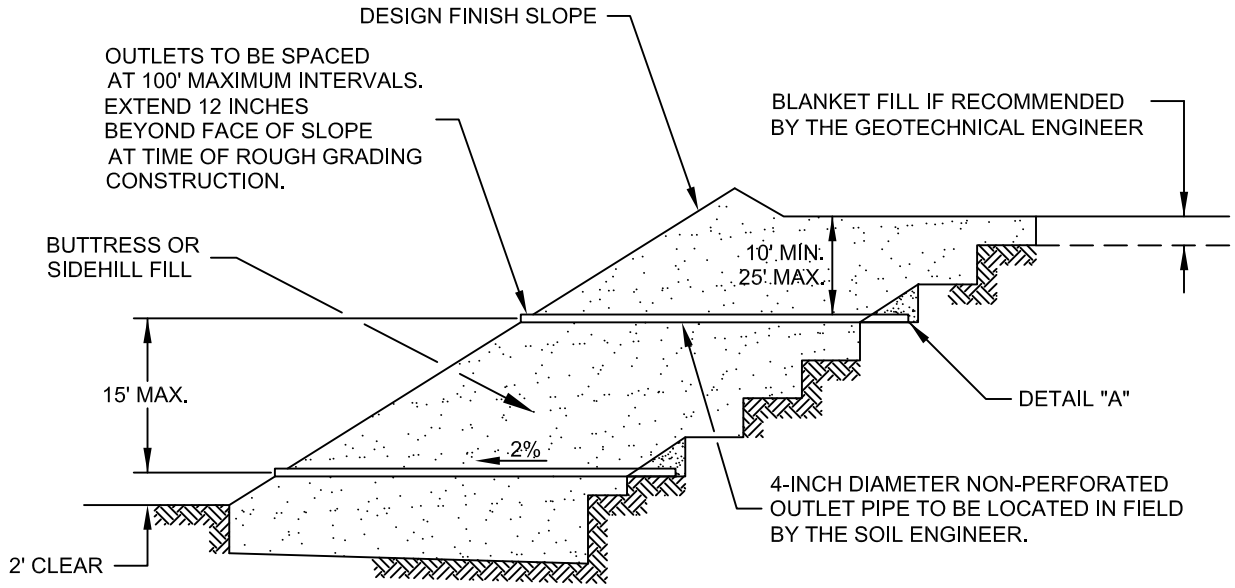
GRADING PLAN SPECIFICATIONS

NOT TO SCALE

DRAWN AS CODED

PLATE D-

SOUTHERN CALIFORNIA GEOTECHNICAL



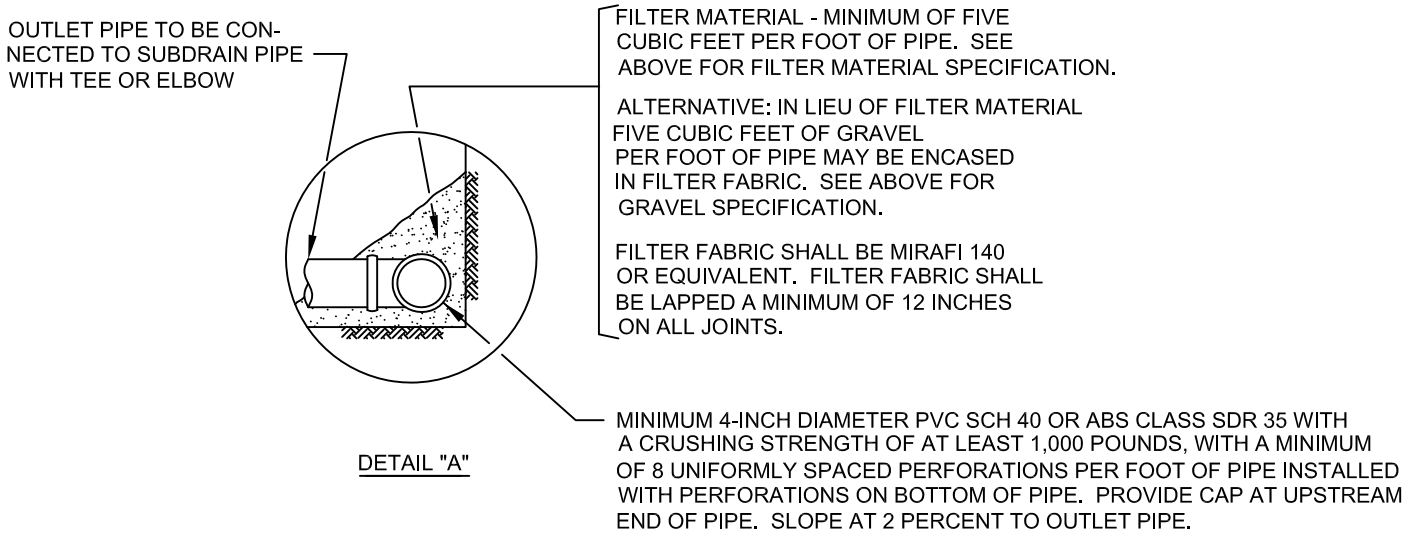
"FILTER MATERIAL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT: (CONFORMS TO EMA STD. PLAN 323)

SIEVE SIZE	PERCENTAGE PASSING
1"	100
3/4"	90-100
3/8"	40-100
NO. 4	25-40
NO. 8	18-33
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

"GRAVEL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT:

SIEVE SIZE	MAXIMUM PERCENTAGE PASSING
1 1/2"	100
NO. 4	50
NO. 200	8

SAND EQUIVALENT = MINIMUM OF 50



DETAIL "A"

NOTES:
1. TRENCH FOR OUTLET PIPES TO BE BACKFILLED WITH ON-SITE SOIL.

SLOPE FILL SUBDRAINS

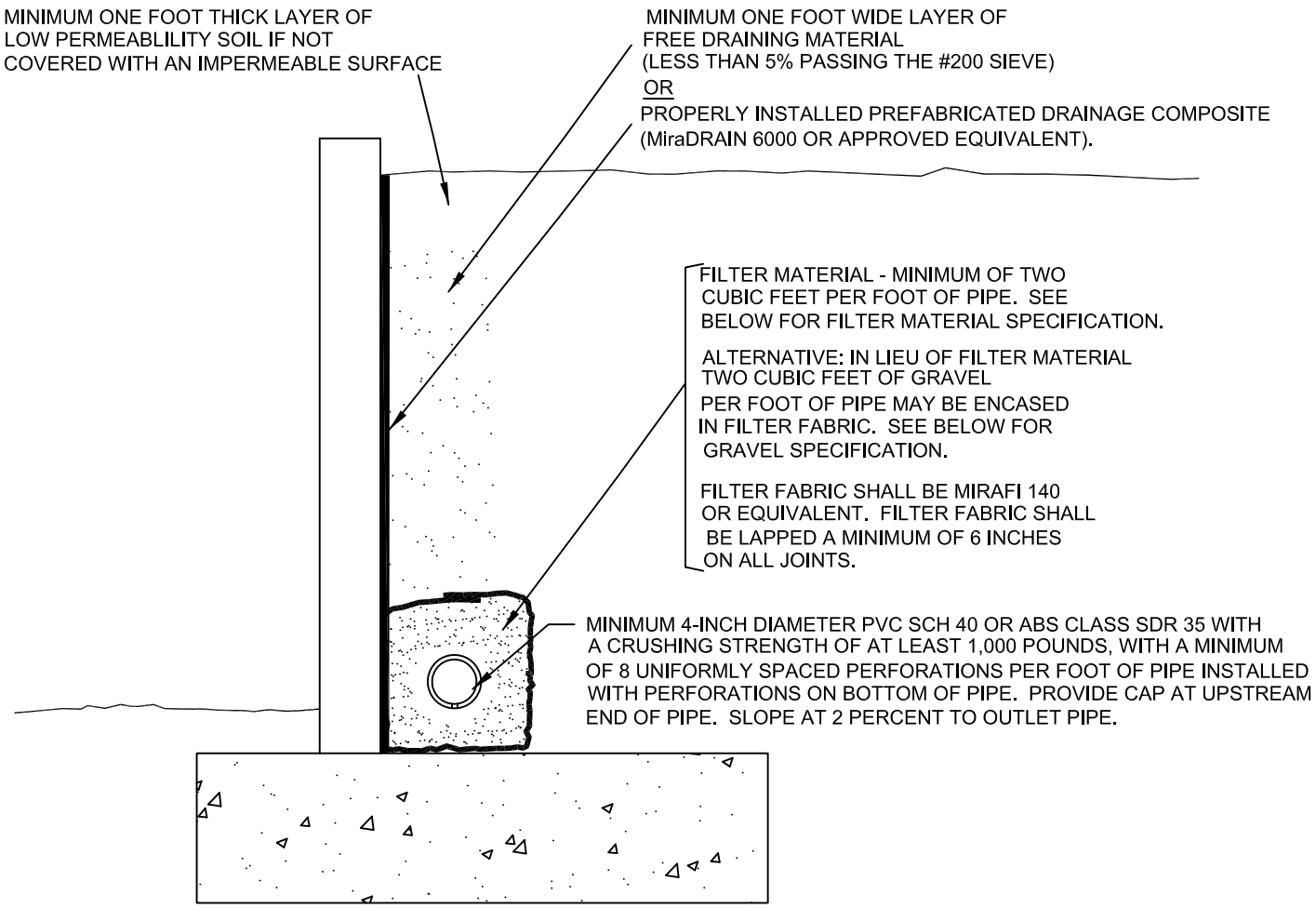
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-6

SOUTHERN CALIFORNIA GEOTECHNICAL



"FILTER MATERIAL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT: (CONFORMS TO EMA STD. PLAN 323)

SIEVE SIZE	PERCENTAGE PASSING
1"	100
3/4"	90-100
3/8"	40-100
NO. 4	25-40
NO. 8	18-33
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

"GRAVEL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT:

SIEVE SIZE	MAXIMUM PERCENTAGE PASSING
1 1/2"	100
NO. 4	50
NO. 200	8

SAND EQUIVALENT = MINIMUM OF 50

RETAINING WALL BACKDRAINS

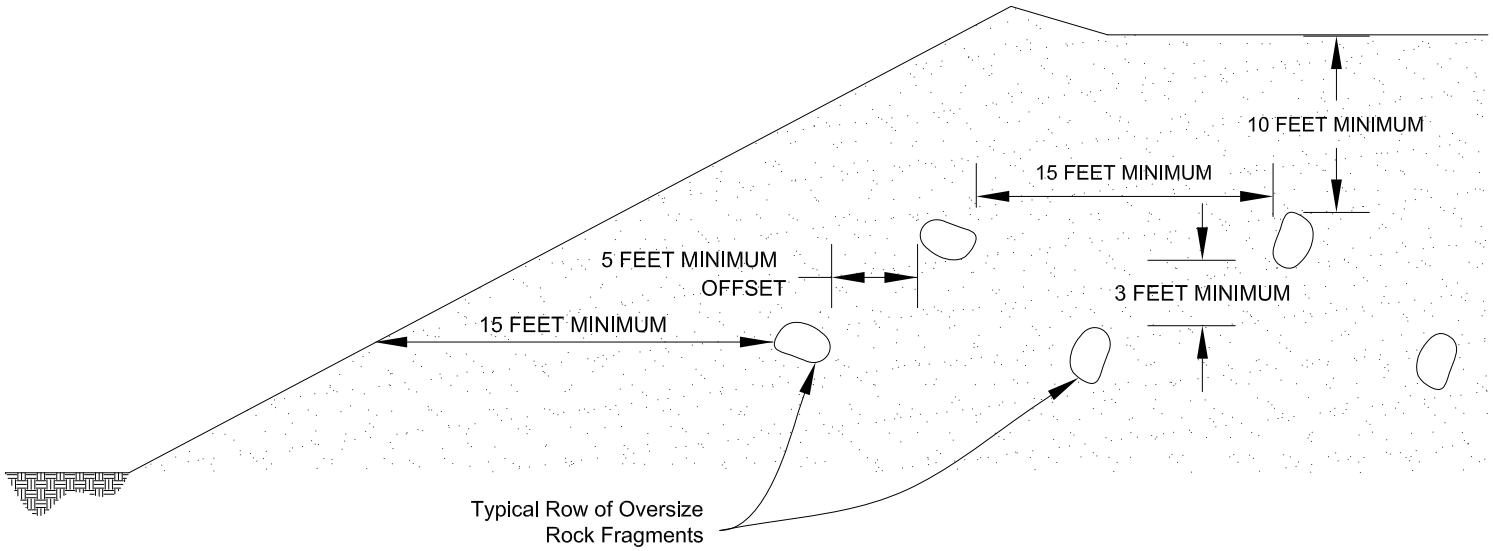
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

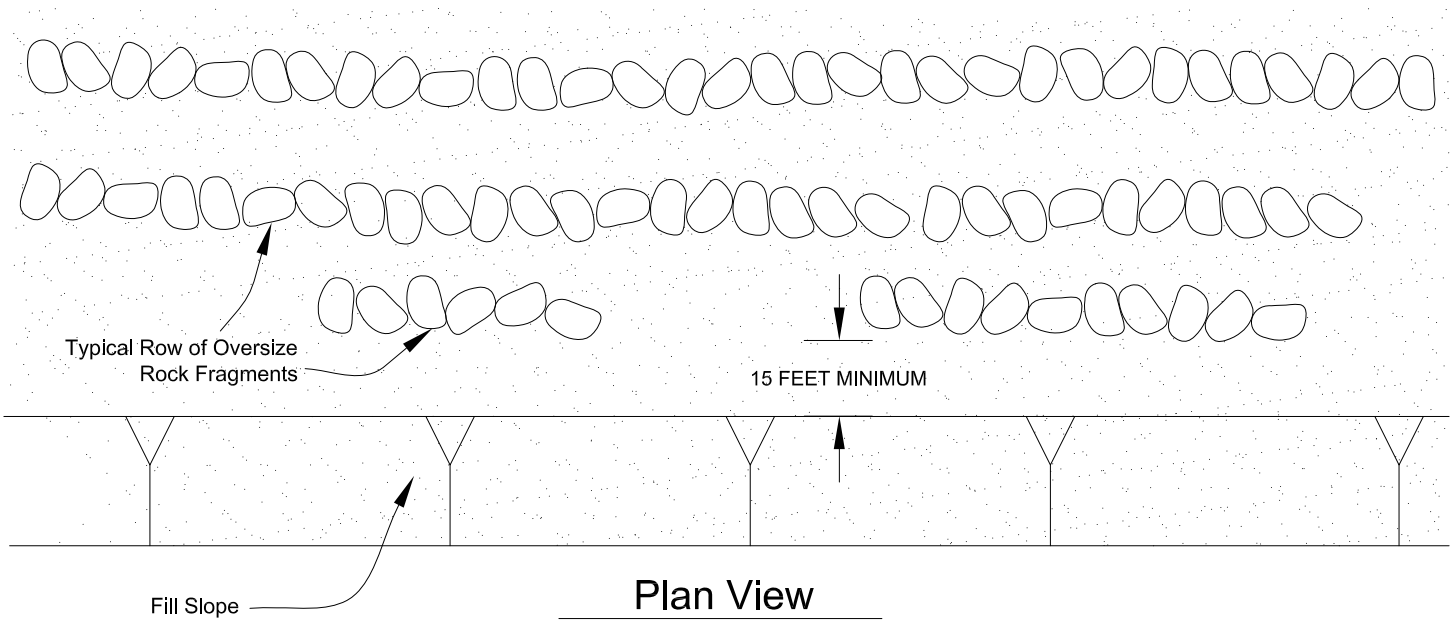
DRAWN: JAS
CHKD: GKM

PLATE D-7

SOUTHERN CALIFORNIA GEOTECHNICAL



Section View



Plan View

PLACEMENT OF OVERSIZED MATERIAL

GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: PM
CHKD: GKM

PLATE D-8

SOUTHERN CALIFORNIA GEOTECHNICAL

APPENDIX E

USGS Design Maps Summary Report

User–Specified Input

Report Title Proposed Retail Development
Mon December 11, 2017 18:18:18 UTC

Building Code Reference Document ASCE 7-10 Standard
(which utilizes USGS hazard data available in 2008)

Site Coordinates 33.95882°N, 117.31104°W

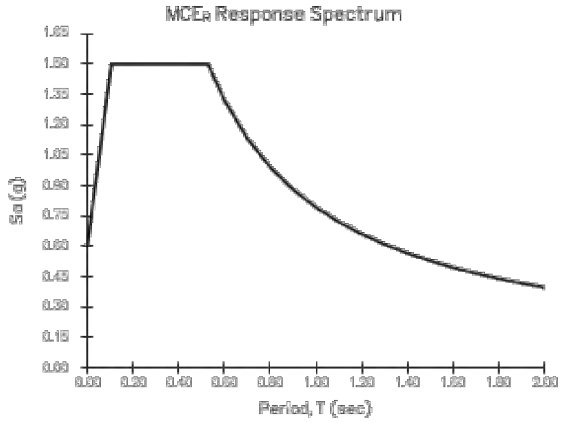
Site Soil Classification Site Class C – "Very Dense Soil and Soft Rock"

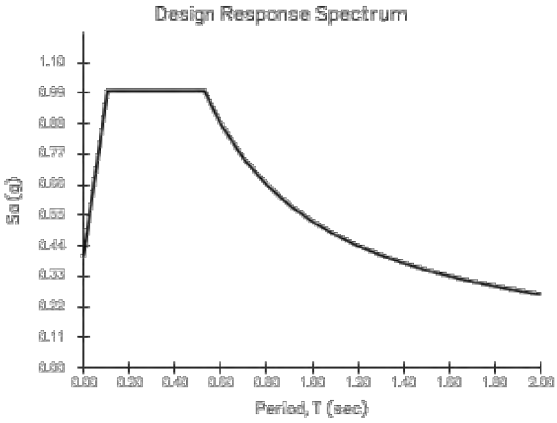
Risk Category I/II/III

USGS–Provided Output

S_S =	1.500 g	S_{MS} =	1.500 g	S_{DS} =	1.000 g
S_1 =	0.611 g	S_{M1} =	0.794 g	S_{D1} =	0.529 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





SOURCE□U S□□EOLO□□CAL SURVEY □US□S□
□□□□□□□□□□□□rd□□□□□□□□□□d□□□□□ □□□□□□□□□□□□□□□□□□□□

SEISMIC DESIGN PARAMETERS
□RO□OSED RETA□L DEVELO□MENT
R□VERS□DE□CAL□□ORN□A

DRA□ N□DR□
C□□D□R□T

SC□ □RO□ECT
□□□ □□□□□

PLATE E-1

SOUTHERN CALIFORNIA GEOTECHNICAL

December 15, 2017

KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, California 92121

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Attention: Mr. Eugene Marini

Project No.: **17G143-4**

Subject: **Storm Water Infiltration**
Proposed Retail Development
NEC Sycamore Canyon Boulevard and Central Avenue
Riverside, California

Reference: Geotechnical Investigation, Proposed Retail Development, NEC Sycamore Canyon Boulevard and Central Avenue, Riverside, California, prepared for KA Enterprises by Southern California Geotechnical, Inc. (SCG), SCG Project No. 17G134-1, dated December 12, 2017.

Dear Mr. Marini:

At your request, we have prepared this letter discuss the use of on-site storm water infiltration systems at the subject site. For the reasons discussed below, we do not recommend that storm water infiltration systems be used at this site.

As discussed in the referenced geotechnical report, the site is underlain by very dense Val Verde Formation tonalite bedrock and undocumented fill soils. Native alluvium was also encountered beneath the artificial fill soils in a localized portion of the southern part of the site.

The artificial fill materials are generally loose and the results of laboratory testing indicate that these soils are prone to collapse when inundated with water. The fill and native alluvium is underlain by very dense tonalite bedrock. Based on our experience with other projects in the riverside county area, Valverde Formation tonalite is relatively impermeable to water. Therefore, infiltration is not considered feasible at this site since it is underlain by relatively impermeable bedrock. Furthermore, storm water infiltration is not considered prudent at this site, from a geotechnical standpoint because the geologic contact between the bedrock and the overlying fill materials generally slopes downward toward the western portion of the site (which is illustrated on the cross-section provided with the referenced geotechnical report). Water would migrate downward until it reached the relatively impermeable bedrock, then it would flow along the surface of the rock to the western portion of the site and accumulate behind the proposed retaining walls. This accumulation would create additional hydrostatic pressures on the proposed retaining walls. Additionally, the lateral migration of water may cause soils below structures to become saturated, altering their engineering properties. Therefore, we do not recommend the use of storm water infiltration systems at this site.

We appreciate the opportunity to be of continued service on this project. If we may be of further assistance in any manner, please contact our office at your convenience.

Respectfully Submitted,
SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

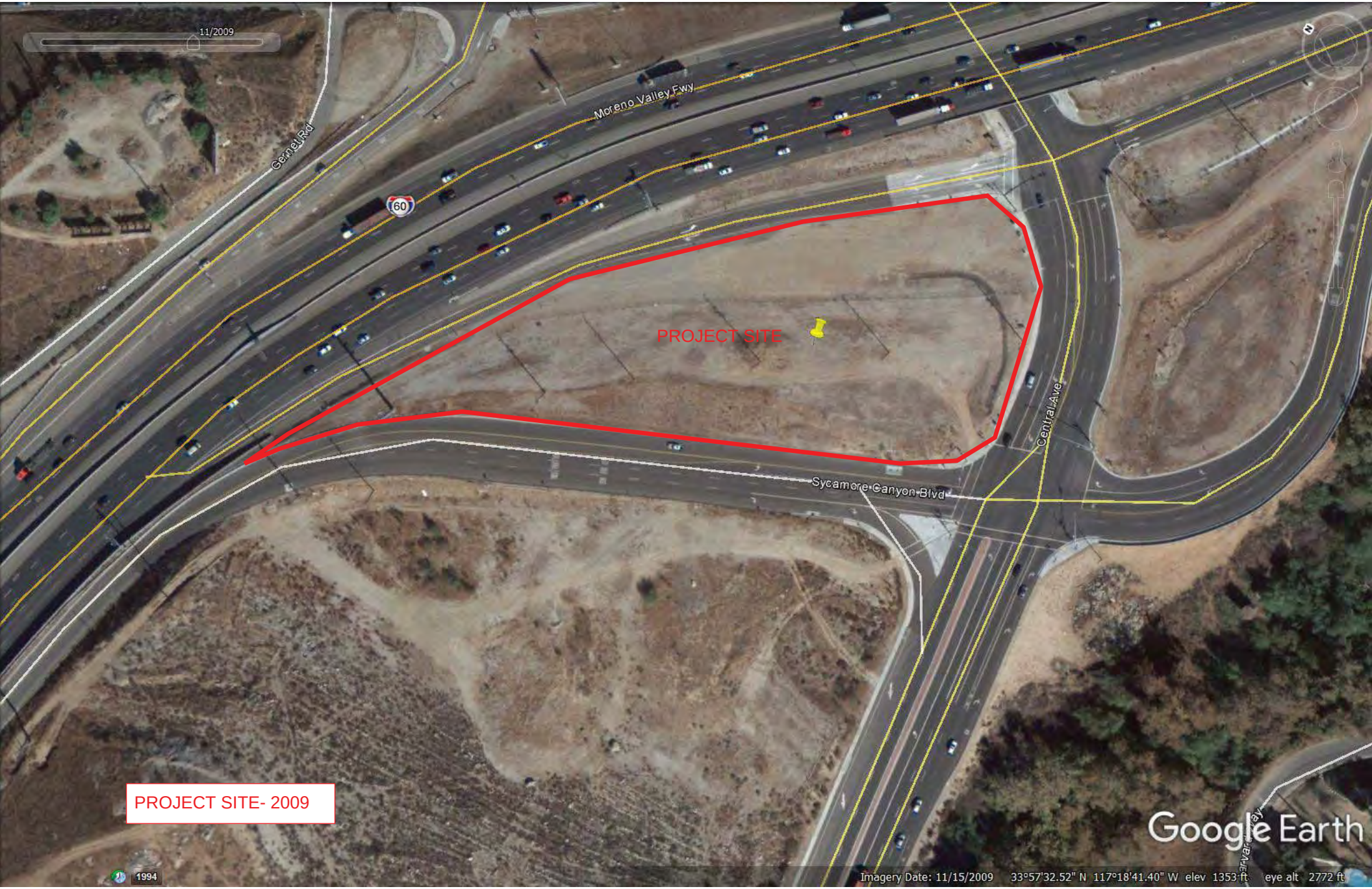
Daniel W. Nielsen, RCE 77915
Project Engineer

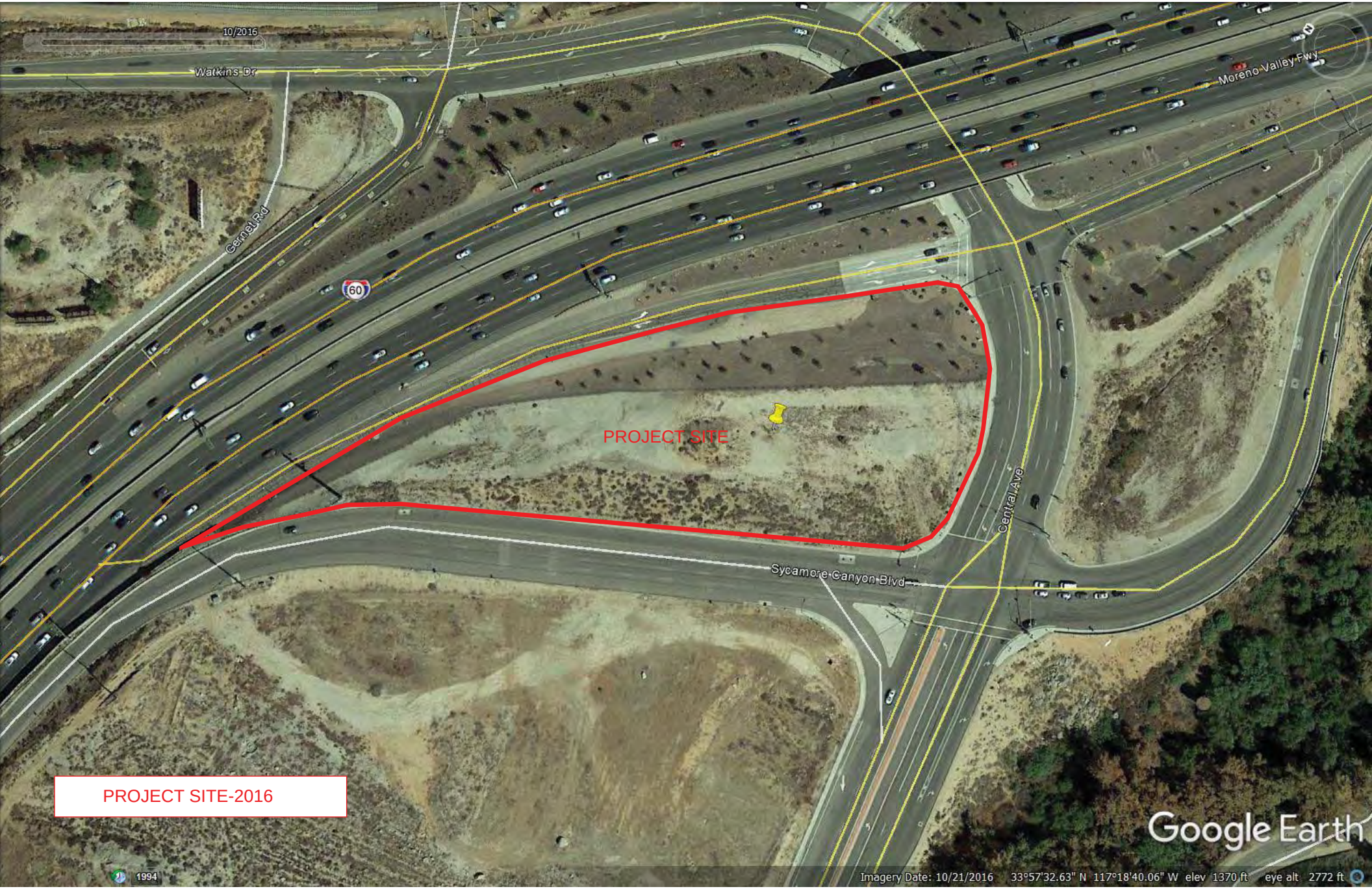
Distribution: (1) Addressee

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

PROJECT SITE - 1994


11/2009
Moreno Valley Fwy
Gernet Rd
60
PROJECT SITE
Central Ave
Sycamore Canyon Blvd
PROJECT SITE- 2009
Google Earth
1994
Imagery Date: 11/15/2009 33°57'32.52" N 117°18'41.40" W elev 1353 ft eye alt 2772 ft


10/2016
Watkins Dr
Gernet Rd
60
Moreno Valley Fwy
PROJECT SITE
Central Ave
Sycamore Canyon Blvd
PROJECT SITE-2016
Google Earth
1994
Imagery Date: 10/21/2016 33°57'32.63" N 117°18'40.06" W elev 1370 ft eye alt 2772 ft

original
2015-0312282 12/28

STATE OF CALIFORNIA
CALIFORNIA STATE TRANSPORTATION AGENCY
DEPARTMENT OF TRANSPORTATION

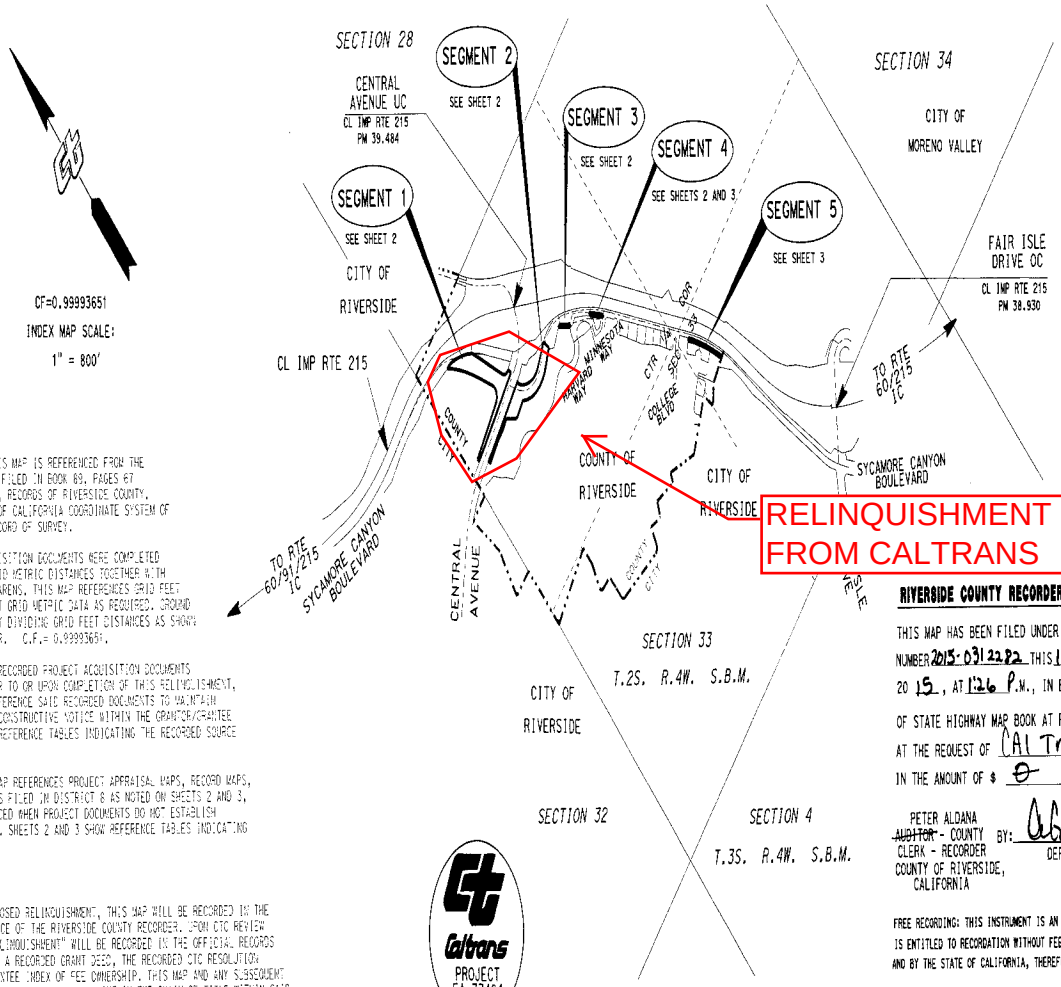
STATE ROUTE 215

INDEX MAP TO PROPOSED RELINQUISHMENT OF COLLATERAL FACILITIES AND RELOCATED COUNTY ROADS IN THE COUNTY OF RIVERSIDE, SECTION 33. T2S, R4W, S.B.M.

APPROVAL RECOMMENDED:
RENE' FLETCHER
DEPUTY DISTRICT DIRECTOR
CHIEF OF R/W & LAND SURVEYS

PROFESSIONAL LAND SURVEYOR
7-10-2015
DATE APPROVED

THOMAS J. CATHAL
No. 6833
EXP. 9-30-2015
PROFESSIONAL LAND SURVEYOR
STATE OF CALIFORNIA



SURVEYOR'S NOTES

1. BASIS OF BEARINGS AS SHOWN ON THIS MAP IS REFERENCED FROM THE PROJECT CONTROL RECORD OF SURVEY FILED IN BOOK 69, PAGES 67 THROUGH 76 OF RECORDS OF SURVEYS, RECORDS OF RIVERSIDE COUNTY. THIS PROJECT UTILIZED THE STATE OF CALIFORNIA COORDINATE SYSTEM OF 1983, ZONE 6 AS SHOWN ON SAID RECORD OF SURVEY.

2. THE PROJECT R/W MAPPING AND ACQUISITION DOCUMENTS WERE COMPLETED WITH A DUAL-UNIT FORMAT USING GRID METRIC DISTANCES TOGETHER WITH EQUIVALENT U.S. SURVEY FEET IN PARENS. THIS MAP REFERENCES GRID FEET DISTANCES OR CONVERTS THE PROJECT GRID METRIC DATA AS REQUIRED. GROUND FEET DISTANCES CAN BE OBTAINED BY DIVIDING GRID FEET DISTANCES AS SHOWN BY THE PROJECT COMBINATION FACTOR. C.F.= 0.99993651.

3. THIS RECORD DATA MAP REFERENCES RECORDED PROJECT ACQUISITION DOCUMENTS AS NOTED ON SHEETS 2 AND 3. PRIOR TO OR UPON COMPLETION OF THIS RELINQUISHMENT, ANY SUBSEQUENT CADASTRE SHALL REFERENCE SAID RECORDED DOCUMENTS TO MAINTAIN THE CHAIN OF TITLE OR TO IMPART CONSTRUCTIVE NOTICE WITHIN THE GRANTOR/GRANTEE INDEX. BOTH SHEETS 2 AND 3 SHOW REFERENCE TABLES INDICATING THE RECORDED SOURCE DOCUMENTS.

4. IN ADDITION, THIS RECORD DATA MAP REFERENCES PROJECT APPRAISAL MAPS, RECORD MAPS, HARDCOPIES, OR MONUMENTATION MAPS FILED IN DISTRICT 8 AS NOTED ON SHEETS 2 AND 3, SAID PROJECT MAPPING WAS REFERENCED WHEN PROJECT DOCUMENTS DO NOT ESTABLISH THE REQUIRED BEARING OR DISTANCE. SHEETS 2 AND 3 SHOW REFERENCE TABLES INDICATING THE PROJECT MAPPING SOURCE.

RELINQUISHMENT NOTES

1. PRIOR TO CTC APPROVAL OF THIS PROPOSED RELINQUISHMENT, THIS MAP WILL BE RECORDED IN THE STATE HIGHWAY MAP BOOK IN THE OFFICE OF THE RIVERSIDE COUNTY RECORDER. UPON CTC REVIEW AND APPROVAL, THE "RESOLUTION OF RELINQUISHMENT" WILL BE RECORDED IN THE OFFICIAL RECORDS OF SAID COUNTY RECORDER. NOT BEING A RECORDED GRANT DEED, THE RECORDED CTC RESOLUTION DOES NOT APPEAR IN THE GRANTOR/GRANTEE INDEX OF FEE OWNERSHIP. THIS MAP AND ANY SUBSEQUENT CADASTRE SHALL REFERENCE SAID RECORDED DOCUMENTS TO MAINTAIN THE CHAIN OF TITLE WITHIN SAID INDEX.

2. TITLE HELD BY THE STATE OF CALIFORNIA IS RELINQUISHED TO THE COUNTY OF RIVERSIDE UPON FINAL CTC REVIEW AND APPROVAL TOGETHER WITH THE RECORDATION OF THE CTC RESOLUTION OF RELINQUISHMENT. THIS MAP SHOWS TWO EXCEPTIONS AND RESERVATIONS TO BE HELD BY THE STATE AS SHOWN HEREON:

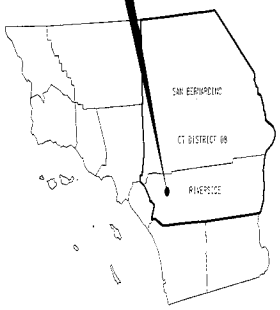
   A. STATE EXCEPTION & RESERVATION FOR A PERMANENT EASEMENT FOR RETAINING WALL PURPOSES AND INCIDENTS THERETO BEING A PORTION OF SEGMENT 2. SEE SHEET 2. SEE ALSO DETAIL "A" ON SHEET 3. SAID PRME IS SHOWN AS CT PROJECT PARCEL NO. 19014-6 (PRME) ON R11.

   B. STATE EXCEPTION & RESERVATION FOR AN EASEMENT FOR RETAINING WALL PURPOSES AND INCIDENTS THERETO BEING A PORTION OF SEGMENT 3 SEE SHT 2. SEE ALSO DETAIL "A" ON SHEET 3. SAID PRME IS SHOWN AS CT PROJECT PARCEL NO. 19014-7 (PRME) ON R11.

3. THE PROJECT REQUIRED SEVERAL STATE EASEMENTS LOCATED WITHIN PREVIOUSLY RELINQUISHED COUNTY-MAINTAINED ROAD. NOT BEING WITHIN ANY PROPOSED RELINQUISHMENT SEGMENT, THESE STATE EASEMENTS CAN ONLY BE SHOWN ON THE R/W APPRAISAL MAP OR RECORD MAP. SAID EASEMENTS WILL BE SHOWN AS ACCEPTED BY THE STATE IN ACCORDANCE WITH THE FREEWAY AGREEMENT AND THE STREETS AND HIGHWAYS CODE. FOR SPECIFIC INFORMATION AND LOCATION, SEE R/W MAP NO. RW000231-1 TO 3 FILED IN DISTRICT MAP FILES OR DISTRICT RECORD MAPS. THIS MAP WILL DESIGNATE SAID R/W MAP NO. RW000231-1 TO 3 AS (R11) NOTED ON SHEETS 2 AND 3 IN THE RECORD REFERENCES TABLE.

4. AN IMPORTANT POINT TO CONSIDER IS CT ACQUIRES THE REQUIRED PRME TO MAINTAIN WALL NO. RW215-44 THROUGH THREE PARCELS FITTING TOGETHER TO FORM ONE EASEMENT. THERE ARE THE TWO PARCELS MENTIONED ABOVE AND A THIRD PARCEL LYING BETWEEN THESE TWO. THE THIRD PARCEL IS SHOWN AS BEING A LOCAL ROAD ACQUISITION PER THE AGREEMENT AND THE S.A.C. SEE PRME 1A DESCRIBED IN NOTE 1 ON RW000231-1 UNDER LOCAL STREETS. THIS PROVIDES THE EASMENT INTEREST. HOWEVER, A COPY OF THIS MAP WITH A LETTER OF ACQUISITION WILL BE PROVIDED TO COUNTY OF RIVERSIDE.

Caltrans
PROJECT
EA 33484



LEGEND

COUNTY / CITY LIMITS

PROPOSED RELINQUISHED SEGMENT OR PORTION

NOTES

BEARINGS SHOWN HEREON ARE BASED UPON THE CALIFORNIA COORDINATE SYSTEM OF 1983, ZONE 6. GRID DISTANCES SHOWN HEREON ARE IN U.S. SURVEY FEET. DIVIDE GRID DISTANCES BY THE COMBINATION FACTOR (C.F.) TO OBTAIN GROUND DISTANCES. C.F.= 0.99993651

RIVERSIDE COUNTY RECORDER'S CERTIFICATE

THIS MAP HAS BEEN FILED UNDER DOCUMENT NUMBER 2015-0312282 THIS 16 DAY OF July 20 15, AT 1:26 P.M., IN BOOK 12 OF STATE HIGHWAY MAP BOOK AT PAGE 28-30 AT THE REQUEST OF CAL Trans IN THE AMOUNT OF $ 0.

PETER ALDANA
~~AUDITOR~~ - COUNTY CLERK - RECORDER
COUNTY OF RIVERSIDE, CALIFORNIA
BY: [signature] DEPUTY RECORDER

FREE RECORDING: THIS INSTRUMENT IS AN OFFICIAL PRODUCT OF IS ENTITLED TO RECORDATION WITHOUT FEE (GOVT. CODE 6103). AND BY THE STATE OF CALIFORNIA, THEREFORE, THIS INSTRUMENT

STATE OF CALIFORNIA
CALIFORNIA STATE TRANSPORTATION AGENCY
DEPARTMENT OF TRANSPORTATION

INDEX MAP OF PROPOSED RELINQUISHMENT TO THE COUNTY OF RIVERSIDE REQUEST NO. 477-R

R/W INFORMATION MAY BE OBTAINED FROM THE FOLLOWING PUBLIC COUNTERS: DISTRICT 08 MAP FILES OR DISTRICT 08 RECORD MAPS IN THE DISTRICT OFFICE AT 464 W. FOURTH ST. SAN BERNARDINO, CA 92401

INDEX MAP SCALE : 1" = 800'
FEET 0 400 800 1600

MAP SCALE DETERMINED FOR 26" X 18" REPROGRAPHIC SHEET FOR RECORDATION PURPOSES IN THE STATE HIGHWAY MAP BOOK IN THE OFFICE OF THE RIVERSIDE COUNTY RECORDER.

DISTRICT	COUNTY	ROUTE	POST MILE RANGE	SHT NO	SHEETS
08	RIV	215	38.9 - 39.7	1	3

original
2015-0312292

12/29

RECORD DATA REFERENCES

THIS IS A RECORD DATA MAP OF PROPOSED RELINQUISHMENT REQUEST NO. 477-R TO THE COUNTY OF RIVERSIDE. THIS MAP DOES NOT SUPERSEDE ANY PREVIOUS R/W MAPPING OR RECORDED DOCUMENTS. THIS MAP AND ANY SUBSEQUENT CADASTRE SHALL REFERENCE THE FOLLOWING DOCUMENTS OR MAPS

(R1) - DOCUMENTS OF RECORD FOR PARCEL 19011 PER FINAL ORDER OF CONDEMNATION TO THE STATE RECORDED ON 2-26-2008 AS DOC. NO. 2008-0092111, RECORDS OF RIV. COUNTY. SAID DOCUMENT ACQUIRED PARCELS 19011-1 (FEE), 19011-2 (FEE), 19011-3 (ACCESS RIGHTS), AND 19011-01-01 (EXCESS)

(R2) - FILED MAPPING FOR PARCELS 19011-2 (FEE), 19011-3 (ACCESS), AND 19011-01-01 (EXCESS) AS SHOWN ON THE FOLLOWING MAPS: 982000- 86, 87, 90, 91, 91A, 93, 94, 95 AND RW000104-04, 05, 06, 07, 08

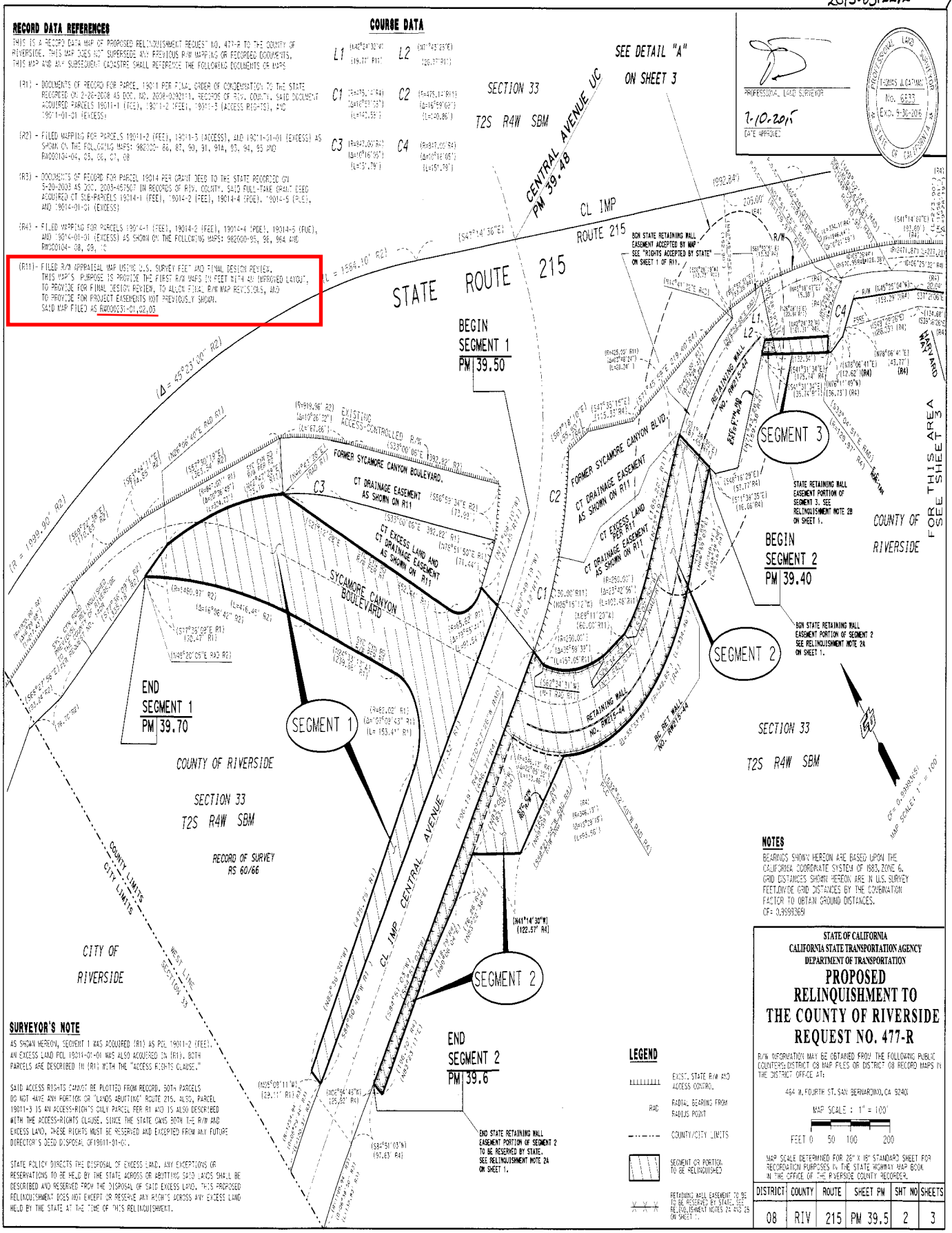
(R3) - DOCUMENTS OF RECORD FOR PARCEL 19014 PER GRANT DEED TO THE STATE RECORDED ON 5-20-2003 AS DOC. 2003-457567 IN RECORDS OF RIV. COUNTY. SAID FULL-TAKE GRANT DEED ACQUIRED CT SUB-PARCELS 19014-1 (FEE), 19014-2 (FEE), 19014-4 (PDE), 19014-5 (PUE), AND 19014-01-01 (EXCESS)

(R4) - FILED MAPPING FOR PARCELS 19014-1 (FEE), 19014-2 (FEE), 19014-4 (PDE), 19014-5 (PUE), AND 19014-01-01 (EXCESS) AS SHOWN ON THE FOLLOWING MAPS: 982000-95, 96, 964 AND RW000104- 08, 09, 10

(R11) - FILED R/W APPRAISAL MAP USING U.S. SURVEY FEET AND FINAL DESIGN REVIEW. THIS MAP'S PURPOSE IS PROVIDE THE FIRST R/W MAPS ON FEET WITH AN IMPROVED LAYOUT, TO PROVIDE FOR FINAL DESIGN REVIEW, TO ALLOW FUTURE R/W MAP REVISIONS, AND TO PROVIDE FOR PROJECT EASEMENTS NOT PREVIOUSLY SHOWN. SAID MAP FILED AS RW000031-01,02,03

COURSE DATA

L1 (N42°24'30"W) (19.37' R11)
L2 (N0°43'23"E) (26.37' R11)
C1 (R=875.12' R4) (Δ=16°51'23") (L=143.55')
C2 (R=475.12' R11) (Δ=16°59'02") (L=140.85')
C3 (R=847.00' R4) (Δ=10°16'05") (L=151.78')
C4 (R=847.00' R4) (Δ=10°16'05") (L=151.78')



PROFESSIONAL LAND SURVEYOR
THOMAS J. CATANZARO
No. 6833
Exp. 9-30-2016
STATE OF CALIFORNIA

7-10-2015
DATE APPROVED

NOTES

BEARINGS SHOWN HEREON ARE BASED UPON THE CALIFORNIA COORDINATE SYSTEM OF 1983, ZONE 6. GRID DISTANCES SHOWN HEREON ARE IN U.S. SURVEY FEET.DIVIDE GRID DISTANCES BY THE COMBINATION FACTOR TO OBTAIN GROUND DISTANCES. CF= 0.9998369

SURVEYOR'S NOTE

AS SHOWN HEREON, SEGMENT 1 WAS ACQUIRED (R1) AS PCL 19011-2 (FEE). AN EXCESS LAND PCL 19011-01-01 WAS ALSO ACQUIRED IN (R1). BOTH PARCELS ARE DESCRIBED IN (R1) WITH THE "ACCESS RIGHTS CLAUSE."

SAID ACCESS RIGHTS CANNOT BE PLOTTED FROM RECORD. BOTH PARCELS DO NOT HAVE ANY PORTION OR "LANDS ABUTTING" ROUTE 215. ALSO, PARCEL 19011-3 IS AN ACCESS-RIGHTS ONLY PARCEL PER R1 AND IS ALSO DESCRIBED WITH THE ACCESS-RIGHTS CLAUSE. SINCE THE STATE OWNS BOTH THE R/W AND EXCESS LAND, THESE RIGHTS MUST BE RESERVED AND EXCEPTED FROM ANY FUTURE DIRECTOR'S DEED DISPOSAL OF19011-01-01.

STATE POLICY DIRECTS THE DISPOSAL OF EXCESS LAND. ANY EXCEPTIONS OR RESERVATIONS TO BE HELD BY THE STATE ACROSS OR ABUTTING SAID LANDS SHALL BE DESCRIBED AND RESERVED FROM THE DISPOSAL OF SAID EXCESS LAND. THIS PROPOSED RELINQUISHMENT DOES NOT EXCEPT OR RESERVE ANY RIGHTS ACROSS ANY EXCESS LAND HELD BY THE STATE AT THE TIME OF THIS RELINQUISHMENT.

LEGEND

- EXIST. STATE R/W AND ACCESS CONTROL
- RAD — RADIAL BEARING FROM RADIUS POINT
- COUNTY/CITY LIMITS
- SEGMENT OR PORTION TO BE RELINQUISHED
- X X X — RETAINING WALL EASEMENT TO BE TO BE RESERVED BY STATE. SEE RELINQUISHMENT NOTES 2A AND 2B ON SHEET 1.

STATE OF CALIFORNIA
CALIFORNIA STATE TRANSPORTATION AGENCY
DEPARTMENT OF TRANSPORTATION

PROPOSED RELINQUISHMENT TO THE COUNTY OF RIVERSIDE REQUEST NO. 477-R

R/W INFORMATION MAY BE OBTAINED FROM THE FOLLOWING PUBLIC COUNTERS: DISTRICT 08 MAP FILES OR DISTRICT 08 RECORD MAPS IN THE DISTRICT OFFICE AT:

464 W. FOURTH ST. SAN BERNARDINO, CA 92401

MAP SCALE : 1" = 100'

FEET 0 50 100 200

MAP SCALE DETERMINED FOR 26" X 18" STANDARD SHEET FOR RECORDATION PURPOSES IN THE STATE HIGHWAY MAP BOOK IN THE OFFICE OF THE RIVERSIDE COUNTY RECORDER.

DISTRICT	COUNTY	ROUTE	SHEET PM	SHT NO	SHEETS
08	RIV	215	PM 39.5	2	3

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

No LID infeasibility analysis was required for this project. The project will employ on-site pollutant and source control LID and BMP features. These are detailed in the body of this report.

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Bioretention Facility - Design Procedure	BMP ID BIO-1	Legend:	Required Entries / Calculated Cells

Company Name:	Omega Engineering Consultants, Inc	Date:	4/4/2018
Designed by:		County/City Case No.:	

Design Volume

Enter the area tributary to this feature	A_T=	0.22	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	374	ft^3

Type of Bioretention Facility Design

- (●) Side slopes required (parallel to parking spaces or adjacent to walkways)
- ( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	1.5	ft
Top Width of Bioretention Facility, excluding curb	w_T =	9.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.27	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	294	ft^2
Proposed Surface Area	A=	295	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	N/A	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0	%
6" Check Dam Spacing		0	feet
Describe Vegetation:		Shrubs	

Notes:

Bioretention Facility - Design Procedure	BMP ID BIO-2	Legend:	Required Entries / Calculated Cells

Company Name:	Omega Engineering Consultants, Inc	Date:	4/4/2018
Designed by:		County/City Case No.:	

Design Volume

Enter the area tributary to this feature	A_T=	0.47	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	726	ft^3

Type of Bioretention Facility Design

- ○ Side slopes required (parallel to parking spaces or adjacent to walkways)
- ◉ No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	1.5	ft
Top Width of Bioretention Facility, excluding curb	w_T =	10.0	ft
Total Effective Depth, d_E			
d_E = [(0.3) x d_S + (0.4) x 1] + 0.5	d_E =	1.35	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	538	ft^2
Proposed Surface Area	A=	754	ft^2
Minimum Required Length of Bioretention Facility, L	L =	53.8	ft

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	N/A	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)			%
6" Check Dam Spacing			feet
Describe Vegetation:		Shrubs	

Notes:

Bioretention Facility - Design Procedure	BMP ID BIO-3	Legend:	Required Entries / Calculated Cells

Company Name:	Omega Engineering Consultants, Inc	Date:	4/4/2018
Designed by:		County/City Case No.:	

Design Volume

Enter the area tributary to this feature	A_T=	0.12	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	182	ft^3

Type of Bioretention Facility Design

- (●) Side slopes required (parallel to parking spaces or adjacent to walkways)
- ( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	1.5	ft
Top Width of Bioretention Facility, excluding curb	w_T =	9.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.27	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	144	ft^2
Proposed Surface Area	A=	150	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	N/A	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0	%
6" Check Dam Spacing		0	feet
Describe Vegetation:		Shrubs	

Notes:

Bioretention Facility - Design Procedure	BMP ID BIO-4	Legend:	Required Entries / Calculated Cells

Company Name:	Omega Engineering Consultants, Inc	Date:	4/4/2018
Designed by:		County/City Case No.:	

Design Volume

Enter the area tributary to this feature	A_T=	0.85	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	1,213	ft^3

Type of Bioretention Facility Design

- (●) Side slopes required (parallel to parking spaces or adjacent to walkways)
- ( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	1.5	ft
Top Width of Bioretention Facility, excluding curb	w_T =	12.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.29	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	940	ft^2
Proposed Surface Area	A=	969	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	N/A	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0	%
6" Check Dam Spacing		0	feet
Describe Vegetation:		Shrubs	

Notes:

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

NOAA Atlas 14, Volume 6, Version 2
Location name: Riverside, California, USA*
Latitude: 33.958°, Longitude: -117.311°
Elevation: 1347.79 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.092 (0.077-0.112)	0.120 (0.100-0.145)	0.157 (0.131-0.191)	0.188 (0.155-0.231)	0.232 (0.185-0.295)	0.267 (0.208-0.346)	0.303 (0.230-0.403)	0.341 (0.252-0.468)	0.395 (0.279-0.565)	0.439 (0.299-0.650)
10-min	0.132 (0.110-0.160)	0.172 (0.143-0.208)	0.225 (0.187-0.274)	0.270 (0.223-0.331)	0.333 (0.265-0.422)	0.382 (0.298-0.496)	0.434 (0.330-0.578)	0.489 (0.361-0.670)	0.566 (0.400-0.810)	0.629 (0.428-0.932)
15-min	0.160 (0.133-0.193)	0.208 (0.173-0.252)	0.272 (0.226-0.331)	0.327 (0.269-0.400)	0.402 (0.320-0.511)	0.462 (0.360-0.600)	0.525 (0.399-0.699)	0.592 (0.436-0.811)	0.685 (0.484-0.980)	0.760 (0.518-1.13)
30-min	0.240 (0.200-0.291)	0.312 (0.260-0.378)	0.409 (0.340-0.498)	0.491 (0.404-0.602)	0.605 (0.481-0.767)	0.695 (0.541-0.902)	0.789 (0.599-1.05)	0.889 (0.656-1.22)	1.03 (0.727-1.47)	1.14 (0.779-1.69)
60-min	0.348 (0.291-0.422)	0.453 (0.378-0.549)	0.594 (0.494-0.722)	0.713 (0.587-0.874)	0.878 (0.699-1.11)	1.01 (0.786-1.31)	1.15 (0.870-1.53)	1.29 (0.952-1.77)	1.50 (1.06-2.14)	1.66 (1.13-2.46)
2-hr	0.498 (0.416-0.603)	0.640 (0.533-0.776)	0.828 (0.688-1.01)	0.984 (0.811-1.21)	1.20 (0.954-1.52)	1.37 (1.06-1.77)	1.54 (1.17-2.05)	1.72 (1.27-2.36)	1.97 (1.39-2.82)	2.17 (1.48-3.21)
3-hr	0.607 (0.506-0.734)	0.776 (0.647-0.941)	1.00 (0.831-1.22)	1.19 (0.976-1.45)	1.44 (1.14-1.83)	1.64 (1.27-2.12)	1.84 (1.39-2.44)	2.05 (1.51-2.80)	2.33 (1.65-3.34)	2.56 (1.75-3.80)
6-hr	0.833 (0.695-1.01)	1.07 (0.887-1.29)	1.37 (1.14-1.66)	1.62 (1.33-1.98)	[illegible]	[illegible]	[illegible]	2.76 (2.04-3.78)	3.14 (2.22-4.49)	3.43 (2.34-5.09)
12-hr	1.09 (0.913-1.32)	1.41 (1.17-1.71)	1.82 (1.51-2.21)	2.15 (1.78-2.64)	[illegible]	[illegible]	[illegible]	3.69 (2.72-5.05)	4.18 (2.96-5.99)	4.57 (3.12-6.78)
24-hr	1.45 (1.28-1.67)	1.89 (1.67-2.18)	2.46 (2.17-2.85)	2.93 (2.57-3.42)	3.57 (3.02-4.30)	4.06 (3.37-5.00)	4.56 (3.69-5.74)	5.08 (4.00-6.57)	5.77 (4.37-7.78)	6.32 (4.62-8.80)
2-day	1.75 (1.55-2.02)	2.32 (2.05-2.68)	3.07 (2.71-3.55)	3.68 (3.22-4.29)	4.51 (3.82-5.44)	5.16 (4.28-6.35)	5.82 (4.71-7.33)	6.50 (5.12-8.41)	7.42 (5.62-10.0)	8.14 (5.96-11.3)
3-day	1.88 (1.66-2.17)	2.53 (2.23-2.92)	3.38 (2.98-3.91)	4.08 (3.57-4.76)	5.04 (4.26-6.07)	5.78 (4.79-7.11)	6.54 (5.30-8.24)	7.33 (5.78-9.49)	8.40 (6.36-11.3)	9.25 (6.77-12.9)
4-day	2.03 (1.80-2.34)	2.76 (2.44-3.18)	3.71 (3.27-4.30)	4.50 (3.93-5.25)	5.58 (4.72-6.72)	6.42 (5.33-7.90)	7.28 (5.90-9.17)	8.18 (6.45-10.6)	9.41 (7.12-12.7)	10.4 (7.59-14.5)
7-day	2.34 (2.07-2.70)	3.20 (2.83-3.70)	4.35 (3.83-5.03)	5.30 (4.63-6.18)	6.60 (5.59-7.95)	7.62 (6.32-9.37)	8.66 (7.02-10.9)	9.75 (7.69-12.6)	11.3 (8.52-15.2)	12.4 (9.10-17.3)
10-day	2.53 (2.24-2.91)	3.48 (3.08-4.02)	4.76 (4.19-5.51)	5.81 (5.08-6.78)	7.27 (6.16-8.76)	8.41 (6.98-10.3)	9.58 (7.76-12.1)	10.8 (8.52-14.0)	12.5 (9.46-16.8)	13.8 (10.1-19.3)
20-day	3.06 (2.71-3.53)	4.25 (3.76-4.91)	5.86 (5.17-6.78)	7.20 (6.30-8.40)	9.07 (7.68-10.9)	10.5 (8.75-13.0)	12.1 (9.78-15.2)	13.7 (10.8-17.7)	15.9 (12.1-21.5)	17.7 (13.0-24.7)
30-day	3.64 (3.22-4.20)	5.07 (4.48-5.85)	6.99 (6.16-8.09)	8.61 (7.53-10.0)	10.9 (9.20-13.1)	12.7 (10.5-15.6)	14.5 (11.8-18.3)	16.5 (13.0-21.4)	19.3 (14.6-26.0)	21.6 (15.8-30.0)
45-day	4.34 (3.84-5.01)	6.00 (5.31-6.93)	8.26 (7.29-9.57)	10.2 (8.90-11.9)	12.9 (10.9-15.5)	15.0 (12.5-18.5)	17.3 (14.0-21.8)	19.7 (15.5-25.5)	23.1 (17.5-31.2)	25.9 (18.9-36.1)
60-day	5.07 (4.48-5.84)	6.94 (6.13-8.01)	9.50 (8.38-11.0)	11.7 (10.2-13.6)	14.8 (12.5-17.8)	17.2 (14.3-21.2)	19.8 (16.1-25.0)	22.6 (17.8-29.3)	26.6 (20.1-35.8)	29.8 (21.8-41.6)

1.89 INCHES
FOR A 2-YEAR 24 HOUR
STORM EVENT

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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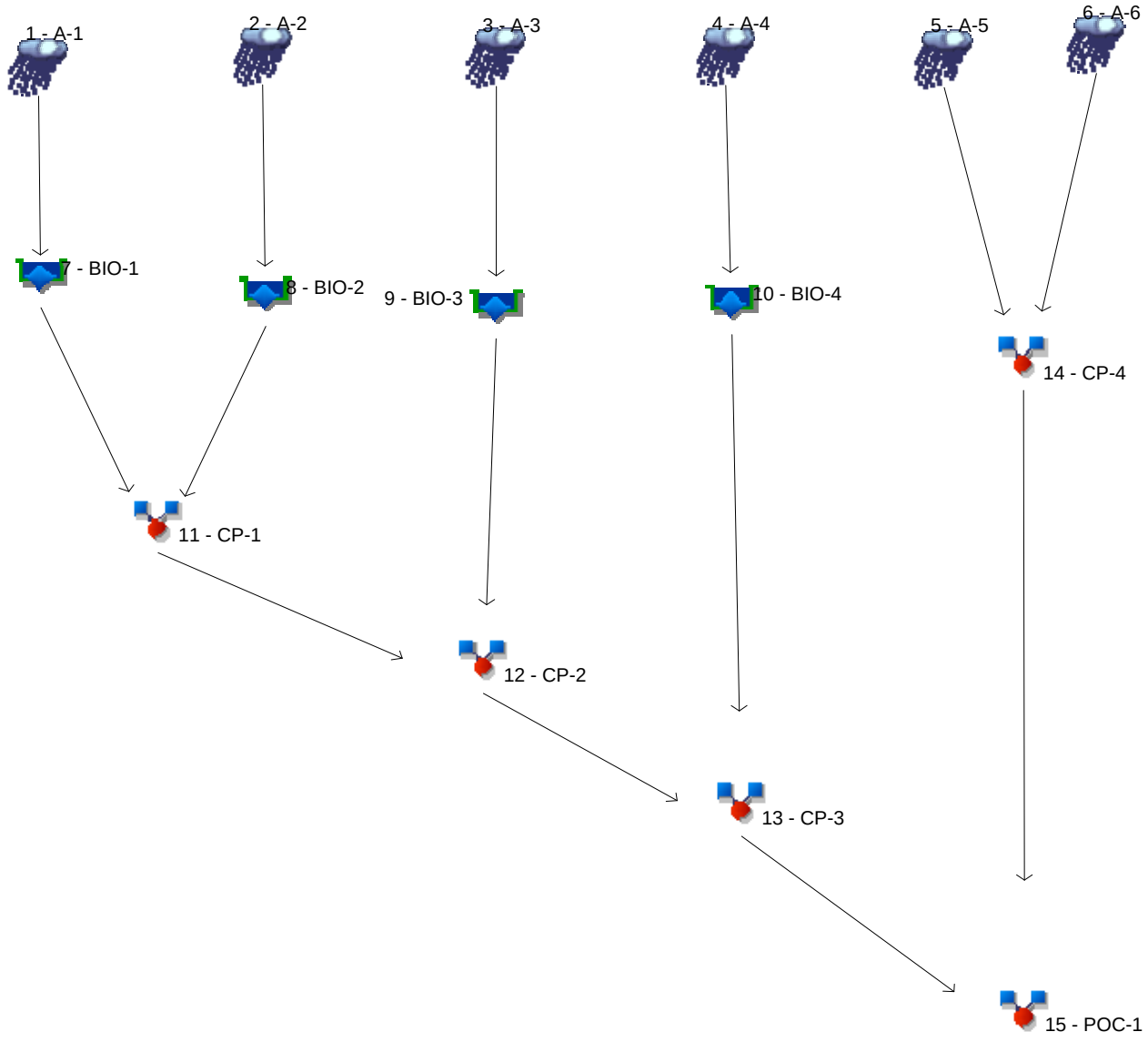
Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5



Legend

Hyd.	Origin	Description
1	Manual	A-1
2	Manual	A-2
3	Manual	A-3
4	Manual	A-4
5	Manual	A-5
6	Manual	A-6
7	Reservoir	BIO-1
8	Reservoir	BIO-2
9	Reservoir	BIO-3
10	Reservoir	BIO-4
11	Combine	CP-1
12	Combine	CP-2
13	Combine	CP-3
14	Combine	CP-4
15	Combine	POC-1

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	0.405	1	6	146	------	------	------	A-1
2	Rational	0.795	1	7	334	------	------	------	A-2
3	Rational	0.224	1	5	67	------	------	------	A-3
4	Rational	1.531	1	5	459	------	------	------	A-4
5	Rational	0.396	1	5	119	------	------	------	A-5
6	Rational	0.345	1	5	104	------	------	------	A-6
7	Reservoir	0.265	1	8	145	1	100.58	64.4	BIO-1
8	Reservoir	0.348	1	11	333	2	100.85	194	BIO-2
9	Reservoir	0.031	1	9	65	3	100.16	58.5	BIO-3
10	Reservoir	0.719	1	8	459	4	103.16	236	BIO-4
11	Combine	0.742	1	5	222	5, 6,	------	------	CP-4
12	Combine	0.591	1	9	478	7, 8,	------	------	CP-1
13	Combine	0.622	1	9	543	9, 12	------	------	CP-2
14	Combine	1.323	1	8	1,002	10, 13	------	------	CP-3
15	Combine	1.709	1	7	1,224	11, 14	------	------	P.O.C
16	Rational	3.228	1	9	1,743	------	------	------	EX-1

PROPOSED DISCHARGE CONDITION

EXISTING DISCHARGE CONDITION

Hydrograph Report

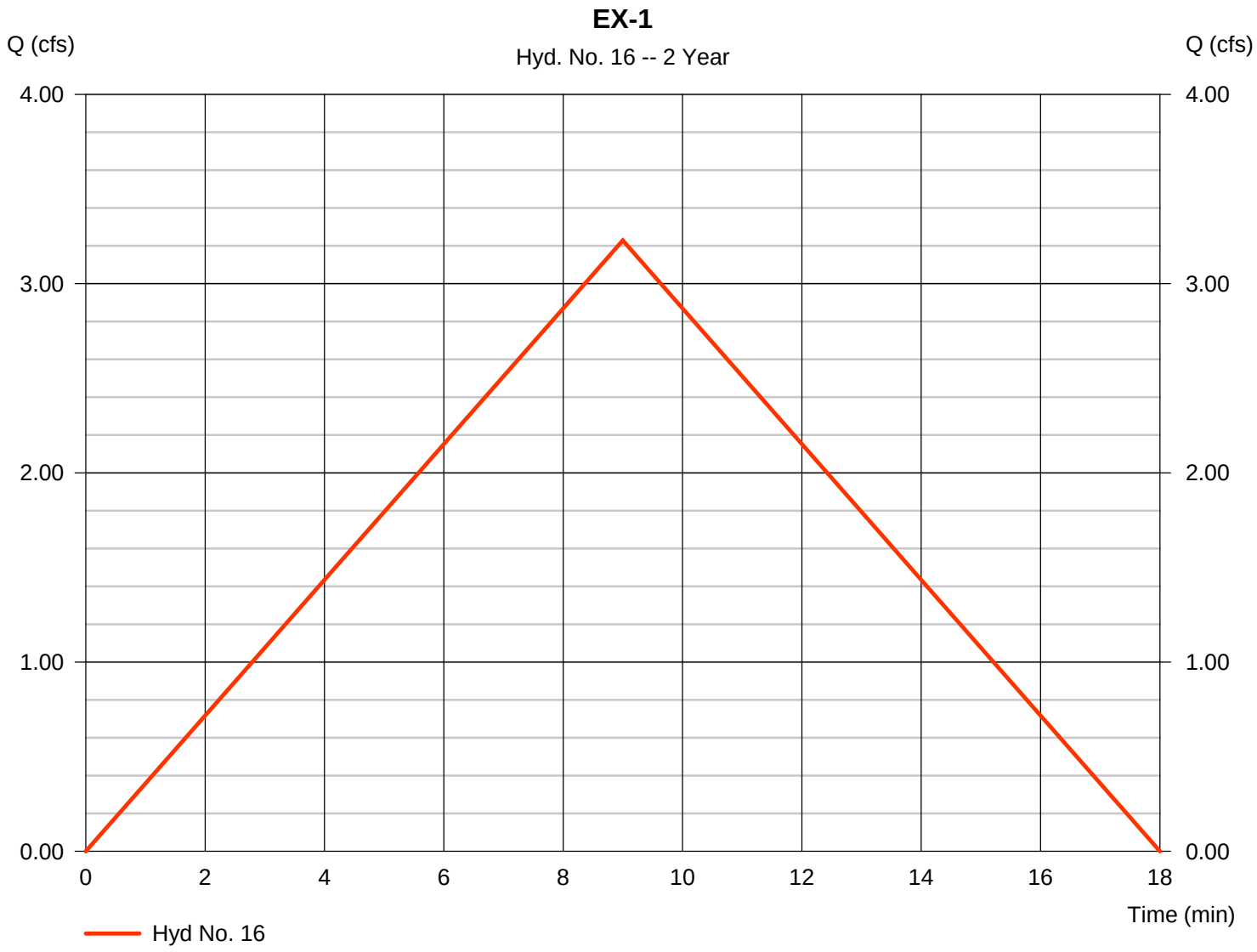
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 16

EX-1

EXISTING PEAK DISCHARGE

Hydrograph type	=	Rational	Peak discharge	=	3.228 cfs
Storm frequency	=	2 yrs	Time to peak	=	9 min
Time interval	=	1 min	Hyd. volume	=	1,743 cuft
Drainage area	=	2.190 ac	Runoff coeff.	=	0.79
Intensity	=	1.866 in/hr	Tc by User	=	9.00 min
IDF Curve	=	SampleFHA.idf	Asc/Rec limb fact	=	1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 1

A-1

Hydrograph type	=	Rational	Peak discharge	=	0.405 cfs
Storm frequency	=	2 yrs	Time to peak	=	6 min
Time interval	=	1 min	Hyd. volume	=	146 cuft
Drainage area	=	0.220 ac	Runoff coeff.	=	0.86
Intensity	=	2.140 in/hr	Tc by User	=	6.00 min
IDF Curve	=	SampleFHA.idf	Asc/Rec limb fact	=	1/1

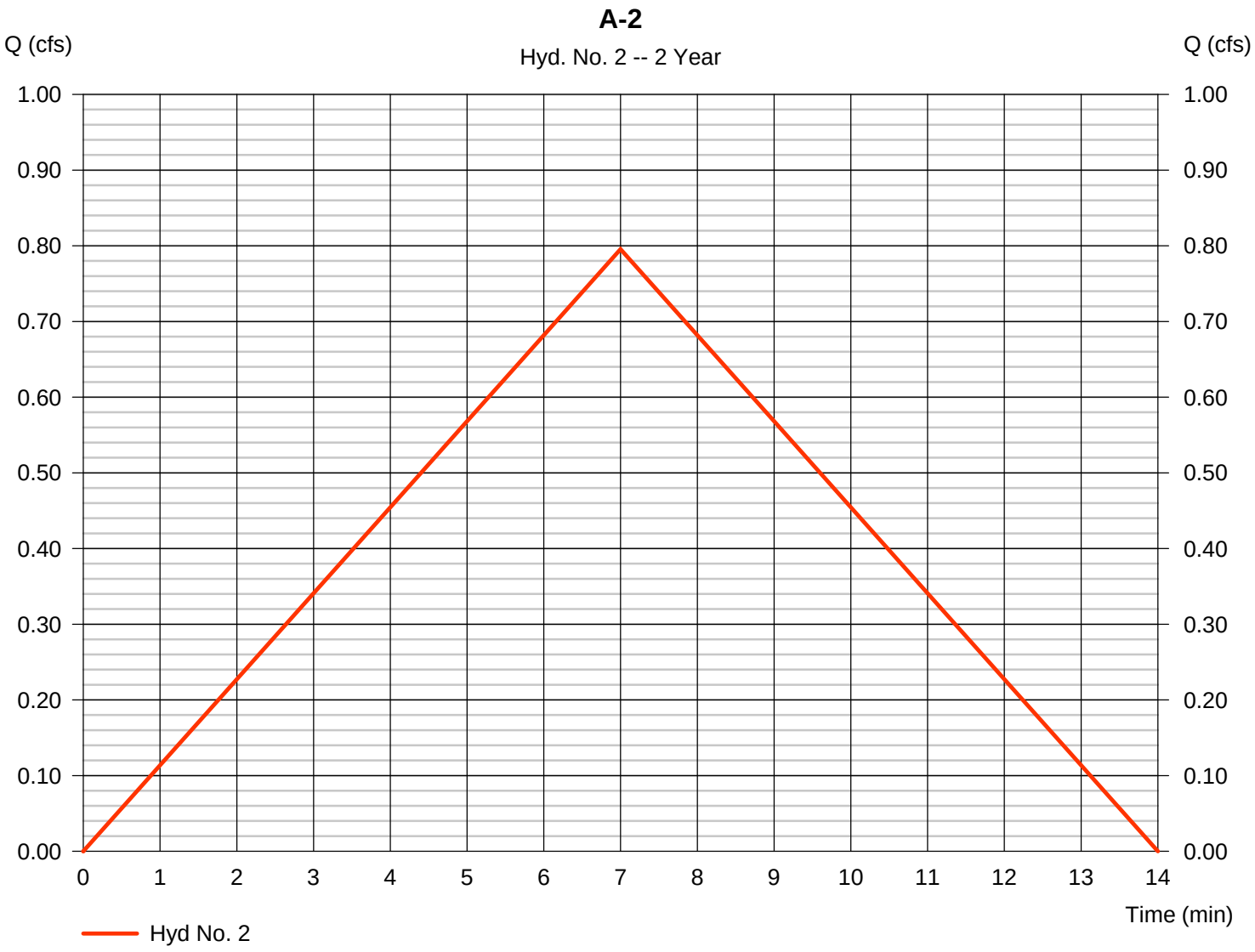
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 2

A-2

Hydrograph type	=	Rational	Peak discharge	=	0.795 cfs
Storm frequency	=	2 yrs	Time to peak	=	7 min
Time interval	=	1 min	Hyd. volume	=	334 cuft
Drainage area	=	0.470 ac	Runoff coeff.	=	0.83
Intensity	=	2.039 in/hr	Tc by User	=	7.00 min
IDF Curve	=	SampleFHA.idf	Asc/Rec limb fact	=	1/1



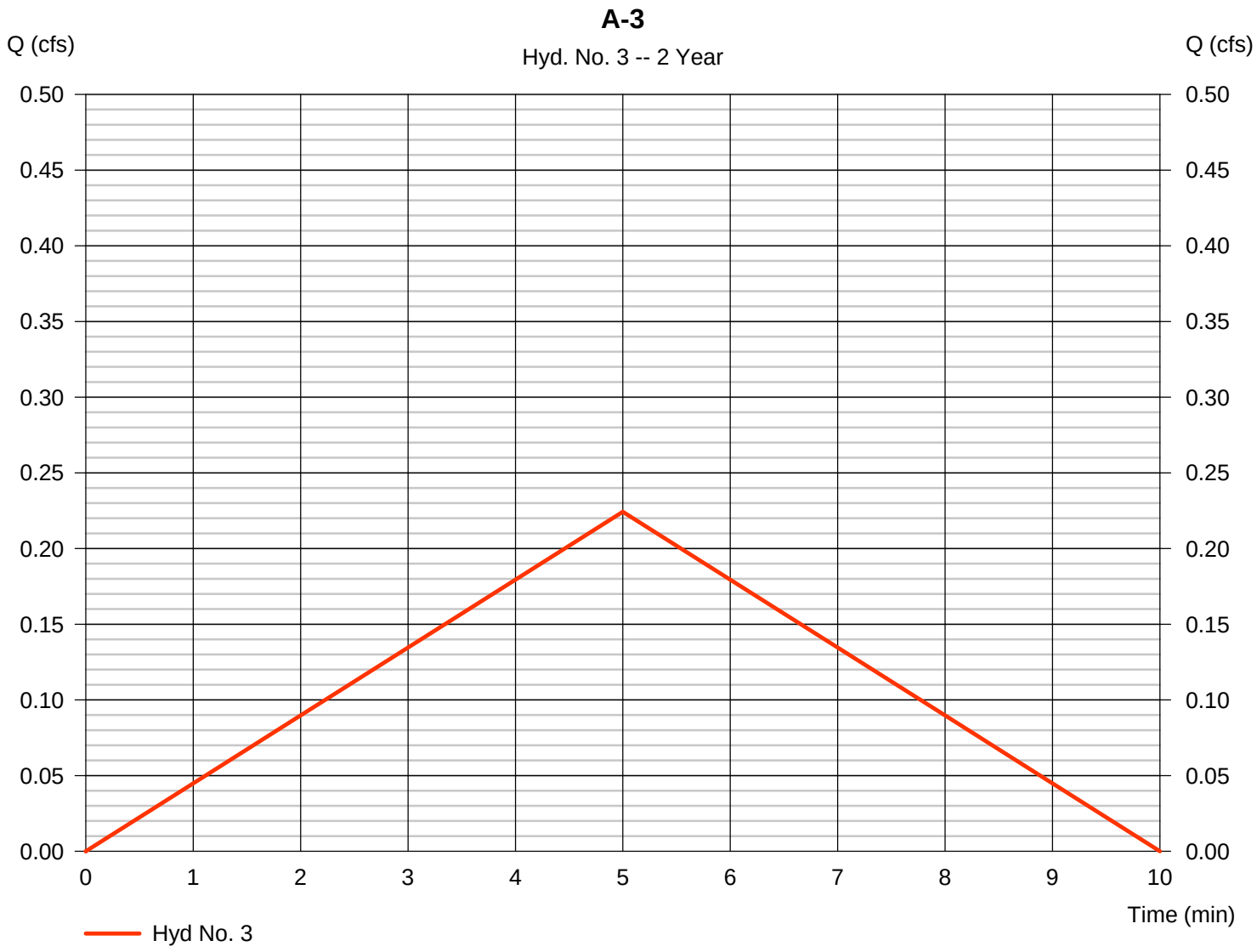
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 3

A-3

Hydrograph type	=	Rational	Peak discharge	=	0.224 cfs
Storm frequency	=	2 yrs	Time to peak	=	5 min
Time interval	=	1 min	Hyd. volume	=	67 cuft
Drainage area	=	0.120 ac	Runoff coeff.	=	0.83
Intensity	=	2.252 in/hr	Tc by User	=	5.00 min
IDF Curve	=	SampleFHA.idf	Asc/Rec limb fact	=	1/1



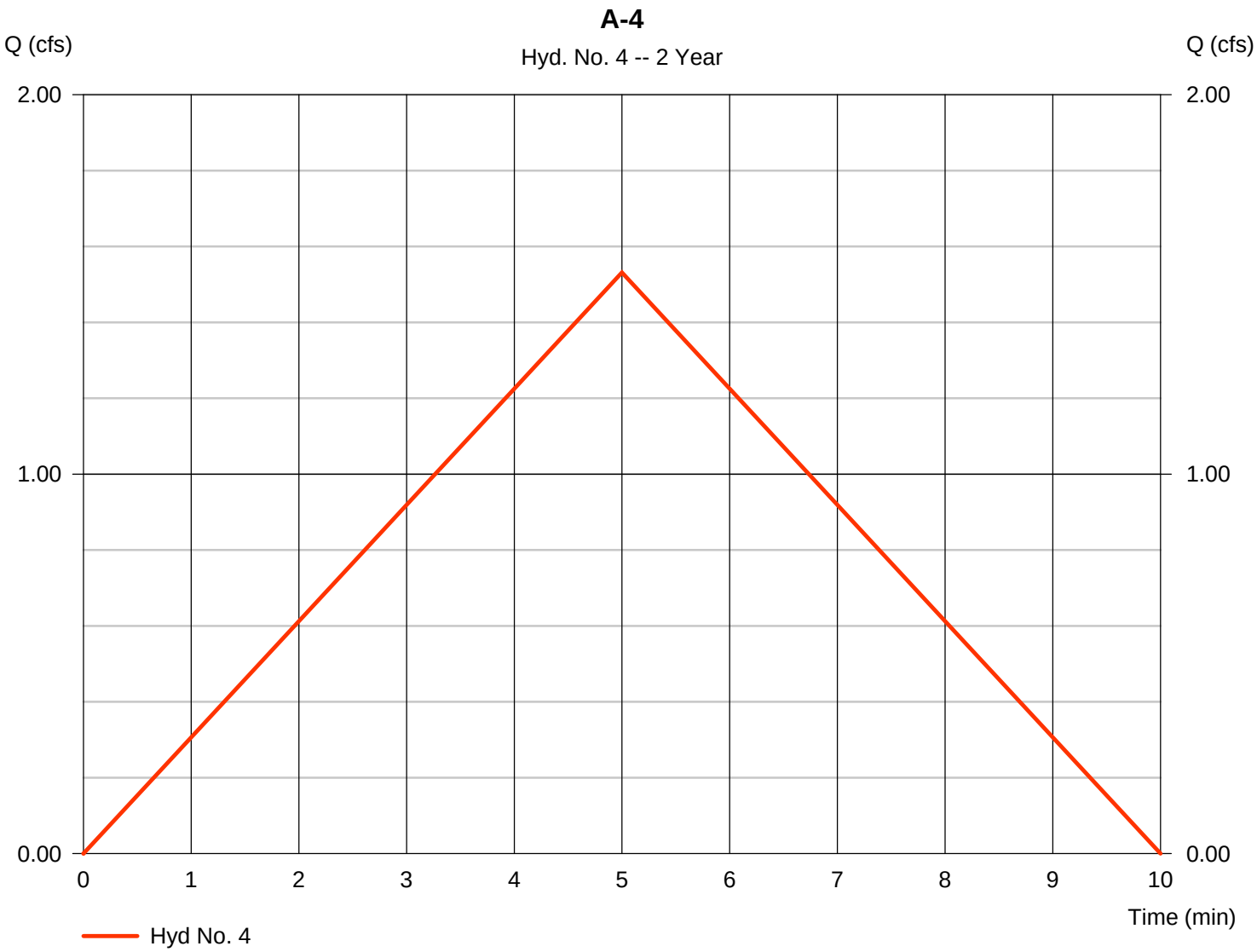
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 4

A-4

Hydrograph type	=	Rational	Peak discharge	=	1.531 cfs
Storm frequency	=	2 yrs	Time to peak	=	5 min
Time interval	=	1 min	Hyd. volume	=	459 cuft
Drainage area	=	0.850 ac	Runoff coeff.	=	0.8
Intensity	=	2.252 in/hr	Tc by User	=	5.00 min
IDF Curve	=	SampleFHA.idf	Asc/Rec limb fact	=	1/1



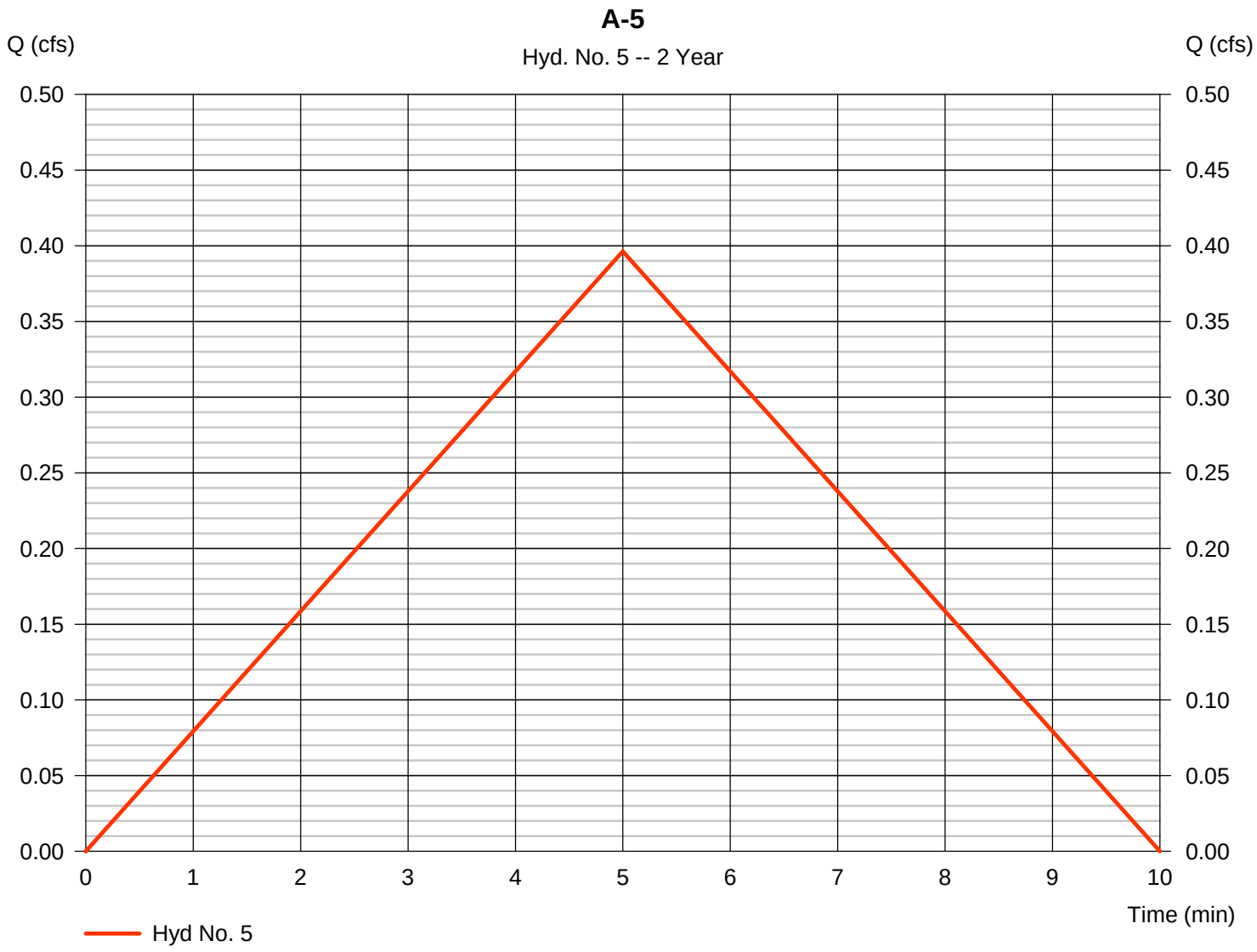
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 5

A-5

Hydrograph type	=	Rational	Peak discharge	=	0.396 cfs
Storm frequency	=	2 yrs	Time to peak	=	5 min
Time interval	=	1 min	Hyd. volume	=	119 cuft
Drainage area	=	0.320 ac	Runoff coeff.	=	0.55
Intensity	=	2.252 in/hr	Tc by User	=	5.00 min
IDF Curve	=	SampleFHA.idf	Asc/Rec limb fact	=	1/1



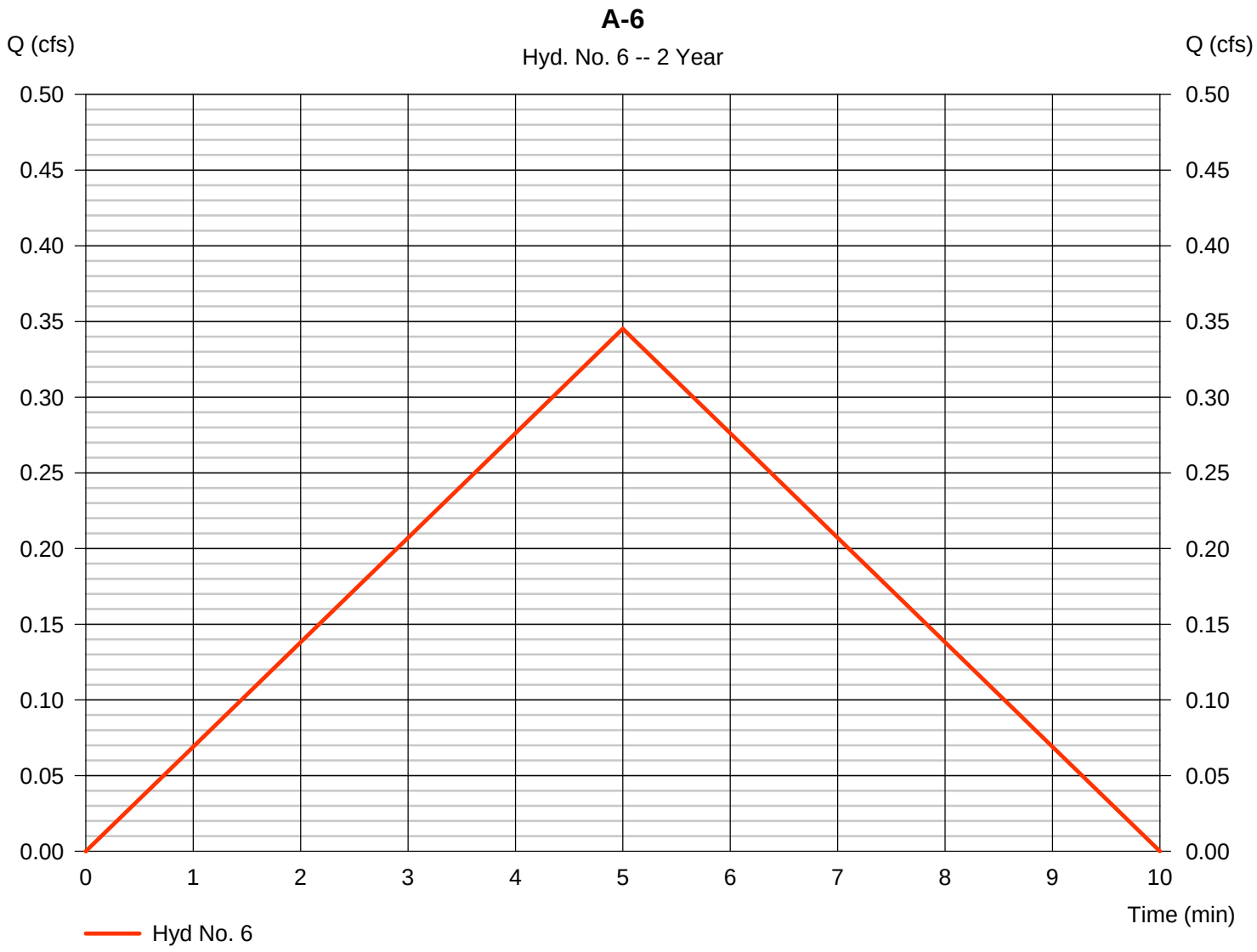
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 6

A-6

Hydrograph type	=	Rational	Peak discharge	=	0.345 cfs
Storm frequency	=	2 yrs	Time to peak	=	5 min
Time interval	=	1 min	Hyd. volume	=	104 cuft
Drainage area	=	0.210 ac	Runoff coeff.	=	0.73
Intensity	=	2.252 in/hr	Tc by User	=	5.00 min
IDF Curve	=	SampleFHA.idf	Asc/Rec limb fact	=	1/1



Hydrograph Report

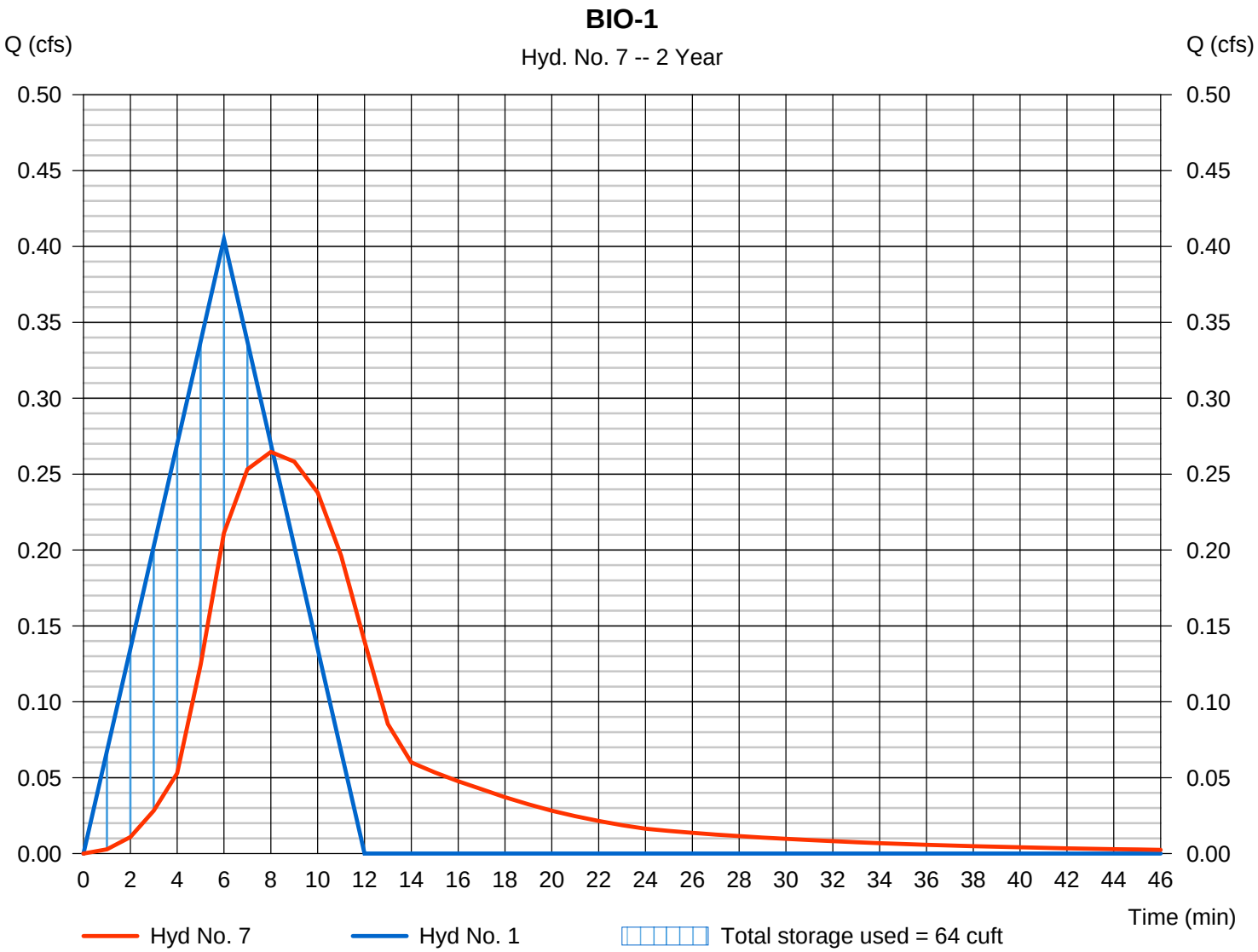
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 7

BIO-1

Hydrograph type	= Reservoir	Peak discharge	= 0.265 cfs
Storm frequency	= 2 yrs	Time to peak	= 8 min
Time interval	= 1 min	Hyd. volume	= 145 cuft
Inflow hyd. No.	= 1 - A-1	Max. Elevation	= 100.58 ft
Reservoir name	= BIO-1	Max. Storage	= 64 cuft

Storage Indication method used.



Hydrograph Report

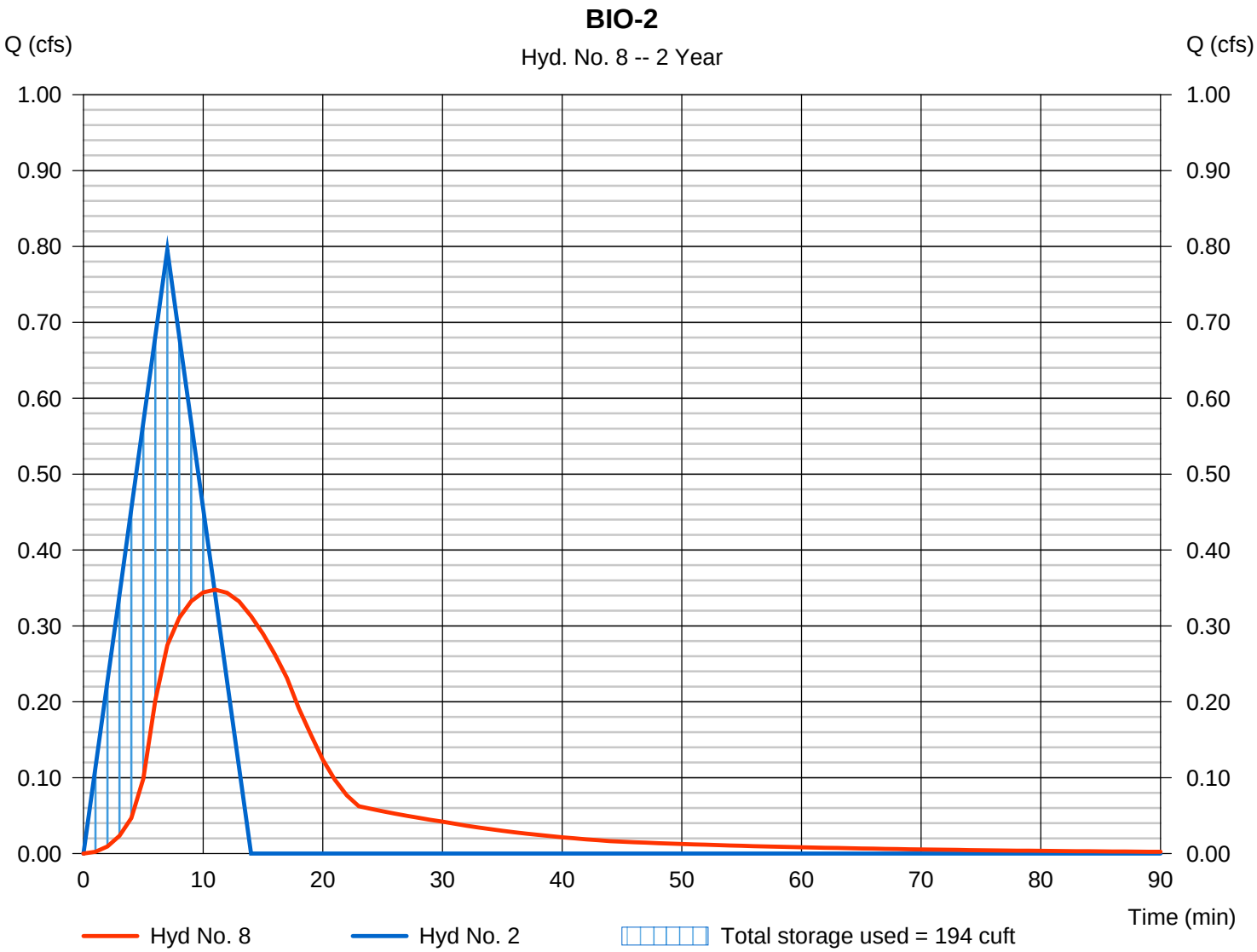
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 8

BIO-2

Hydrograph type	= Reservoir	Peak discharge	= 0.348 cfs
Storm frequency	= 2 yrs	Time to peak	= 11 min
Time interval	= 1 min	Hyd. volume	= 333 cuft
Inflow hyd. No.	= 2 - A-2	Max. Elevation	= 100.85 ft
Reservoir name	= BIO-2	Max. Storage	= 194 cuft

Storage Indication method used.



Hydrograph Report

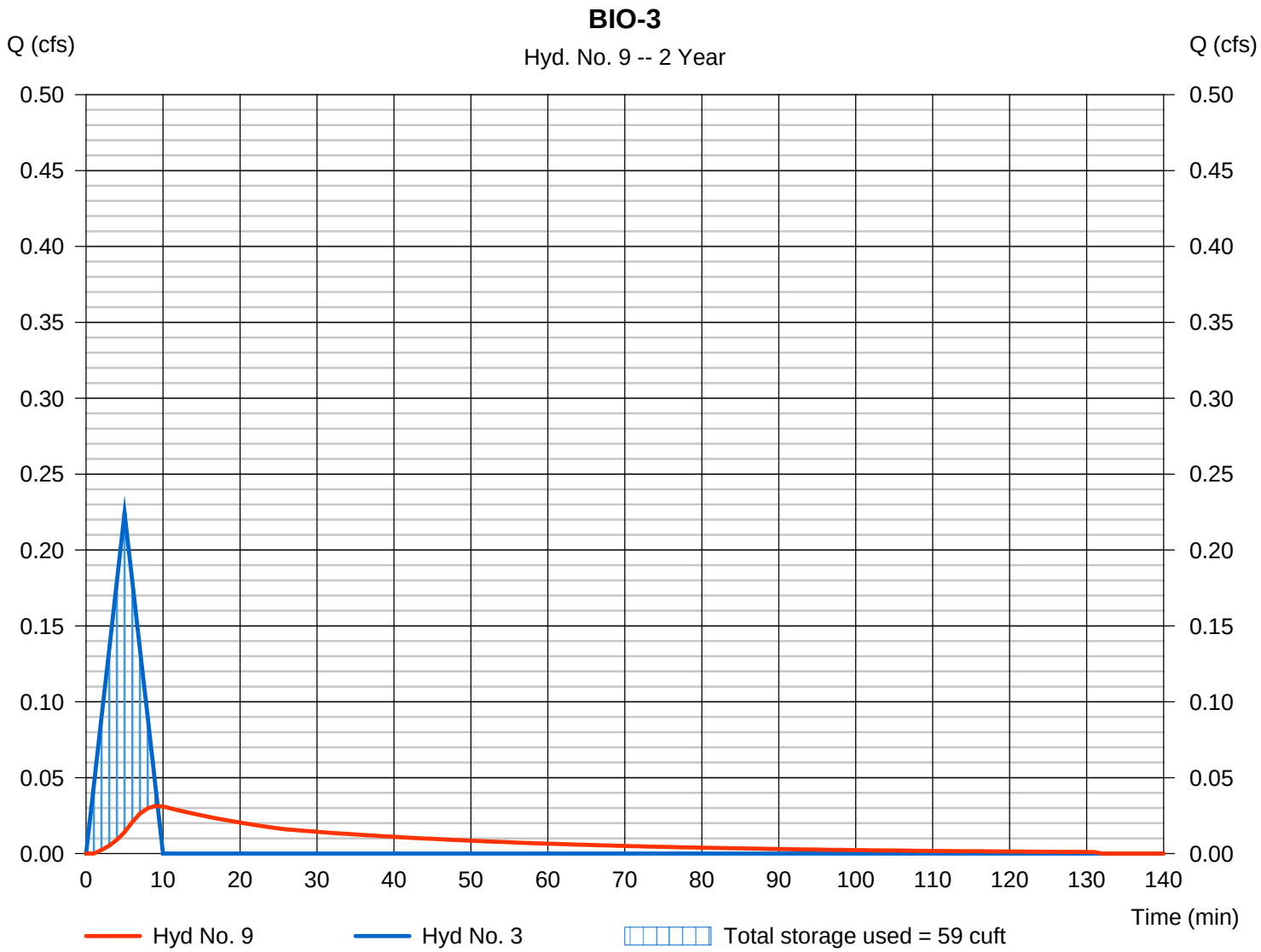
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 9

BIO-3

Hydrograph type	= Reservoir	Peak discharge	= 0.031 cfs
Storm frequency	= 2 yrs	Time to peak	= 9 min
Time interval	= 1 min	Hyd. volume	= 65 cuft
Inflow hyd. No.	= 3 - A-3	Max. Elevation	= 100.16 ft
Reservoir name	= BIO-3	Max. Storage	= 59 cuft

Storage Indication method used.



Hydrograph Report

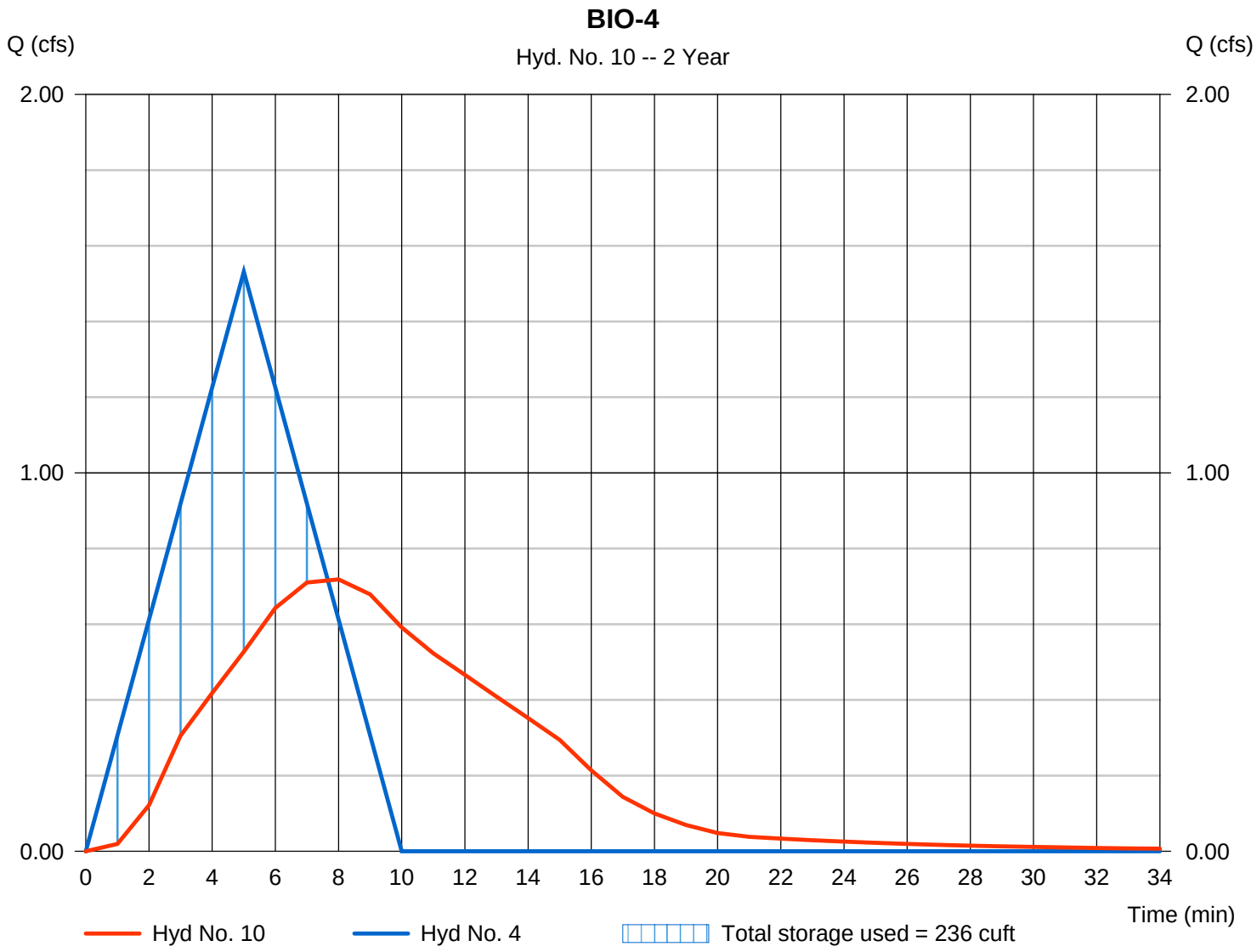
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 10

BIO-4

Hydrograph type	= Reservoir	Peak discharge	= 0.719 cfs
Storm frequency	= 2 yrs	Time to peak	= 8 min
Time interval	= 1 min	Hyd. volume	= 459 cuft
Inflow hyd. No.	= 4 - A-4	Max. Elevation	= 103.16 ft
Reservoir name	= BIO-4	Max. Storage	= 236 cuft

Storage Indication method used.



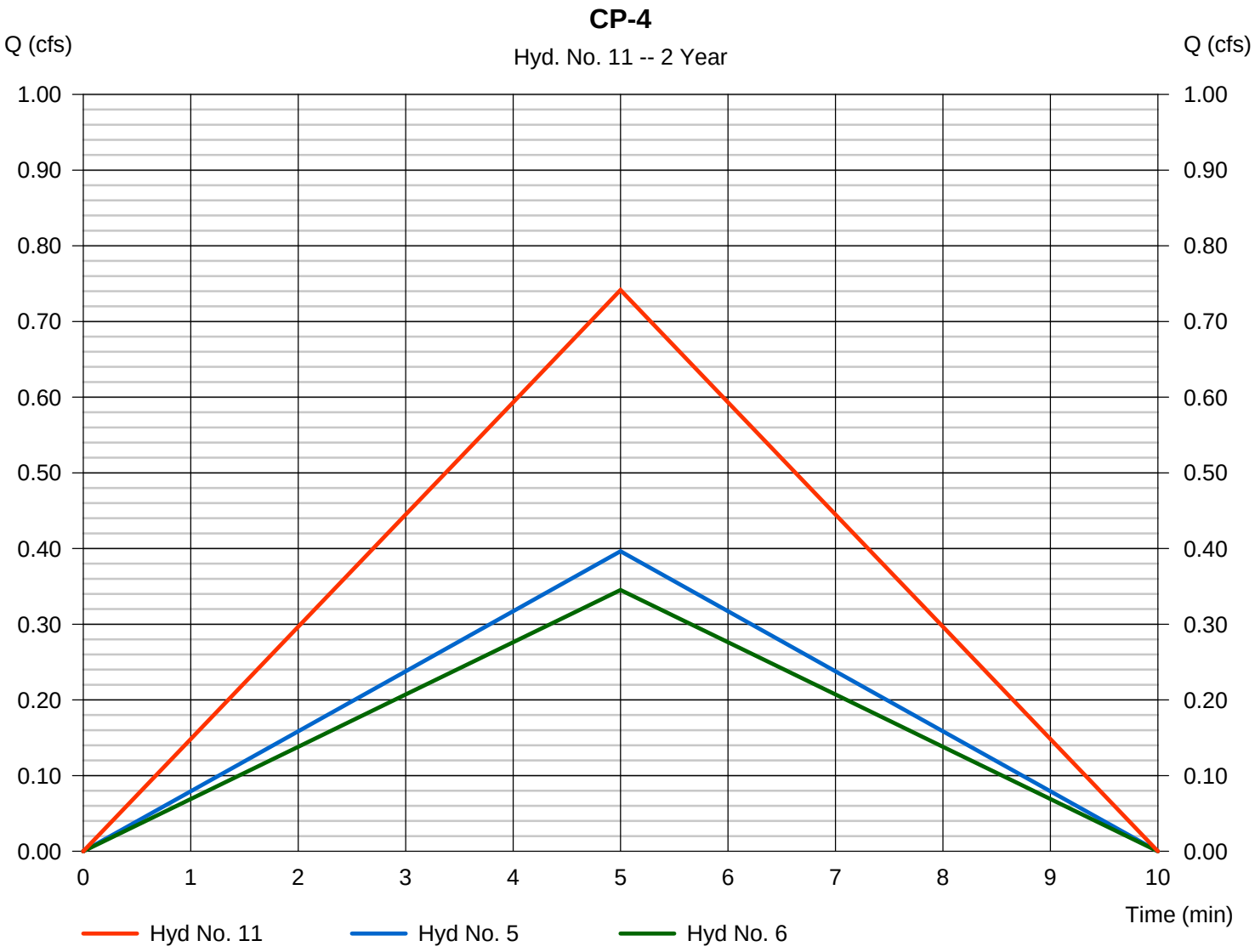
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 11

CP-4

Hydrograph type	= Combine	Peak discharge	= 0.742 cfs
Storm frequency	= 2 yrs	Time to peak	= 5 min
Time interval	= 1 min	Hyd. volume	= 222 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 0.530 ac



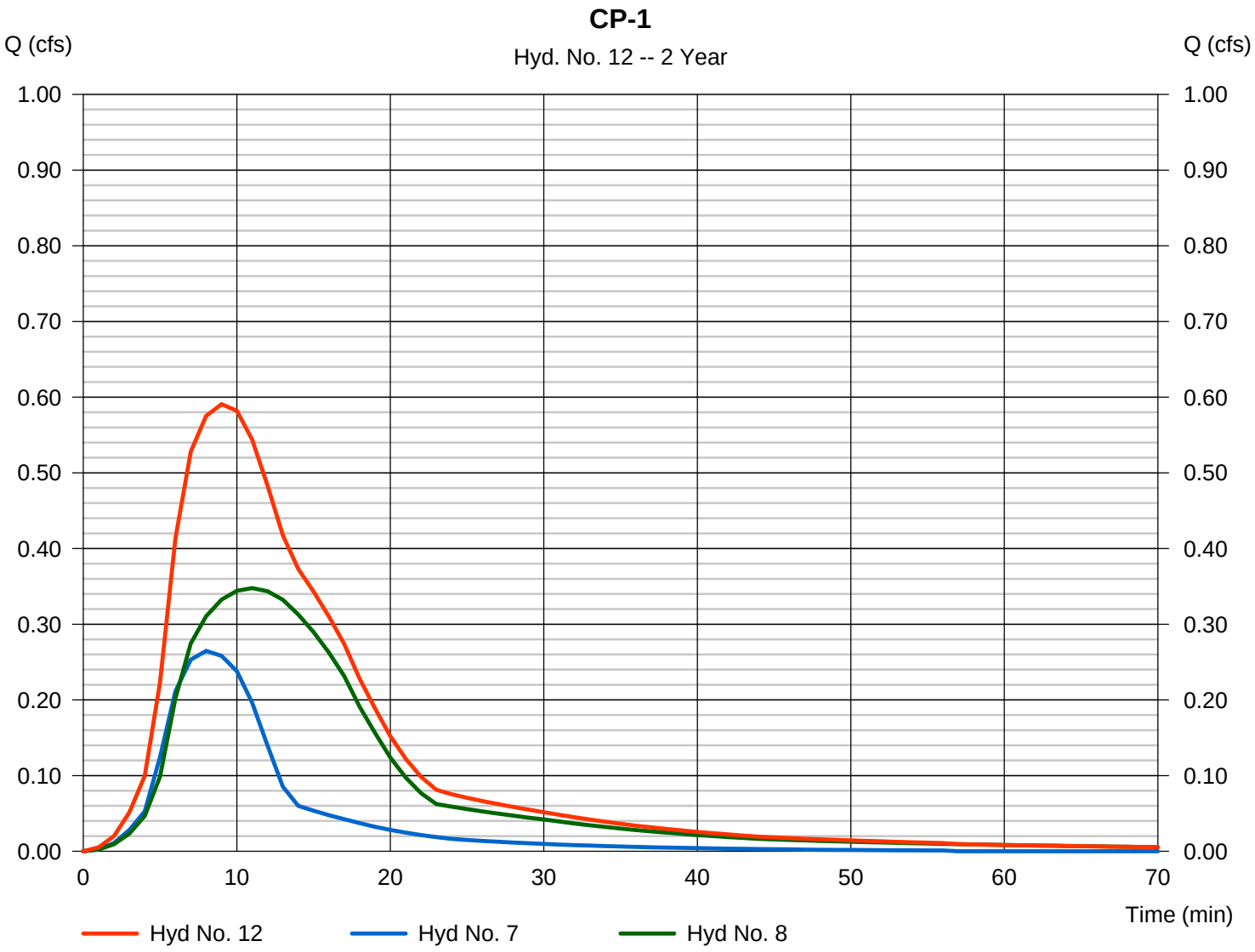
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 12

CP-1

Hydrograph type	= Combine	Peak discharge	= 0.591 cfs
Storm frequency	= 2 yrs	Time to peak	= 9 min
Time interval	= 1 min	Hyd. volume	= 478 cuft
Inflow hyds.	= 7, 8	Contrib. drain. area	= 0.000 ac



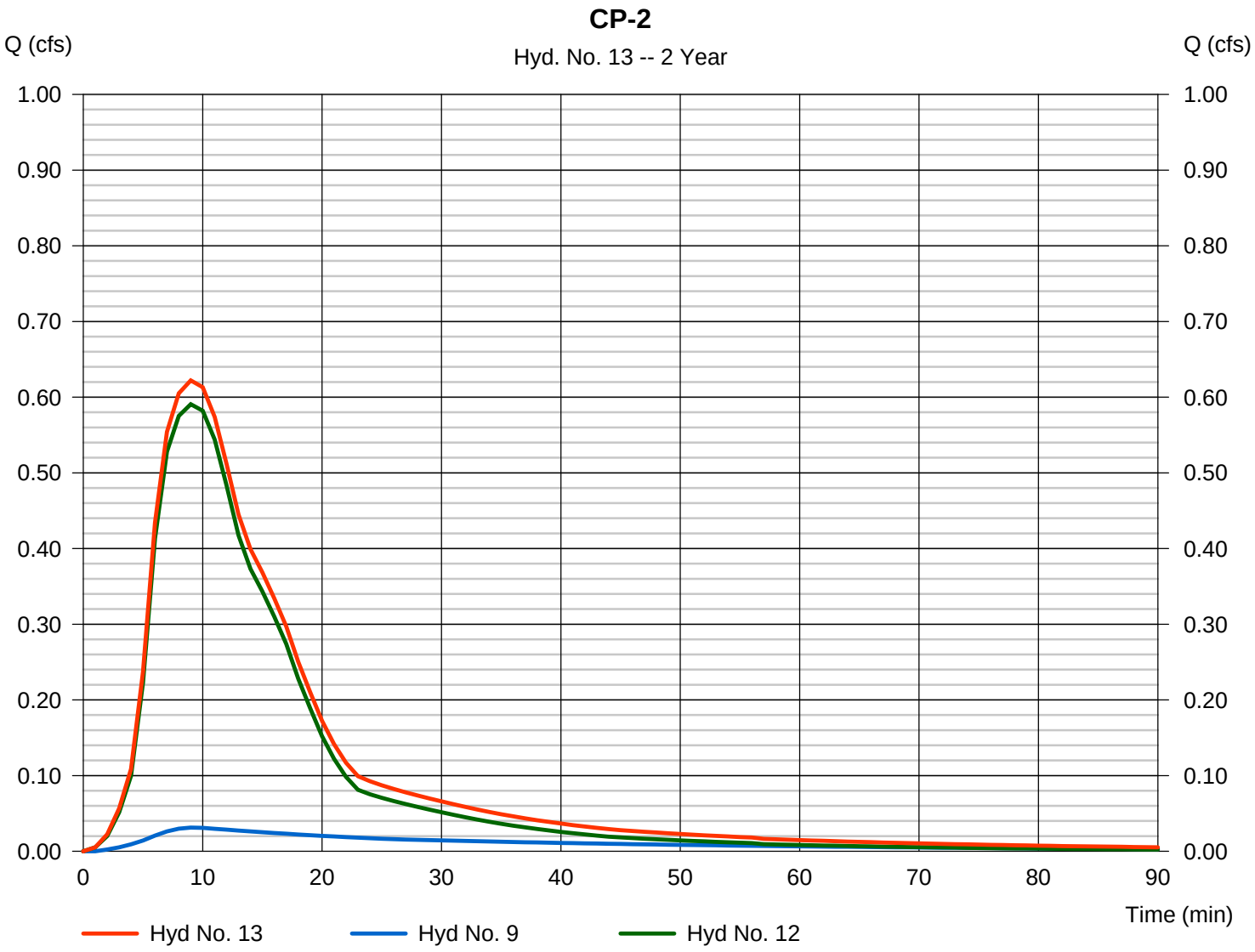
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 13

CP-2

Hydrograph type	=	Combine	Peak discharge	=	0.622 cfs
Storm frequency	=	2 yrs	Time to peak	=	9 min
Time interval	=	1 min	Hyd. volume	=	543 cuft
Inflow hyds.	=	9, 12	Contrib. drain. area	=	0.000 ac



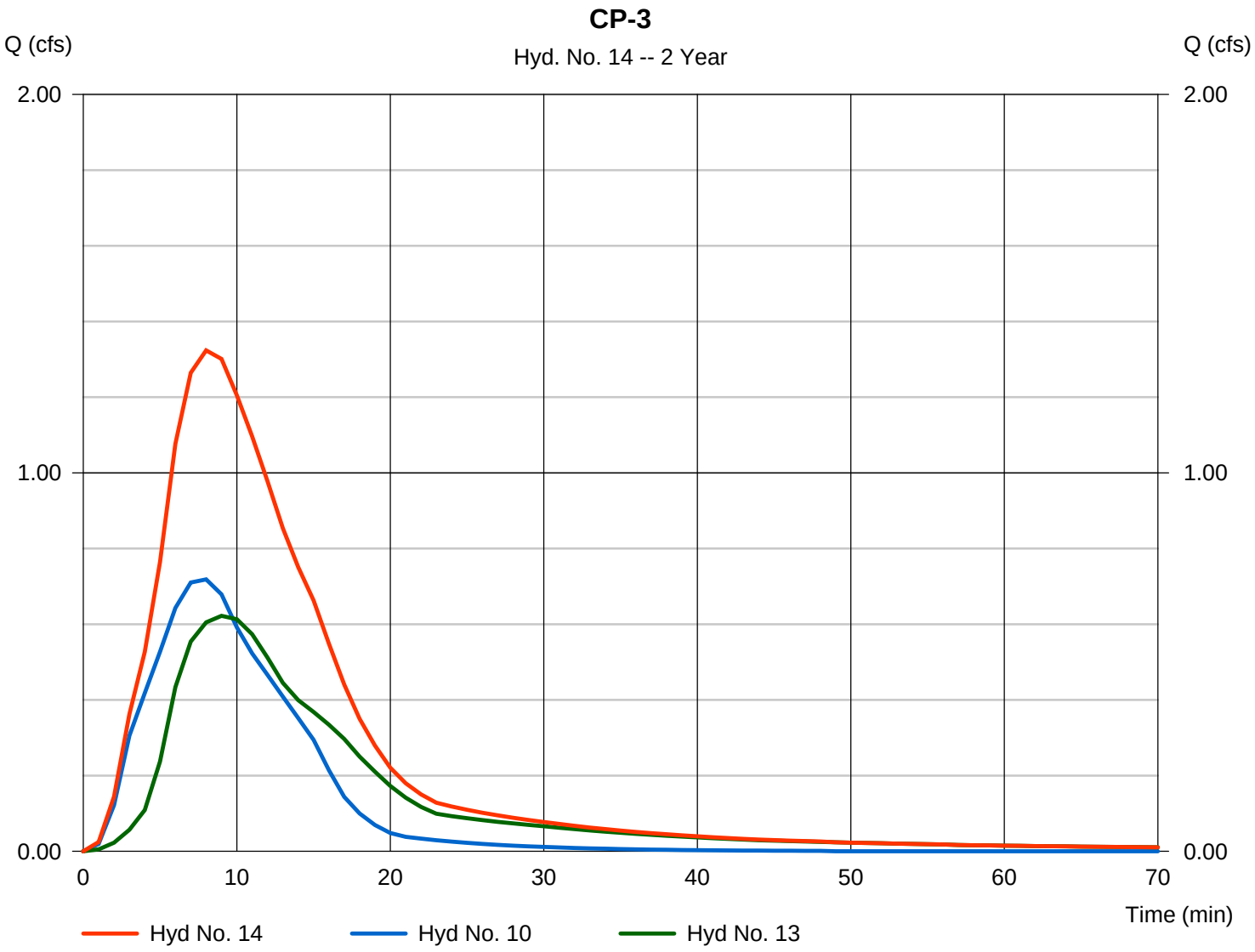
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 14

CP-3

Hydrograph type	= Combine	Peak discharge	= 1.323 cfs
Storm frequency	= 2 yrs	Time to peak	= 8 min
Time interval	= 1 min	Hyd. volume	= 1,002 cuft
Inflow hyds.	= 10, 13	Contrib. drain. area	= 0.000 ac



Hydrograph Report

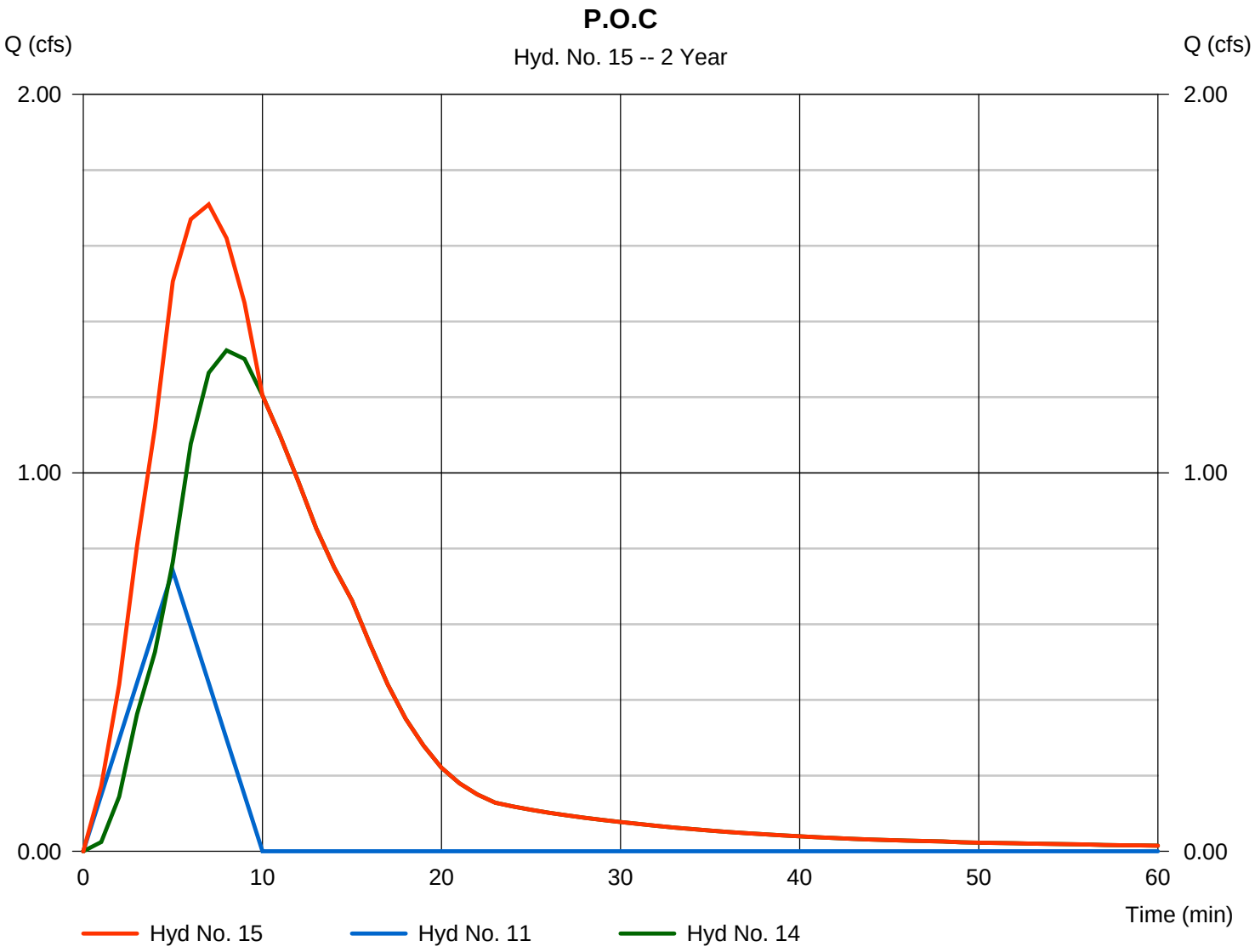
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 04 / 4 / 2018

Hyd. No. 15

P.O.C

PROPOSED DISCHARGE WITH FLOW CONTROL MITIGATION

Hydrograph type	=	Combine	Peak discharge	=	1.709 cfs
Storm frequency	=	2 yrs	Time to peak	=	7 min
Time interval	=	1 min	Hyd. volume	=	1,224 cuft
Inflow hyds.	=	11, 14	Contrib. drain. area	=	0.000 ac



Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section G of the WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table G.1on page 23 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☒ **A.** On-site storm drain inlets	☒ Locations of inlets.	☒ Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	☒ Maintain and periodically repaint or replace inlet markings. ☒ Provide stormwater pollution prevention information to new site owners, lessees, or operators. ☒ See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com ☐ Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
☐ **B.** Interior floor drains and elevator shaft sump pumps		☐ State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.
☐ **C.** Interior parking garages		☐ State that parking garage floor drains will be plumbed to the sanitary sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☐ **D1.** Need for future indoor & structural pest control		☐ Note building design features that discourage entry of pests.	☐ Provide Integrated Pest Management information to owners, lessees, and operators.
☒ **D2.** Landscape/ Outdoor Pesticide Use	☐ Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. ☐ Show self-retaining landscape areas, if any. ☐ Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)	State that final landscape plans will accomplish all of the following. ☐ Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. ☒ Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. ☒ Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. ☒ Consider using pest-resistant plants, especially adjacent to hardscape. To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	☒ Maintain landscaping using minimum or no pesticides. ☒ See applicable operational BMPs in "What you should know for.....Landscape and Gardening" at http://rcflood.org/stormwater/Error! Hyperlink reference not valid. ☒ Provide IPM information to new owners, lessees and operators.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☐ **E.** Pools, spas, ponds, decorative fountains, and other water features.	☒ Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)	If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	☐ See applicable operational BMPs in "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/
☒ **F.** Food service	☒ For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. ☒ On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	☒ Describe the location and features of the designated cleaning area. ☒ Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	☐ See the brochure, "The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ Provide this brochure to new site owners, lessees, and operators.
☐ **G.** Refuse areas	☐ Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. ☒ If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area. ☐ Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	☐ State how site refuse will be handled and provide supporting detail to what is shown on plans. ☒ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	☒ State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **H.** Industrial processes.	❑ Show process area.	❑ If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."	❑ See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **I.** Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	❑ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. ❑ Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. ❑ Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for: ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release (CalARP) ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank www.cchealth.org/groups/hazmat/	❑ See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☒ **J.** Vehicle and Equipment Cleaning	☒ Show on drawings as appropriate: (1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. (2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use). (3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. (4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.	☒ If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.	Describe operational measures to implement the following (if applicable): ☒ Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ ☐ Car dealerships and similar may rinse cars with water only.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☐ **K.** Vehicle/Equipment Repair and Maintenance	☐ Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater. ☐ Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. ☐ Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.	☐ State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. ☐ State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. ☐ State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.	In the Stormwater Control Plan, note that all of the following restrictions apply to use the site: ☐ No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains. ☐ No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. ☐ No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment. Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☒ **L.** Fuel Dispensing Areas	☒ Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. ☒ Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.		☒ The property owner shall dry sweep the fueling area routinely. ☒ See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

[6] The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **M.** Loading Docks	❑ Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer. ❑ Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. ❑ Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		❑ Move loaded and unloaded items indoors as soon as possible. ❑ See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☒ **N.** Fire Sprinkler Test Water		☒ Provide a means to drain fire sprinkler test water to the sanitary sewer.	☒ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
O. Miscellaneous Drain or Wash Water or Other Sources ☐ Boiler drain lines ☐ Condensate drain lines ☐ Rooftop equipment ☐ Drainage sumps ☒ Roofing, gutters, and trim. ☐ Other sources		☐ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. ☐ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ☐ Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ☐ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. ☒ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. Include controls for other sources as specified by local reviewer.	

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
☒ **P.** Plazas, sidewalks, and parking lots.			☒ Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

TO BE PROVIDED AT FINAL DESIGN

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

Help Protect Our Waterways!

Use These Guidelines For Outdoor Cleaning Activities and Wash Water Disposal

DO NOT . . . dispose of water containing soap or any other type of cleaning agent into a storm drain or water body. This is a direct violation of state and/or local regulations. Because wash water from cleaning parking areas may contain metallic brake pad dust, oil and other automotive fluids, litter, food wastes and other materials, if should never be discharged to a street, gutter or storm drain.

DO . . . dispose of small amounts of wash water from cleaning building exteriors, sidewalks or plazas onto landscaped or unpaved surfaces, provided you have the owner's permission and the discharge will not cause nuisance problems or flow into a street or storm drain.

DO . . . check with your sanitary sewer agency's policies and requirements concerning wash water disposal. Wash water from outdoor cleaning activities may be acceptable for disposal to the sanitary sewer with specific permission. See the list on the back of this flyer for phone numbers of the sanitary sewer agencies in your area.

DO . . . Understand that mobile auto detailers should divert wash water to landscaped or dirt areas. Be aware that soapy wash water may damage landscaping. Residual wash water may remain on paved surfaces to evaporate. Residues should be swept up and disposed of.

DO NOT . . . Dispose of leftover cleaning agents into the gutter. storm drain or sanitary sewer.

DO . . . understand that wash water (without soap) used to remove dust from a clean vehicle may be discharged to a street or drain. Wash water from sidewalk, plaza, and building surface cleaning may go into a street or storm drain **IF ALL** of the following conditions are met:

1. The surface being washed is free of residual oil, debris and other materials by using dry cleanup methods (i.e., sweeping, and cleaning any oil or chemical spills with rags or other absorbent materials before using water).
2. Washing is done with water only, not with soap or other cleaning materials.
3. You have not used the water to remove paint from surfaces during cleaning.

CALL 1-800-506-2555
TO REPORT ILLEGAL POLLUTING OF STORM DRAINS

ONLY RAIN... DOWN THE STORM DRAIN

or visit
www.floodcontrol.co.riverside.ca.us

USING CLEANING AGENTS:

If you must use soap, use biodegradable/ phosphate-free cleaners. Although the use of nontoxic cleaning products is strongly encouraged, do understand that these products can degrade water quality. The discharge of these products into the street, gutters, storm drain system or waterways is prohibited by local ordinances and the State Water Code. Avoid use of petroleum-based cleaning products.

When cleaning surfaces with a high-pressure washer or steam cleaning methods, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning, as compared to the use of a low-pressure hose, can remove additional materials that can contaminate local waterways.

OTHER TIPS TO HELP PROTECT OUR WATER . . .

SCREENING WASH WATER

A thorough dry cleanup before washing exterior surfaces such as building and decks without loose paint, sidewalks, or plaza areas, should be sufficient to protect receiving waters. HOWEVER, if any debris (solids) could enter storm drains or remain in the gutter or street after cleaning, wash water should first pass through a "20 mesh" or finer screen to catch the solid materials, the mesh should then be disposed of in the trash.

DRAIN INLET PROTECTION/CONTAINMENT & COLLECTION OF WASH WATER

- Sand bags can be used to create a barrier around storm drain inlets.
- Plugs or rubber mats can be used to temporarily seal storm drain openings.
- Containment pads, temporary berms or vacuum brooms can be used to contain and collect wash water.

EQUIPMENT AND SUPPLIES

Special materials such as absorbents, storm drain plugs and seals, small sump pumps, and vacuum booms are available from many vendors. For more information, check catalogs such as New Pig (800-468-4647, www.newpig.com), Lab Safety Supply (800-356-0783), C&H (800-558-9966), and W.W. Grainger (800-994-9174); or call the Cleaning Equipment Trade Association (800-441-0111) or the Power Washers of North America (800-393-PWNA).

Helpful telephone numbers and links:

WATER AGENCY LIST in Riverside County

City of Banning	(951) 922-3130
City of Beaumont	(951) 769-8520
City of Blythe	(760) 922-6161
City of Coachella	(760) 398-3502
Coachella Valley Water District	(760) 398-2651
City of Corona	(951) 736-2259
Desert Center, CSA #51	(760) 227-3203
Eastern Municipal Water District	(951) 928-3777
Elsinore Valley MWD	(951) 674-3146
Farm Mutual Water Company	(951) 244-4198
City of Hemet	(951) 765-3712
Idyllwild Water District	(951) 659-2143
Jurupa Community Services District	(951) 360-8795
Lake Hemet MWD	(951) 658-3241
Lee Lake Water District	(951) 277-1414
March Air Force Base	(951) 656-7000
Mission Springs Water District	(760) 329-6448
City of Palm Springs	(760) 323-8253
Rancho Caballero	(951) 780-9272
Rancho California Water District	(951) 296-6900
Ripley, CSA #62	(760) 922-4951
City of Riverside	(951) 351-6170
Rubidoux Community Services District	(951) 684-7580
Silent Valley Club, Inc	(951) 849-4501
Valley Sanitary District	(760) 347-2356
Western Municipal Water District	(951) 789-5000
Yucaipa Valley Water District	(909) 797-5117

To report illegal dumping into storm drains or clogged storm drains, please call:

1-800-506-2555

Online resources include:

Riverside County Flood Control District outreach materials page:
www.floodcontrol.co.riverside.ca.us

California Storm Water Quality Association
www.casqa.org or www.cabmphandbooks.com

State Water Resources Control Board, Water Quality
www.swrcb.ca.gov/stormwtr/index.html

U.S. Environmental Protection Agency
www.epa.gov/oppt/p2home/programs/busprac.htm

StormWater Pollution

What you should know for...

OUTDOOR CLEANING ACTIVITIES AND NON-POINT SOURCE DISCHARGES

For disposal of wash water from:

- Sidewalk, plaza or parking lot cleaning
- Vehicle washing or detailing
- Building exterior cleaning
- Waterproofing
- Equipment cleaning or degreasing

Do you know . . . where the water actually goes?

Storm Drains are not connected to sanitary sewer systems and treatment plants!

The primary purpose of storm drains is to carry rain water away from developed areas to prevent flooding. Pollutants discharged to storm drains are conveyed directly into rivers, lakes and streams. Soaps, degreasers, automotive fluids, litter and a host of other materials washed off buildings, sidewalks, plazas, parking areas, vehicles and equipment must be properly managed to prevent the pollution of rivers, lakes and streams.

Preventing pollution is the best way to protect the environment. In addition, it is much easier and less costly than cleaning up "after the fact."

The Cities and County of Riverside Regional Water Quality Control Board

A WATERSHED is an area of land that catches rain and snow, then drains or seeps into a marsh, stream, river, lake or groundwater. Watersheds come in all shapes and sizes, crossing county, state, and national boundaries, therefore many of our activities at home, work or play affect the quality of our watersheds.

In accordance with state and federal law to protect our watersheds, the CITIES AND COUNTY OF RIVERSIDE have adopted ordinances for stormwater management and discharge control to prohibit the discharge of wastes into the storm drain system or local surface waters. This INCLUDES discharge of wash water from outdoor cleaning activities which may contain pollutants such as oil, grease, detergent, degreasers, trash, pet waste or other materials.

PLEASE NOTE: Check with your Regional Water Quality Control Board, local municipal government and water agencies on what the restrictions are in your area.

3.5 Bioretention Facility

Type of BMP	LID – Bioretention
Treatment Mechanisms	Infiltration, Evapotranspiration, Evaporation, Biofiltration
Maximum Drainage Area	This BMP is intended to be integrated into a project's landscaped area in a distributed manner. Typically, contributing drainage areas to Bioretention Facilities range from less than 1 acre to a maximum of around 10 acres.
Other Names	Rain Garden, Bioretention Cell, Bioretention Basin, Biofiltration Basin, Landscaped Filter Basin, Porous Landscape Detention

Description

Bioretention Facilities are shallow, vegetated basins underlain by an engineered soil media. Healthy plant and biological activity in the root zone maintain and renew the macro-pore space in the soil and maximize plant uptake of pollutants and runoff. This keeps the Best Management Practice (BMP) from becoming clogged and allows more of the soil column to function as both a sponge (retaining water) and a highly effective and self-maintaining biofilter. In most cases, the bottom of a Bioretention Facility is unlined, which also provides an opportunity for infiltration to the extent the underlying onsite soil can accommodate. When the infiltration rate of the underlying soil is exceeded, fully biotreated flows are discharged via underdrains. Bioretention Facilities therefore will inherently achieve the maximum feasible level of infiltration and evapotranspiration and achieve the minimum feasible (but highly biotreated) discharge to the storm drain system.

Siting Considerations

These facilities work best when they are designed in a relatively level area. Unlike other BMPs, Bioretention Facilities can be used in smaller landscaped spaces on the site, such as:

- ✓ Parking islands
- ✓ Medians
- ✓ Site entrances

Landscaped areas on the site (such as may otherwise be required through minimum landscaping ordinances), can often be designed as Bioretention Facilities. This can be accomplished by:

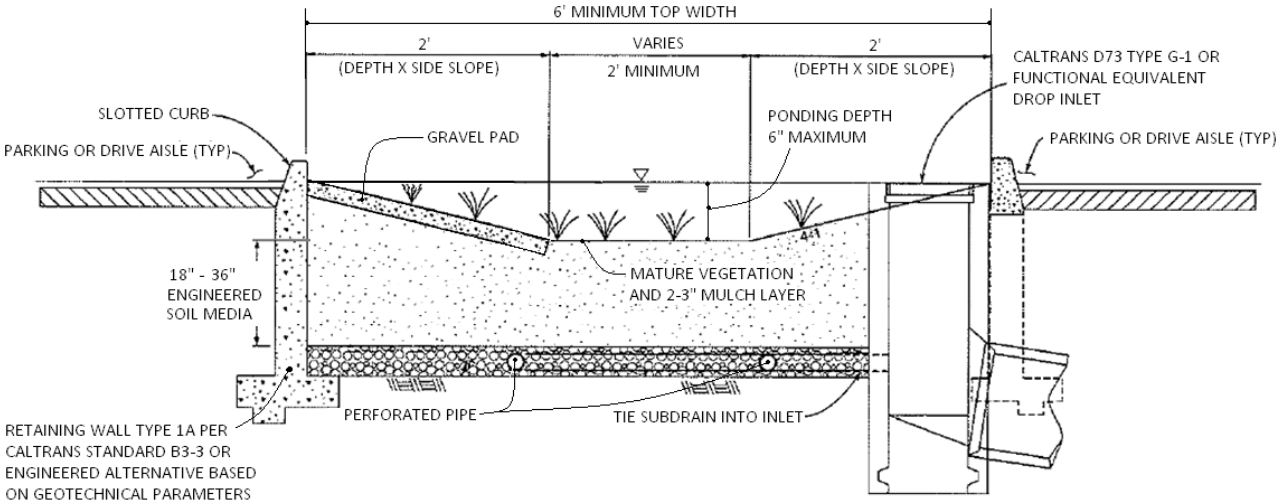
- *Depressing* landscaped areas below adjacent impervious surfaces, rather than elevating those areas
- Grading the site to direct runoff from those impervious surfaces *into* the Bioretention Facility, rather than away from the landscaping
- Sizing and designing the depressed landscaped area as a Bioretention Facility as described in this Fact Sheet

Bioretention Facilities should however not be used downstream of areas where large amounts of sediment can clog the system. Placing a Bioretention Facility at the toe of a steep slope should also be avoided due to the potential for clogging the engineered soil media with erosion from the slope, as well as the potential for damaging the vegetation.

Design and Sizing Criteria

The recommended cross section necessary for a Bioretention Facility includes:

- Vegetated area
- 18' minimum depth of engineered soil media
- 12' minimum gravel layer depth with 6' perforated pipes (added flow control features such as orifice plates may be required to mitigate for HCOC conditions)



While the 18-inch minimum engineered soil media depth can be used in some cases, it is recommended to use 24 inches or a preferred 36 inches to provide an adequate root zone for the chosen plant palate. Such a design also provides for improved removal effectiveness for nutrients. The recommended ponding depth inside of a Bioretention Facility is 6 inches; measured from the flat bottom surface to the top of the water surface as shown in Figure 1.

Because this BMP is filled with an engineered soil media, pore space in the soil and gravel layer is assumed to provide storage volume. However, several considerations must be noted:

- Surcharge storage above the soil surface (6 inches) is important to assure that design flows do not bypass the BMP when runoff exceeds the soil's absorption rate.
- In cases where the Bioretention Facility contains engineered soil media deeper than 36 inches, the pore space within the engineered soil media can only be counted to the 36-inch depth.
- A maximum of 30 percent pore space can be used for the soil media whereas a maximum of 40 percent pore space can be use for the gravel layer.

Figure 1: Standard Layout for a Bioretention Facility

Engineered Soil Media Requirements

The engineered soil media shall be comprised of 85 percent mineral component and 15 percent organic component, by volume, drum mixed prior to placement. The mineral component shall be a Class A sandy loam topsoil that meets the range specified in Table 1 below. The organic component shall be nitrogen stabilized compost[1], such that nitrogen does not leach from the media.

Table 1: Mineral Component Range Requirements

Percent Range	Component
70-80	Sand
15-20	Silt
5-10	Clay

The trip ticket, or certificate of compliance, shall be made available to the inspector to prove the engineered mix meets this specification.

Vegetation Requirements

Vegetative cover is important to minimize erosion and ensure that treatment occurs in the Bioretention Facility. The area should be designed for at least 70 percent mature coverage throughout the Bioretention Facility. To prevent the BMP from being used as walkways, Bioretention Facilities shall be planted with a combination of small trees, densely planted shrubs, and natural grasses. Grasses shall be native or ornamental; preferably ones that do not need to be mowed. The application of fertilizers and pesticides should be minimal. To maintain oxygen levels for the vegetation and promote biodegradation, it is important that vegetation not be completely submerged for any extended period of time. Therefore, a maximum of 6 inches of ponded water shall be used in the design to ensure that plants within the Bioretention Facility remain healthy.

A 2 to 3-inch layer of standard shredded aged hardwood mulch shall be placed as the top layer inside the Bioretention Facility. The 6-inch ponding depth shown in Figure 1 above shall be measured from the top surface of the 2 to 3-inch mulch layer.

Curb Cuts

To allow water to flow into the Bioretention Facility, 1-foot-wide (minimum) curb cuts should be placed approximately every 10 feet around the perimeter of the Bioretention Facility. Figure 2 shows a curb cut in a Bioretention Facility. Curb cut flow lines must be at or above the V_{BMP} water surface level.

[1] For more information on compost, visit the US Composting Council website at: http://compostingcouncil.org/

Figure 2: Curb Cut located in a Bioretention Facility

To reduce erosion, a gravel pad shall be placed at each inlet point to the Bioretention Facility. The gravel should be 1- to 1.5-inch diameter in size. The gravel should overlap the curb cut opening a minimum of 6 inches. The gravel pad inside the Bioretention Facility should be flush with the finished surface at the curb cut and extend to the bottom of the slope.

In addition, place an apron of stone or concrete, a foot square or larger, inside each inlet to prevent vegetation from growing up and blocking the inlet. See Figure 3.

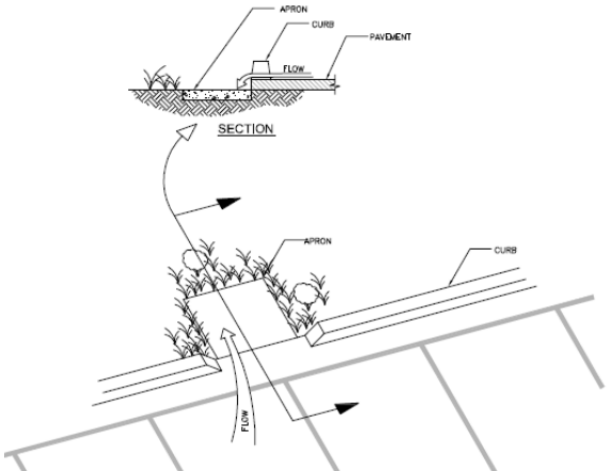


Figure 3: Apron located in a Bioretention Facility

Terracing the Landscaped Filter Basin

It is recommended that Bioretention Facilities be level. In the event the facility site slopes and lacks proper design, water would fill the lowest point of the BMP and then discharge from the basin without being treated. To ensure that the water will be held within the Bioretention Facility on sloped sites, the BMP must be terraced with nonporous check dams to provide the required storage and treatment capacity.

The terraced version of this BMP shall be used on non-flat sites with no more than a 3 percent slope. The surcharge depth cannot exceed 0.5 feet, and side slopes shall not exceed 4:1. Table 2 below shows the spacing of the check dams, and slopes shall be rounded up (i.e., 2.5 percent slope shall use 10' spacing for check dams).

Table 2: Check Dam Spacing

6” Check Dam Spacing	
Slope	**Spacing**
1%	*25'*
2%	*15'*
3%	*10'*

Roof Runoff

Roof downspouts may be directed towards Bioretention Facilities. However, the downspouts must discharge onto a concrete splash block to protect the Bioretention Facility from erosion.

Retaining Walls

It is recommended that Retaining Wall Type 1A, per Caltrans Standard B3-3 or equivalent, be constructed around the entire perimeter of the Bioretention Facility. This practice will protect the sides of the Bioretention Facility from collapsing during construction and maintenance or from high service loads adjacent to the BMP. Where such service loads would not exist adjacent to the BMP, an engineered alternative may be used if signed by a licensed civil engineer.

Side Slope Requirements

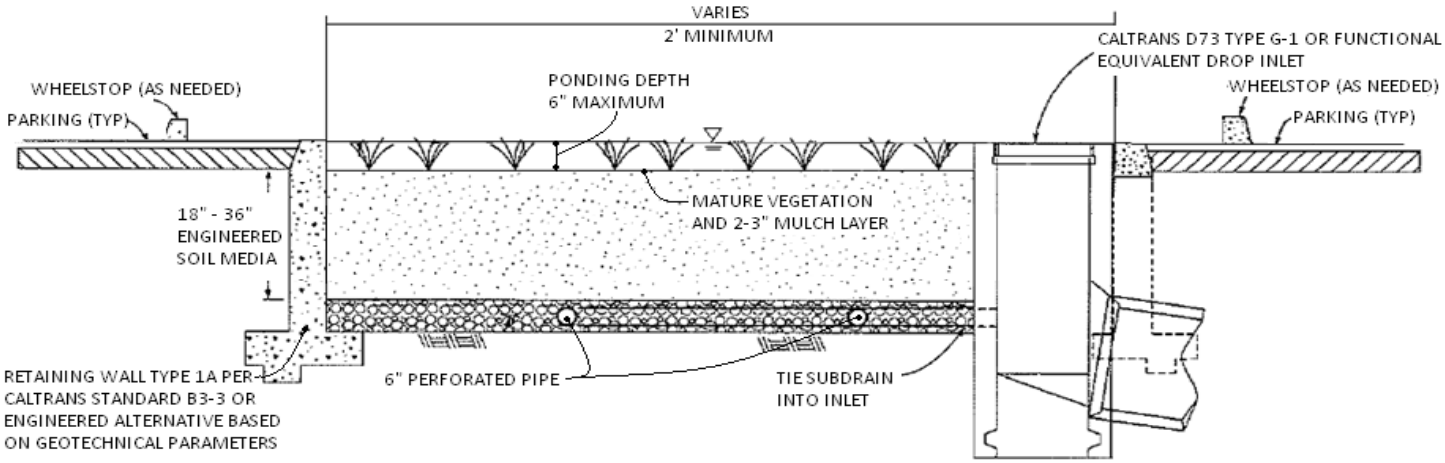
Bioretention Facilities Requiring Side Slopes

The design should assure that the Bioretention Facility does not present a tripping hazard. Bioretention Facilities proposed near pedestrian areas, such as areas parallel to parking spaces or along a walkway, must have a gentle slope to the bottom of the facility. Side slopes inside of a Bioretention Facility shall be 4:1. A typical cross section for the Bioretention Facility is shown in Figure 1.

Bioretention Facilities Not Requiring Side Slopes

Where cars park perpendicular to the Bioretention Facility, side slopes are not required. A 6-inch maximum drop may be used, and the Bioretention Facility must be planted with trees and shrubs to prevent pedestrian access. In this case, a curb is not placed around the Bioretention Facility,

but wheel stops shall be used to prevent vehicles from entering the Bioretention Facility, as shown in Figure 4.



Planter Boxes

Bioretention Facilities can also be placed above ground as planter boxes. Planter boxes must have a minimum width of 2 feet, a maximum surcharge depth of 6 inches, and no side slopes are necessary. Planter boxes must be constructed so as to ensure that the top surface of the engineered soil media will remain level. This option may be constructed of concrete, brick, stone or other stable materials that will not warp or bend. Chemically treated wood or galvanized steel, which has the ability to contaminate stormwater, should not be used. Planter boxes must be lined with an impermeable liner on all sides, including the bottom. Due to the impermeable liner, the inside bottom of the planter box shall be designed and constructed with a cross fall, directing treated flows within the subdrain layer toward the point where subdrain exits the planter box, and subdrains shall be oriented with drain holes oriented down. These provisions will help avoid excessive stagnant water within the gravel underdrain layer. Similar to the in-ground Bioretention Facility versions, this BMP benefits from healthy plants and biological activity in the root zone. Planter boxes should be planted with appropriately selected vegetation.

Figure 5: Planter Box
Source: LA Team Effort

Overflow

An overflow route is needed in the Bioretention Facility design to bypass stored runoff from storm events larger than V_{BMP} or in the event of facility or subdrain clogging. Overflow systems must connect to an acceptable discharge point, such as a downstream conveyance system as shown in Figure 1 and Figure 4. The inlet to the overflow structure shall be elevated inside the Bioretention Facility to be flush with the ponding surface for the design capture volume (V_{BMP}) as shown in Figure 4. This will allow the design capture volume to be fully treated by the Bioretention Facility, and for larger events to safely be conveyed to downstream systems. The overflow inlet shall **not** be located in the entrance of a Bioretention Facility, as shown in Figure 6.

Underdrain Gravel and Pipes

An underdrain gravel layer and pipes shall be provided in accordance with Appendix B – Underdrains.

Figure 6: Incorrect Placement of an Overflow Inlet.

Inspection and Maintenance Schedule

The Bioretention Facility area shall be inspected for erosion, dead vegetation, soggy soils, or standing water. The use of fertilizers and pesticides on the plants inside the Bioretention Facility should be minimized.

Schedule	Activity
Ongoing	• Keep adjacent landscape areas maintained. Remove clippings from landscape maintenance activities. • Remove trash and debris • Replace damaged grass and/or plants • Replace surface mulch layer as needed to maintain a 2-3 inch soil cover.
After storm events	• Inspect areas for ponding
Annually	• Inspect/clean inlets and outlets

Bioretention Facility Design Procedure

1) Enter the area tributary, A_T, to the Bioretention Facility.

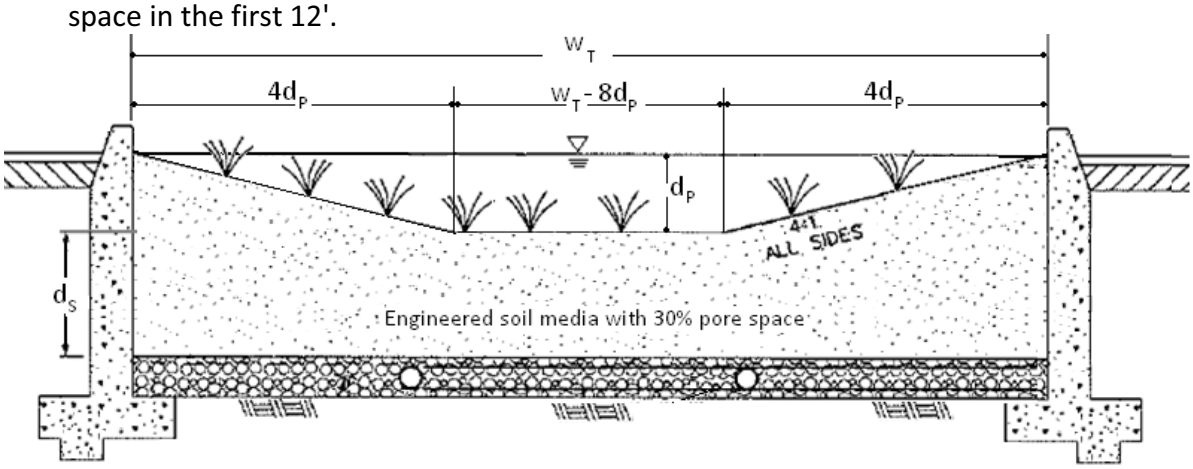
2) Enter the Design Volume, V_{BMP}, determined from Section 2.1 of this Handbook.

3) Select the type of design used. There are two types of Bioretention Facility designs: the standard design used for most project sites that include side slopes, and the modified design used when the BMP is located perpendicular to the parking spaces or with planter boxes that do not use side slopes.

4) Enter the depth of the engineered soil media, d_S. The minimum depth for the engineered soil media can be 18' in limited cases, but it is recommended to use 24' or a preferred 36' to provide an adequate root zone for the chosen plant palette. Engineered soil media deeper than 36' will only get credit for the pore space in the first 36'.

5) Enter the top width of the Bioretention Facility.

6) Calculate the total effective depth, d_E, within the Bioretention Facility. The maximum allowable pore space of the soil media is 30% while the maximum allowable pore space for the gravel layer is 40%. Gravel layer deeper than 12' will only get credit for the pore space in the first 12'.



a. For the design with side slopes the following equation shall be used to determine the total effective depth. Where, d_P is the depth of ponding within the basin.

$$d_E(\text{ft}) = \frac{0.3 \times \left[\left(w_T(\text{ft}) \times d_S(\text{ft})\right) + 4\left(d_P(\text{ft})\right)^2\right] + 0.4 \times 1(\text{ft}) + d_P(\text{ft})\left[4d_P(\text{ft}) + \left(w_T(\text{ft}) - 8d_P(\text{ft})\right)\right]}{w_T(\text{ft})}$$

This above equation can be simplified if the maximum ponding depth of 0.5' is used. The equation below is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$d_E(\text{ft}) = (0.3 \times d_S(\text{ft}) + 0.4 \text{ x } 1(\text{ft})) - \left(\frac{0.7\ (\text{ft}^2)}{w_T(\text{ft})}\right) + 0.5(\text{ft})$$

b. For the design without side slopes the following equation shall be used to determine the total effective depth:

$$d_E(\text{ft}) = d_P(\text{ft}) + [(0.3) \times d_S(\text{ft}) + (0.4) \times 1(\text{ft})]$$

The equation below, using the maximum ponding depth of 0.5', is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$d_E(\text{ft}) = 0.5\ (\text{ft}) + [(0.3) \times d_S(\text{ft}) + (0.4) \times 1(\text{ft})]$$

7) Calculate the minimum surface area, A_M, required for the Bioretention Facility. This does not include the curb surrounding the Bioretention Facility or side slopes.

$$A_M(\text{ft}^2) = \frac{V_{BMP}(\text{ft}^3)}{d_E\ (\text{ft})}$$

8) Enter the proposed surface area. This area shall not be less than the minimum required surface area.

9) Verify that side slopes are no steeper than 4:1 in the standard design, and are not required in the modified design.

10) Provide the diameter, minimum 6 inches, of the perforated underdrain used in the Bioretention Facility. See Appendix B for specific information regarding perforated pipes.

11) Provide the slope of the site around the Bioretention Facility, if used. The maximum slope is 3 percent for a standard design.

12) Provide the check dam spacing, if the site around the Bioretention Facility is sloped.

13) Describe the vegetation used within the Bioretention Facility.

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APPENDIX I

NOISE IMPACT ANALYSIS

NOISE IMPACT ANALYSIS

Sycamore Canyon Commercial
Sycamore Canyon Boulevard and Central Avenue
Riverside, California

Prepared For

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Job #B70816N3

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1.0 EXECUTIVE SUMMARY

The proposed project, Sycamore Canyon Commercial, includes the construction of a new commercial facility to include a gas station, car wash, convenience store, and one restaurant with drive-through services. The project site is located at the northeast corner of the intersection of Sycamore Canyon Boulevard and Central Avenue in the City of Riverside, California.

The purpose of this report is to assess noise impacts from the equipment associated with the proposed commercial facility, and to determine if mitigation is necessary and feasible to reduce project-related noise impacts to comply with applicable noise limits. Noise limits specified within the City of Riverside Municipal Code must be met at neighboring property lines.

Calculations show that, with the currently anticipated equipment, exterior noise levels generated at the project site are expected to comply with the applicable City of Riverside daytime and nighttime noise limits at the nearest noise-sensitive property lines. It should be noted that, in order to maintain compliant noise levels at off-site receivers, the car wash equipment must be selected such that the equipment generates a noise level of not greater than 84 dBA at a distance of 10 feet from the exit of the tunnel, which is a condition satisfied by the currently evaluated Mark VII car wash system. With the car wash equipment selected accordingly, noise impacts from all proposed noise-generating equipment at off-site receivers would be expected to be equal to or lesser than the projected noise impacts shown herein.

Additionally, the City of Riverside Municipal Code exempts noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided that said activities do not take place between the hours of 7 p.m. and 7 a.m. on weekdays, between the hours of 5 p.m. and 8 a.m. on Saturdays, or at any time on Sunday or a federal holiday. Provided construction activities take place during the permissible hours of operation, the project is anticipated to comply with the City of Riverside requirements.

2.0 INTRODUCTION

This acoustical analysis report is submitted to satisfy the noise requirements of the City of Riverside. Its purpose is to assess noise impacts from proposed project-related noise sources, and to determine if mitigation is necessary to reduce the noise impacts to be compliant with applicable limits.

All noise level or sound level values presented herein are expressed in terms of decibels (dB), with A-weighting, abbreviated "dBA," to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol “L_{EQ}.” Unless a different time period is specified, “L_{EQ}” is implied to mean a period of one hour. Some of the data may also be presented as octave-band-filtered and/or A-octave-band-filtered data, which are a series of sound spectra centered about each stated frequency, with half of the bandwidth above and half of the bandwidth below each stated frequency. This data is typically used for machinery noise analysis and barrier calculations.

Sound pressure is the actual noise experienced by a human or registered by a sound level instrument. When sound pressure is used to describe a noise source, the distance from the noise source must be specified in order to provide complete information. Sound power, on the other

hand, is a specialized analytical method to provide information without the distance requirement, but it may be used to calculate the sound pressure at any desired distance.

2.1 Project Description

The proposed project, Sycamore Canyon Commercial, includes the construction of a new commercial facility to include a gas station, car wash, convenience store, and one restaurant with drive-through services. The automatic car wash will be installed in a tunnel near the southeast corner of the property. The proposed automatic car wash with dryer unit is the primary focus of this analysis, although noise from proposed car wash vacuum units, HVAC equipment, and drive-through intercom systems has been evaluated as well. For purposes of this analysis, it is assumed that equipment on site may operate during the nighttime hours. For additional project details and equipment positioning, please refer to the project plans provided in Appendix A.

2.2 Project Location

The subject property is located at the northeast corner of the intersection of Sycamore Canyon Boulevard and Central Avenue in the City of Riverside, California. The site is currently vacant. For a graphical representation of the site, please refer to the Vicinity Map, Satellite Aerial Photograph, and Topographic Map provided as Figures 1 through 3, respectively.

2.3 Applicable Noise Standards

The noise regulations applicable to this project are contained within the City of Riverside Municipal Code, Title 7, which specifies noise limits based on the land use of the properties in question. The subject property will be a commercial land use after development. The nearest noise-sensitive properties are a park across Sycamore Canyon to the west, which is considered to be a recreational use, and residential properties to the south, beyond Central Avenue. All other surrounding area is either vacant or occupied by major roadways, such as Interstate 215/State Route 60, which is located immediately to the east of the property.

The City of Riverside Municipal Code states that exterior noise levels at properties zoned for residential use shall not exceed a noise level of 55 dBA between the hours of 7 a.m. and 10 p.m. and 45 dBA between the hours of 10 p.m. and 7 a.m. Noise impacts at public recreation facilities are allowable up to 65 dBA at any time. It should be noted, however, that the Municipal Code also states that, in the event that the measured ambient noise level exceeds allowable standards, the noise limit shall be increased in five-decibel increments to encompass the ambient noise level. Measured ambient noise levels detailed in Section 3.1 demonstrate that the minimum measured ambient noise level was 59.7 dBA during nighttime hours. As this noise level exceeds the applicable residential noise standards, the applicable nighttime noise limit has been increased to 60 dBA for residential properties, while the public recreation facility noise limit will remain at 65 dBA.

The City of Riverside Municipal Code exempts noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided that said activities do not take place between the hours of 7 p.m. and 7 a.m. on weekdays, between the hours of 5 p.m. and 8 a.m. on Saturdays, or at any time on Sunday or a federal holiday.

The City of Riverside Noise Element to the General Plan was also reviewed. The Noise Element does not contain specific noise limits for stationary noise sources, and is generally geared more towards the analysis of potential noise impacts on proposed project sites from off-site transportation

noise sources. The Noise Element states that stationary noise sources should be mitigated to meet the noise limits of the City or Riverside Noise Control Code (Chapter 7 of the Municipal Code), as referenced above.

Pertinent sections of the City of Riverside Municipal Code and Noise Element to the General Plan are provided as Appendix B.

3.0 ENVIRONMENTAL SETTING

3.1 Existing Noise Environment

An on-site inspection was conducted at 10:30 a.m. on Tuesday, August 29, 2017. The existing noise environment consists primarily of traffic traveling on surrounding roadways. A long-term ambient noise measurement was made near the southwest corner of the subject property. The microphone position was approximately 2.5 feet above the existing grade. The measured noise levels can be seen in Table 1.

Table 1. On-Site Measured Noise Levels

Date	Time	Noise Level (dBA)
August 29, 2017	11 a.m. – 12 p.m.	62.6
	12 p.m. – 1 p.m.	65.4
	1 p.m. – 2 p.m.	62.7
	2 p.m. – 3 p.m.	65.9
	3 p.m. – 4 p.m.	65.5
	4 p.m. – 5 p.m.	65.4
	5 p.m. – 6 p.m.	67.1
	6 p.m. – 7 p.m.	65.9
	7 p.m. – 8 p.m.	64.9
	8 p.m. – 9 p.m.	68.9
	9 p.m. – 10 p.m.	66.5
	10 p.m. – 11 p.m.	62.7
	11 p.m. – 12 a.m.	68.7
August 30, 2017	12 a.m. – 1 a.m.	60.1
	1 a.m. – 2 a.m.	62.7
	2 a.m. – 3 a.m.	59.7
	3 a.m. – 4 a.m.	61.9
	4 a.m. – 5 a.m.	62.5
	5 a.m. – 6 a.m.	65.1
	6 a.m. – 7 a.m.	67.7
	7 a.m. – 8 a.m.	66.8
	8 a.m. – 9 a.m.	66.2

Table 1. On-Site Measured Noise Levels		
Date	**Time**	**Noise Level (dBA)**
August 30, 2017	9 a.m. – 10 a.m.	66.9
	10 a.m. – 11 a.m.	63.6
	11 a.m. – 12 p.m.	63.5

As shown above, noise levels measured on site ranged from 59.7 dBA between the hours of 2 a.m. and 3 a.m. to 68.9 dBA between the hours of 8 p.m. and 9 p.m.

3.2 Future Noise Environment

The future noise environment in the vicinity of the project site will be primarily a result of the same roadway noise sources, as well as the noise generated by the proposed automatic car wash dryer and vacuum equipment, HVAC equipment operating on site, and drive-through intercom noise from the one restaurant on site.

The automatic car wash equipment is anticipated to be a Mark VII "rollover" car wash or a similar unit. As the dryer is the primary source of noise generation from an automatic car wash, product data from Mark VII has been used for this analysis. The dryer is anticipated to be the AquaDri E-20 20 hp or an equivalent. This dryer is an onboard dryer, meaning that the dryer is mobile, and moves over a stationary vehicle. Noise levels for this equipment were provided by the manufacturer as broadband, A-weighted noise levels of 84 dBA at 10 feet from the exit of the car wash tunnel, and 83 dBA at a distance of 10 feet from the entrance to the car wash tunnel. No octave band data has been given for the dryer, and therefore, octave band noise levels of a similar carwash with a mobile dryer have been used to estimate the spectral content of the AquaDri E-20 dryer. Noise levels are shown in Table 2, and manufacturer sheets are provided in Appendix C.

Table 2. Sound Pressure Level and Estimated Spectrum of Typical Car Wash Equipment									
Source	**Sound Pressure Level at Octave Band Frequency (dB)**								**Total (dBA)**
	63	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	
AquaDri E-20, at 10 feet from tunnel exit	76.8	80.8	77.7	78.2	79.3	77.4	74.9	71.7	84.0

The vacuum on site will be manufactured by J.E. Adams Industries (Model 8600) and is a dual motor, single vacuum. The proposed vacuum is expected to generate approximately 78.2 dBA at 10 feet from the unit. Octave band data has not been provided, and for this reason, this information has been estimated based on previous noise measurements of vacuums at similar car wash facilities. Noise data is shown in Table 3, and manufacturer information is provided in Appendix C.

Table 3. Sound Pressure Level & Estimated Spectrum of Vacuum, at 10 Feet from Source									
Source	**Sound Pressure Level at Octave Band Frequency (dBA)**								**Total (dBA)**
	63	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	
Vacuum	67.9	63.7	70.6	65.7	70.5	72.3	73.5	67.7	78.2

Typical assumptions were made regarding air conditioning units to be used on site based on the square footage of proposed buildings. It was assumed that the 3,200-square foot convenience store and the 3,800-square foot restaurant would each be serviced by units with a capacity of 7.5 tons. Both units were assumed to be roof-mounted for purposes of the noise model. As a specific make/model is unknown at this time, typical units manufactured by Carrier have been input into the noise model. Octave band sound power levels have been provided by the manufacturer and are shown in Table 4. Please refer to Appendix C for additional information.

Table 4. Sound Power Levels of Carrier 48PG Centurion Units

Source	Sound Power at Octave Band Frequency (dB)								Total (dBA)
	63	125	250	500	1K	2K	4K	8K	
48PG08 (7.5-ton)	91.7	83.6	81.0	77.9	75.0	69.9	66.0	59.3	80.0

The proposed drive-through intercom systems are expected to be manufactured by HME or a similar manufacturer. The HME Intercom System is measured to have a maximum noise level of 84 dBA at one foot from the speaker post. Although the proposed intercom system is available in a configuration that automatically adjusts its noise level based on the ambient noise conditions present on site, the maximum noise levels of the drive-through intercom systems will be input into the noise model, in order to reflect anticipated worst-case conditions. For further details on the HME intercom system, please refer to Appendix C: Manufacturer Data Sheets.

No other proposed equipment on site is anticipated to generate significant levels of noise.

4.0 METHODOLOGY AND EQUIPMENT

4.1 Methodology

Modeling of the outdoor noise environment is accomplished using Cadna Version 2018, which is an industry-standard, model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. Cadna (Computer Aided Noise Abatement) assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project information such as noise source data, barriers, structures, and topography to create a detailed model and uses the most up-to-date calculation standards to predict outdoor noise impacts. Noise standards used by Cadna that are particularly relevant to this analysis include ISO 9613 (Attenuation of sound during propagation outdoors). Cadna provides results that are in line with basic acoustical calculations for distance attenuation and barrier insertion loss. Further explanation may be provided upon request.

4.2 Measurement Equipment

The following equipment was used at the site to document site conditions and measure existing ambient noise levels (detailed in Section 3.1):

- Larson Davis Model 720 Type 2 Sound Level Meter, Serial # 0311
- Larson Davis Model CA150 Type 2 Calibrator, Serial # 2056
- Distance measurement wheel, digital camera

The sound level meter was field-calibrated immediately prior to the noise measurement and checked afterwards, to ensure accuracy. All sound level measurements conducted and presented in this report, in accordance with the regulations, were made with sound level meters that conform to the American National Standards Institute specifications for sound level meters (ANSI S1.4). All instruments are maintained with National Bureau of Standards traceable calibration, per the manufacturers' standards.

5.0 NOISE IMPACTS AND MITIGATION

5.1 Noise Impacts on Surrounding Properties

5.1.1 Operational Noise Impacts

Noise levels of the proposed equipment (including the proposed car wash, vacuums, HVAC equipment, and the drive-through intercoms) were calculated using Cadna at surrounding properties to the south and west. As there are no noise-sensitive receivers located at the sidewalk/street to the south and west, receivers have been calculated at the nearest noise-sensitive properties across Central Avenue and Sycamore Canyon Boulevard, respectively. All receivers were calculated at a height of five feet above grade, to account for the height of an average individual's ears above the ground. Calculations include the shielding that will be provided by the proposed on-site structures as well as the topography of the site and surrounding area.

In addition, appropriate duty cycles were applied to the car wash equipment operating on site. The total duration of a typical automatic car wash is approximately 5 minutes, from start to finish. Therefore, it was assumed that a maximum of 12 car washes would take place during any given hour. Typically, the dryer unit of an automatic car wash operates for one minute out of each cycle. For this reason, the dryer unit was evaluated assuming that it would be in use for one minute per car wash, for a maximum expected duty cycle of 12 minutes per hour. These scenarios are assumed to be a worst-case estimate of usage at the car wash. Vacuums, air conditioning equipment, and drive-through intercom systems have been evaluated as being operational during the entire hour.

Results of the analysis are shown in Table 5 below. Noise contours are shown in Figure 4. Additional information can be found in Appendix D: Cadna Analysis Data and Results.

Table 5. Calculated Commercial Facility Noise Impact Levels

Receiver Number	Receiver Location	Noise Limit (dBA)	Equipment Noise Level (dBA)
R-1	South Residential Property	60	45.8
R-2	West Property	65	46.8

As shown above, with the currently anticipated on-site equipment, noise levels generated at the project site are expected to comply with the most stringent applicable noise limits of the City of Riverside at the nearest residential and recreational properties. The calculated receivers represent the highest amount of noise exposure at off-site properties, and any other receivers are expected to have lesser noise impacts due to added distance attenuation. No additional project design features are deemed necessary to attenuate noise impacts.

As this analysis was conducted using typical assumptions regarding car wash equipment, it should be noted that the car wash equipment must be selected appropriately in order to maintain compliance. Provided the car wash dryer does not generate a noise level of greater than 84 dBA at a distance of 10 feet from the exit of the tunnel (a condition satisfied by the Mark VII rollover car wash with AquaDri E-20 dryer, as evaluated herein), noise impacts generated at off-site receivers are expected to be equal to or lesser than the noise impacts projected herein.

5.1.2 Temporary Construction Noise Impacts

The City of Riverside Municipal Code exempts noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided that said activities do not take place between the hours of 7 p.m. and 7 a.m. on weekdays, between the hours of 5 p.m. and 8 a.m. on Saturdays, or at any time on Sunday or a federal holiday.

5.2 Mitigation Measures

In order to comply with the applicable noise limits of the City of Riverside for permanent noise sources associated with the operation of the site, the following mitigation measure is required:

NOI-1 The car wash dryer must be selected so that it does not generate a noise level of greater than 84 dBA at a distance of 10 feet from the exit of the tunnel (a condition satisfied by the Mark VII rollover car wash with AquaDri E-20 dryer, as evaluated herein).

With the above mitigation measures in place, the project is expected to comply with all applicable City of Riverside noise regulations.

6.0 CONCLUSION

Calculations show that, with the currently anticipated equipment, exterior noise levels generated at the project site are expected to comply with the applicable City of Riverside daytime and nighttime noise limits at the nearest noise-sensitive property lines. It should be noted that, in order to maintain compliant noise levels at off-site receivers, the car wash equipment must be selected such that the equipment generates a noise level of not greater than 84 dBA at a distance of 10 feet from the exit of the tunnel, which is a condition satisfied by the currently evaluated Mark VII car wash system. With the car wash equipment selected accordingly, noise impacts at off-site receivers would be expected to be equal to or lesser than the projected noise impacts shown herein.

This analysis is based upon a current worst-case scenario of anticipated, typical equipment for this type of facility. Substitution of equipment with higher noise emission levels may invalidate the recommendations of this study. These conclusions and recommendations are based on the best and most current project-related information available at the time this study was prepared.

7.0 CERTIFICATION

This report is based on the related project information received and measured noise levels, and represents a true and factual analysis of the acoustical impact issues associated with the proposed Sycamore Canyon Commercial property, to be located at the northeast corner of Sycamore Canyon Boulevard and Central Avenue in the City of Riverside, California. This report was prepared by Amy Hool and Jonathan Brothers.

Amy Lynn Hool

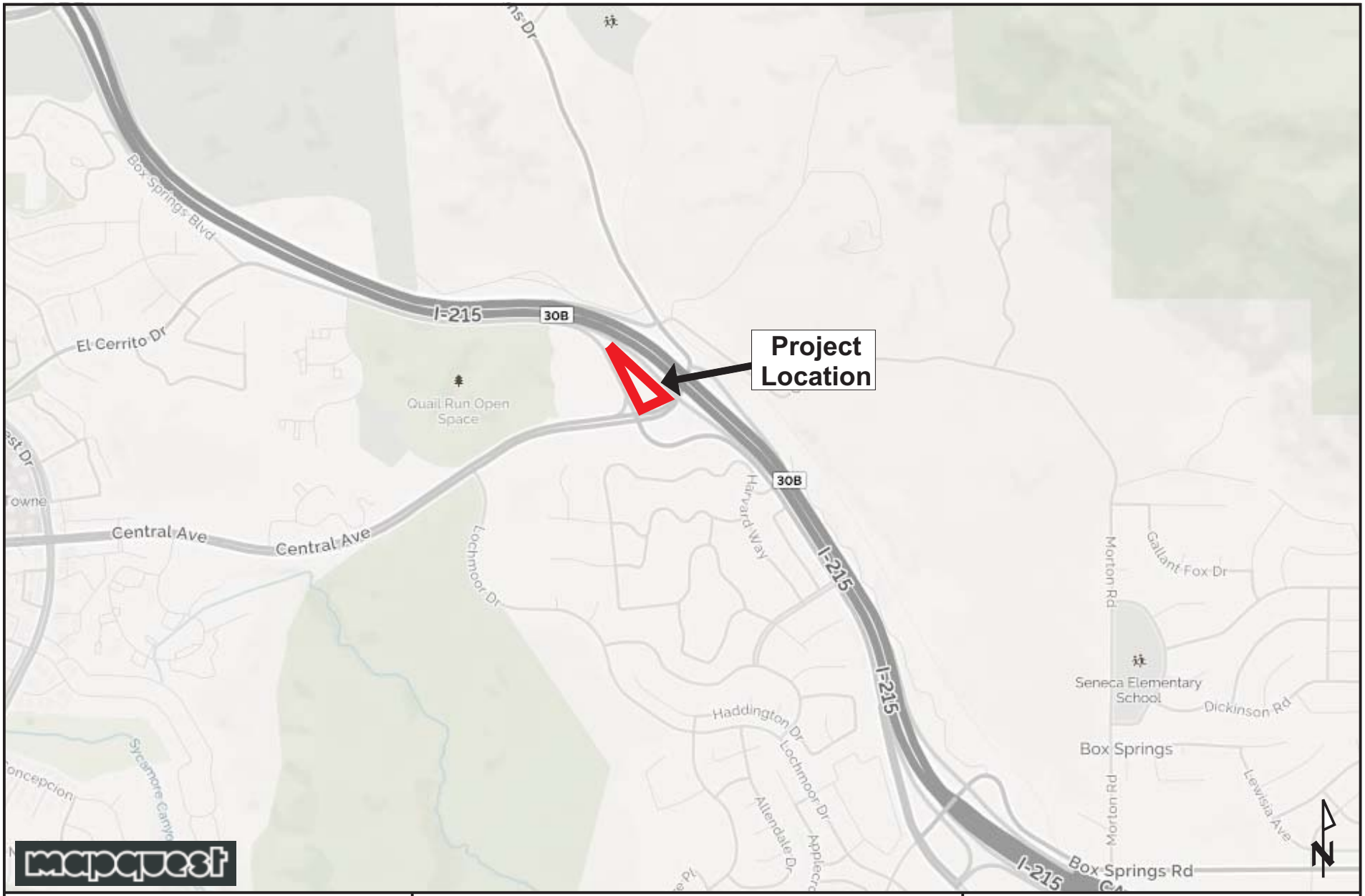
Amy Hool, Senior Acoustical Consultant

Jonathan Brothers, Principal Acoustical Consultant

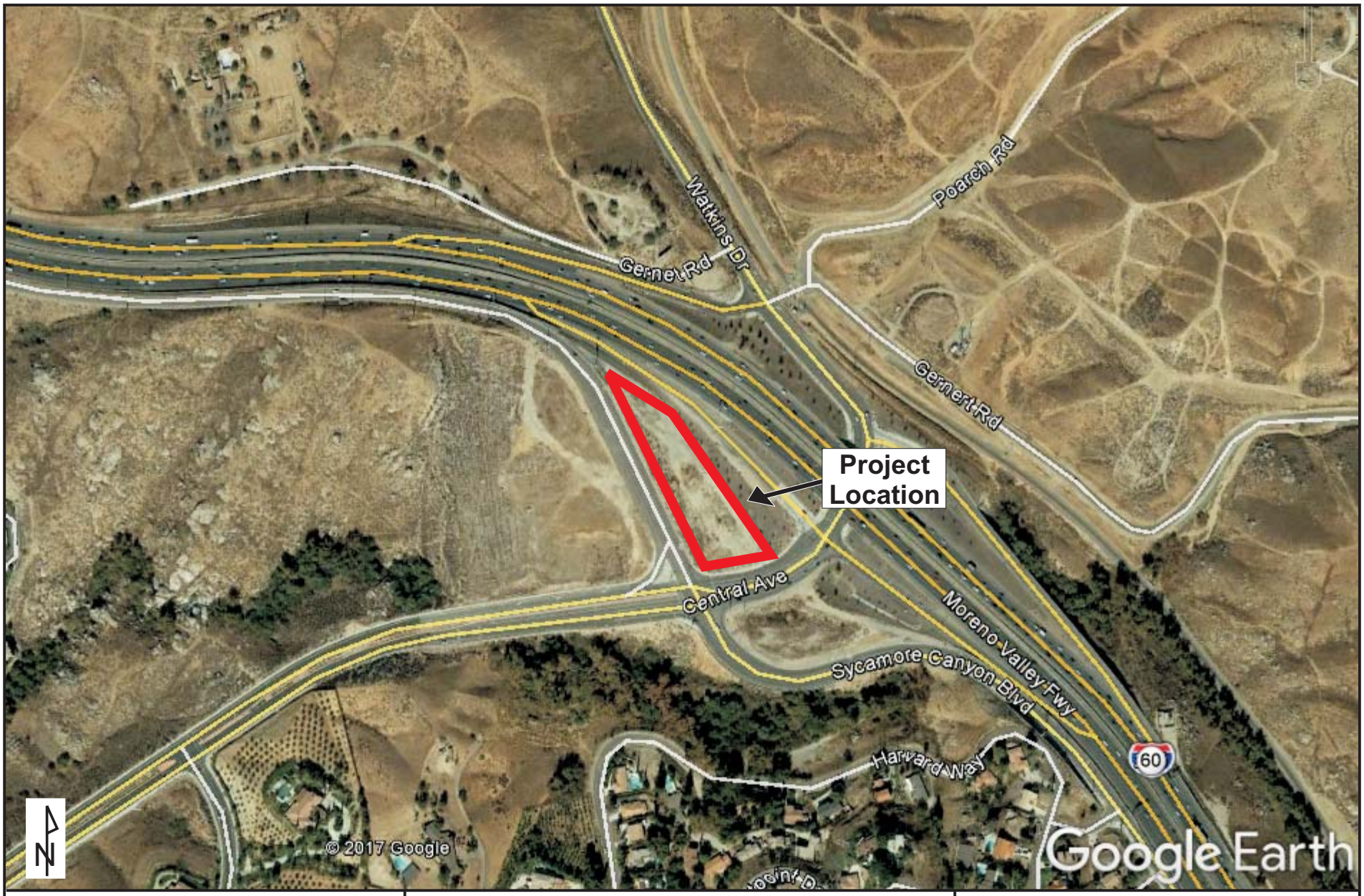
8.0 REFERENCES

1. City of Riverside Municipal Code, Title 7: Noise Control.
2. City of Riverside Noise Element to the General Plan 2025, Adopted November 2007.
3. DataKustik, CadnaA (Computer Aided Noise Abatement), Version 2018.

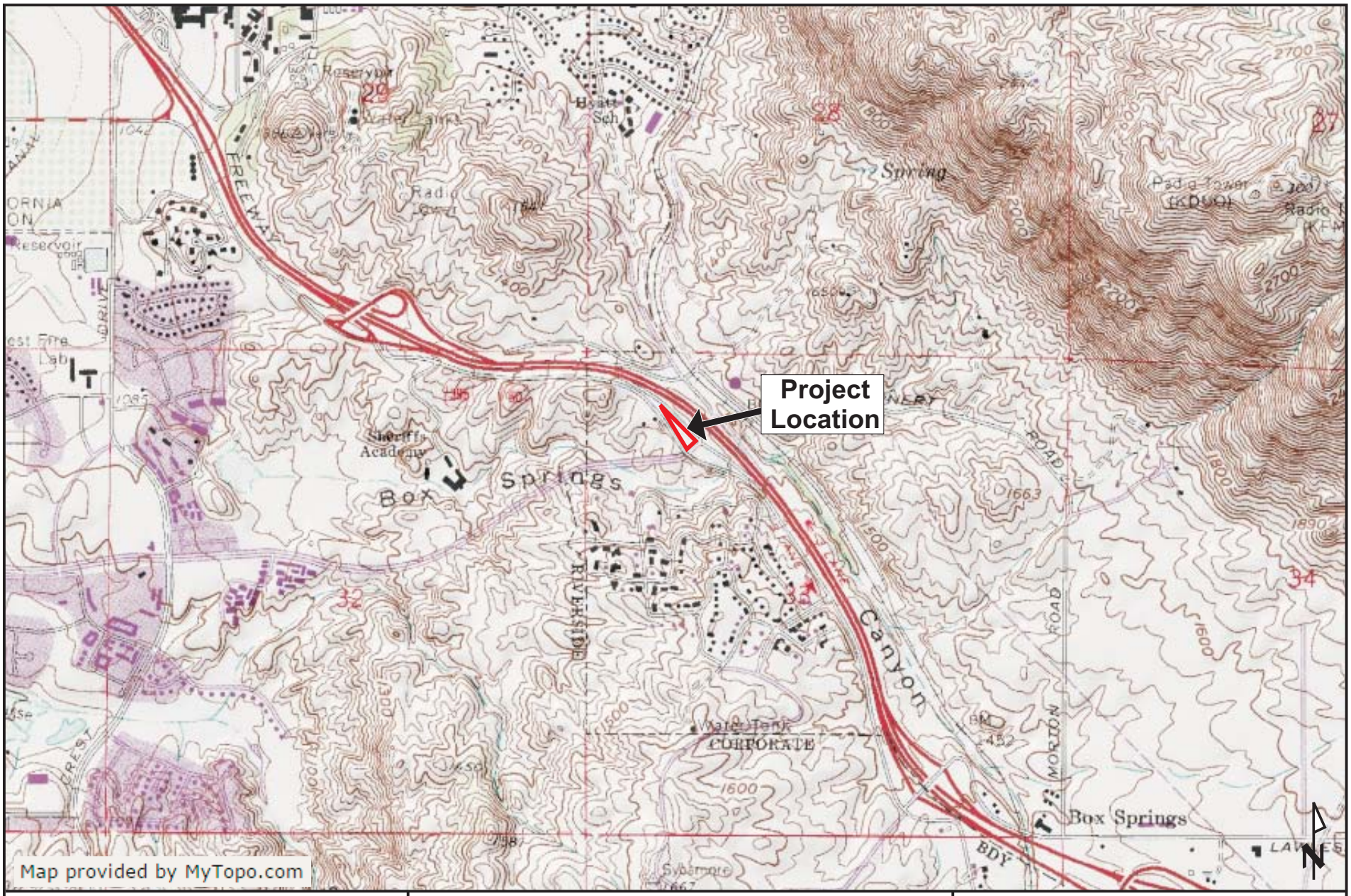
FIGURES



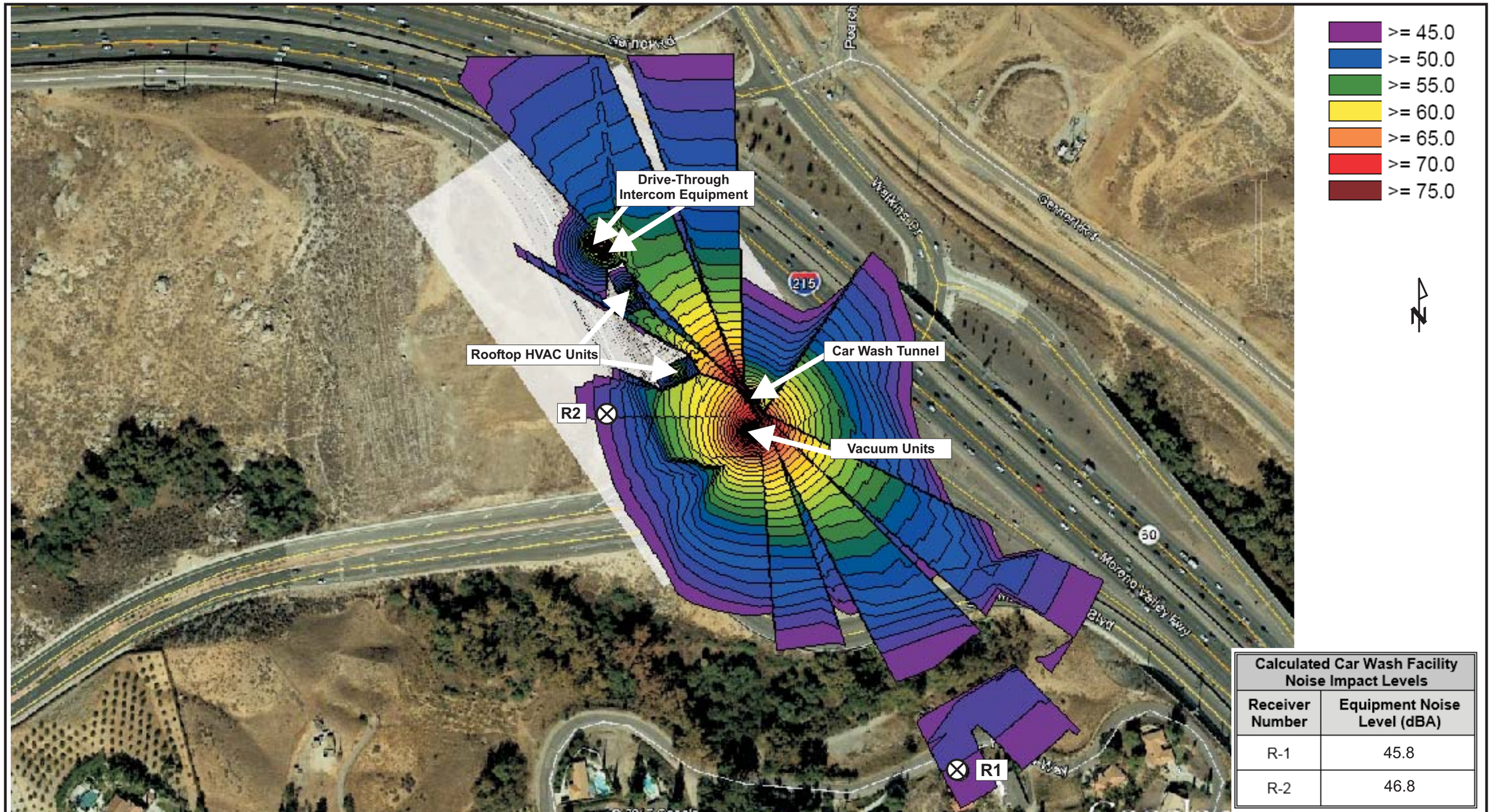
Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Vicinity Map** **Job # B70816N3**	**Figure 1**



Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570	Satellite Aerial Photograph Job # B70816N3	Figure 2



Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Topographic Map** **Job # B70816N3**	**Figure 3**



Calculated Car Wash Facility Noise Impact Levels	
Receiver Number	Equipment Noise Level (dBA)
R-1	45.8
R-2	46.8

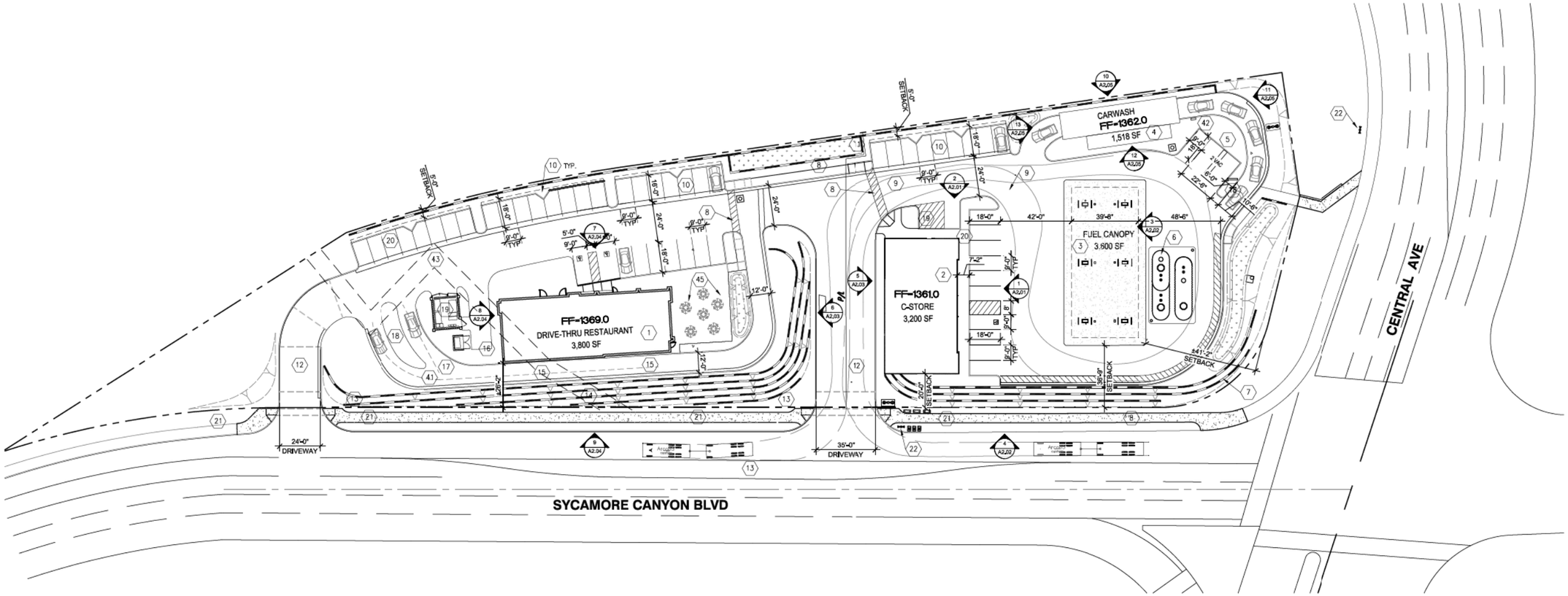
Eilar Associates, Inc.
210 South Juniper Street, Suite 100
Escondido, California 92025
760-738-5570

Satellite Aerial Photograph Showing Equipment Noise Contours and Receiver Locations
Job # B70816N3

Figure 4

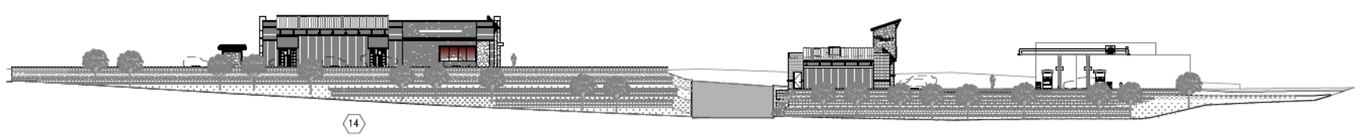
APPENDIX A

Project Plans



SITE PLAN

1" = 30'-0"



SITE ELEVATION

1" = 30'-0"

SETBACK TABLE

DEVLOPMENT STANDARD	CR
FRONT YARD SETBACK (MIN.)	0 FT.
SIDE YARD SETBACK (MIN.) INTERIOR SIDE STREET SIDE	 0 FT. 0 FT.
REAR YARD SETBACK (MIN.)	0 FT.

DEVELOPMENT SUMMARY

LOT AREA:

AREA OF PROPOSED SUMMARY STREET VACATION

AREA OF PROPOSED STREET VACATION

TOTAL LOT AREA:

PARCEL MAP:

LOT AREA FOR EACH PARCEL

SUMMARY OF EA. BLDG AND SQ. FT

C-STORE	3,200 SF
CANOPY	3,600 SF
FAST FOOD	3,800 SF
CAR WASH	1,518 SF
TOTAL	12,118 S.F.

FLOOR AREA RATIO: .12

TOTAL LANDSCAPE AREA: 10,762 S.F.

LANDSCAPE ANALYSIS

SITE:		95,559 SF	2.18 ACRES
BUILDINGS:			
	C-STORE	3,200 SF	
	CANOPY	3,600 SF	
	FAST FOOD	3,800 SF	
	CAR WASH	1,518 SF	
LOT COVERAGE :		11,800/95558	12.3%
LANDSCAPE AREA:		10,762 SF	11%

PARKING ANALYSIS

PARKING SPACES REQUIREMENTS PER RIVERSIDE ZONING ORDINANCE TABLE 19-580-060:

VEHICLE FUELING STATION W/ CONVENIENCE STORE: 1 SPACE/250 SF OF RETAIL AREA INCLUDING COOLER AREAS
3,200 SF / 250 = 13 SPACES

STAND ALONE FAST FOOD DRIVE THRU:
1 SPACE/100 SF OF FLOOR AREA
3,800 SF / 100 = 38 SPACES

FULL SERVICE AUTOMATED CARWASH:
1 SPACE/2 EMPLOYEES OF LARGEST SHIFT
1,518 SF = 1 SPACES

PARKING SPACES REQUIRED: 52 SPACES
PARKING SPACES PROVIDED: 54 SPACES

KEYED NOTES

1. DRIVE-THRU RESTAURANT – 3,800 sf. ALL ROOF MNTD EQUIP SHALL BE FULLY SCREENED FROM VIEW. BLDG ELEVS HAVE WELL MODULATED PLANES & ARTICULATED FACADES, ARTICULATED ROOF LINES, AND MULTIPLE EXTERIOR MATERIALS. (TYPICAL)
2. C-STORE – 3,200 sf. ALL ROOF MNTD EQUIP SHALL BE FULLY SCREENED FROM VIEW, TOWER PROJECTIONS SHALL BE FINISHED ON ALL FOUR SIDES
3. 6 MULTI PRODUCT DISPENSERS (MPD's) W/ 90'x40' CANOPY – 3,600 sf
4. CAR WASH AND EQUIPMENT ROOM BUILDING – 1,199 sf – SELF SERVE
5. VACCUUMS – 2 SPACES
6. UNDERGROUND STORAGE TANKS –
7. CORNER ID SIGN FOR THE CENTER – INTERSECTION AS GATEWAY INTO THE CITY OF RIVERSIDE. AN ATTTRACTIVE AND DYNAMIC ENTRANCE FEATURE SHALL BE PROVIDED ALONG THE PROJECTS STREET FRONTAGES
8. PEDESTRIAN SITE ACCESS SHALL BE PROVIDED NEAR THE INTERSECTION. PEDESTRIAN CONNECTIONS SHALL BE PROVIDED BETWEEN ALL USES ON-SITE
9. 20' WIDE TRUCK TURNING TEMPLATE – FOR FUEL TRUCKS, FIRE TRUCKS AND TRASH TRUCKS
10. PARKING LOT LANDSCAPE DIAMONDS SHALL BE PROVIDED EVERY 4 PARKING SPACES. AVOID USE OF LIGHT POLES IN DIAMONDS. LANDSCAPE FINGERS BETWEEN PARKING SPACES SHALL BE PROVIDED WHERE FEASIBLE
11. LANDSCAPE SETBACK ALONG FREEWAY ROW
12. DECORATIVE PROJECT ENTRANCE PAVING
13. MONUMENT SIGN – PER RIVERSIDE ZONING ORDINANCE TABLE 19-620.
14. STREET TREES TO ENHANCE DRIVE-THRU SCREENING
15. DRIVE-THRU WINDOWS – SCREENED WITH ARCHITECTURAL ELEMENTS – SEE ELEVATIONS
16. LOADING ZONE– PER RIVERSIDE ZONING ORDINANCE 19-580.
17. DRIVE-THRU LANES – DRIVE-THRU LANES SHALL BE SCREENED FROM VIEW THRU ELEV GRADE DIFFERENCES, LANDSCAPING ARBORS TRELLISES TO REDUCE VISUAL PRESENCE OF DRIVE-THRU OPS
18. MENU BOARDS FOR DRIVE-THRU RESTAURANT AND CAR WASH
19. TRASH ENCLOSURE
20. FREEWAY SIGN – FREEWAY SIGNAGE SHALL COMPLY WITH STDS TABLE 19.620.080.C. OF RIVERSIDE MUNICIPAL CODE
21. OFF-SITE IMPROVEMENTS WITHIN 100 FEET OF SITE
22. NEW FIRE HYDRANT
41. 180' OF VEHICULAR STACKING FROM MENU BD TO PU WINDOW
42. CAR WASH PAY STATION
43. EASEMENT TO BE VACATED – SEE CIVIL
45. OUTDOOR SEATING AREA
46. GROUND-MOUNTED UTILITY EQUIPMENT SUCH AS, BUT NOT LIMITED TO, ELECTRIC POWER TRANSFORMERS AND DISTRIBUTION FACILITIES, WATER PUMPS, CABLE TELEVISION BOXES, AND TELECOMMUNICATIONS FACILITIES (NOT INCLUDING POLE-MOUNTED EQUIPMENT) SHALL BE SCREENED FROM VIEW ON ALL SIDES WITH SOLID MASONRY WALLS OR SIMILAR PERMANENT STRUCTURES.

No.	Date	By	Ckd.	Appr.	Revision

Title:

KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA

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18447 SD1.01

APPENDIX B

Pertinent Sections of the City of Riverside Municipal Code and Noise Element to the General Plan

Title 7

NOISE CONTROL

Chapters:

7.05	**POLICY AND INTENT**
7.10	**DEFINITIONS**
7.15	**ADMINISTRATION AND ENFORCEMENT**
7.20	**SOUND LEVEL MEASUREMENT**
7.23	**AMBIENT NOISE LEVELS**
7.25	**NUISANCE EXTERIOR SOUND LEVEL LIMITS**
7.30	**NUISANCE INTERIOR SOUND LEVEL LIMITS**
7.35	**GENERAL NOISE REGULATIONS**
7.40	**VARIANCE PROCEDURE**
7.45	**SEVERABILITY**

Chapter 7.05

POLICY AND INTENT

Sections:

7.05.010 Policy and intent.

Section 7.05.010 Policy and intent.

It is determined that certain noise levels are detrimental to the public health, safety and welfare and are contrary to the public interest. Therefore, the City Council declares that creating, maintaining, causing or allowing to create, maintain or cause any noise in a manner not in conformity with the provisions of this chapter, is a public nuisance and shall be punishable as such.

In order to control unnecessary, excessive and/or annoying noise in the City, it is declared to be the policy of the City to prohibit such noise generated by the sources specified in this chapter. It shall be the goal of the City to minimize noise levels and mitigate the effects of noise to provide a safe and healthy living environment. (Ord. 6273 § 1 (part), 1996)

Chapter 7.10

DEFINITIONS

Sections:

7.10.010 Definitions generally.
7.10.015 A-weighted sound level.
7.10.020 Agricultural property.
7.10.025 Ambient noise level.
7.10.030 Commercial purpose.
7.10.035 Construction.
7.10.040 Community support land use category.
7.10.045 Cumulative period.
7.10.050 Decibel (dB).
7.10.055 Demolition.
7.10.060 Emergency.
7.10.065 Emergency work.
7.10.070 Fixed noise source.
7.10.075 Grading.
7.10.080 Impulsive sound.
7.10.085 Industrial land use category.
7.10.090 Intrusive noise.
7.10.095 Minor maintenance.
7.10.100 Mobile noise source.
7.10.105 Motor vehicle.
7.10.110 Muffler or sound dissapative device.
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7.10.140 Nonurban land use category.
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7.10.165 Public right-of-way.
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7.10.180 Sound.
7.10.185 Sound amplifying equipment.
7.10.190 Sound level.
7.10.195 Sound level meter.
7.10.200 Sound pressure.
7.10.205 Sound pressure level.
7.10.210 Supplementary definitions of technical terms.

Section 7.10.010 Definitions generally.

For the purposes of this title, the words and phrases defined in this chapter shall have the meanings respectively ascribed to them by this chapter. (Ord. 6273 § 1 (part), 1996)

Section 7.10.015 A-weighted sound level.

"A-weighted sound level" means the sound pressure level in decibels as measured on a sound level meter using the A-weighing network. The level is designated dB(A) or dBA. (Ord. 6273 § 1 (part), 1996)

Section 7.10.020 Agricultural property.

"Agricultural property" means a parcel of real property which is developed for agricultural and incidental residential purposes which is located within any permitted zone. (Ord. 6273 § 1 (part), 1996)

Section 7.10.025 Ambient noise level.

"Ambient noise level" means the all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding an alleged offensive noise, at the location and approximate time at which the comparison with the offensive noise is to be made. The ambient noise level constitutes the normal or existing level of environmental noise at a given location. (Ord. 6273 § 1 (part), 1996)

Section 7.10.030 Commercial purpose.

"Commercial purpose" means the use, operation or maintenance of any sound amplification equipment for the purpose of advertising any business, goods or services, or for the purposes of attracting the attention of the public, or soliciting patronage of customers to any performance, show, entertainment, exhibition or event, or for the purpose of demonstrating such sound equipment. (Ord. 6273 § 1 (part), 1996)

Section 7.10.035 Construction.

"Construction" means any site preparation including grading, building, fabricating, assembly, substantial repair, alteration, or similar action. (Ord. 6273 § 1 (part), 1996)

Section 7.10.040 Community support land use category.

"Community support land use category" means areas developed with schools, libraries, fire stations, hospitals and similar uses in any zone. (Ord. 6273 § 1 (part), 1996)

Section 7.10.045 Cumulative period.

"Cumulative period" means a total period of time composed of time segments which may be continuous or discontinuous. (Ord. 6273 § 1 (part), 1996)

Section 7.10.050 Decibel (dB).

"Decibel (dB)" means a unit for measuring amplitude of a sound, equal to twenty times the logarithm to the base ten of the ratio of the pressure of the sound measured to the reference pressure, which is twenty micropascals (twenty micronewtons per square meter). (Ord. 6273 § 1 (part), 1996)

Section 7.10.055 Demolition.

"Demolition" means any dismantling, intentional destruction or removal of structures, site

improvements, landscaping or utilities. (Ord. 6273 § 1 (part), 1996)

Section 7.10.060 Emergency.

"Emergency" means any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demands immediate action. (Ord. 6273 § 1 (part), 1996)

Section 7.10.065 Emergency work.

"Emergency work" means work made necessary to restore property to a safe condition following a physical trauma or property damage caused by an emergency or work necessary to prevent or minimize damage from a potential emergency. (Ord. 6273 § 1 (part), 1996)

Section 7.10.070 Fixed noise source.

"Fixed noise source" means a stationary device which creates sounds from a fixed location, including residential, agricultural, industrial and commercial machinery and equipment, pumps fans, compressors, air conditioners and refrigeration devices. (Ord. 6273 § 1 (part), 1996)

Section 7.10.075 Grading.

"Grading" means any excavating and/or filling of earth material to prepare a site for construction or the placement of improvements. (Ord. 6273 § 1 (part), 1996)

Section 7.10.080 Impulsive sound.

"Impulsive sound" means sound of short duration, usually less than one second, with an abrupt onset and rapid decay. Examples include explosions, drum beats, drop-forge impacts, fire crackers, discharge of firearms and one object striking another. (Ord. 6273 § 1 (part), 1996)

Section 7.10.085 Industrial land use category.

"Industrial land use category" means any area occupied by land uses whose primary operation involves warehousing, manufacturing, assembling, distributing, packaging or processing goods in the BMP, I, and AIR zones. (Ord. 6967 § 2, 2007; (Ord. 6273 § 1 (part), 1996)

Section 7.10.090 Intrusive noise.

"Intrusive noise" means a noise which intrudes over and above the existing ambient noise. The relative intrusiveness of the sound depends upon its amplitude, duration, frequency and time of occurrence, tonal or informational content as well as its relationship to the prevailing ambient noise level. (Ord. 6273 § 1 (part), 1996)

Section 7.10.095 Minor maintenance.

"Minor maintenance" means work required to keep property used for residential purposes in an existing state. (Ord. 6273 § 1 (part), 1996)

Section 7.10.100 Mobile noise source.

"Mobile noise source" means any noise source other than a fixed noise source. (Ord. 6273 § 1 (part), 1996)

Section 7.10.105 Motor vehicle.

"Motor vehicle" means any self-propelled vehicle as defined in the California Vehicle Code, including all on-highway types of motor vehicles subject to registration under said code, and all off-highway type motor vehicles subject to identification under said code. (Ord. 6273 § 1 (part), 1996)

Section 7.10.110 Muffler or sound dissapative device.

"Muffler or sound dissapative device" means a device for abating the sound of escaping gases from an internal combustion engine. (Ord. 6273 § 1 (part), 1996)

Section 7.10.115 Noise.

"Noise" means any sound which exceeds the appropriate actual or presumed ambient noise level or which annoys or tends to disturb humans or which causes or tends to cause an adverse psychological or physiological effect on humans. (Ord. 6273 § 1 (part), 1996)

Section 7.10.120 Noise Control Officer.

"Noise Control Officer" means the City official(s) or duly authorized representative(s) with the responsibility to enforce the noise ordinance. (Ord. 6273 § 1 (part), 1996)

Section 7.10.125 Noise disturbance.

"Noise disturbance" means any sound which endangers or injures the safety or health of humans or animals, or annoys or disturbs a reasonable person of normal sensitivities or endangers or injures personal or real property. (Ord. 6273 § 1 (part), 1996)

Section 7.10.130 Noise source.

"Noise source" means a disturbance causing operation which originates from noise generating mechanism. An example of a noise source is the combination of a motor, pump and compressor. (Ord. 6273 § 1 (part), 1996)

Section 7.10.135 Noise zone.

"Noise zone" means defined areas of generally consistent land use where the ambient noise levels are generally similar within a range of five decibels. (Ord. 6273 § 1 (part), 1996)

Section 7.10.140 Nonurban land use category.

"Nonurban land use category" means vacant land or land primarily for agricultural production containing ten acres or more. (Ord. 6273 § 1 (part), 1996)

Section 7.10.145 Office/commercial land use category.

"Office/commercial land use category" means areas developed with office and/or commercial uses in the O, CRC, CR-NC, CR, and CG zones. (Ord. 6967 § 2, 2007; Ord. 6273 § 1 (part), 1996)

Section 7.10.150 Person.

"Person" means any individual, association, partnership or corporation and includes any officer, employee, department, agency or instrumentality of a State or any political subdivision of a State. (Ord. 6273 § 1 (part), 1996)

Section 7.10.155 Powered model vehicle.

"Powered model vehicle" means airborne, waterborne or land-borne vehicles such as model airplanes, model boats, and model vehicles of any type or size which are not designed for carrying persons or property and which can be propelled in any form other than manpower or wind power. (Ord. 6273 § 1 (part), 1996)

Section 7.10.160 Public recreation facility land use category.

"Public recreation facility land use category" means areas developed with public parks and other public recreational facilities. (Ord. 6273 § 1 (part), 1996)

Section 7.10.165 Public right-of-way.

"Public right-of-way" means any street, avenue, boulevard, highway, sidewalk or alley or similar place which is owned or controlled by a government entity. (Ord. 6273 § 1 (part), 1996)

Section 7.10.170 Public space.

"Public space" means any real property or structures which are owned or controlled by a government entity. (Ord. 6273 § 1 (part), 1996)

Section 7.10.175 Residential land use category.

"Residential land use category" means areas primarily used for residential purposes in the RE, RA-5, RR, RC, R-1-1-1/2 acre, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-2500, R-3-4000, R-3-3000, R-3-2000, R-3-1500, and R-4 zones. (Ord. 6967 § 2, 2007; Ord. 6273 § 1 (part), 1996)

Section 7.10.180 Sound.

"Sound" means an oscillation in pressure, particle displacement, particle velocity or other physical parameter, in a medium with internal forces that causes compression and rarefaction of that medium. The description of sound may include any characteristic of such sound, including duration, intensity and frequency. (Ord. 6273 § 1 (part), 1996)

Section 7.10.185 Sound amplifying equipment.

"Sound amplifying equipment" means any device for the amplification of the human voice, or music, or any other sound, excluding devices in motor vehicles when heard only by the occupants of the vehicle, excluding warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes. (Ord. 6273 § 1 (part), 1996)

Section 7.10.190 Sound level.

"Sound level" means the weighted sound pressure level obtained by the use of a sound level meter and frequency weighing network, such as A, B or C, as specified in American National Standards Institute specifications for sound level meter ANSI S1.4-1971 or the latest approved revision thereof. If the frequency weighing method used is not stated, the A-weighing shall apply. (Ord. 6273 § 1 (part), 1996)

Section 7.10.195 Sound level meter.

"Sound level meter" means an instrument, including a microphone, an amplifier, an output meter, and frequency weighing networks for the measurement of sound levels which satisfies the requirements for S2A meters in American National Standards Institute

specifications for sound level meters, S1.4-1971, or the most recent revision thereof. (Ord. 6273 § 1 (part), 1996)

Section 7.10.200 Sound pressure.

"Sound pressure" means the instantaneous difference between the actual pressure and the average or barometric pressure at a given point in space, as produced by sound energy. (Ord. 6273 § 1 (part), 1996)

Section 7.10.205 Sound pressure level.

"Sound pressure level" in decibels means twenty times the logarithm to the base ten of the ratio of the pressure of this sound to the reference pressure, which reference pressure shall be explicitly stated. (Ord. 6273 § 1 (part), 1996)

Section 7.10.210 Supplementary definitions of technical terms.

Definitions of technical terms not defined herein shall be obtained from the American National Standard, "Acoustical Terminology" S1.1-1961 (R-1971) or the latest revision thereof. (Ord. 6273 § 1 (part), 1996)

Chapter 7.15

ADMINISTRATION AND ENFORCEMENT

Section:

7.15.005 Administration and enforcement.

Section 7.15.005 Administration and enforcement.

A. The noise regulation shall be enforced by the Code Enforcement Division of the Community Development Department and/or the Riverside Police Department.

B. It shall be the responsibility of the Code Enforcement Division and/or the Riverside Police Department to enforce the provisions of this Title and to perform all other functions required by this Title. Such duties shall include, but not be limited to investigating potential violations, issuing warning notices and citations, and providing evidence to the City Attorney for legal action.

C. A violation of these regulations may be prosecuted as a misdemeanor or as an infraction. Each day a violation occurs shall constitute a separate offense and shall be punishable as such. However, nothing in these regulations shall prevent any code compliance officer or his duly authorized representatives from efforts to obtain voluntary compliance by way of warning, notice or education. (Ord. 6959 § 1, 2007; Ord. 6844 § 15, 2006; Ord. 6273 § 1 (part), 1996)

Chapter 7.20

SOUND LEVEL MEASUREMENT

Section:

7.20.010 Sound level measurement.

Section 7.20.010 Sound level measurement.

Except as provided by Chapter 17.35, General Noise Regulations, any sound or noise level measurement made to enforce this title shall be measured with a sound level meter using the A-weighing scale at slow response. The exterior noise level shall be measured at the position or positions along the complainant's property line closest to the noise source or where the noise level is highest. If the complaint concerns an interior source, noise measurements shall be made at a point at least four feet from the wall, ceiling or floor nearest the noise source with windows opened or closed as would be normal for the season. (Ord. 6273 § 1 (part), 1996)

Chapter 7.23

AMBIENT NOISE LEVELS

Sections:

7.23.010 Ambient Sound Levels.
7.23.020 Mixed Use Development.
7.23.030 Infill Single-Family Residential Development.

Section 7.23.010 Ambient Sound Levels.

Title 7 - Noise Control of the Riverside Municipal Code shall be consistent with Title 24 of the Health and Safety Code of the State of California as may be amended from time to time. (Ord. 6967 § 3, 2007)

Section 7.23.020 Mixed Use Development.

Where a new development proposal includes a mix of residential and nonresidential uses within the same project, the interior ambient noise standard for the residential component of the project may be increased by 5 decibels. (Ord. 6967 § 3, 2007)

Section 7.23.030 Infill Single-Family Residential Development.

Where a new development proposal includes an infill single-family residential use, the interior ambient noise standard for the proposal may be increased by 5 decibels. (Ord. 6967 § 3, 2007)

Chapter 7.25

NUISANCE EXTERIOR SOUND LEVEL LIMITS

Section:

7.25.010 Exterior sound level limits.

Section 7.25.010 Exterior sound level limits.

A. Unless a variance has been granted as provided in this chapter, it shall be unlawful for any person to cause or allow the creation of any noise which exceeds the following:

1. The exterior noise standard of the applicable land use category, up to five decibels, for a cumulative period of more than thirty minutes in any hour; or

2. The exterior noise standard of the applicable land use category, plus five decibels, for a cumulative period of more than fifteen minutes in any hour; or

3. The exterior noise standard of the applicable land use category, plus ten decibels, for a cumulative period of more than five minutes in any hour; or

4. The exterior noise standard of the applicable land use category, plus fifteen decibels, for the cumulative period of more than one minute in any hour; or

5. The exterior noise standard for the applicable land use category, plus twenty decibels or the maximum measured ambient noise level, for any period of time.

B. If the measured ambient noise level exceeds that permissible within any of the first four noise limit categories, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to encompass the ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

C. If possible, the ambient noise level shall be measured at the same location along the property line with the alleged offending noise source inoperative. If for any reason the alleged offending noise source cannot be shut down, then the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance that the offending noise is inaudible. If the measurement location is on the boundary between two different districts, the noise shall be the arithmetic mean of the two districts.

D. Where the intruding noise source is an air-conditioning unit or refrigeration system which was installed prior to the effective date of this chapter, the exterior noise level when measured at the property line shall not exceed sixty dBA for units installed before 1-1-80 and fifty-five dBA for units installed after 1-1-80.

Table 7.25.010A

Exterior Noise Standards		
Land Use Category	**Time Period**	**Noise Level**
Residential	Night (10 p.m. to 7 a.m.) Day (7 a.m. to 10 p.m.)	45 dBA 55 dBA
Office/commercial	Any time	65 dBA
Industrial	Any time	70 dBA
Community support	Any time	60 dBA
Public recreation facility	Any time	65 dBA
Nonurban	Any time	70 dBA

Table 7.25.010B

Land Use Category/Zoning Matrix	
Land Use Category	**Underlying Zone**
Residential	RE, RA-5, RR, RC, R-1-1/2 acre, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-2500, R-3-4000, R-3-3000, R-3-2000, R-3-1500, R-4
Office/commercial	O, CRC, CR-NC, CR, CG
Industrial	BMP, I, AIR
Community support	Any permitted zone
Nonurban	Any permitted zone

(Ord. 6967 § 5, 2007; Ord. 6273 § 1 (part), 1996)

Chapter 7.30

NUISANCE INTERIOR SOUND LEVEL LIMITS

Section:

7.30.015 Interior sound level limits.

Section 7.30.015 Interior sound level limits.

A. No person shall operate or cause to be operated, any source of sound indoors which causes the noise level, when measured inside another dwelling unit, school or hospital, to exceed:

1. The interior noise standard for the applicable land category area, up to five decibels, for a cumulative period of more than five minutes in any hour;

2. The interior noise standard for the applicable land use category, plus five decibels, for a cumulative period of more than one minute in any hour;

3. The interior noise standard for the applicable land use category, plus ten decibels or the maximum measured ambient noise level, for any period of time.

B. If the measured interior ambient noise level exceeds that permissible within the first two noise limit categories in this section, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to reflect the interior ambient noise level. In the event the interior ambient noise level exceeds the third noise limit category, the maximum allowable interior noise level under said category shall be increased to reflect the maximum interior ambient noise level.

C. The interior noise standard for various land use districts shall apply, unless otherwise specifically indicated, within structures located in designated zones with windows opened or closed as is typical of the season.

Table 7.30.015

Interior Noise Standard		
Land Use Category	**Time Period**	**Noise Level**
Residential	Night (10 p.m. C 7 a.m.) Day (7 a.m. C 10 p.m.)	35 dBA 45 dBA
School	7 a.m. C 10 p.m. (while school is in session)	45 dBA
Hospital	Any time	45 dBA

(Ord. 6273 § 1 (part), 1996)

Chapter 7.35

GENERAL NOISE REGULATIONS

Sections:

7.35.010 General noise regulations.
7.35.020 Exemptions.

Section 7.35.010 General noise regulations.

A. Notwithstanding the sound level meter standards described in this ordinance, it is nonetheless unlawful for any person to make, continue, or cause to be made or continued any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity. The factors which should be considered in determining whether a violation of this section exists, include the following:

1. The sound level of the objectionable noise.
2. The sound level of the ambient noise.
3. The proximity of the noise to residential sleeping facilities.
4. The zoning of the area.
5. The population density of the area.
6. The time of day or night.
7. The duration of the noise.
8. Whether the noise is recurrent, intermittent, or constant.
9. Whether the noise is produced by a commercial or noncommercial activity.
10. Whether the nature of the noise is usual or unusual.
11. Whether the noise is natural or unnatural.

B. It is unlawful for any person to make, continue, or cause to be made or continued any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity. The following acts, among others, are declared to be disturbing, excessive and offensive noises in violation of this section:

1. Radios, Television Sets, Musical Instruments and similar stationary or mobile devices: Operating, playing or permitting the operation or playing of any radio, television set, audio equipment, drum, musical instrument, or similar device which produces or reproduces sound in such a manner as to disturb the peace, quiet and comfort of neighboring residents or persons of normal sensitivity. The operation of any such set, instrument, audio equipment, television set, machine or similar device between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to be plainly audible at a distance of 50 feet from the building, structure or vehicle in which it is located, shall be prima facie evidence of a violation of this section.

2. Loud Speakers (Amplified Sound): Using, or operating, or permitting to be used or operated, for any purpose, any loud speaker, loudspeaker system, or similar device between the hours of 10:00 p.m. and 7:00 a.m. such that the sound therefrom creates a noise disturbance across a residential property line, or at any time exceeds the maximum permitted noise level for the underlying land use category, except for any non-commercial public speaking, public assembly or other activity for which a variance has been issued.

3. Animals and Birds: Owning, possessing, or permitting to be harbored any animal or bird which frequently or for a continued duration howls, barks, meows, squawks, or makes other sounds which create a noise disturbance across a residential or commercial property line.

4. Loading and Unloading: Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects, or permitting these activities between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to cause a

noise disturbance across a residential property line or at any time exceeds the maximum permitted noise level for the underlying land use category.

5. Construction: Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, grading or demolition work between the hours of 7:00 p.m. and 7:00 a.m. on week days and between 5 p.m. and 8 a.m. on Saturdays or at any time on Sunday or federal holidays such that the sound therefrom creates a noise disturbance across a residential or commercial property line or at any time exceeds the maximum permitted noise level for the underlying land use category, except for emergency work or by variance. This section does not apply to the use of domestic power tools.

6. Domestic Power Tools: Operating or permitting the operation of any mechanically powered saw, sander, drill grinder, lawn or garden tool, or similar tool between 10:00 p.m. and 7:00 a.m. so as to create a noise disturbance across a residential or commercial property line. Any motor, machinery, pump, compressor, generator etc., shall be sufficiently muffled and maintained so as not to create a noise disturbance.

7. Powered Model Vehicles: Operating or permitting the operation of powered model vehicles between the hours of 7:00 p.m. and 7:00 a.m. so as to create a noise disturbance across a residential or commercial property line or at any time exceeds the maximum permitted noise level for the underlying land use category.

8. Stationary Non-emergency Signaling Devices: Sounding, or permit-ting the sounding of any signal from any stationary bell, chime, siren, whistle, or similar device intended primarily for non-emergency purposes, from any place, for more than 10 seconds in any hourly period. Houses of worship and the Mission Inn carillons shall be exempt from the operation of this provision. Sound sources covered by this provision and not exempted under this subsection may be exempted by a variance.

9. Emergency Signaling Devices: The intentional sounding or permitting the sounding outdoors of any fire, burglar or civil defense alarm, siren, whistle or similar stationary emergency signaling device, except for emergency purposes or for testing. Testing of a stationary emergency signaling device shall not occur before 7 a.m. or after 7 p.m. Any such testing shall only use the minimum cycle test time. In no case shall the test time exceed 10 seconds or occur more than once each calendar month.

10. Vehicle, Motorcycle, Motorboat or Aircraft Repair and Testing: Repairing, rebuilding, modifying or testing any motor vehicle, motorboat or aircraft, or permitting any these activities, in such a manner as to create a noise disturbance across a residential property line, or at any time exceeds the maximum permitted noise level for the underlying land use category shall not be permitted except where said activities are directly related to officially sanctioned events. underlying land use category.

11. Permitting any noise disturbance that is:

a. Plainly audible across property boundaries;

b. Plainly audible through partitions common to two residences within a building;

c. Plainly audible at a distance of 50 feet in any direction from the source of music or sound between the hours of 7:00 a.m. and 10:00 p.m.; or

d. Plainly audible at a distance of 25 feet in any direction from the source of music or sound between the hours of 10:00 p.m. ad 7:00 a.m. (Ord. 6959 §2, 2007; Ord. 6328 § 1, 1996; Ord. 6273 § 1 (part), 1996)

Section 7.35.020 Exemptions.

The following activities shall be exempt from the provisions of this title:

A. Emergency Work. The provisions of this Title shall not apply to the emission of sound for the purpose of alerting persons to the existence of an emergency or in the performance of emergency work.

B. Entertainment Events. The provisions of this Title shall not apply to those reasonable sounds emanating from authorized school bands, school athletic and school entertainment events and occasional public and private outdoor or indoor gatherings, public dances, shows, bands, sporting and entertainment events conducted between the hours of seven a.m. and ten p.m.

C. Federal or State Preempted Activities. The provisions of this Chapter shall not apply to any other activity the noise level of which is regulated by state or federal law.

D. Minor Maintenance to Residential Property. The provisions of this Title shall not apply to noise sources associated with minor maintenance to property used for residential purposes, provided the activities take place between the hours of seven a.m. and ten p.m.

E. Right-Of-Way Construction. The provisions of this Title shall not apply to any work performed in the City right-of-ways when, in the opinion of the Public Works Director or his designee, such work will create traffic congestion and/or hazardous or unsafe conditions.

F. Public Health, Welfare and Safety Activities. The provisions of this Title shall not apply to construction maintenance and repair operations conducted by public agencies and/or utility companies or their contractors which are deemed necessary to serve the best interests of the public and to protect the public health, welfare and safety, including but not limited to, trash collection, street sweeping, debris and limb removal, removal of downed wires, restoring electrical service, repairing traffic signals, unplugging sewers, vacuuming catch basins, repairing of damaged poles, removal of abandoned vehicles, repairing of water hydrants and mains, gas lines, oil lines, sewers, storm drains, roads, sidewalks, etc. (Ord. 6917 § 1, 1996; Ord. 6328 § 2, 1996; Ord. 6273 § 1 (part), 1996)

Chapter 7.40

VARIANCE PROCEDURE

Sections:

7.40.010 Variance procedure.
7.40.020 Appeals.

Section 7.40.010 Variance procedure.

A. The Zoning Administrator is authorized to grant variances for exemption from any provision of this title, and may limit area of applicability, noise levels, time limits, and other terms and conditions determined appropriate to protect the public health, safety, and welfare. The provisions of this section shall in no way affect the duty to obtain any permit or license required by law for such activities.

B. Any person seeking a variance pursuant to this section shall file an application with the Zoning Administrator. The application shall be signed by the property owner or owner's representative using forms supplied by the Planning Division. The application shall contain information which demonstrates that bringing the source of the sound or activity into compliance with this title would constitute an unreasonable hardship to the applicant, the community, or other persons. The Zoning Administrator may require additional information if it is necessary to make a determination regarding the variance request. The application shall be accompanied by a fee established by resolution of the City Council.

C. A separate application shall be filed for each noise source; provided, however, several mobile sources under common ownership or several fixed sources on a single property may be combined into one application. Any person who claims to be adversely affected by the allowance of the variance may file a statement with the Zoning Administrator containing any information to support his claim. If the Zoning Administrator determines that a sufficient controversy exists regarding a variance application, the variance may be set for public hearing before the Planning Commission.

D. Public notice of the consideration of a proposed variance from the standards of this chapter shall be provided by the Zoning Administrator by mailing such notice to property owners within three hundred feet of the exterior boundaries of the property under consideration. The notice shall invite interested persons to notify the Planning Department of any concerns or comments within ten days of the date of the notice.

E. In determining whether to grant or deny the application, the Zoning Administrator or the Planning Commission shall consider comments received from property owners within three hundred feet, hardship on the applicant, the community, or other persons affected and property affected and any other adverse impacts. The requested variance may be granted in whole or in part and upon such terms and conditions as it deems necessary if, from the facts presented on the application, the Zoning Administrator or the Planning Commission finds that:

1. The strict application of the provisions of this title would result in practical difficulties or unnecessary hardships inconsistent with the general purpose of this title;

2. There are exceptional circumstances or conditions applicable to the property involved or to the intended use or development of the property that do not apply generally to other property in the same zone or neighborhood;

3. The granting of such variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the zone or neighborhood in which the property is located;

4. The granting of such variance will not be contrary to the objectives of any part of the

adopted General Plan.

F. A variance shall be granted by a notice to the applicant containing all the necessary conditions, including any time limits on the permitted activity. The variance shall not become effective until all the conditions are agreed to by the applicant. Noncompliance with any condition of the variance shall terminate the variance and subject the person holding it to those provisions of this chapter for which the variance was granted.

G. A variance shall be valid for a period not exceeding one year after the date on which it was granted. Applications for extensions of the time limits specified in variances or for the modification of other substantial conditions shall be treated like applications for initial variances.

H. In the event the Zoning Administrator does not approve an application for a variance within ten days after the application is filed it shall be placed on the agenda of the next regularly scheduled Planning Commission, unless the Commission refers the matter to the City Council. (Ord. 6967 § 7, 2007; Ord. 6462 § 8-10, 1999; Ord. 6273 § 1 (part), 1996)

Section 7.40.020 Appeals.

Any person aggrieved by the approval or disapproval of a variance, may appeal the decision of the Zoning Administrator or Planning Commission to the City Council within ten days after the date of such approval or disapproval. The City Council shall hold a hearing thereon, upon notice to the applicant, considering the same criteria presented to the Zoning Administrator. (Ord. 6462 § 11, 1999; Ord. 6273 § 1 (part), 1996)

Chapter 7.45

SEVERABILITY

Section:

7.45.010 Severability

Section 7.45.010 Severability

If any section, subsection, sentence, clause or phrase in this title is for any reason held to be invalid or unconstitutional by decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this title. The City Council hereby declares that it would have passed this title and each section, subsection, clause or phrase thereof irrespective of the fact that any one or more other sections, subsections, clauses or phrases may be declared invalid or unconstitutional. (Ord. 6328 § 3, 1996)

Although MARB/MIP is located outside of the City and its sphere of influence, noise from the facility will affect both the City and the sphere.

The Public Safety and Land Use Elements contain additional information on airports in and adjacent to Riverside.

The City has worked as part of the March Joint Powers Authority to adjust air traffic patterns into and out of the MARB/MIP. Efforts have been made to minimize exposure of sensitive land uses to excessive noise in the busy airspace of Ontario and Los Angeles International Airports. Additionally, topographic conditions surrounding MARB/MIP also constrain flight patterns. Established patterns associated with MARB/MIP are anticipated to continue into the future, resulting in ongoing noise levels.

STATIONARY SOURCE NOISE

Industrial Noise

Industrial businesses can have a varying degree of impact on adjacent uses. Industrial operations often involve use of mechanical equipment, generators and vehicles that contribute to noise levels at industrial sites, particularly for outdoor activities. Many of Riverside's neighborhoods have homes in close proximity to industrial uses.

Title 7 of the Riverside Municipal Code establishes noise performance criteria to guard against exposure of residential and other noise-sensitive uses to loud industrial-related noise. The noise/land use compatibility criteria in Table N–1 (Characteristics of Noise) will be used in assessing siting of new industrial uses.

Construction Noise

Construction noise typically involves the loudest common urban noise events associated with building demolition, grading, construction, large diesel engines and truck deliveries and hauling. Construction activity, although temporary at any given location, can be substantially disruptive to adjacent uses during the construction period. Riverside Municipal Code Section 7.35.010(B)(5) regulates the allowable hours of construction activity to 7:00 A.M. to 7:00 P.M. on weekdays and 8:00 A.M. to 5:00 P.M. on Saturdays, with no construction activities allowed on Sunday or Federal holidays. In addition, the Municipal Code limits noise levels from construction activities to the maximum permitted exterior noise level for the affected land use.

Infrastructure improvements such as street widenings can also be a source of noise. Street improvement projects will incorporate the City's acoustical assessment procedure to minimize noise impacts.

Mechanical Equipment Noise

The motors, pumps and fans that cool and heat our buildings produce point-source noise that most directly affects adjacent land uses. Frequently, this equipment includes components of pure tone noise from the rotational frequency of motors. Although noise levels are generally low from these sources, the fact that such sources may operate continuously and may include pure tones that make them audible at a substantial distance creates potential for conflict. The City's Zoning Code and Municipal Code provisions generally address these conflicts.

Portable Power Equipment

Leaf blowers, lawn mowers, portable generators, electric saws and drills and other similar equipment that people use to maintain their properties create frequent noise during daylight hours. Such disruptions to the ambient sound environment are ubiquitous in the modern city and can produce very high noise levels at the location of the work.

Amplified Sound

Amplified sound includes noise from personal or home audio equipment, automotive audio equipment, outdoor loudspeakers such as those used for paging and amplified sound at music or theatrical performances. Because this sound typically includes music or speech, it is potentially more detectable and more annoying than other sounds of the same noise level. Section 7.35.010 of the Municipal Code establishes limitations on time and magnitude of noise for these sources.

FUTURE NOISE CONDITIONS

Data, including a location map of measurement sites used to create the projected noise contours, can be found in the General Plan EIR.

The most significant noise sources in Riverside — roadways, freeways, railways and air facilities—will continue generating noise into the future. Figure N-5 (2025 Roadway Noise) identifies the projected noise contours for year 2025 largely attributable to roadway traffic; Figure N-6 (2025 Freeway Noise) identifies noise projected from freeway traffic. Projected noise from railroad activity is shown in Figure N-7 (2025 Railway Noise). Noise levels from these surface sources are expected to increase with increased traffic levels anticipated in the Planning Area by 2025.

development process, potential noise impacts and appropriate mitigation will be identified.

Similarly, enforcement of the Noise Control Code will address nuisance noise such as loud animals or birds, loud audio equipment, domestic power tools, vehicle repair and testing, powered motor vehicles and construction activities.

Objective N–1:	**Minimize noise levels from point sources throughout the community and, wherever possible, mitigate the effects of noise to provide a safe and healthful environment.**

Policy N–1.1: Continue to enforce noise abatement and control measures particularly within residential neighborhoods.

Policy N–1.2: Require the inclusion of noise-reducing design features in development consistent with standards in Figure N–10 (Noise/Land Use Compatibility Criteria), Title 24 California Code of Regulations and Title 7 of the Municipal Code.

Policy N–1.3: Enforce the City of Riverside Noise Control Code to ensure that stationary noise and noise emanating from construction activities, private developments/residences and special events are minimized.

Policy N–1.4: Incorporate noise considerations into the site plan review process, particularly with regard to parking and loading areas, ingress/egress points and refuse collection areas.

Policy N–1-5: Avoid locating noise-sensitive land uses in existing and anticipated noise-impacted areas.

Policy N–1.6: Educate the public about City noise regulations.

Policy N–1.7: Evaluate noise impacts from roadway improvement projects by using the City's Acoustical Assessment Procedure.

Policy N–1.8: Continue to consider noise concerns in evaluating all proposed development decisions and roadway projects.

APPENDIX C

Manufacturer Data Sheets

AquaJet XT®

↗ TOUCH-FREE ROLLOVER

Mark VII®
A subsidiary of WashTec AG

AquaJet XT: touchless rollover for high performance washing.

EVOLUTIONARY WITH A TOUCH OF REVOLUTIONARY

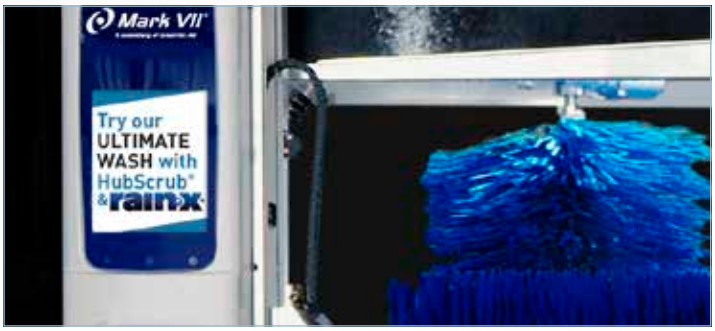
- Ideal touch-free system for gas stations/convenience stores and investor sites
- Leverages the best features of the legacy AquaJet GT® system proven at thousands of sites worldwide
- Adds new technology to enhance wash quality and customer satisfaction while generating incremental revenue for the operator
- Engineered and manufactured in the USA to achieve the lowest total cost of ownership

Innovations that separate you from the competition.

↗ LED LIGHTING

Bright green, red, and yellow lights and reflective decals ensure customers are safely guided into position.

↗ MERCHANDISING DISPLAY



Customized animated graphics help brand your site, illustrate wash functions, up-sell to premium wash packages, and cross-sell to other profit centers.

↗ DRYER OPTIONS

Contour-following dryer (shown) tracks vehicle from optimal distance to dry thoroughly while minimizing energy consumption and avoiding obstacles. Static on-board and freestanding dryers are also available.

↗ K100 CONTROLLER

Provides unparalleled flexibility to create wash programs and control speed to ensure optimal cleaning results and maximize choices for the customer.

↗ THROUGHPUT TO MATCH YOUR SITE

AquaJet XT offers two high pressure pumping plant options to match your throughput needs. Medium volume sites looking for an economical system that still delivers great wash results can choose our CAT 1540 pumping plant. High volume sites needing more throughput can select our CAT 2530 pumping plant which allows you to wash the top and sides in the same pass. Either pumping plant can be located either on-board (shown) to save space or off-board in the equipment room or bay.

Technology to clean better and lower operating costs.

↗ IMPROVED PRESOAK SYSTEM

Presoak nozzles lower completely in the front and back of the vehicle for enhanced coverage. On-board presoak heater minimizes heat loss and maximizes the cleaning power of the presoak chemicals.

↗ TURBO TECHNOLOGY

28 zero degree turbo nozzles with built-in rocker panel blasters thoroughly clean the vehicle while minimizing the electricity, water and chemicals consumed.

↗ IDEAL SPEED FOR GREATER CUSTOMER CONFIDENCE

The travel and lift drives are frequency controlled for a smooth start and variable speed control. There is less stress on components, the machine runs smoothly and customers perceive the carwash to be safer.

Revenue enhancing options to boost your bottom line.

WHEELJET® WHEEL CLEANING SYSTEM

Our premium wheel cleaning system is angled for better centering, has larger brushes for better coverage, and integrates high pressure for added cleaning power. Our basic HubScrub® system is also available.

TRIPLE-FOAM DETERGENT OR CONDITIONER

Customers love the colorful display and scent provided by tri-color foamed chemicals used to enhance the cleaning process, and are willing to pay more for wash packages that include them.

PREMIUM WAX SYSTEM

Enables the use of chemicals such as Rain-X® to provide extended protection of all vehicle surfaces while driving incremental revenue for the carwash operator.

LOWER OPERATING COSTS

	Time *(min:sec)*		Chemical *(oz)*		Water *(gal)*		Electricity *(kW)*	
	Volvo S-40	Ford Explorer	Volvo S-40	Ford Explorer	Volvo S-40	Ford Explorer	Volvo S-40	Ford Explorer
Premium Wash *(AquaJet XT 700)*	3:35	3:54	3.18	3.41	34.4	40.3	1.142	1.251
Express Wash *(AquaJet XT 700)*	2:10	2:26	2.18	2.36	24.2	29.9	0.641	0.732
Premium Wash *(AquaJet XT 300)*	4:11	4.24	6.03	6.40	40.1	42.0	1.276	1.340
Express Wash *(AquaJet XT 300)*	2:57	3:07	5.03	5.35	29.7	31.3	0.830	0.877

Detailed data is available from your Mark VII representative.

Express wash: presoak, dwell, high pressure wash, wax+spot free rinse

Premium wash: undercarriage [not included in wash time], presoak, HubScrub+dwell, high pressure wash, triple foam, high pressure rinse, wax+spot free rinse

Mark VII continues its legacy of engineering highly efficient rollover systems that protect the environment while increasing your bottom line.

DIMENSIONS:

- Machine Height without dryer: 108.5" / 276cm
- Machine Height with on-board static dryer or contouring dryer: 130.3" / 331cm
- Machine Width: 150" / 381cm
- Machine Depth with ABS doors: 52" / 132cm
- Machine Depth with stainless steel doors: 46" / 117cm
- Machine Weight: 3,000 lbs / 1,361 kg

VEHICLE CLEARANCE:

- Height without dryer: 90" / 229cm
- Height with on-board static dryer or contouring dryer: 88.7" / 225cm
- Width at mirrors: 105" / 267cm
- Width at wheel brushes: 85" / 216cm

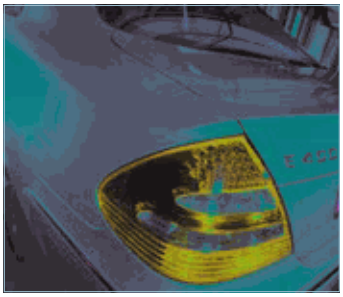
BAY SIZE:

- Minimum Height without dryer: 111" / 282cm for standard energy chain, 144" / 366cm for narrow bay energy chain option, not including shims
- Minimum Height for on-board contouring or static dryer: 132" / 335cm, not including shims
- Minimum Width: 166" / 422cm (153" / 389cm with narrow bay option)
- Recommended Length: 34'

UTILITIES

- Electrical: 208-230 VAC 60Hz 3Φ, 75 amp with 15 HP or 20 HP on-board dryer or no dryer
- Electrical: 208-230 VAC 60Hz 3Φ, 125 amp with 30 HP on-board dryer
- Minimum Water Pressure: 50 PSI / 3.5 bar
- Maximum Water Pressure: 80 PSI / 5.5 bar
- Minimum Water Demand: 28 GPM / 106 LPM
- Minimum Air Supply: ½" line with 80 PSI / 5.5 bar
- Maximum Air Supply: 150 PSI / 10.3 bar
- Air Consumption Demand: Constant 1 CFM / 28 LPM
  Intermittent 3 CFM / 85 LPM
  Triple foam 25 CFM / 708 LPM

Everything you need for a successful carwash business.



Mark VII is the North American subsidiary of WashTec AG of Germany, the world's leading manufacturer of vehicle washing equipment. Each day we wash over 2 million vehicles in over 35,000 locations and over 60 countries worldwide.

MARK VII'S PRODUCTS AND SERVICES INCLUDE:

- AquaJet XT® touch-free rollover
- SoftWash XT® soft-touch rollover
- ChoiceWash XT® hybrid rollover
- TurboJet XT® touch-free overhead
- SoftLine® tunnel
- JetWash® self-serve
- Premium and value line chemicals
- Ancillary products (entry systems, water treatment systems, etc.)
- Site selection assistance
- Custom site and bay layouts
- Service contracts
- Technical support
- Wash bay refurbishment

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Mark VII®
A subsidiary of WashTec AG

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Arvada, CO 80003
Phone: 800.525.8248 or 303.423.4910
Fax: 303.430.0139
Email: markvii@markvii.net
Web: www.markvii.net

Models- 8100, 8500 angled lock bar
8200, 8600 pin lock
Single Door Vacuums

Page 2	Product Information
Page 3	Specifications
Page 4	Important Safety Instructions
Page 5	Product Dimensions
Page 6-8	Installation
Page 8-9	Programming
Page 10	Operating Instructions
Page 10-11	Maintenance & Troubleshooting
Page 12-18	Parts List
Page 19	Wiring Diagram

8100

8200

8500LD

8600LD

Calculated Sound Levels at Typical Distances

1) All calculations based on data obtained from testing on standard 9200, 9210, and 9213 vac models with metal domes to assume a worst case scenario.

2) Calculations assume an open field condition on a reflective surface (i.e. concrete). Nearby reflective surfaces such as walls may affect actual sound levels.

3) Data is to be used as an approximation only. Actual sound levels may vary based on environmental and site-related conditions.

2 Motor Vac - Small Dome															
Wide Open With Attachment	Distance From Vac in Feet														
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Sound Level (dB)	76.4	70.4	66.9	64.4	62.4	60.9	59.5	58.4	57.3	56.4	55.6	54.8	54.1	53.5	52.9
Sealed Attachment	Distance From Vac in Feet														
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Sound Level (dB)	80.5	74.5	71.0	68.5	66.5	64.9	63.6	62.4	61.4	60.5	59.7	58.9	58.2	57.6	57.0
Attachment Removed	Distance From Vac in Feet														
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Sound Level (dB)	74.5	68.5	65.0	62.5	60.6	59.0	57.6	56.5	55.4	54.5	53.7	52.9	52.3	51.6	51.0

2 Motor Vac - Large Dome															
Wide Open With Attachment	Distance From Vac in Feet														
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Sound Level (dB)	78.2	72.2	68.7	66.2	64.3	62.7	61.3	60.2	59.1	58.2	57.4	56.6	56.0	55.3	54.7
Sealed Attachment	Distance From Vac in Feet														
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Sound Level (dB)	84.2	78.1	74.6	72.1	70.2	68.6	67.2	66.1	65.1	64.2	63.3	62.6	61.9	61.2	60.6
Attachment Removed	Distance From Vac in Feet														
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Sound Level (dB)	78.3	72.3	68.8	66.3	64.3	62.7	61.4	60.2	59.2	58.3	57.5	56.7	56.0	55.4	54.8

3 Motor Vac - Large Dome															
Wide Open With Attachment	Distance From Vac in Feet														
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Sound Level (dB)	81.3	75.3	71.8	69.3	67.3	65.7	64.4	63.2	62.2	61.3	60.5	59.7	59.0	58.4	57.8
Sealed Attachment	Distance From Vac in Feet														
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Sound Level (dB)	85.9	79.9	76.3	73.8	71.9	70.3	69.0	67.8	66.8	65.9	65.1	64.3	63.6	63.0	62.4
Attachment Removed	Distance From Vac in Feet														
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Sound Level (dB)	79.6	73.6	70.1	67.6	65.6	64.0	62.7	61.5	60.5	59.6	58.8	58.0	57.3	56.7	56.1

Dual Vac, Both Sides In Operation (Approximate - Derived From 2 Motor Large Dome Data)															
Wide Open With Attachment	Distance From Vac in Feet														
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Sound Level (dB)	81.2	75.2	71.7	69.2	67.3	65.7	64.3	63.2	62.1	61.2	60.4	59.6	59.0	58.3	57.7
Sealed Attachment	Distance From Vac in Feet														
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Sound Level (dB)	87.2	81.1	77.6	75.1	73.2	71.6	70.2	69.1	68.1	67.2	66.3	65.6	64.9	64.2	63.6
Attachment Removed	Distance From Vac in Feet														
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Sound Level (dB)	81.3	75.3	71.8	69.3	67.3	65.7	64.4	63.2	62.2	61.3	60.5	59.7	59.0	58.4	57.8

48PG03−14
Ultra High Efficiency Single Package Gas Heating/Electric Cooling Commercial Rooftop Units with PURON® (R−410A) Refrigerant
2 to 12.5 Nominal Tons

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Product Data

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2005

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Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

Replaces: 48PG−5PD

OPERATION AIR QUANTITY LIMITS

48PG

48PG03-14 Vertical and Horizontal Units

UNIT 48PG	COOLING (cfm)		HEATING (cfm)*	
	Min	Max	Min	Max
03	600	1000	600	1680
04 (Low Heat)	900	1500	600	1680
04 (Med Heat)	900	1500	940	2810
04 (High Heat)	900	1500	1130	2820
05 (Low Heat)	1200	2000	600	1680
05 (Med Heat)	1200	2000	940	2810
05 (High Heat)	1200	2000	1130	2820
06 (Low Heat)	1500	2500	940	2810
06 (Med Heat)	1500	2500	1130	2820
06 (High Heat)	1500	2500	1510	2520
07 (Low Heat)	1800	3000	940	2810
07 (Med Heat)	1800	3000	1130	2820
07 (High Heat)	1800	3000	1510	2520
08 (Low Heat)	2250	3750	2060	5160
08 (Med Heat)	2250	3750	2110	6870
08 (High Heat)	2250	3750	2450	4900
09 (Low Heat)	2550	4250	2060	5160
09 (Med Heat)	2550	4250	2110	6870
09 (High Heat)	2550	4250	2450	4900
12 (Low Heat)	3000	5000	2110	6870
12 (Med Heat)	3000	5000	2450	4900
12 (High Heat)	3000	5000	3150	6300
14 (Low Heat)	3750	6250	2110	6870
14 (Med Heat)	3750	6250	2450	4900
14 (High Heat)	3750	6250	3150	6300

*Consult tables on pages 8 and 9 if using a stainless steel heat exchanger.

Outdoor Sound Power (Total Unit)

UNIT 48PG	A–WEIGHTED* (dB)	OCTAVE BAND LEVELS dB							
		63	125	250	500	1000	2000	4000	8000
03	75.0	82.6	79.9	75.7	73.3	70.0	64.3	58.4	50.5
04	73.2	79.8	77.2	74.1	70.1	68.0	63.6	58.4	51.9
05	71.9	79.7	79.6	72.6	69.6	66.0	61.4	56.4	48.5
06	78.5	82.2	82.6	79.5	75.7	73.9	68.6	64.0	56.3
07	78.5	87.5	83.0	78.5	76.3	73.8	68.4	63.8	56.5
08	80.0	91.7	83.6	81.0	77.9	75.0	69.9	66.0	59.3
09	79.9	89.1	82.7	80.0	77.7	75.0	70.2	66.3	57.8
12	80.0	90.4	83.1	80.9	77.8	75.2	70.0	66.1	57.6
14	83.3	86.4	85.9	85.3	81.8	78.2	72.2	67.9	59.9

LEGEND

dB – Decibel

* Sound Rating AHRI or tone Adjusted, A–Weighted Sound Power Level in dB. For sizes 03–12, the sound rating is in accordance with AHRI Standard 270–1995. For sizes 14, the sound rating is in accordance with AHRI 370–2010.

HME

Customer Driven

Memo

Re: Drive-Thru Sound Pressure Levels From the Menu Board or Speaker Post

The sound pressure levels from the menu board or speaker post are as follows:

1. Sound pressure level (SPL) contours (A weighted) were measured on a typical HME SPP2 speaker post. The test condition was for pink noise set to 84 dBA at 1 foot in front of the speaker. All measurements were conducted outside with the speaker post placed 8 feet from a non-absorbing building wall and at an oblique angle to the wall. These measurements should not be construed to guarantee performance with any particular speaker post in any particular environment. They are typical results obtained under the conditions described above.

2. The SPL levels are presented for different distances from the speaker post:

Distance from the Speaker (Feet)	SPL (dBA)
1 foot	84 dBA
2 feet	78 dBA
4 feet	72 dBA
8 feet	66 dBA
16 feet	60 dBA
32 feet	54 dBA

3. The above levels are based on factory recommended operating levels, which are preset for HME components and represent the optimum level for drive-thru operations in the majority of the installations.

Also, HME incorporates automatic volume control (AVC) into many of our Systems. AVC will adjust the outbound volume based on the outdoor, ambient noise level. When ambient noise levels naturally decrease at night, AVC will reduce the outbound volume on the system. See below for example:

Distance from Outside Speaker	Decibel Level of standard system with 45 dB of outside noise <u>without</u> AVC	Decibel level of standard system with 45 dB of outside noise <u>with</u> AVC active
1 foot	84 dBA	60 dBA
2 feet	78 dBA	54 dBA
4 feet	72 dBA	48 dBA
8 feet	66 dBA	42 dBA
16 feet	60 dBA	36 dBA

If there are any further questions regarding this issue please contact HME customer service at 1-800-848-4468.

Thank you for your interest in HME's products.

HM Electronics, Inc. | 14110 Stowe Drive | Poway, CA 92064
phone: 800.848.4468 | fax: 858.452.7207 | www.hme.com

APPENDIX D

Cadna Analysis Data and Results

Cadna Noise Model - Sound Levels														
Name	ID	Type		Oktave Spectrum (dB)										Source
			Weight	63	125	250	500	1000	2000	4000	8000	A	lin	
DT Speaker	L1	Lw (c)	A				84.5					84.5	87.7	Mfr
AquaDri C-30	L2	Lw (c)		106.5	110.5	107.4	107.9	109	107.1	104.6	101.4	113.7	116.5	Manufacturer and Measured
Carrier 48PG08 (7.5-ton)	L3	Lw		91.7	83.6	81	77.9	75	69.9	66	59.3	80.3	92.9	Mfr
Vacuum	L4	Lw		86.9	82.7	89.6	84.7	89.5	91.3	92.5	86.7	97.4	98	Manufacturer and Measured

Cadna Noise Model - Point Sources									
Name	ID	Result. PWL	Lw / Li		Height	Coordinates			Operating Time
		Day	Type	Value		X	Y	Z	
		(dBA)			(m)	(m)	(m)	(m)	(min/hr)
DT1	S_1	84.5	Lw	L1	1.22	158.61	222.36	416.22	
DT2	S_2	84.5	Lw	L1	1.22	164.05	218.46	416.22	
Car Wash	S_3	113.7	Lw	L2	1.83	254.52	124.39	416.83	12
CS HVAC	S_4	80.3	Lw	L3	5.79	208.05	141.65	420.79	
FF1 HVAC	S_5	80.3	Lw	L3	5.79	178.39	189.59	420.79	
VAC1	S_6	97.4	Lw	L4	1.52	255.41	104.31	416.52	
VAC2	S_7	97.4	Lw	L4	1.52	255.51	104.76	416.52	

Cadna Noise Model - Buildings							
Name	ID	Height	Coordinates				Absorption
		(m)	X	Y	Z	Ground	
			(m)	(m)	(m)	(m)	
Fast Food 1	BL_1	4.57	172.39	209.62	419.57	415	0.37
			175.11	210.69	419.57	415	
			188.92	182.54	419.57	415	
			178.13	177.69	419.57	415	
			164.1	205.31	419.57	415	
			172.74	208.98	419.57	415	
C-Store	BL_2	4.57	193.71	141.72	419.57	415	0.37
			195.46	142.55	419.57	415	
			216.63	151.8	419.57	415	
			222.38	140.88	419.57	415	
			199.13	130.3	419.57	415	

Cadna Noise Model - Barriers										
Name	ID	Coordinates					Cantilever		Absorption	
		X	Y	Z	Ground	Z-Ext	horz	vert	Left	Right
		(m)	(m)	(m)	(m)	(m)	(m)	(m)		
Tunnel Wall 1	B_1	247.62	131.62	419.57	415				0.37	0.37
		247.17	131.31	419.57	415					
		259.14	113.68	419.57	415					
		259.78	114.1	419.57	415					
Tunnel Wall 2	B_2	250.53	133.78	419.57	415				0.37	0.37
		251.03	134.14	419.57	415					
		263.2	116.28	419.57	415					
		262.84	116.05	419.57	415					
Tunnel Roof	B_3	251.03	134.14	419.57	415		4.85		0.37	0.37
		263.21	116.27	419.57	415					
Tunnel Wall 3	B_4	259.13	113.68	419.57	415	0.91			0.37	0.37
		263.21	116.28	419.57	415					
Tunnel Wall 4	B_5	247.08	131.23	419.57	415	0.91			0.37	0.37
		251.02	134.13	419.57	415					

Cadna Noise Model - Contour Lines									
Name	ID	Coordinates			Name	ID	Coordinates		
		X	Y	Z			X	Y	Z
		(m)	(m)	(m)			(m)	(m)	(m)
1	C_1	136.25	-172.22	417	7	C_7	147.09	237.32	415
		166.94	-167.99	419			176.43	178.31	415
		307.18	-155.29	419			199.43	129.64	415
		383.39	-134.65	425			217.77	93.3	415
		487.64	-112.95	433			228.1	87.97	415
		519.39	-100.78	437			254.77	94.97	415
		557.49	-100.78	434			266.44	106.97	415
2	C_2	71.16	-165.34	410			264.11	116.97	415
		105.56	-105.54	406			194.1	220.32	415
		147.36	-80.14	407			167.43	244.99	415
		307.71	-100.25	403			156.76	245.99	415
		432.6	-24.04	416			147.76	238.32	415
		482.88	-25.1	425	8	C_8	-22.84	421.61	400
3	C_3	85.98	18.82	403			-218.87	304.26	400
		195.52	-44.68	405			-219.54	-35.11	400
		295.01	-52.62	405			47.83	90.9	400
		399.79	-15.58	416			-26.18	411.61	400
4	C_4	80.68	29.93	403	9	C_9	191.18	412.28	415
		220.92	45.81	412			138.51	276.26	415
		300.83	19.35	412			281.86	164.24	415
		398.73	18.82	419			466.55	56.9	415
		546.38	46.87	424			599.24	230.92	415
5	C_5	64.13	57.96	405			254.53	409.61	415
		168.3	73.08	410			199.19	410.94	415
		221.22	77.28	412	10	C_10	472.81	-177.76	440
		256.5	88.2	415			349.46	-166.42	440
		306.49	124.32	416			238.78	-188.42	440
6	C_6	8.69	305.35	416			239.44	-198.43	440
		86.81	265.03	415			518.81	-198.43	440
		161.58	124.74	412			517.48	-175.76	440
		150.66	79.38	408			477.47	-177.76	440
		33.89	63	406					

Cadna Noise Model - Noise Levels at Receivers						
Name	ID	Level Lr	Height	Coordinates		
		Day		X	Y	Z
		(dBA)	(m)	(m)	(m)	(m)
South	R_1	45.8	1.52	384.79	-107.78	422.11
West	R_2	46.8	1.52	164.94	115.35	413.31

APPENDIX J

TRAFFIC IMPACT STUDY

TRAFFIC IMPACT STUDY

For

Sycamore Canyon Commercial Development

Prepared For: The City of Riverside

Submitted To:
Eugene Marini
KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, CA 92121

Prepared By:
Bill E. Darnell, P.E.
(RCE 22338)
Darnell & Associates, Inc.
4411 Mercury Street, Suite 207A
San Diego, CA 92111

REGISTERED PROFESSIONAL ENGINEER
BILL E. DARNELL
No. 22338
CIVIL
STATE OF CALIFORNIA

Signature: Bill E Darnell

Date Signed: 8/2/2018

August 2, 2018
May 15, 2018
Original: December 29, 2017

D&A Ref. No.170805

Darnell & ASSOCIATES, INC.
TRANSPORTATION PLANNING & TRAFFIC ENGINEERING

August 2, 2018

Eugene Marini
KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, CA 92121

D&A Ref. No: 170805

Subject: Traffic Impact Study for Proposed Sycamore Canyon Commercial Development located at Sycamore Canyon Boulevard/Central Avenue in the City of Riverside.

Dear Mr. Marini:

In accordance with your authorization, Darnell & Associates, Inc. (D&A) has prepared this traffic impact study to assess the impacts associated with the proposed Sycamore Canyon Commercial Development which is located at Sycamore Canyon Boulevard/Central Avenue in the City of Riverside, California.

The traffic study analyzes the traffic impacts related to the proposed Sycamore Canyon Commercial Development on local roadways and intersections under the following conditions: Existing, Opening Day (2019) and Opening Day 2019 plus Project. The report has been prepared to cover the work identified in the approved scoping agreement and comments from City of Riverside dated April 20, 2018.

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

Sincerely,

Darnell & Associates, Inc.

REGISTERED PROFESSIONAL ENGINEER
BILL E. DARNELL
No. 22338
CIVIL
STATE OF CALIFORNIA

Bill E Darnell, P.E.
Firm Principal
RCE 22338

Date Signed: 8/2/2018

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170805 - Sycamore Canyon Traffic Study Report _Aug2018.doc

4411Mercury Street • Suite 207A • San Diego, CA 92111 • Phone: 619-233-9373
E-mail: office@darnell-assoc.com

TRAFFIC IMPACT STUDY

FOR

SYCAMORE CANYON COMMERCIAL DEVELOPMENT

IN THE CITY OF RIVERSIDE

Submitted To:

Eugene Marini
KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, CA 92121

Prepared by:

DARNELL & ASSOCIATES, INC
4411 MERCURY STREET, SUITE 207A
San Diego, California 92111
619-233-9373

August 2, 2018

170805 - Sycamore Canyon Traffic Study Report _Aug2018.doc

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Opening Day 2019 Conditions refers to those conditions which include the traffic volumes and lane configurations generated by Opening Day 2019 conditions. 2

Opening Day 2019 Plus Project Conditions refers to those conditions which include the Opening Day 2019 traffic volumes and lane configurations plus the traffic generated by of the proposed project 2

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SECTION I - INTRODUCTION

This traffic impact analysis (TIA) has been prepared to assess the potential circulation impacts associated with the proposed Sycamore Canyon Development Project located at the northeast corner of Sycamore Canyon Boulevard at Central Avenue in the City of Riverside (City). Figure 1 is a vicinity map that illustrates the regional and project location and Figure 2 presents the project site plan.

This report is intended to satisfy the requirements established by the City of Riverside "Traffic Impact Preparation Guide," dated January 2016, as well as the requirements for the disclosure of potential impacts and mitigation measures pursuant to the California Environmental Quality Act (CEQA). The scope of work for this TIA, including trip generation, trip distribution, study area, and analysis methodologies, has been approved by City staff via the Scoping Agreement process. A copy of the Scoping Agreement is included as Appendix A.

This TIA examines traffic operations in the vicinity of the proposed project under the following scenarios:

- Existing traffic conditions;
- Opening Day (2019) conditions; and
- Opening Day (2019) with project traffic conditions.

For each scenario, traffic operations at study intersections are evaluated for the AM and PM peak hours. The AM peak hour is defined as the one hour of highest traffic volumes occurring between 7:00 and 9:00 AM. The PM peak hour is defined as the one hour of highest traffic volumes occurring between 4:00 and 6:00 PM.

STUDY AREA DETERMINATION

The study area was approved by City staff via the City's scoping agreement process (Appendix A). Study intersections were selected based on discussion with City staff and where project traffic has the potential to cause a significant impact. The study area includes the following four intersections:

1. Sycamore Canyon Boulevard/Central Avenue;
2. Central Avenue/SR-60 Southbound On/Off Ramp;
3. Central Avenue/ SR-60 Northbound Off Ramp; and
4. Watkins Drive at Poarch/SR-60 Westbound On Ramp.

Figure 3 illustrates the Project location, the study area intersections and existing intersection geometry and traffic control.

PROJECT DESCRIPTION

The proposed project consists of a 3,200-square foot C-Store with 16 Fueling Stations with a carwash and a 3,800-square foot Fast Food Restaurant with a drive thru.

Access to the project will be provided by two driveways on the eastside of Sycamore Canyon Boulevard north of Central Avenue.

SCENARIOS STUDIED

For purposes of this analysis, the following scenarios are included:

Existing Conditions refers to that condition which exists on the ground today including existing traffic and existing lane configurations at roadway segments.

Opening Day 2019 Conditions refers to those conditions which include the traffic volumes and lane configurations generated by Opening Day 2019 conditions.

Opening Day 2019 Plus Project Conditions refers to those conditions which include the Opening Day 2019 traffic volumes and lane configurations plus the traffic generated by of the proposed project.

REPORT ORGANIZATION

Following this introduction, Section II introduces the Existing 2017 conditions. Section III Project Related Conditions which discusses trip generation and trip distribution associated with the proposed project. Section IV provides analysis of project's traffic impacts. Section V addresses the project's access and internal circulation. Section VI summarizes the projects direct and cumulative impacts of the project and provides mitigation measures.

ANALYSIS METHODOLOGY

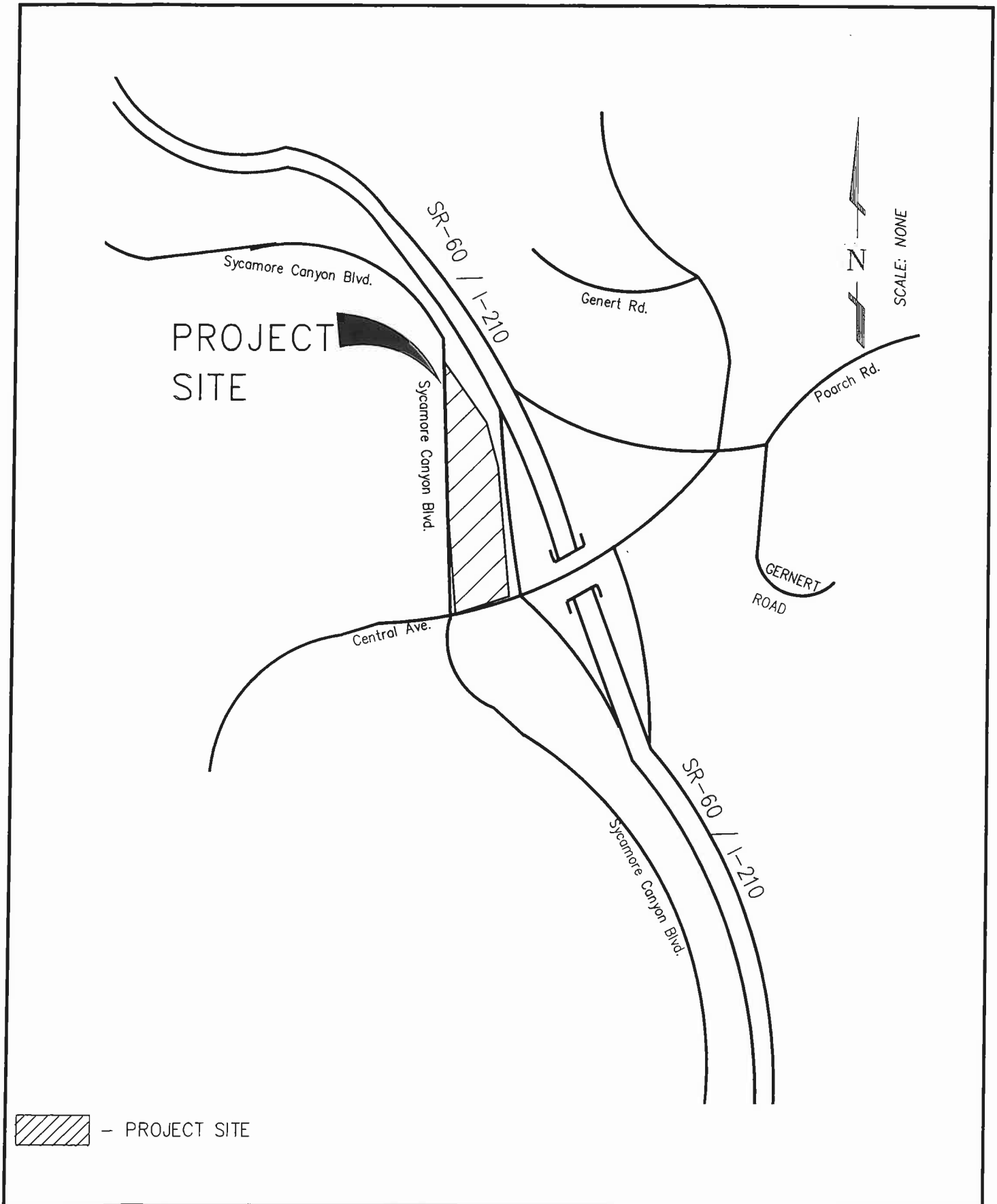
Level of Service Definitions and Procedures

Roadway operations and the relationship between capacity and traffic volumes are generally expressed in terms of levels of service (which are defined using the letter grades A through F). These levels recognize that, while an absolute limit exists as to the amount of traffic traveling through a given intersection (the absolute capacity), the conditions that motorists experience rapidly deteriorate as traffic approaches the absolute capacity. Under such conditions, congestion is experienced. There is general instability in the traffic flow, which means that relatively small incidents (e.g., momentary engine stall) can cause considerable fluctuations in speeds and delays. This near-capacity situation is labeled Level of Service (LOS) E. Beyond LOS E, capacity has been exceeded, and arriving traffic will exceed the ability of the intersection to accommodate it. An upstream queue will then form and continue to expand in length until the demand volume again declines.

A complete description of the meaning of level of service can be found in the Transportation Research Board Special Report 2009, *Highway Capacity Manual* (HCM). The HCM establishes levels of service, as shown in Table 1.

Table 2 shows the level of service criteria for unsignalized and signalized intersections.

Consistent with the City's TIA guidelines, the 2010 HCM analysis methodologies were used to determine intersection levels of service for all study area intersections. All levels of service were calculated using Synchro 8.0 software, which uses the HCM 2010 methodologies.



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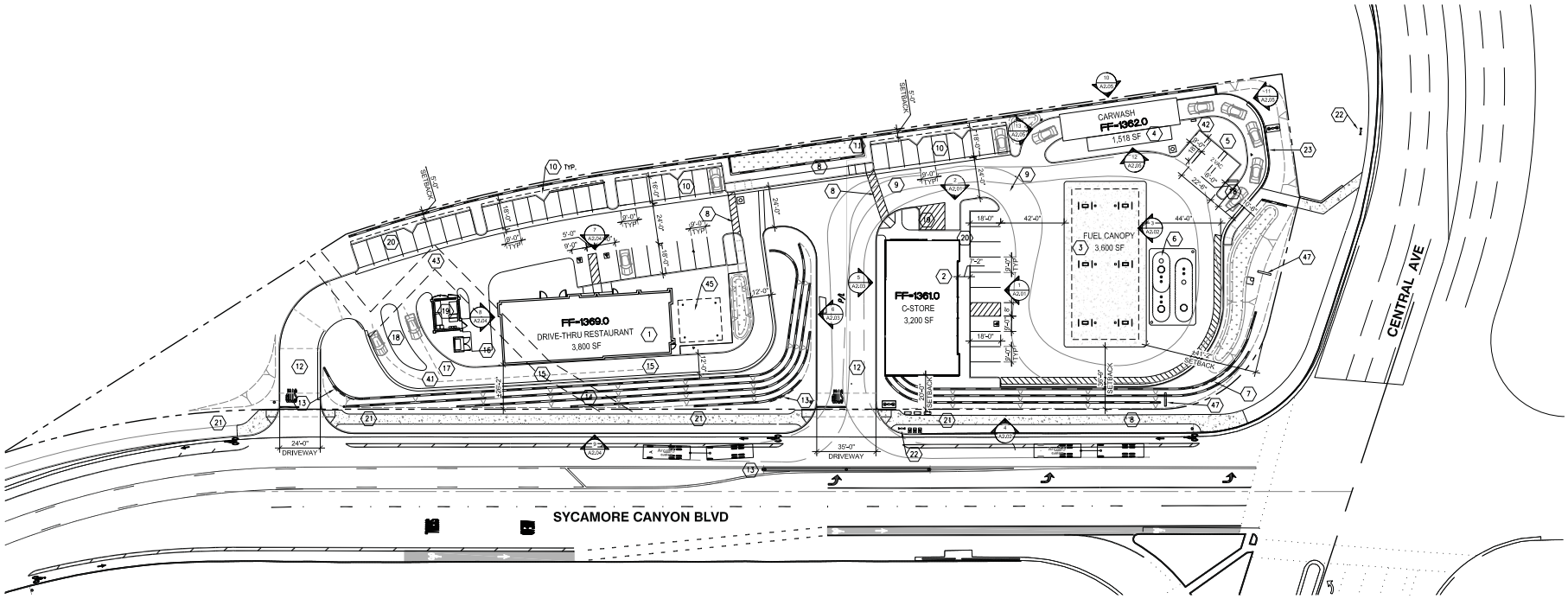
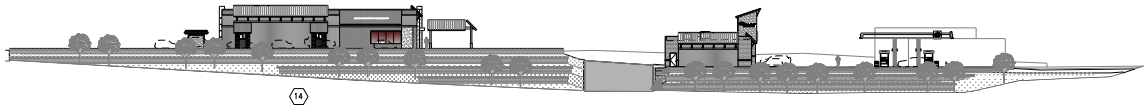
DWG 170805-DD DATE: 08-02-2018 BY: JAM

FIGURE 1
VICINITY MAP



SITE PLAN

1" = 30'-0"



SITE ELEVATION

1" = 30'-0"

SETBACK TABLE

DEVLOPMENT STANDARD (MIN)	CR (REQUIR'D)	(PROV'D)
FRONT YARD SETBACK (MIN.)	0 FT.	–
SIDE YARD SETBACK (MIN.) INTERIOR SIDE STREET SIDE	0 FT. 0 FT.	5 FT. 5 FT.
REAR YARD SETBACK (MIN.)	0 FT.	0 FT.

DEVELOPMENT SUMMARY

LOT AREA:

AREA OF PROPOSED SUMMARY STREET VACATION

AREA OF PROPOSED STREET VACATION

TOTAL LOT AREA:

PARCEL MAP:

LOT AREA FOR EACH PARCEL

SUMMARY OF EA. BLDG AND SQ. FT

C-STORE	3,200 SF
CANOPY	3,600 SF
FAST FOOD	3,800 SF
CAR WASH	1,518 SF
TOTAL	12,118 S.F.

FLOOR AREA RATIO: .12

TOTAL LANDSCAPE AREA: 10,762 S.F.

LANDSCAPE ANALYSIS

SITE:		95,542 SF	2.19 ACRES
BUILDINGS:			
	C-STORE	3,200 SF	
	CANOPY	3,600 SF	
	FAST FOOD	3,800 SF	
	CAR WASH	1,518 SF	
LOT COVERAGE :		11,800/95558	12.3%
LANDSCAPE AREA:		10,762 SF	11%

PARKING ANALYSIS

PARKING SPACES REQUIREMENTS PER RIVERSIDE ZONING ORDINANCE TABLE 19-580-060:

VEHICLE FUELING STATION W/ CONVENIENCE STORE: 1 SPACE/250 SF OF RETAIL AREA INCLUDING COOLER AREAS
3,200 SF / 250 = 13 SPACES

STAND ALONE FAST FOOD DRIVE THRU:
1 SPACE/100 SF OF FLOOR AREA
3,800 SF / 100 = 38 SPACES

FULL SERVICE AUTOMATED CARWASH:
1 SPACE/2 EMPLOYEES OF LARGEST SHIFT
1,518 SF = 1 SPACES

PARKING SPACES REQUIRED: 52 SPACES
PARKING SPACES PROVIDED: 54 SPACES

KEYED NOTES

1. DRIVE-THRU RESTAURANT – 3,800 sf. ALL ROOF MNTD EQUIP SHALL BE FULLY SCREENED FROM VIEW. BLDG ELEVS HAVE WELL MODULATED PLANES & ARTICULATED FACADES, ARTICULATED ROOF LINES, AND MULTIPLE EXTERIOR MATERIALS. (TYPICAL)
2. C-STORE – 3,200 sf. ALL ROOF MNTD EQUIP SHALL BE FULLY SCREENED FROM VIEW. TOWER PROJECTIONS SHALL BE FINISHED ON ALL FOUR SIDES
3. 6 MULTI PRODUCT DISPENSERS (MPD's) W/ 90'x40' CANOPY – 3,600 sf
4. CAR WASH AND EQUIPMENT ROOM BUILDING – 1,199 sf – SELF SERVE
5. VACCUUMS – 2 SPACES
6. UNDERGROUND STORAGE TANKS –
7. CORNER ID SIGN FOR THE CENTER – INTERSECTION AS GATEWAY INTO THE CITY OF RIVERSIDE. AN ATTRACTIVE AND DYNAMIC ENTRANCE FEATURE SHALL BE PROVIDED ALONG THE PROJECTS STREET FRONTAGES
8. PEDESTRIAN SITE ACCESS SHALL BE PROVIDED NEAR THE INTERSECTION. PEDESTRIAN CONNECTIONS SHALL BE PROVIDED BETWEEN ALL USES ON-SITE
9. 20' WIDE TRUCK TURNING TEMPLATE – FOR FUEL TRUCKS, FIRE TRUCKS AND TRASH TRUCKS
10. PARKING LOT LANDSCAPE DIAMONDS SHALL BE PROVIDED EVERY 4 PARKING SPACES. AVOID USE OF LIGHT POLES IN DIAMONDS. LANDSCAPE FINGERS BETWEEN PARKING SPACES SHALL BE PROVIDED WHERE FEASIBLE
11. LANDSCAPE SETBACK ALONG FREEWAY ROW
12. DECORATIVE PROJECT ENTRANCE PAVING
13. MONUMENT SIGN – PER RIVERSIDE ZONING ORDINANCE TABLE 19-620.
14. STREET TREES TO ENHANCE DRIVE-THRU SCREENING
15. DRIVE-THRU WINDOWS – SCREENED WITH ARCHITECTURAL ELEMENTS – SEE ELEVATIONS
16. LOADING ZONE– PER RIVERSIDE ZONING ORDINANCE 19-580.
17. DRIVE-THRU LANES – DRIVE-THRU LANES SHALL BE SCREENED FROM VIEW THRU ELEV GRADE DIFFERENCES LANDSCAPING ARBORS TRELLISES TO REDUCE VISUAL PRESENCE OF DRIVE-THRU OPS
18. MENU BOARDS FOR DRIVE-THRU RESTAURANT AND CAR WASH
19. TRASH ENCLOSURE
20. FREEWAY SIGN – FREEWAY SIGNAGE SHALL COMPLY WITH STDS TABLE 19.620.080.C. OF RIVERSIDE MUNICIPAL CODE
21. OFF-SITE IMPROVEMENTS WITHIN 100 FEET OF SITE
22. NEW FIRE HYDRANT
23. 3 FT. TALL SCREEN WALL
41. 180' OF VEHICULAR STACKING FROM MENU BD TO PU WINDOW
42. CAR WASH PAY STATION
43. EASEMENT TO BE VACATED – SEE CIVIL
45. COVERED OUTDOOR SEATING AREA
46. GROUND-MOUNTED UTILITY EQUIPMENT SUCH AS, BUT NOT LIMITED TO, ELECTRIC POWER TRANSFORMERS AND DISTRIBUTION FACILITIES, WATER PUMPS, CABLE TELEVISION BOXES, AND TELECOMMUNICATIONS FACILITIES (NOT INCLUDING POLE-MOUNTED EQUIPMENT) SHALL BE SCREENED FROM VIEW ON ALL SIDES WITH SOLID MASONRY WALLS OR SIMILAR PERMANENT STRUCTURES.
47. PRICE SIGN

No.	Date	By	Chd.	Appr.	Revision

Title: SITE PLAN AND SITE ELEVATION

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Sycamore Canyon Blvd and Central Ave
Riverside, CA

For: KA ENTERPRISES

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18447 SD1.01

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FIGURE 2 - PROPOSED PROJECT SITE PLAN

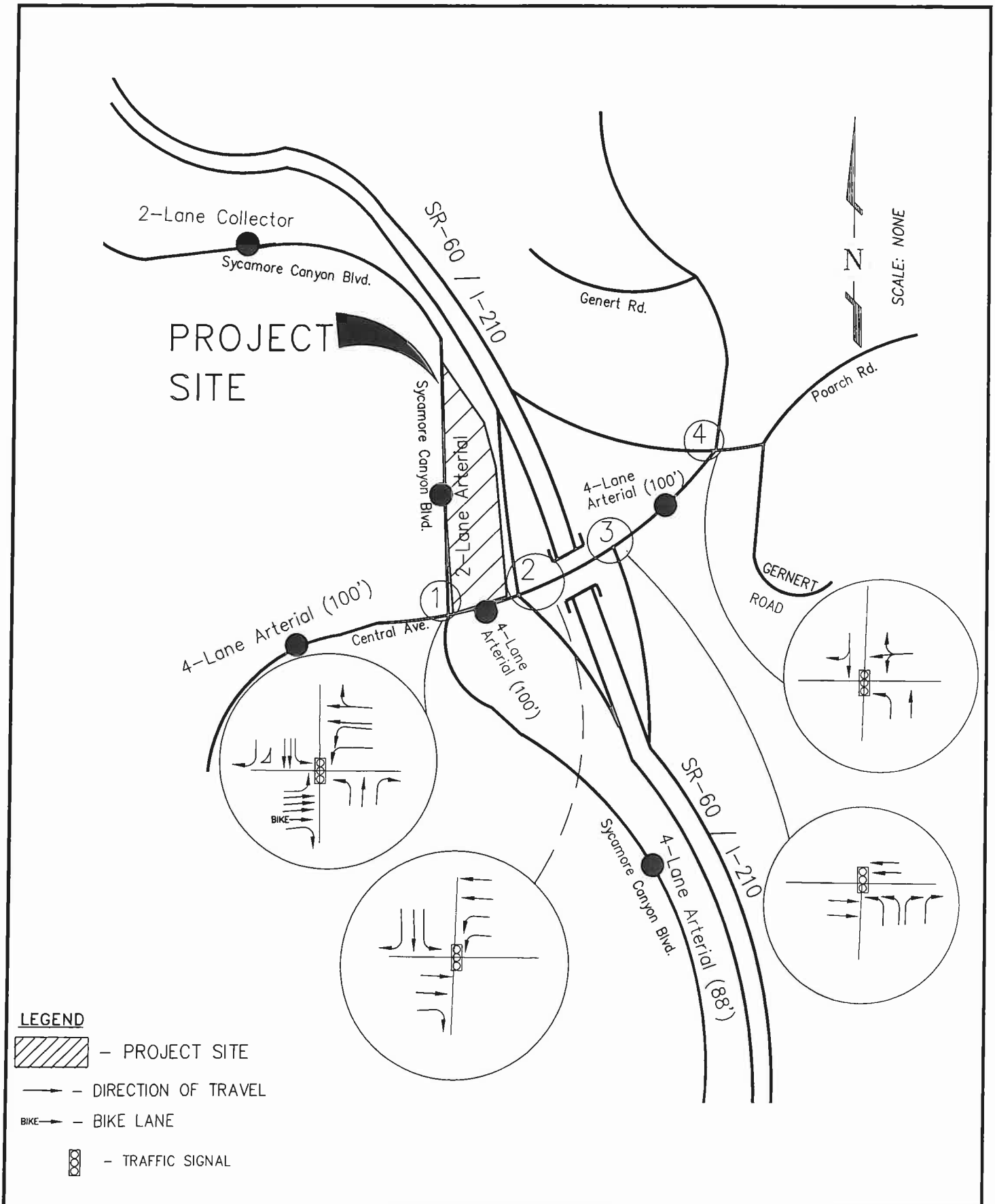

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FIGURE 3

EXISTING CONDITIONS AND STUDY AREA INTERSECTION

Table 1 - Level of Service Definitions	
LOS	**Description**
A	No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Typically, the approach appears quite open, turns are made easily and nearly all drivers find freedom of operation.
B	This service level represents stable operation, where an occasional approach phase is fully utilized and a substantial number are approaching full use. Many drivers begin to feel restricted within platoons of vehicles.
C	This level still represents stable operating conditions. Occasionally drivers may have to wait through more than one red signal indication, and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.
D	This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak period; however, enough cycles with lower demand occur to permit periodic clearance of developing queues, thus preventing excessive backups.
E	Capacity occurs at the upper end of this service level. It represents the most vehicles that any particular intersection approach can accommodate. Full utilization of every signal cycle is seldom attained no matter how great the demand.
F	This level describes forced flow operations at low speeds, where volumes exceed capacity. These conditions usually result from queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially and stoppages may occur for short or long periods of time due to the congestion. In the extreme case, both speed and volume can drop to zero.

Table 2 - Level of Service Criteria for Unsignalized and Signalized Intersections		
Level of Service	**Unsignalized Intersection Average Delay per Vehicle (sec.)**	**Signalized Intersection Average Delay per Vehicle (sec.)**
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

Level of Service Threshold

The intersections of Central Avenue/SR-60 Eastbound Ramp, Central Avenue/SR-60 Northbound Off Ramp and the Watkins Drive/SR-60 Eastbound On Ramp are under the jurisdiction of Caltrans. The remaining study intersections are solely under the jurisdiction of the City. Caltrans considers an acceptable level of service to be between C and D (delay of 45 seconds) at all intersections under its jurisdiction. The City uses LOS D as its minimum level of service for intersections and roadways of Collector or higher classification.

Therefore the study area intersections under the jurisdiction of the City of Riverside LOS D is the minimum standard. For intersections within the jurisdiction of Caltrans, the Caltrans LOS threshold (minimum intersection delay of 45 seconds) is used as a worst-case approach.

ROADWAY CAPACITY

Table 3 presents the City of Riverside Roadway Capacity Level of Service Criteria. The values presented in Table 3 will be used for analyzing the projects impacts.

Table 3 – City of Riverside Roadway Capacity [1]

Roadway Classification	Number of Lanes	Two-Way Traffic Volume (ADT) [2]		
		Service Level C	Service Level D	Service Level E
Local	2	2,500-2,799	2,800-3,099	3,100+
Collector (66' or 80')	2	9,900-11,199	11,200-12,499	12,500+
Arterial [3]	2	14,400-16,199	16,200-17,999	18,000+
Arterial (88')	4	16,800-19,399	19,400-21,199	22,000+
Arterial (100')	4	26,200-29,599	29,600-32,999	33,000+
Arterial (120')	6	38,700-44,099	44,100-49,499	49,500+
Arterial (144')	8	50,600-57,799	57,800-64,499	65,000+

Notes:
All capacity figures are based on optimum conditions and are intended as guidelines for planning purposes only
Maximum two-way ADT values are based on the 1999 Modified Highway Capacity Manual Level of Service Tables
Two-land roadways designated as future arterials that conform to arterial design standards for vertical and horizontal alignments are analyzed as arterials.

SECTION II - EXISTING CONDITIONS

TRAFFIC VOLUMES WITHOUT PROJECT SCENARIOS

EXISTING TRAFFIC VOLUMES

Existing traffic volumes are based on peak hour intersection turn movement counts collected by National Data and Surveying Services in October 2017. Appendix A contains traffic count sheets. Vehicle classification counts were conducted at the intersections of Central Avenue/SR-60 Eastbound Ramp, Central Avenue/SR-60 Northbound Off Ramp and the Watkins Drive/SR-60 Eastbound On Ramp. The percentage of trucks at the remaining study intersections without classification counts was determined from classification counts at nearby intersections. Detailed volume development worksheets are included in Appendix B. Figure 4 illustrates the Existing 2017 daily and peak hour traffic volumes at study intersections and roadway segments.

KEY ROADWAY SEGMENTS

The key roadway segments analyzed in the study area are identified below:

- Sycamore Canyon Boulevard West of Project;
- Sycamore Canyon Boulevard North of Central Avenue;
- Sycamore Canyon Boulevard South of Central Avenue;
- Central Avenue West of Sycamore Canyon Boulevard;
- Central Avenue East of Sycamore Canyon Boulevard;
- Central Avenue East of SR-60 Eastbound on/off Ramp; and
- Central Avenue East of SR-60 Westbound on/off Ramp.

ROADWAY SEGMENT DAILY TRAFFIC

Twenty-four (24) hour count data were collected for all key roadway segments in October 2017. Count summary sheets can be found in Appendix A. The existing daily traffic volumes are illustrated in Figure 4.

INTERSECTION CONTROLS AND TRAFFIC COUNTS

The intersection configurations and traffic control for the key intersections were previously presented on Figure 3. The key intersections analyzed in the study area are identified below:

- Sycamore Canyon Boulevard at Central Avenue;
- Central Avenue at SR-60 Eastbound on/off Ramp;
- Central Avenue at SR-60 Westbound on/off Ramp;
- Central Avenue/Watkins at SR-60 Westbound on/off Ramp.

Morning and afternoon peak hour turn counts were collected at all key intersections, on a typical weekday (Tuesday, Wednesday, or Thursday). The existing peak hour traffic counts are depicted on Figure 4. A copy of the traffic count sheets are provided in Appendix A.

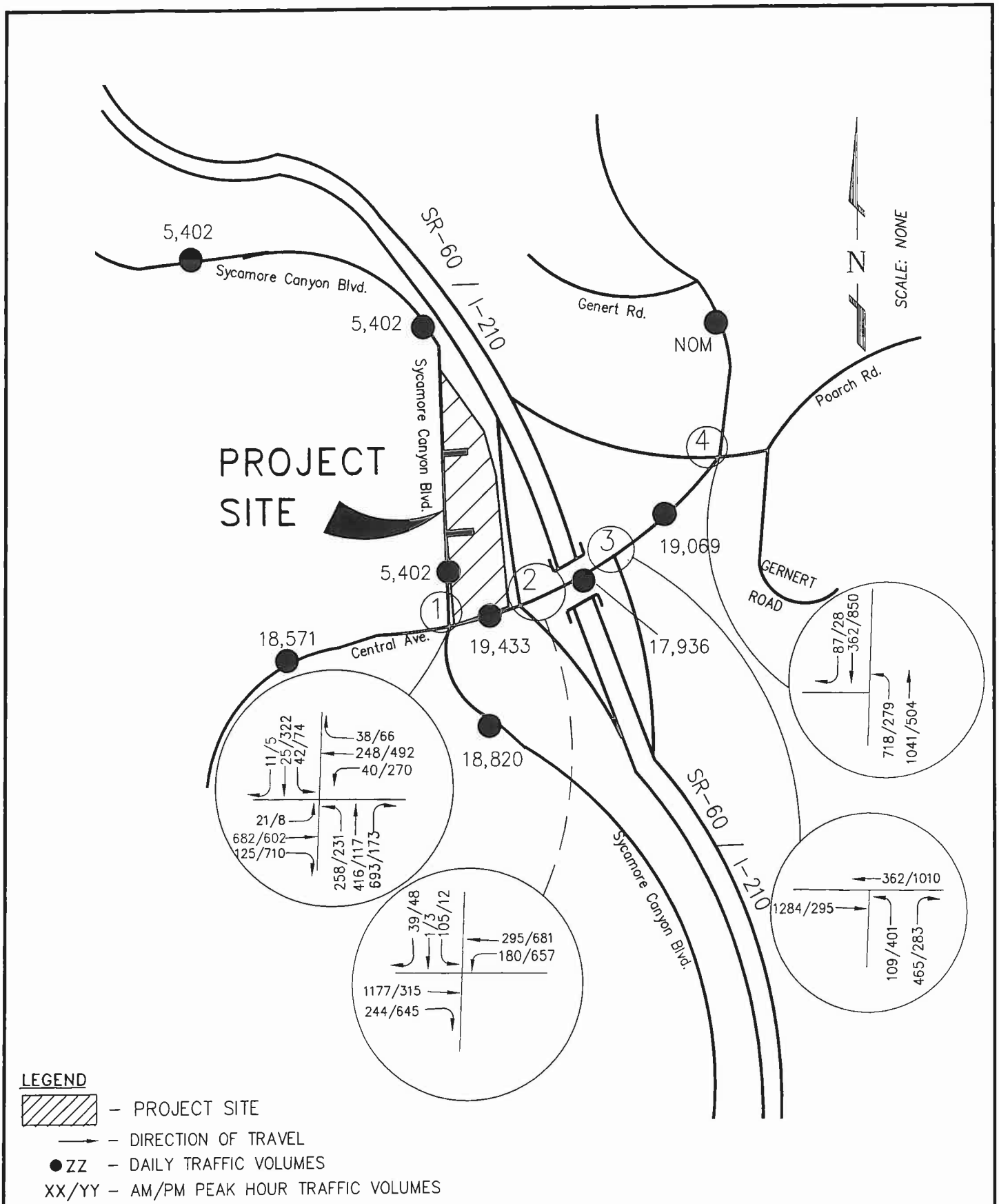

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FIGURE 4

EXISTING (2017)
TRAFFIC VOLUMES

EXISTING LEVEL OF SERVICE CONDITIONS

Existing – Roadway Segments

Table 4 summarizes the daily segment analysis for the existing conditions. As shown in Table 4, based on average daily conditions the following roadway segment currently operates at an unacceptable LOS "D" or better under existing conditions.

Table 4 – Existing Roadway Segment Level of Service

Roadway	Roadway Classification	LOS E Capacity	Existing 2017		
			ADT	V/C	LOS
Central Avenue					
West of Sycamore Canyon Boulevard	4-Lane Arterial (100')	33,000	18,571	0.57	B
East of Sycamore Canyon Boulevard	4-Lane Arterial (100')	33,000	19,433	0.59	B
I-215 SB Ramp to I-215 NB Ramp	4-Lane Arterial (100')	33,000	17,936	0.55	B
Sycamore Canyon Boulevard					
North of Project	2-Lane Collector	12,500	5,402	0.43	B
North of Central Ave.	2-Lane Arterial	18,000	5,402	0.30	A
South of Central Ave.	4-Lane Arterial (88')	22,000	18,820	0.86	C
Watkins Drive					
Between I-215 NB Off Ramp and I-215 NB On Ramp	4-Lane Arterial (88')	22,000	19,069	0.87	D
Source; See City of Riverside Roadway Capacity					

Existing - Intersections

Table 5 illustrates the existing intersection levels of service summary under existing conditions. A copy of the Synchro worksheets for the existing conditions can be found in Appendix B.

As can be seen from Table 5, all key intersections currently operate at LOS "D" or better during both peak hours under existing conditions.

Table 5 - Existing Conditions Intersection LOS Summary

Intersection	Traffic Control	Peak Hour	Existing Conditions	
			Delay (a)	LOS (b)
Sycamore Avenue at Central Avenue	Signal	AM	44.8	D
		PM	43.5	D
Central Avenue at SR-60 Eastbound on/off Ramp	Signal	AM	9.2	A
		PM	10.2	B
Central Avenue at SR-60 Westbound on/off Ramp	Signal	AM	16.0	B
		PM	22.2	C
Central Avenue /Watkins at SR-60 Westbound on/off Ramp	OWSC	AM	16.7	C
		PM	12.9	B

Delay is measured in seconds/vehicle; LOS=Level of Service; sig=signalized; OWSC=One Way Stop Controlled;
(a) Delays are reported as the average control delay for the entire intersection at signalized intersections and the worst movement at unsignalized intersections, (b) LOS calculations are based on the methodology outlined in the 2010 Highway Capacity Manual (HCM) and performed using Synchro 8 software

PROJECT TRAFFIC

Project Trip Generation

The project site proposes the development of a Gasoline Station with 16 fueling stations, a 3,200 square foot C-Store and a Carwash. Also proposed on the site is a 3,800 square foot fast Food Restaurant with a drive thru. The trip generation for the project was developed using rates from the ITE Trip Generation (9th) Edition) Land Use (946) for the Service Station with C-Store and Carwash and Land Use (934) for the Fast Food Restaurant with drive thru window.

The Service Station and Restaurant uses will typically draw trips from the traffic passing the site on an adjacent street. These trips are not "new" trips made for the sole purpose of visiting the site, but are trips made as an intermediate stop en route to an ultimate destination. These trips are referred to as "pass-by" trips and only affect traffic at project driveways and on streets adjacent to the project. Pass- by trips were calculated using rates from the ITE *Trip Generation Handbook* (9th Edition).

Table 6 summarizes the AM and PM peak hour and daily project trip generation and shows that the project is expected to generate 4,332 gross daily trips, 363 AM peak hour trips, and 347 PM peak hour trips. After accounting for pass-by trips, the project would generate 3,248 net new trips, 373 in the AM peak hour, , and 260 net new trips in the PM peak hour.

Table 6 – PROJECT TRIP GENERATION

Trip Generation Rates

Land Use	ITE CODE	Weekday Daily	AM PEAK Rate	AM PEAK In:Out Ratio	PM PEAK RATE	PM PEAK In:Out Ratio
Convenience Market w/Gas Pumps and Carwash	946	152.84 trips /fs	11.84	0.51:0.49	13.86	0.51:0.49
Fast Food w/Drive Thru	934	496.12 trips/ksf	45.42	0.51:0.49	32.65	0.52:0.48

TRIP GENERATION CALCULATIONS

Land Use	ITE CODE	Amount	ADT	AM PEAK In	AM PEAK Out	AM PEAK Total	PM PEAK In	PM PEAK Out	PM PEAK Total
Proposed Land Use									
Convenience Market w/Gas Pumps and Carwash	946	16 fs	2,446	97	93	190	114	108	222
Pass-by Trip Reduction (25%)			-612	-24	-23	-47	-29	-27	-56
		Subtotal	**1,834**	**73**	**70**	**143**	**85**	**81**	**166**
Fast Food w/Drive Thru	934	3.800 ksf	1,866	89	84	173	65	60	125
Pass-by Trip Reduction (25%)			-472	-22	-21	-43	-16	-15	-31
		Subtotal	**1,414**	**67**	**63**	**130**	**49**	**45**	**94**
Project Driveway Trips			**4,332**	**186**	**177**	**363**	**179**	**168**	**347**
Project Cumulative Trips			**3,248**	**140**	**133**	**373**	**134**	**126**	**260**

fs: fueling station, ksf: 1,000 square feet

Source: The trip rates for the project's land uses are based on the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition.*

Project Trip Distribution

The distribution of project trips was developed in consultation with City staff by examining the regional roadway network and the location of the proposed project in relation to the surrounding areas. Figure 5 presents the projects trip distribution with the projects southerly access restricted to right in/out movement as requested by the City. Trip assignment for project trips is the product of the project trip generation assignment illustrated on Figure 6 presents the project traffic volumes with the projects southerly access on Sycamore Canyon Boulevard restricted to right in/out access.

Opening Day (2019) Traffic Volumes

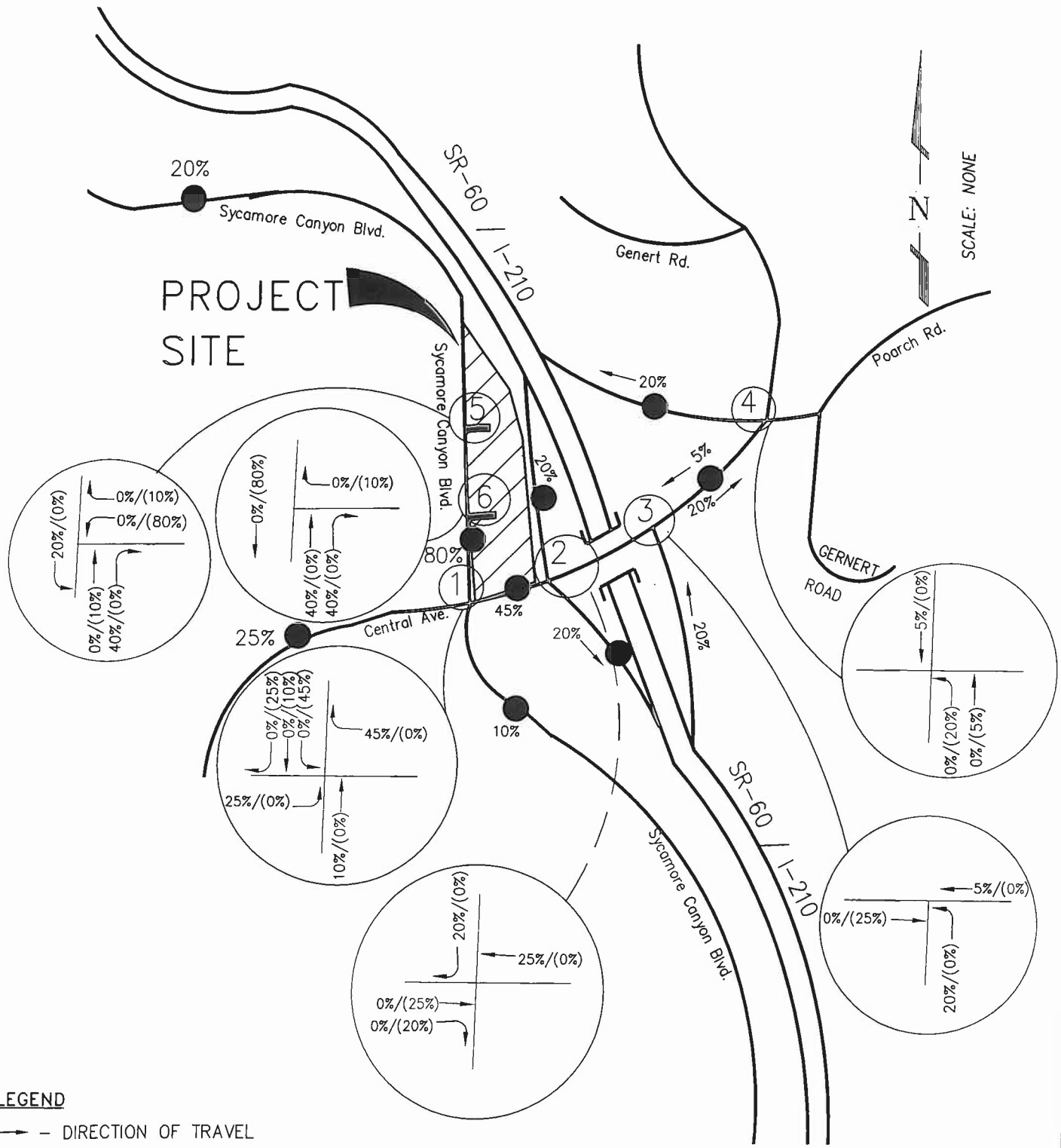
Opening Day (2019) traffic volumes were developed by applying an annual growth rate of 2.0 percent per year to the existing volumes. All assumptions, including the growth rate to be used for Opening Day analyses, are outlined in the City- approved scoping letter attached as Appendix A. Figure 7 illustrates the Opening Day 2019 peak hour volumes at study intersections under Opening Day 2019 project completion conditions

TRAFFIC VOLUMES WITH PROJECT SCENARIOS

Existing, Opening Day 2019 and Opening Day 2019 plus Project traffic volumes were developed by adding project traffic to the corresponding without project scenarios. Figure8 illustrates the Opening Day (2019) plus project traffic volumes with the projects southerly access restricted to right in/out access.

Cumulative Projects

Information concerning cumulative projects in the vicinity of the proposed project was obtained from City staff. Table 7 lists the cumulative projects that are within a 1.5 mile radius of the project site. Further investigation of the location of the projects found all projects except the project C-74 are located south on Sycamore Canyon Boulevard and Alessandro Boulevard. The location of the projects found their primary access routes would be in SR-60 and I-215. Access to SR-60 and I-215 is accommodated by the Box Springs/Fair Aisle Drive Interchange with SR-60. Due to the further investigation of the location of the cumulative projects listed on Table 7 it was concluded that the Opening Day 2019 traffic shown on Figure 7 would account for cumulative projects traffic and additional traffic analysis is not necessary.



LEGEND

→ – DIRECTION OF TRAVEL

▨ – PROJECT SITE

XX%/YY% – (IN%/OUT%) TRIP DISTRIBUTION PERCENTAGE

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FIGURE 5

PROJECT TRIP DISTRIBUTION WITH RIGHT IN/OUT AT THE PROJECTS SOUTHERLY DRIVEWAY

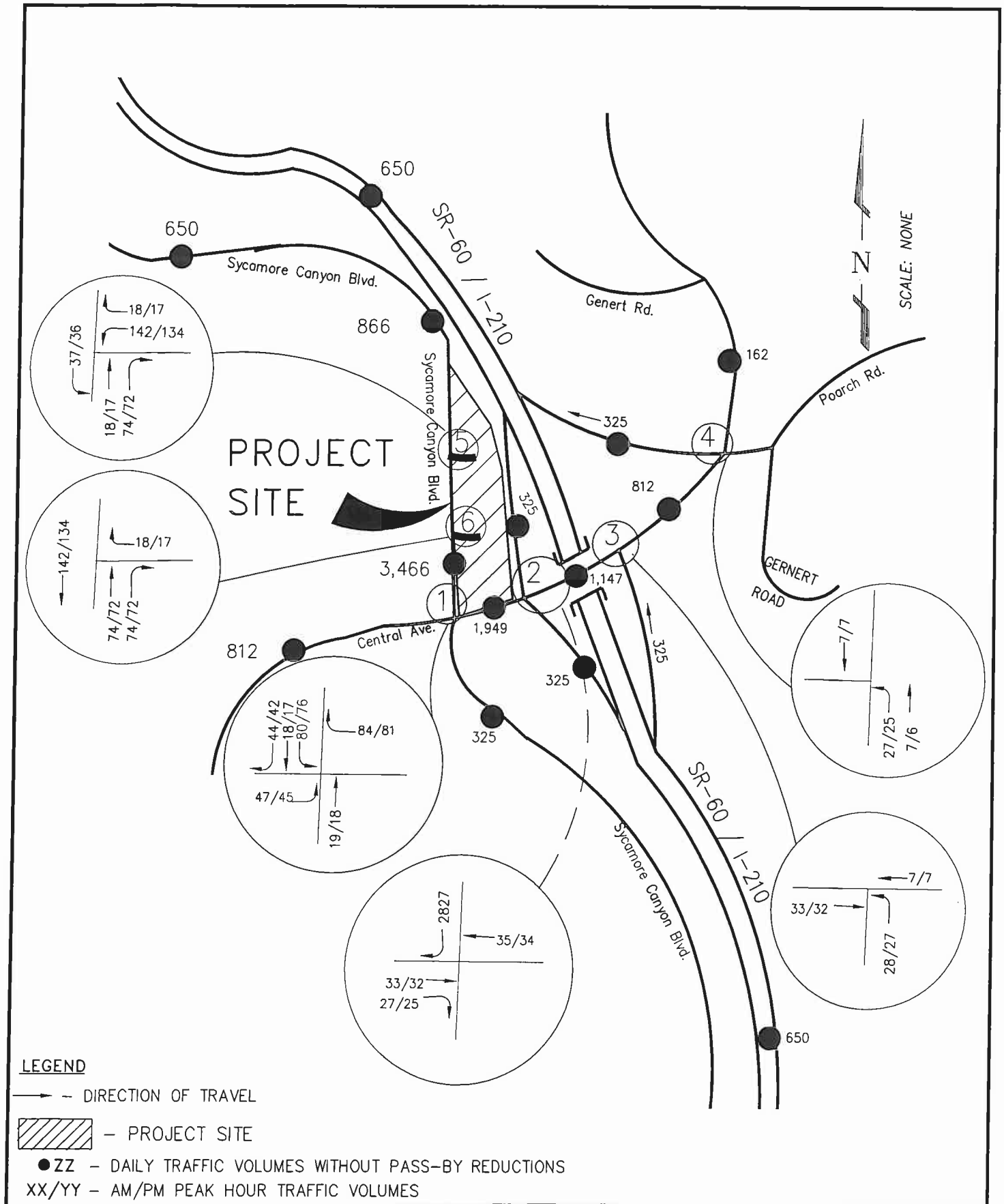

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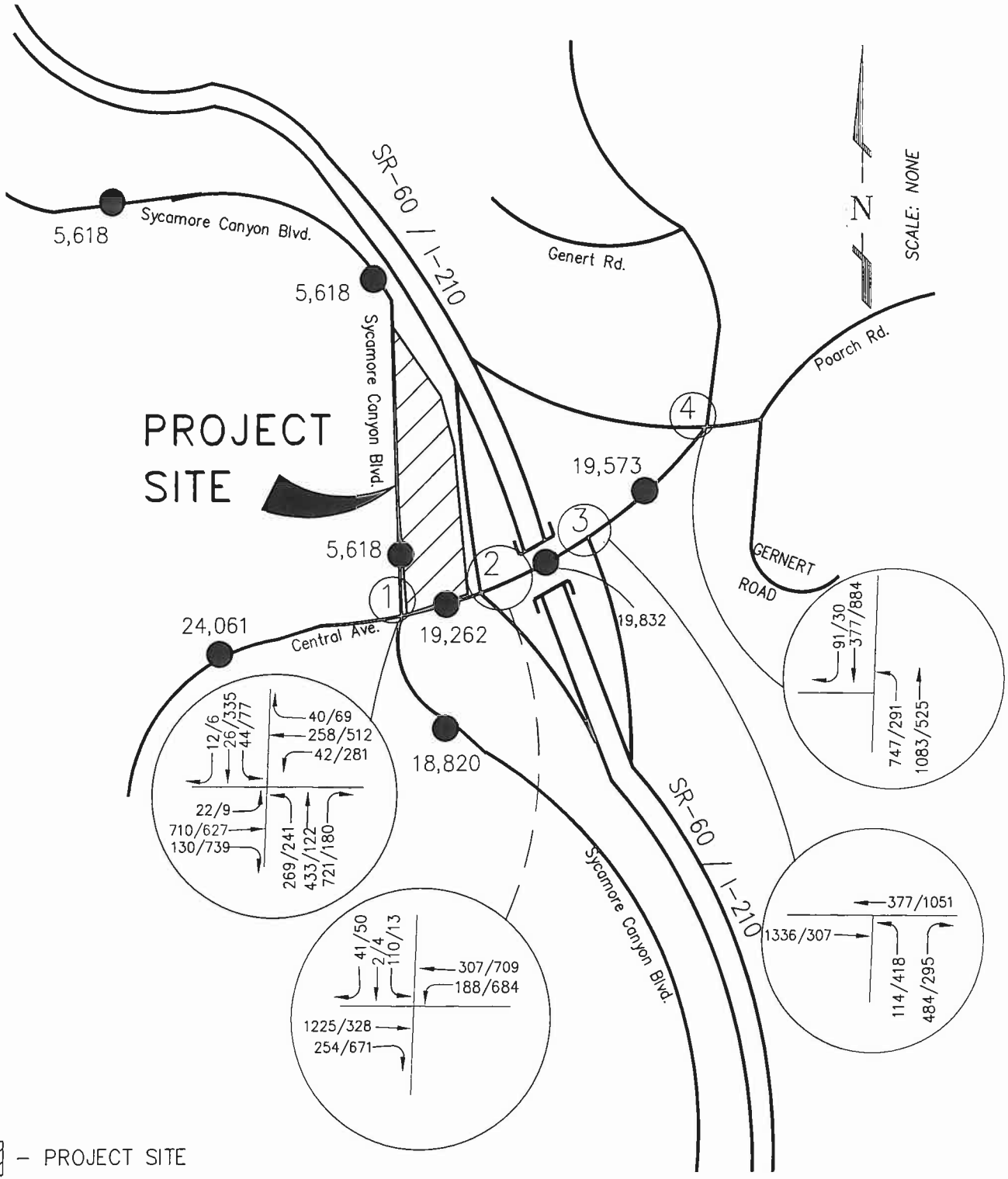
FIGURE 6

PROJECT TRIP ASSIGNMENT WITH RIGHT IN/OUT AT THE PROJECTS SOUTHERLY DRIVEWAY



LEGEND

- PROJECT SITE
- DIRECTION OF TRAVEL
- ●ZZ – DAILY TRAFFIC VOLUMES
- XX/YY – AM/PM PEAK HOUR TRAFFIC VOLUMES

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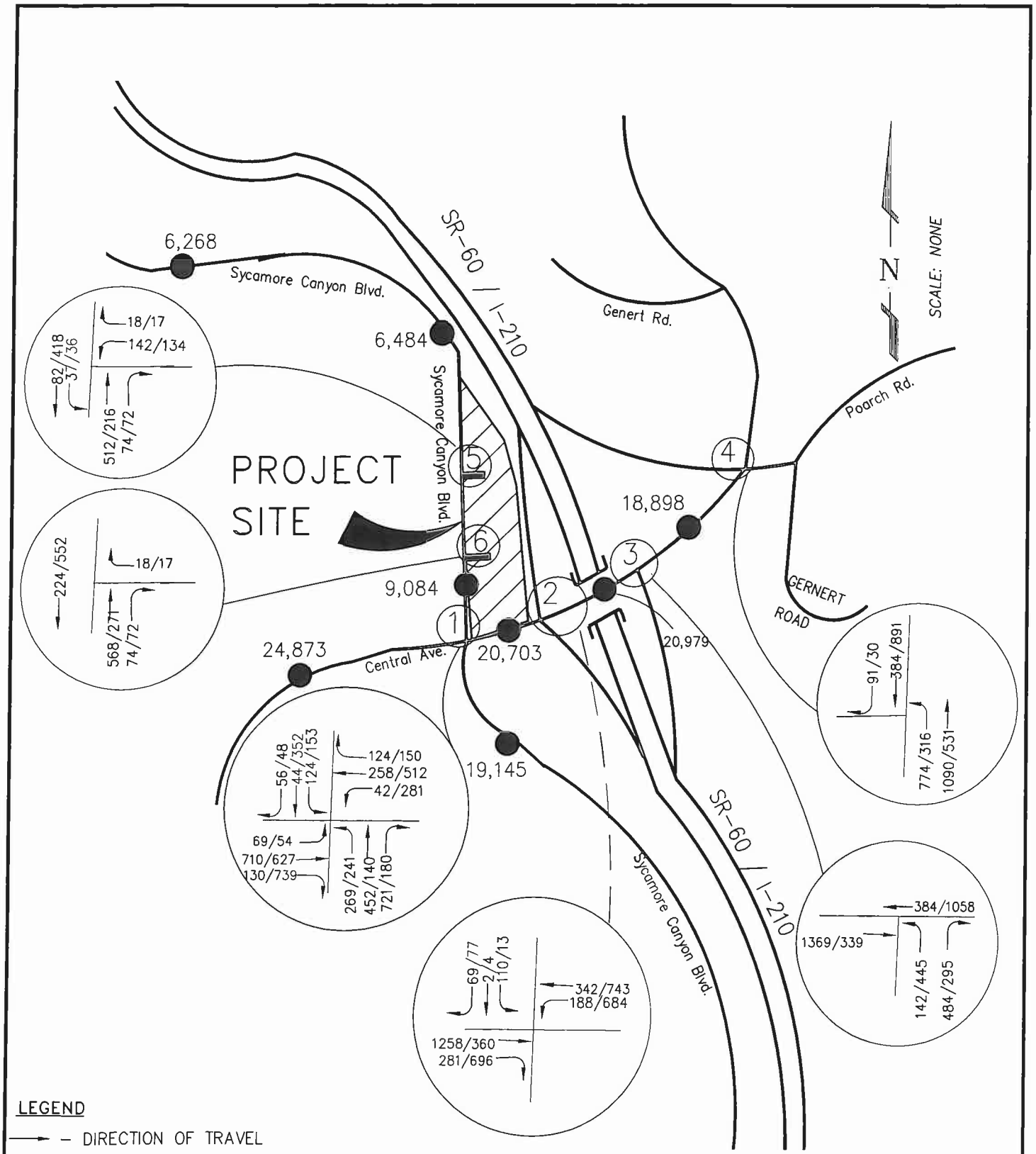
FIGURE 7

OPENING DAY (2019) TRAFFIC VOLUMES



LEGEND

→ – DIRECTION OF TRAVEL

▨ – PROJECT SITE

●ZZ – DAILY TRAFFIC VOLUMES WITHOUT PASS-BY REDUCTIONS

XX/YY – AM/PM PEAK HOUR TRAFFIC VOLUMES

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FIGURE 8

OPENING DAY 2019 PLUS PROJECT TRAFFIC VOLUMES WITH RIGHT IN/OUT AT PROJECTS SOUTHER DRIVEWAY

SECTION IV - PROJECT IMPACTS

OPENNG DAY 2019 PLUS PROJECT LEVEL OF SERVICE CONDITIONS

This scenario analyzes the traffic impacts of the proposed project under Opening Day (2019) and Opening Day (2019) plus Project traffic volumes presented on Figures 7 and 8.

2019 Opening Day Plus Project Roadway Segments

Table 7 summarizes the daily roadway segments level of service for Opening Day 2019 and Opening Day 2019 plus Project conditions. As shown on Table 7, based on Opening Day 2019 conditions all of the roadway segments will operate at LOS D or better. Further review of Table 7 shows with the addition of project traffic all of the roadway segments will continue to operate at LOS D or better.

Table 7 – Opening Day 2019 Roadway Segment Level of Service

Roadway	Roadway Classification	LOS E Capacity (a)	Opening Day 2019 ADT			Opening Day 2019 Plus Project			
			ADT	V/C	LOS	Project ADT	ADT	V/C	LOS
Central Avenue									
West of Sycamore Canyon Boulevard	4-Lane Arterial (100')	33,000	24,061	0.73	B	812	24,873	0.76	B
East of Sycamore Canyon Boulevard	4-Lane Arterial (100')	33,000	19,620	0.60	B	1,083	20,703	0.63	B
I-215 SB Ramp to I-215 NB Ramp	4-Lane Arterial (100')	33,000	19,832	0.60	B	1,147	20,979	0.64	B
Sycamore Canyon Boulevard									
North of Project	2-Lane Collector	12,500	5,618	0.45	B	866	6,484	0.51	B
North of Central Ave.	2-Lane Arterial	18,000	5,618	0.31	A	3,466	9,084	0.51	A
South of Central Ave.	4-Lane Arterial (88')	22,000	18,820	0.86	C	325	19,145	0.87	C
Watkins Drive									
Between I-215 NB Off Ramp and I-215 NB On Ramp	4-Lane Arterial (88')	22,000	19,573	0.89	D	812	19,898	0.90	D

Source; See City of Riverside Roadway Capacity shown in Table 3

2019 Opening Day Plus Project Intersection

Table 2 summarizes the City of Riverside Level of Service thresholds. The Opening Day 2019 and Opening Day 2019 plus Project traffic volumes presented on Figures 7 and 8 were analyzed using Synchro 8 software to report the resulting levels of service for each intersection and condition. Table 8 presents the results of the analysis. Copies of the Synchro worksheets are presented in Appendix C. Review of Table 8 shows all of the intersections will operate at LOS D or better for Opening Day 2019 conditions and Opening Day 2019 plus Project Conditions.

Table 8 – Opening Day 2019 Intersection Level of Service

Intersection	Traffic Control	Peak Hour	Opening Day (2019)		Opening Day (2019) Plus Project		Opening Day (2019) Plus Project (RIRO at the Projects Southerly Driveway	
			Delay (a)	LOS (b)	Delay (a)	LOS (b)	Delay (a)	LOS (b)
Sycamore Canyon Rd & Central Ave	Signal	AM	48.8	D	52.7	D	41.3	D
		PM	49.9	D	53.0	D	34.2	C
SR-60 EB Ramps & Central Ave	Signal	AM	9.4	A	9.8	A	9.8	A
		PM	11.4	B	14.0	B	14.0	B
SR-60 WB Off-Ramp & Watkins Dr/Central Ave	Signal	AM	16.5	B	16.8	B	16.8	B
		PM	22.6	C	23.0	C	23.0	C
Watkins Dr & Poarch Rd/SR-60 WB On-Ramp	OWSC	AM	18.7	B	20.6	C	20.6	C
		PM	13.5	B	14.2	B	14.2	B
Sycamore Canyon Rd & North Proj Dwy	OWSC	AM	n/a		15.7	C	20.3	C
		PM			12.6	B	15.1	C
Sycamore Canyon Rd & South Proj Dwy (c)	OWSC	AM	n/a		17.1	C	13.1	B
		PM			13.6	B	10.2	B

Notes:

(a) Delays are reported as the average control delay for the entire intersection at signalized intersections and the worst movement at unsignalized intersections.
(a) LOS calculations are based on the methodology outlined in the *2010 Highway Capacity Manual* (HCM) and performed using Synchro 8.
(b) Drawing restricted to right in/out/ (RIRO= Right In/Right Out)

Further review of Table 8 shows the project driveways will each operate at LOS B under full access and the projects northerly access will operate at LOS C with the southerly access restricted to right in/out movement. Additional discussion of the project driveways is provided in Section V of this report.

Further review of the Sycamore Canyon Road/Central Avenue intersection found the Opening Day 2019 and Opening Day 2019 Plus Project traffic conditions found the Eastbound right turn lane to operate at LOS F in the AM Peak and the Northbound right turn lane to operate at LOS F in the PM Peak Hour period. The LOS F condition is due to the high right turning volumes on each approach. To mitigate the LOS E and LOS F condition City staff recommends that the traffic signal be modified to provide overlap phasing with the Northbound and Westbound left turn phasing at the intersection. With these improvements intersection peak hour level of service at each approach would improve. A copy of Synchro worksheets are presented in Appendix B.

In summary the project does not create any significant direct project impacts.

SECTION V - PROJECT ACCESS AND INTERNAL CIRCULATION

The site plan presented on Figure 2 shows the project's proposed access to the Sycamore Canyon Boulevard. The project proposes each driveway to function with full access movement at the projects northerly access and right in/out at the projects southerly access driveway. The City of Riverside Traffic Department has requested that we assess the corner sight distance looking north on Sycamore Canyon Boulevard at Southbound traffic.

The location of the driveways and existing striping is presented on Figure 9. Also presented on Figure 9 is the available corner sight distance looking north from the projects proposed northerly driveway. Review of Figure 9 identifies there is 415' feet of corner sight distance looking north from the projects northerly driveway and 415' feet of stopping sight distance for southbound Sycamore Canyon Boulevard traffic approaching the projects northerly driveway. Figure 9 also presents the existing striping on Sycamore Canyon Boulevard. Review of the existing striping shows the roadway is striped with a painted median in the vicinity of the projects northerly driveway.

To accommodate full access to the project and improve safety exiting the projects driveways, we have prepared a channelization concept to restripe Sycamore Canyon Boulevard to provide left turn access at the projects northerly driveway and channelization of Sycamore Avenue to install a 3 foot median to restrict the projects southerly driveway to right in/out movements. Figure 10 presents the recommended channelization. In addition the channelization plan restripes Sycamore Canyon Boulevard to provide a left turn lane for the projects northerly access.

Further review of the project internal circulation found the circulation to be satisfactory, including the stacking for the carwash and fast food restaurant drive thru.

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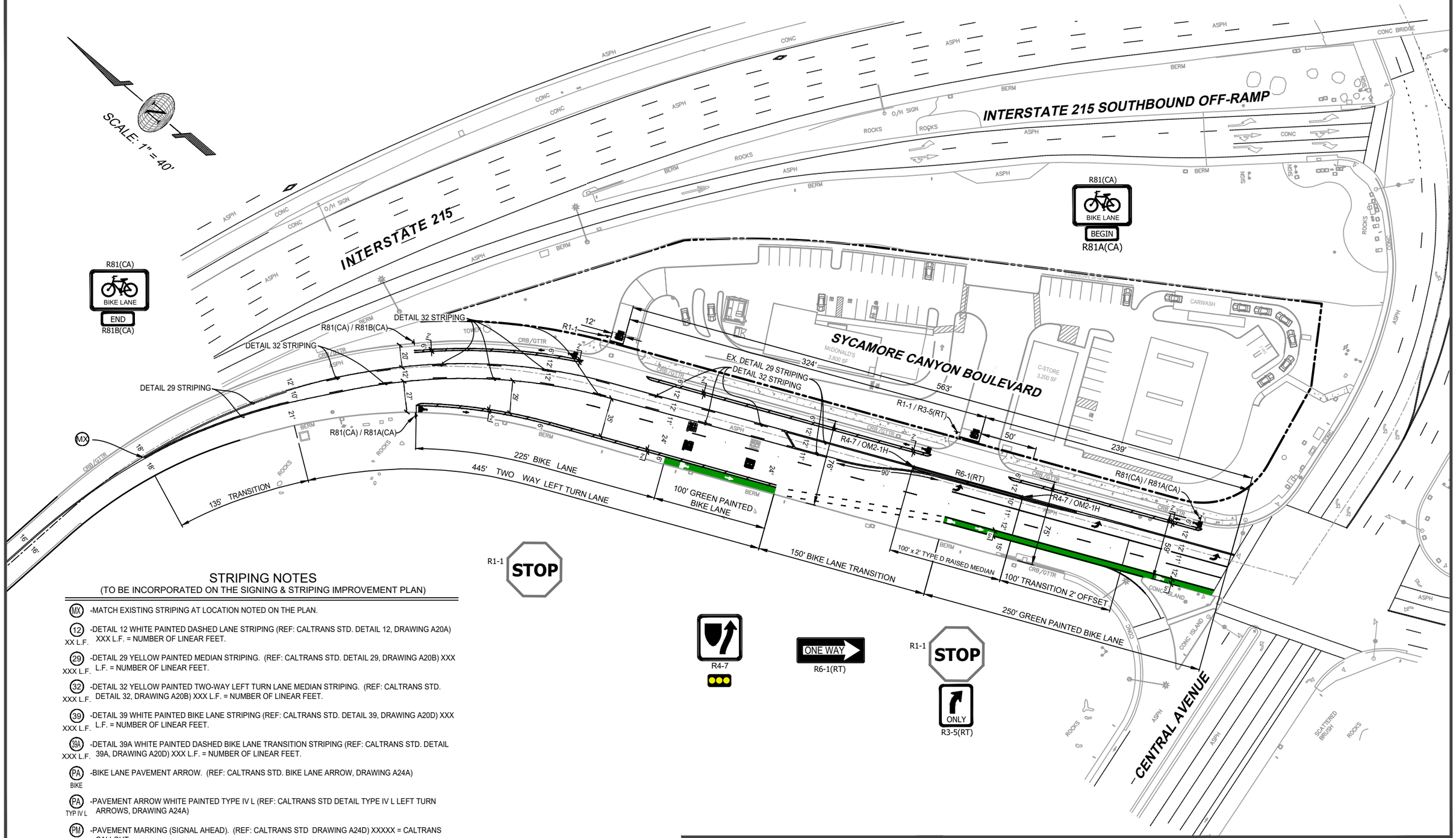
FIGURE 9
EXISTING STRIPING AND SIGHT DISTANCE

File : \\SERVER\Public\Server Recovered Data\1Projects\170805 – Sycamore Canyon\CAD\170805–Sycamore Canyon Ex Striping and Sight Dist–1B
Date : May 11, 2018 Designed By : Dave Bermudes



STRIPING NOTES

(TO BE INCORPORATED ON THE SIGNING & STRIPING IMPROVEMENT PLAN)

- (MX) -MATCH EXISTING STRIPING AT LOCATION NOTED ON THE PLAN.
- (12) XX L.F. -DETAIL 12 WHITE PAINTED DASHED LANE STRIPING (REF: CALTRANS STD. DETAIL 12, DRAWING A20A) XXX L.F. = NUMBER OF LINEAR FEET.
- (29) XXX L.F. -DETAIL 29 YELLOW PAINTED MEDIAN STRIPING. (REF: CALTRANS STD. DETAIL 29, DRAWING A20B) XXX L.F. = NUMBER OF LINEAR FEET.
- (32) XXX L.F. -DETAIL 32 YELLOW PAINTED TWO-WAY LEFT TURN LANE MEDIAN STRIPING. (REF: CALTRANS STD. DETAIL 32, DRAWING A20B) XXX L.F. = NUMBER OF LINEAR FEET.
- (39) XXX L.F. -DETAIL 39 WHITE PAINTED BIKE LANE STRIPING (REF: CALTRANS STD. DETAIL 39, DRAWING A20D) XXX L.F. = NUMBER OF LINEAR FEET.
- (39A) XXX L.F. -DETAIL 39A WHITE PAINTED DASHED BIKE LANE TRANSITION STRIPING (REF: CALTRANS STD. DETAIL 39A, DRAWING A20D) XXX L.F. = NUMBER OF LINEAR FEET.
- (PA) BIKE -BIKE LANE PAVEMENT ARROW. (REF: CALTRANS STD. BIKE LANE ARROW, DRAWING A24A)
- (PA) TYP IV L -PAVEMENT ARROW WHITE PAINTED TYPE IV L (REF: CALTRANS STD DETAIL TYPE IV L LEFT TURN ARROWS, DRAWING A24A)
- (PM) XXXXXX -PAVEMENT MARKING (SIGNAL AHEAD). (REF: CALTRANS STD DRAWING A24D) XXXXX = CALTRANS CALLOUT.
- (S) XXX-XX -INSTALL SIGN AT LOCATION SHOWN ON THE PLAN. (XXX(CA) = CALTRANS SIGN NUMBER; XXX-XX = MUTCD SIGN NUMBER)
- (SB) TYPICAL -SANDBLAST / GRIND / OBLITERATE ALL EXISTING CONFLICTING STRIPING (TYPICAL) WHERE NOTED ON THE PLAN. **BLACKING OUT OF EXISTING STRIPING IS NOT PERMITTED**

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FIGURE 10
RECOMMENDED CHANNELIZATION
SYCAMORE CANYON BOULEVARD

SECTION VI – SUMMARY OF FINDINGS AND CONCLUSSIONS

- The applicant proposes to develop the Sycamore Canyon Boulevard Commercial Development to provide a Service Station with a 3,200 square foot C-store with 16 Fueling positions and a carwash, and a 3,800 square foot Fast Food Restaurant.

- Development of the project is estimated to generate 4,332 daily, 363 AM peak hour and 347 PM peak hour driveway trips. With pass-by reductions the project will add 3,248 daily, 273 Am peak hour and 260 PM peak hour trips to the surrounding roadways and intersections.

- Analysis of the Year 2019 Opening Day conditions and with the addition of project traffic found each of the roadway segments and intersections analyzed to operate at an acceptable LOS D or better. Tables 8 and 9 shows the results of the analysis .

- Further analysis of a Sycamore Boulevard at Central Avenue intersection found LOS F conditions in the AM Peak Hour for the Northbound right turn and LOS F conditions in the PM Peak Hour for the Eastbound right turn movements. Installation of the overlap phasing of the signal modification will improve the LOS F condition and LOS F conditions to the Northbound right and Eastbound right lanes at the Sycamore Canyon Boulevard at Central Avenue intersection. Installation of the right turn overlaps phasing for the Eastbound right turn lane will improve LOS. Therefore the project does not create any significant direct impacts.

- To accommodate full access to the projects northerly driveway it is recommended that Sycamore Canyon Boulevard be restriped as shown on Figure 10.

- The projects southerly access will be restricted to right in/out movements. To restrict the projects southerly access the channelization plan shown on Figure 10 includes the installation a median barrier and installation of signage to restrict the driveway to right in/out movements.

APPENDIX A

- Scoping Agreement
- AM/PM Peak Hour Traffic Counts
- 24 Hour Machine Counts

National Data & Surveying Services Intersection Turning Movement Count

Location: Sycamore Canyon Blvd & Central Ave
City: Moreno Valley
Control: Signalized

Project ID: 17-06160-001
Date: 10/19/2017

Total

NS/EW Streets:	Sycamore Canyon Blvd				Sycamore Canyon Blvd				Central Ave				Central Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	1	0	1	3	1	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	90	132	211	0	8	13	1	0	3	124	21	0	7	49	7	0	666
7:15 AM	77	126	187	0	10	4	3	0	3	154	28	0	9	62	12	0	675
7:30 AM	27	52	139	0	9	5	3	0	8	217	37	0	9	64	8	0	578
7:45 AM	64	106	156	0	15	3	4	0	7	187	39	0	15	73	11	0	680
8:00 AM	95	86	193	0	11	6	0	0	8	106	30	0	7	44	3	0	589
8:15 AM	83	94	206	0	12	12	3	0	6	115	40	0	15	51	5	0	642
8:30 AM	106	85	219	0	7	2	2	0	3	82	47	0	10	48	11	0	622
8:45 AM	79	89	160	0	13	9	1	0	1	90	30	0	13	53	7	0	545
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	621	770	1471	0	85	54	17	0	39	1075	272	0	85	444	64	0	4997
APPROACH %'s :	21.70%	26.90%	51.40%	0.00%	54.49%	34.62%	10.90%	0.00%	2.81%	77.56%	19.62%	0.00%	14.33%	74.87%	10.79%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	258	416	693	0	42	25	11	0	21	682	125	0	40	248	38	0	2599
PEAK HR FACTOR :	0.717	0.788	0.821	0.000	0.700	0.481	0.688	0.000	0.656	0.786	0.801	0.000	0.667	0.849	0.792	0.000	0.956
	0.789				0.886				0.790				0.823				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	1	0	1	3	1	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	77	35	88	0	17	42	3	0	2	152	116	0	43	110	8	0	693
4:15 PM	73	42	94	0	14	59	1	0	1	153	146	0	35	87	19	0	724
4:30 PM	71	35	70	0	21	57	0	0	1	121	147	0	52	90	13	0	678
4:45 PM	58	30	59	0	24	65	4	0	0	164	135	0	49	96	13	0	697
5:00 PM	61	41	62	0	7	75	0	0	1	167	157	0	45	104	13	0	733
5:15 PM	60	29	50	0	21	72	0	0	1	177	169	0	51	112	14	0	756
5:30 PM	63	23	33	0	26	88	2	0	4	171	189	0	59	130	23	0	811
5:45 PM	47	24	28	0	20	87	3	0	2	87	195	0	115	146	16	0	770
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	510	259	484	0	150	545	13	0	12	1192	1254	0	449	875	119	0	5862
APPROACH %'s :	40.70%	20.67%	38.63%	0.00%	21.19%	76.98%	1.84%	0.00%	0.49%	48.49%	51.02%	0.00%	31.12%	60.64%	8.25%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	231	117	173	0	74	322	5	0	8	602	710	0	270	492	66	0	3070
PEAK HR FACTOR :	0.917	0.713	0.698	0.000	0.712	0.915	0.417	0.000	0.500	0.850	0.910	0.000	0.587	0.842	0.717	0.000	0.946
	0.794				0.864				0.907				0.747				

National Data & Surveying Services Intersection Turning Movement Count

Location: SR-60 EB Moreno Valley Fwy On/Off Ramp & Central Ave
City: Moreno Valley
Control: Signalized

Project ID: 17-06160-002
Date: 10/19/2017

Total

NS/EW Streets:	SR-60 EB Moreno Valley Fwy On/Off Ramp				SR-60 EB Moreno Valley Fwy On/Off Ramp				Central Ave				Central Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0.5	1.5	0	0	2	1	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	8	0	14	0	0	289	51	0	32	51	0	0	445
7:15 AM	0	0	0	0	21	0	8	0	0	294	55	0	37	73	0	0	488
7:30 AM	0	0	0	0	55	0	7	0	0	292	69	0	54	78	0	0	555
7:45 AM	0	0	0	0	21	1	10	0	0	302	69	0	57	93	0	0	553
8:00 AM	0	0	0	0	9	3	16	0	0	264	48	0	32	40	0	0	412
8:15 AM	0	0	0	0	7	1	12	0	0	256	65	0	26	52	0	0	419
8:30 AM	0	0	0	0	3	0	11	0	0	269	46	0	23	60	0	0	412
8:45 AM	0	0	0	0	3	1	14	0	0	190	64	0	25	56	0	0	353
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	127	6	92	0	0	2156	467	0	286	503	0	0	3637
APPROACH %'s :					56.44%	2.67%	40.89%	0.00%	0.00%	82.20%	17.80%	0.00%	36.25%	63.75%	0.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	105	1	39	0	0	1177	244	0	180	295	0	0	2041
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.477	0.250	0.696	0.000	0.000	0.974	0.884	0.000	0.789	0.793	0.000	0.000	0.919
					0.585				0.958				0.792				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0.5	1.5	0	0	2	1	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	3	1	12	0	0	132	129	0	136	141	0	0	554
4:15 PM	0	0	0	0	6	1	19	0	0	121	138	0	164	127	0	0	576
4:30 PM	0	0	0	0	6	0	12	0	0	95	118	0	154	138	0	0	523
4:45 PM	0	0	0	0	6	1	16	0	0	90	157	0	147	149	0	0	566
5:00 PM	0	0	0	0	2	0	12	0	0	86	146	0	162	148	0	0	556
5:15 PM	0	0	0	0	1	0	12	0	0	83	161	0	172	171	0	0	600
5:30 PM	0	0	0	0	3	2	8	0	0	56	181	0	176	213	0	0	639
5:45 PM	0	0	0	0	3	3	49	0	0	60	62	0	120	233	0	0	530
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	30	8	140	0	0	723	1092	0	1231	1320	0	0	4544
APPROACH %'s :					16.85%	4.49%	78.65%	0.00%	0.00%	39.83%	60.17%	0.00%	48.26%	51.74%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	12	3	48	0	0	315	645	0	657	681	0	0	2361
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.500	0.375	0.750	0.000	0.000	0.875	0.891	0.000	0.933	0.799	0.000	0.000	0.924
					0.685				0.972				0.860				

National Data & Surveying Services Intersection Turning Movement Count

Location: SR-60 WB Off Ramp N/O Moreno Valley Fwy & Watkins Dr
City: Moreno Valley
Control: Signalized

Project ID: 17-06160-003
Date: 10/19/2017

Total

NS/EW Streets:	SR-60 WB Off Ramp N/O Moreno Valley Fwy				SR-60 WB Off Ramp N/O Moreno Valley Fwy				Watkins Dr				Watkins Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	0	1	0	0	0	0	0	0	2	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	25	0	120	0	0	0	0	0	0	304	0	0	0	52	0	0	501
7:15 AM	33	0	137	0	0	0	0	0	0	313	0	0	0	79	0	0	562
7:30 AM	21	0	104	0	0	0	0	0	0	348	0	0	0	110	0	0	583
7:45 AM	30	0	104	0	0	0	0	0	0	319	0	0	0	121	0	0	574
8:00 AM	25	0	75	0	0	0	0	0	0	283	0	0	0	51	0	0	434
8:15 AM	37	0	95	0	0	0	0	0	0	262	0	0	0	41	0	0	435
8:30 AM	42	0	98	0	0	0	0	0	0	262	0	0	0	39	0	0	441
8:45 AM	37	0	89	0	0	0	0	0	0	209	0	0	0	44	0	0	379
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	250	0	822	0	0	0	0	0	0	2300	0	0	0	537	0	0	3909
APPROACH %'s :	23.32%	0.00%	76.68%	0.00%					0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	109	0	465	0	0	0	0	0	0	1284	0	0	0	362	0	0	2220
PEAK HR FACTOR :	0.826	0.000	0.849	0.000	0.000	0.000	0.000	0.000	0.000	0.922	0.000	0.000	0.000	0.748	0.000	0.000	0.952
	0.844								0.922				0.748				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	0	1	0	0	0	0	0	0	2	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	74	0	78	0	0	0	0	0	0	129	0	0	0	202	0	0	483
4:15 PM	80	0	75	0	0	0	0	0	0	135	0	0	0	222	0	0	512
4:30 PM	70	0	87	0	0	0	0	0	0	101	0	0	0	213	0	0	471
4:45 PM	85	0	90	0	0	0	0	0	0	93	0	0	0	208	0	0	476
5:00 PM	81	0	62	0	0	0	0	0	0	91	0	0	0	236	0	0	470
5:15 PM	89	0	67	0	0	0	0	0	0	84	0	0	0	246	0	0	486
5:30 PM	125	0	73	0	0	0	0	0	0	57	0	0	0	269	0	0	524
5:45 PM	106	0	81	0	0	0	0	0	0	63	0	0	0	259	0	0	509
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	710	0	613	0	0	0	0	0	0	753	0	0	0	1855	0	0	3931
APPROACH %'s :	53.67%	0.00%	46.33%	0.00%					0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	401	0	283	0	0	0	0	0	0	295	0	0	0	1010	0	0	1989
PEAK HR FACTOR :	0.802	0.000	0.873	0.000	0.000	0.000	0.000	0.000	0.000	0.810	0.000	0.000	0.000	0.939	0.000	0.000	0.949
	0.864								0.810				0.939				

National Data & Surveying Services Intersection Turning Movement Count

Location: Watkins Dr & SR-60 WB On Ramp/Poarch Rd
City: Moreno Valley
Control: 1-Way Stop(WB)

Project ID: 17-06160-004
Date: 10/19/2017

Total

NS/EW Streets:	Watkins Dr				Watkins Dr				SR-60 WB On Ramp/Poarch Rd				SR-60 WB On Ramp/Poarch Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	0.5	0.5	0	0	0	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	208	222	0	0	0	56	8	0	0	0	0	0	0	0	0	0	494
7:15 AM	173	277	0	0	0	77	12	0	0	0	0	0	0	0	0	0	539
7:30 AM	153	302	0	0	0	107	39	0	0	0	0	0	0	0	0	0	601
7:45 AM	184	240	0	0	0	122	28	0	0	0	0	0	0	0	0	0	574
8:00 AM	195	164	0	0	0	48	10	0	0	0	0	0	0	0	0	0	417
8:15 AM	183	178	0	0	0	41	5	0	0	0	0	0	0	0	0	0	407
8:30 AM	187	166	0	0	0	40	1	0	0	0	0	0	0	0	0	0	394
8:45 AM	154	146	0	0	0	42	5	0	0	0	0	0	0	0	0	0	347
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1437	1695	0	0	0	533	108	0	0	0	0	0	0	0	0	0	3773
APPROACH %'s :	45.88%	54.12%	0.00%	0.00%	0.00%	83.15%	16.85%	0.00%									
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	718	1041	0	0	0	362	87	0	0	0	0	0	0	0	0	0	2208
PEAK HR FACTOR :	0.863	0.862	0.000	0.000	0.000	0.742	0.558	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.918
	0.966				0.748												

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	0.5	0.5	0	0	0	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	92	112	0	0	0	206	5	0	0	0	0	0	0	0	0	0	415
4:15 PM	80	125	0	0	0	219	9	0	0	0	0	0	0	0	0	0	433
4:30 PM	59	131	0	0	0	215	9	0	0	0	0	0	0	0	0	0	414
4:45 PM	48	136	0	0	0	210	5	0	0	0	0	0	0	0	0	0	399
5:00 PM	52	97	0	0	0	229	6	0	0	0	0	0	0	0	0	0	384
5:15 PM	58	95	0	0	0	254	6	0	0	0	0	0	0	0	0	0	413
5:30 PM	36	95	0	0	0	271	6	0	0	0	0	0	0	0	0	0	408
5:45 PM	31	108	0	2	0	255	5	0	0	0	0	0	0	0	0	0	401
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	456	899	0	2	0	1859	51	0	0	0	0	0	0	0	0	0	3267
APPROACH %'s :	33.60%	66.25%	0.00%	0.15%	0.00%	97.33%	2.67%	0.00%									
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	279	504	0	0	0	850	28	0	0	0	0	0	0	0	0	0	1661
PEAK HR FACTOR :	0.758	0.926	0.000	0.000	0.000	0.970	0.778	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.959
	0.955				0.963												

Prepared by NDS/ATD

VOLUME

Central Ave W/O Sycamore Canyon Blvd

Day: Wednesday
Date: 11/1/2017

City: Riverside
Project #: CA17_6158_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	10,491	8,080	18,571

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			19		26		45		12:00			139		106		245	
00:15			21		31		52		12:15			153		103		256	
00:30			17		17		34		12:30			142		113		255	
00:45			23	80	20	94	43	174	12:45			120	554	201	523	321	1077
01:00			21		19		40		13:00			123		143		266	
01:15			11		16		27		13:15			138		134		272	
01:30			16		13		29		13:30			128		134		262	
01:45			7	55	10	58	17	113	13:45			160	549	107	518	267	1067
02:00			9		7		16		14:00			138		140		278	
02:15			9		6		15		14:15			151		133		284	
02:30			14		13		27		14:30			162		155		317	
02:45			4	36	11	37	15	73	14:45			170	621	118	546	288	1167
03:00			8		14		22		15:00			162		136		298	
03:15			8		10		18		15:15			195		134		329	
03:30			10		10		20		15:30			211		139		350	
03:45			7	33	15	49	22	82	15:45			264	832	162	571	426	1403
04:00			22		14		36		16:00			240		160		400	
04:15			19		16		35		16:15			275		180		455	
04:30			20		15		35		16:30			310		155		465	
04:45			17	78	27	72	44	150	16:45			303	1128	144	639	447	1767
05:00			23		22		45		17:00			318		165		483	
05:15			26		47		73		17:15			344		181		525	
05:30			42		63		105		17:30			323		160		483	
05:45			51	142	82	214	133	356	17:45			339	1324	136	642	475	1966
06:00			54		77		131		18:00			292		122		414	
06:15			63		97		160		18:15			265		115		380	
06:30			73		94		167		18:30			215		88		303	
06:45			126	316	128	396	254	712	18:45			216	988	83	408	299	1396
07:00			144		134		278		19:00			141		74		215	
07:15			214		111		325		19:15			115		72		187	
07:30			255		120		375		19:30			86		65		151	
07:45			191	804	157	522	348	1326	19:45			83	425	59	270	142	695
08:00			148		153		301		20:00			71		69		140	
08:15			156		137		293		20:15			84		94		178	
08:30			124		138		262		20:30			69		52		121	
08:45			115	543	139	567	254	1110	20:45			70	294	65	280	135	574
09:00			92		110		202		21:00			68		68		136	
09:15			85		110		195		21:15			67		66		133	
09:30			84		100		184		21:30			64		59		123	
09:45			86	347	102	422	188	769	21:45			51	250	57	250	108	500
10:00			98		90		188		22:00			42		43		85	
10:15			84		83		167		22:15			32		47		79	
10:30			102		71		173		22:30			47		37		84	
10:45			110	394	92	336	202	730	22:45			34	155	36	163	70	318
11:00			112		102		214		23:00			29		26		55	
11:15			119		75		194		23:15			24		35		59	
11:30			108		94		202		23:30			26		30		56	
11:45			106	445	117	388	223	833	23:45			19	98	24	115	43	213
TOTALS				3273		3155		6428	TOTALS				7218		4925		12143
SPLIT %				50.9%		49.1%		34.6%	SPLIT %				59.4%		40.6%		65.4%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	10,491	8,080	18,571

AM Peak Hour			07:15	07:45	07:15	PM Peak Hour		17:00	15:45	17:00
AM Pk Volume			808	585	1349	PM Pk Volume		1324	657	1966
Pk Hr Factor			0.792	0.932	0.899	Pk Hr Factor		0.962	0.913	0.936
7 - 9 Volume	0	0	1347	1089	2436	4 - 6 Volume	0	2452	1281	3733
7 - 9 Peak Hour			07:15	07:45	07:15	4 - 6 Peak Hour		17:00	16:45	17:00
7 - 9 Pk Volume	0	0	808	585	1349	4 - 6 Pk Volume	0	1324	650	1966
Pk Hr Factor	0.000	0.000	0.792	0.932	0.899	Pk Hr Factor	0.000	0.962	0.898	0.936

Prepared by NDS/ATD

Prepared by National Data & Surveying Services

VOLUME

Sycamore Canyon Blvd N/O Central Ave

Day: Thursday
Date: 10/19/2017

City: Riverside
Project #: CA17_6159_001

DAILY TOTALS	NB	SB	EB	WB	Total
	3,149	2,253	0	0	5,402

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	14		3		0	0	17		12:00	37		18		0	0	55	
00:15	8		3		0	0	11		12:15	30		17		0	0	47	
00:30	2		7		0	0	9		12:30	25		18		0	0	43	
00:45	7	31	3	16	0	0	10	47	12:45	35	127	23	76	0	0	58	203
01:00	2		3		0	0	5		13:00	35		21		0	0	56	
01:15	4		2		0	0	6		13:15	43		28		0	0	71	
01:30	2		4		0	0	6		13:30	34		25		0	0	59	
01:45	2	10	4	13	0	0	6	23	13:45	57	169	15	89	0	0	72	258
02:00	2		3		0	0	5		14:00	59		20		0	0	79	
02:15	2		3		0	0	5		14:15	48		36		0	0	84	
02:30	2		2		0	0	4		14:30	49		37		0	0	86	
02:45	1	7	1	9	0	0	2	16	14:45	50	206	29	122	0	0	79	328
03:00	3		3		0	0	6		15:00	55		44		0	0	99	
03:15	1		1		0	0	2		15:15	48		37		0	0	85	
03:30	1		2		0	0	3		15:30	47		46		0	0	93	
03:45	2	7	1	7	0	0	3	14	15:45	58	208	47	174	0	0	105	382
04:00	4		5		0	0	9		16:00	48		60		0	0	108	
04:15	3		3		0	0	6		16:15	41		73		0	0	114	
04:30	6		5		0	0	11		16:30	45		82		0	0	127	
04:45	12	25	4	17	0	0	16	42	16:45	50	184	59	274	0	0	109	458
05:00	16		5		0	0	21		17:00	38		88		0	0	126	
05:15	16		3		0	0	19		17:15	53		117		0	0	170	
05:30	25		12		0	0	37		17:30	33		99		0	0	132	
05:45	33	90	9	29	0	0	42	119	17:45	36	160	96	400	0	0	132	560
06:00	31		6		0	0	37		18:00	23		93		0	0	116	
06:15	57		10		0	0	67		18:15	24		87		0	0	111	
06:30	88		11		0	0	99		18:30	12		63		0	0	75	
06:45	97	273	20	47	0	0	117	320	18:45	21	80	54	297	0	0	75	377
07:00	140		21		0	0	161		19:00	19		55		0	0	74	
07:15	136		15		0	0	151		19:15	24		42		0	0	66	
07:30	104		23		0	0	127		19:30	15		34		0	0	49	
07:45	122	502	17	76	0	0	139	578	19:45	13	71	31	162	0	0	44	233
08:00	92		16		0	0	108		20:00	26		21		0	0	47	
08:15	110		26		0	0	136		20:15	23		12		0	0	35	
08:30	98		11		0	0	109		20:30	13		14		0	0	27	
08:45	103	403	21	74	0	0	124	477	20:45	11	73	12	59	0	0	23	132
09:00	54		16		0	0	70		21:00	12		14		0	0	26	
09:15	56		18		0	0	74		21:15	13		15		0	0	28	
09:30	48		18		0	0	66		21:30	11		8		0	0	19	
09:45	40	198	14	66	0	0	54	264	21:45	14	50	12	49	0	0	26	99
10:00	27		13		0	0	40		22:00	8		5		0	0	13	
10:15	29		22		0	0	51		22:15	4		9		0	0	13	
10:30	29		15		0	0	44		22:30	9		3		0	0	12	
10:45	34	119	18	68	0	0	52	187	22:45	7	28	7	24	0	0	14	52
11:00	31		25		0	0	56		23:00	11		6		0	0	17	
11:15	16		18		0	0	34		23:15	5		2		0	0	7	
11:30	27		19		0	0	46		23:30	10		8		0	0	18	
11:45	24	98	22	84	0	0	46	182	23:45	4	30	5	21	0	0	9	51
TOTALS		1763		506				2269	TOTALS		1386		1747				3133
SPLIT %		77.7%		22.3%				42.0%	SPLIT %		44.2%		55.8%				58.0%

DAILY TOTALS	NB	SB	EB	WB	Total
	3,149	2,253	0	0	5,402

AM Peak Hour	07:00	11:00			07:00	PM Peak Hour	13:45	17:15		17:00
AM Pk Volume	502	84			578	PM Pk Volume	213	405		560
Pk Hr Factor	0.896	0.840			0.898	Pk Hr Factor	0.903	0.865		0.824
7 - 9 Volume	905	150	0	0	1055	4 - 6 Volume	344	674	0	1018
7 - 9 Peak Hour	07:00	07:30			07:00	4 - 6 Peak Hour	16:30	17:00		17:00
7 - 9 Pk Volume	502	82	0	0	578	4 - 6 Pk Volume	186	400	0	560
Pk Hr Factor	0.896	0.788	0.000	0.000	0.898	Pk Hr Factor	0.877	0.855	0.000	0.824

A-5b

Prepared by NDS/ATD

VOLUME

Central Ave Bet. Sycamore Canyon Blvd & SR-60 EB On/Off Ramp

Day: Thursday
Date: 10/19/2017

City: Riverside
Project #: CA17_6158_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	12,242	7,191	19,433

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			18		41		59		12:00			128		88		216	
00:15			22		41		63		12:15			125		87		212	
00:30			27		31		58		12:30			149		103		252	
00:45			25	92	27	140	52	232	12:45			141	543	172	450	313	993
01:00			27		26		53		13:00			147		130		277	
01:15			19		31		50		13:15			141		95		236	
01:30			16		17		33		13:30			179		111		290	
01:45			9	71	15	89	24	160	13:45			186	653	92	428	278	1081
02:00			12		16		28		14:00			172		129		301	
02:15			12		13		25		14:15			184		102		286	
02:30			15		23		38		14:30			195		125		320	
02:45			5	44	13	65	18	109	14:45			204	755	100	456	304	1211
03:00			9		17		26		15:00			212		119		331	
03:15			9		9		18		15:15			221		120		341	
03:30			16		10		26		15:30			253		127		380	
03:45			8	42	21	57	29	99	15:45			263	949	117	483	380	1432
04:00			20		10		30		16:00			243		154		397	
04:15			26		14		40		16:15			250		152		402	
04:30			28		10		38		16:30			261		128		389	
04:45			25	99	27	61	52	160	16:45			220	974	158	592	378	1566
05:00			31		21		52		17:00			244		157		401	
05:15			77		29		106		17:15			260		201		461	
05:30			172		20		192		17:30			218		191		409	
05:45			236	516	28	98	264	614	17:45			213	935	178	727	391	1662
06:00			266		37		303		18:00			195		151		346	
06:15			320		37		357		18:15			187		146		333	
06:30			272		43		315		18:30			149		95		244	
06:45			297	1155	65	182	362	1337	18:45			156	687	99	491	255	1178
07:00			329		54		383		19:00			90		97		187	
07:15			324		79		403		19:15			90		80		170	
07:30			337		92		429		19:30			48		76		124	
07:45			327	1317	105	330	432	1647	19:45			57	285	74	327	131	612
08:00			267		78		345		20:00			66		81		147	
08:15			314		64		378		20:15			59		105		164	
08:30			267		68		335		20:30			49		64		113	
08:45			240	1088	83	293	323	1381	20:45			53	227	79	329	132	556
09:00			142		68		210		21:00			48		89		137	
09:15			131		65		196		21:15			53		78		131	
09:30			106		80		186		21:30			43		71		114	
09:45			121	500	87	300	208	800	21:45			40	184	81	319	121	503
10:00			115		55		170		22:00			36		69		105	
10:15			98		74		172		22:15			26		58		84	
10:30			120		65		185		22:30			36		46		82	
10:45			122	455	78	272	200	727	22:45			33	131	54	227	87	358
11:00			113		85		198		23:00			38		34		72	
11:15			92		70		162		23:15			33		41		74	
11:30			106		96		202		23:30			23		33		56	
11:45			119	430	89	340	208	770	23:45			16	110	27	135	43	245
TOTALS				5809		2227		8036	TOTALS				6433		4964		11397
SPLIT %				72.3%		27.7%		41.4%	SPLIT %				56.4%		43.6%		58.6%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	12,242	7,191	19,433

AM Peak Hour			07:00	11:45	07:00	PM Peak Hour		15:45	17:00	17:00
AM Pk Volume			1317	367	1647	PM Pk Volume		1017	727	1662
Pk Hr Factor			0.977	0.891	0.953	Pk Hr Factor		0.967	0.904	0.901
7 - 9 Volume	0	0	2405	623	3028	4 - 6 Volume	0	1909	1319	3228
7 - 9 Peak Hour			07:00	07:15	07:00	4 - 6 Peak Hour		16:30	17:00	17:00
7 - 9 Pk Volume	0	0	1317	354	1647	4 - 6 Pk Volume	0	985	727	1662
Pk Hr Factor	0.000	0.000	0.977	0.843	0.953	Pk Hr Factor	0.000	0.943	0.904	0.901

Prepared by NDS/ATD

VOLUME

Central Ave Bet. SR-60 EB On/Off Ramp & SR-60 WB Off Ramp

Day: Thursday
Date: 10/19/2017

City: Riverside
Project #: CA17_6158_003

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	8,334	9,602	17,936

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			8		35		43		12:00			80		118		198	
00:15			13		30		43		12:15			76		98		174	
00:30			13		22		35		12:30			110		107		217	
00:45			10	44	24	111	34	155	12:45			92	358	153	476	245	834
01:00			8		16		24		13:00			89		153		242	
01:15			10		10		20		13:15			96		125		221	
01:30			6		10		16		13:30			105		129		234	
01:45			3	27	17	53	20	80	13:45			138	428	124	531	262	959
02:00			5		7		12		14:00			125		186		311	
02:15			4		2		6		14:15			122		140		262	
02:30			6		5		11		14:30			120		162		282	
02:45			5	20	9	23	14	43	14:45			136	503	145	633	281	1136
03:00			8		10		18		15:00			128		147		275	
03:15			6		7		13		15:15			124		171		295	
03:30			7		5		12		15:30			139		190		329	
03:45			6	27	15	37	21	64	15:45			131	522	233	741	364	1263
04:00			13		11		24		16:00			105		262		367	
04:15			15		9		24		16:15			110		295		405	
04:30			24		22		46		16:30			95		268		363	
04:45			51	103	22	64	73	167	16:45			105	415	288	1113	393	1528
05:00			45		28		73		17:00			85		320		405	
05:15			100		23		123		17:15			82		365		447	
05:30			227		16		243		17:30			80		377		457	
05:45			230	602	40	107	270	709	17:45			76	323	344	1406	420	1729
06:00			223		25		248		18:00			45		301		346	
06:15			233		32		265		18:15			52		252		304	
06:30			281		45		326		18:30			44		236		280	
06:45			295	1032	89	191	384	1223	18:45			59	200	184	973	243	1173
07:00			284		78		362		19:00			41		170		211	
07:15			310		104		414		19:15			42		134		176	
07:30			347		130		477		19:30			24		130		154	
07:45			311	1252	145	457	456	1709	19:45			26	133	94	528	120	661
08:00			291		72		363		20:00			32		96		128	
08:15			259		74		333		20:15			33		76		109	
08:30			254		75		329		20:30			37		81		118	
08:45			215	1019	75	296	290	1315	20:45			19	121	66	319	85	440
09:00			181		71		252		21:00			23		72		95	
09:15			144		68		212		21:15			23		56		79	
09:30			101		94		195		21:30			24		71		95	
09:45			83	509	77	310	160	819	21:45			29	99	56	255	85	354
10:00			47		80		127		22:00			22		44		66	
10:15			66		88		154		22:15			17		40		57	
10:30			60		97		157		22:30			19		38		57	
10:45			49	222	80	345	129	567	22:45			23	81	39	161	62	242
11:00			64		97		161		23:00			14		28		42	
11:15			57		77		134		23:15			12		32		44	
11:30			50		86		136		23:30			13		32		45	
11:45			73	244	87	347	160	591	23:45			11	50	33	125	44	175
TOTALS				5101		2341		7442	TOTALS				3233		7261		10494
SPLIT %				68.5%		31.5%		41.5%	SPLIT %				30.8%		69.2%		58.5%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	8,334	9,602	17,936

AM Peak Hour			07:15	07:00	07:15	PM Peak Hour		14:45	17:00	17:00
AM Pk Volume			1259	457	1710	PM Pk Volume		527	1406	1729
Pk Hr Factor			0.907	0.788	0.896	Pk Hr Factor		0.948	0.932	0.946
7 - 9 Volume	0	0	2271	753	3024	4 - 6 Volume	0	738	2519	3257
7 - 9 Peak Hour			07:15	07:00	07:15	4 - 6 Peak Hour		16:00	17:00	17:00
7 - 9 Pk Volume	0	0	1259	457	1710	4 - 6 Pk Volume	0	415	1406	1729
Pk Hr Factor	0.000	0.000	0.907	0.788	0.896	Pk Hr Factor	0.000	0.943	0.932	0.946

Prepared by NDS/ATD

VOLUME

Watkins Dr Bet. SR-60 WB Off Ramp & SR-60 WB On Ramp

Day: Thursday
Date: 10/19/2017

City: Riverside
Project #: CA17_6158_004

DAILY TOTALS	NB	SB	EB	WB	Total
	12,749	6,320	0	0	19,069

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	18		19						37		12:00	130		72						202	
00:15	17		23						40		12:15	129		45						174	
00:30	15		18						33		12:30	160		52						212	
00:45	19	69	20	80					39	149	12:45	168	587	35	204					203	791
01:00	14		9						23		13:00	117		89						206	
01:15	14		8						22		13:15	175		75						250	
01:30	11		7						18		13:30	178		75						253	
01:45	5	44	7	31					12	75	13:45	214	684	66	305					280	989
02:00	10		3						13		14:00	195		138						333	
02:15	6		2						8		14:15	185		91						276	
02:30	10		3						13		14:30	200		112						312	
02:45	7	33	6	14					13	47	14:45	202	782	102	443					304	1225
03:00	12		6						18		15:00	187		107						294	
03:15	9		4						13		15:15	186		124						310	
03:30	7		1						8		15:30	210		135						345	
03:45	14	42	5	16					19	58	15:45	202	785	177	543					379	1328
04:00	18		2						20		16:00	172		178						350	
04:15	24		3						27		16:15	196		216						412	
04:30	83		4						87		16:30	197		197						394	
04:45	102	227	8	17					110	244	16:45	181	746	209	800					390	1546
05:00	86		10						96		17:00	142		239						381	
05:15	166		6						172		17:15	165		263						428	
05:30	298		3						301		17:30	132		264						396	
05:45	335	885	16	35					351	920	17:45	145	584	248	1014					393	1598
06:00	257		13						270		18:00	111		202						313	
06:15	335		15						350		18:15	92		207						299	
06:30	342		25						367		18:30	77		185						262	
06:45	392	1326	69	122					461	1448	18:45	91	371	135	729					226	1100
07:00	420		57						477		19:00	54		124						178	
07:15	449		76						525		19:15	69		92						161	
07:30	430		111						541		19:30	53		90						143	
07:45	394	1693	122	366					516	2059	19:45	68	244	53	359					121	603
08:00	365		49						414		20:00	54		52						106	
08:15	371		41						412		20:15	65		52						117	
08:30	355		40						395		20:30	68		45						113	
08:45	319	1410	43	173					362	1583	20:45	44	231	34	183					78	414
09:00	219		37						256		21:00	38		36						74	
09:15	208		29						237		21:15	45		34						79	
09:30	170		55						225		21:30	45		38						83	
09:45	138	735	41	162					179	897	21:45	54	182	40	148					94	330
10:00	97		52						149		22:00	44		26						70	
10:15	104		52						156		22:15	30		26						56	
10:30	113		42						155		22:30	36		26						62	
10:45	105	419	33	179					138	598	22:45	34	144	28	106					62	250
11:00	100		48						148		23:00	24		20						44	
11:15	102		40						142		23:15	22		25						47	
11:30	105		51						156		23:30	26		25						51	
11:45	128	435	58	197					186	632	23:45	19	91	24	94					43	185
TOTALS		7318		1392						8710	TOTALS		5431		4928						10359
SPLIT %		84.0%		16.0%						45.7%	SPLIT %		52.4%		47.6%						54.3%

DAILY TOTALS	NB	SB	EB	WB	Total
	12,749	6,320	0	0	19,069

AM Peak Hour	07:00	07:00			07:00	PM Peak Hour	13:45	17:00			17:00
AM Pk Volume	1693	366			2059	PM Pk Volume	794	1014			1598
Pk Hr Factor	0.943	0.750			0.951	Pk Hr Factor	0.928	0.960			0.933
7 - 9 Volume	3103	539	0	0	3642	4 - 6 Volume	1330	1814	0	0	3144
7 - 9 Peak Hour	07:00	07:00			07:00	4 - 6 Peak Hour	16:00	17:00			17:00
7 - 9 Pk Volume	1693	366	0	0	2059	4 - 6 Pk Volume	746	1014	0	0	1598
Pk Hr Factor	0.943	0.750	0.000	0.000	0.951	Pk Hr Factor	0.947	0.960	0.000	0.000	0.933

Prepared by NDS/ATD

VOLUME

Sycamore Canyon Blvd S/O Central Ave

Day: Thursday
Date: 10/19/2017

City: Riverside
Project #: CA17_6158_005

DAILY TOTALS	NB	SB	EB	WB	Total
	11,326	7,494	0	0	18,820

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	11		15						26		12:00	126		67						193	
00:15	9		15						24		12:15	92		67						159	
00:30	12		17						29		12:30	94		71						165	
00:45	8	40	18	65					26	105	12:45	91	403	71	276					162	679
01:00	10		14						24		13:00	118		82						200	
01:15	9		6						15		13:15	135		85						220	
01:30	8		8						16		13:30	170		90						260	
01:45	5	32	8	36					13	68	13:45	175	598	92	349					267	947
02:00	3		6						9		14:00	174		93						267	
02:15	5		3						8		14:15	185		90						275	
02:30	2		3						5		14:30	172		140						312	
02:45	4	14	1	13					5	27	14:45	229	760	114	437					343	1197
03:00	3		4						7		15:00	202		127						329	
03:15	3		6						9		15:15	199		153						352	
03:30	5		3						8		15:30	219		162						381	
03:45	6	17	8	21					14	38	15:45	231	851	193	635					424	1486
04:00	8		6						14		16:00	186		198						384	
04:15	15		6						21		16:15	176		246						422	
04:30	35		16						51		16:30	177		246						423	
04:45	70	128	17	45					87	173	16:45	152	691	262	952					414	1643
05:00	65		15						80		17:00	145		268						413	
05:15	155		14						169		17:15	145		320						465	
05:30	290		15						305		17:30	117		326						443	
05:45	289	799	32	76					321	875	17:45	93	500	327	1241					420	1741
06:00	284		22						306		18:00	66		298						364	
06:15	359		24						383		18:15	60		257						317	
06:30	419		22						441		18:30	48		238						286	
06:45	406	1468	38	106					444	1574	18:45	47	221	171	964					218	1185
07:00	414		41						455		19:00	42		172						214	
07:15	398		42						440		19:15	46		128						174	
07:30	239		53						292		19:30	31		114						145	
07:45	348	1399	57	193					405	1592	19:45	23	142	92	506					115	648
08:00	389		41						430		20:00	34		72						106	
08:15	396		70						466		20:15	38		61						99	
08:30	412		59						471		20:30	26		52						78	
08:45	315	1512	56	226					371	1738	20:45	31	129	47	232					78	361
09:00	243		42						285		21:00	19		49						68	
09:15	227		53						280		21:15	22		49						71	
09:30	156		64						220		21:30	23		39						62	
09:45	129	755	66	225					195	980	21:45	20	84	43	180					63	264
10:00	92		67						159		22:00	14		43						57	
10:15	100		75						175		22:15	22		27						49	
10:30	96		57						153		22:30	13		24						37	
10:45	84	372	65	264					149	636	22:45	18	67	25	119					43	186
11:00	82		63						145		23:00	9		23						32	
11:15	54		53						107		23:15	3		24						27	
11:30	64		61						125		23:30	12		20						32	
11:45	111	311	65	242					176	553	23:45	9	33	24	91					33	124
TOTALS		6847		1512						8359	TOTALS		4479		5982						10461
SPLIT %		81.9%		18.1%						44.4%	SPLIT %		42.8%		57.2%						55.6%

DAILY TOTALS	NB	SB	EB	WB	Total
	11,326	7,494	0	0	18,820

AM Peak Hour	06:30	09:30			06:30	PM Peak Hour	15:00	17:15			17:00
AM Pk Volume	1637	272			1780	PM Pk Volume	851	1271			1741
Pk Hr Factor	0.977	0.907			0.978	Pk Hr Factor	0.921	0.972			0.936
7 - 9 Volume	2911	419	0	0	3330	4 - 6 Volume	1191	2193	0	0	3384
7 - 9 Peak Hour	07:45	07:45			07:45	4 - 6 Peak Hour	16:00	17:00			17:00
7 - 9 Pk Volume	1545	227	0	0	1772	4 - 6 Pk Volume	691	1241	0	0	1741
Pk Hr Factor	0.938	0.811	0.000	0.000	0.941	Pk Hr Factor	0.929	0.949	0.000	0.000	0.936

Exhibit B

SCOPING AGREEMENT FOR TRAFFIC IMPACT STUDY

This letter acknowledges the City of Riverside Public Works Traffic Engineering Division requirements for traffic impact analysis of the following project. The analysis must follow the City Traffic Impact Analysis Preparation Guide dated January 2016.

Case No. P-17-0511 Sycamore Canyon Commercial Development
Related Cases -
SP No.
EIR No.
GPA No.
CZ No.
Project Name: Sycamore Canyon Commercial Development
Project Location: Northeast corner of Sycamore Canyon at Central Avenue
Project Description: 3,200 SQ. Ft. Convenience Store with 16 Fueling Stations & Car Wash and a 3,800 Sq. Ft. Fast Food With Drive Thru.

	Consultant	Developer
Name:	Darnell & Associates	KA Shores Group LLC
Address:	4411 Mercury St. #207A San Diego, CA. 92111	5820 Oberlin Drive, Ste. 201 San Diego CA. 92121
Telephone:	(619) 233-9373	

A. Trip Generation Source: ITE *Trip Generation Manual*, most recent edition

Existing Land Use	Commercial	Proposed Land Use	Commercial
Existing Zoning	Not Designated	Proposed Zoning	C6 Commercial
Total Daily Trips	10,568 ADT		

	In	Out	Total
AM Trips	227	217	439
PM Trips	218	213	431

Internal Trip Allowance ☐ Yes ☒ No (0% % Trip Discount)
Pass-By Trip Allowance ☒ Yes ☐ No (25% % Trip Discount)
(Attach additional sheet if this is a multi-use site with a breakdown of trips generated)

B. Trip Geographic Distribution: N 40% S 30 % E 5 % W 25%
(See attached exhibit for detailed assignment)

C. Background Traffic

Project Completion Year: 2019 Annual Ambient Growth Rate: 2 %
Other area projects to be included: (See Table 2)

Please contact Planning Division or use the most recently provided data

Model/Forecast methodology if required City of Riverside GP 2025 Model

D. Build-out Studies: Does this project require a Build-out Study per TIA Guidelines Section 7.2?
☐ Yes ☐ No

E. Study Intersections: (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.)

1. Sycamore Canyon Blvd. at Central Ave.
2. Central Ave. at SR-60 EB on/off ramp.
3. Central Ave. at SR-60 WB on/off ramp.
4. Central Ave./Watkins at SR-60 WB on/off ramp.
5.
6.
7.
8.

F. Study Roadway Segments (For Build-out Studies):

1. Sycamore Canyon Blvd. W/O Project
2. Sycamore Canyon Blvd. N/O Central Ave.
3. Sycamore Canyon Blvd. S/O Central Ave.
4. Central Ave. W/O Sycamore Canyon Blvd.
5. Central Ave. E/O Sycamore Canyon Blvd.
6. Central Ave. E/O SR-60 EB on/off ramp.
7. Central Ave. E/O SR-60 WB on/off ramp.
8.

G. Other Jurisdictional Impacts

Is this project within any other Agency's Sphere of Influence or one-mile radius of boundaries? ☒ Yes ☐ No

If so, name of Jurisdiction: Caltrans District 8 and County of Riverside

H. Site Plan (please attach a legible 11'X17' copy)

I. Specific Issues to be addressed in the Study (in addition to the standard analysis described in the Guideline) (To be filled out by Public Works Traffic Department)

Analysis of Projects Northerly Access on the Projects southerly access on Sycamore Canyon Blvd. Level of Service, Stopping Sight Distance and Channelization requirements. Analysis of Sycamore Canyon Blvd. as right in/out and as full access to determine the recommended access movement.

Recommended by:

Bill E Darnell

Consultant's Representative
Bill E. Darnell

October 27, 2017
Date

Scoping Agreement Submitted on **Date**

Scoping Agreement Resubmitted on **Date**

Approved Scoping Agreement:

City of Riverside
Traffic Engineering Division

10/30/17
Date

cc: Planning Division

Table 1 – PROJECT TRIP GENERATION

TRIP GENERATION RATES

Land Use	ITE Code	Weekday Daily	AM PEAK Rate	AM PEAK In:Out Ratio	PM PEAK Rate	PM PEAK In:Out Ratio
Convenience Market w/Gas Pumps	853	542.60 trips / fs	16.57	0.50 : 0.50	19.07	0.50 : 0.50
Fast Food w/Drive Thru	934	496.12 trips / ksf	45.42	0.51 : 0.49	32.65	0.52 : 0.48

TRIP GENERATION CALCULATIONS

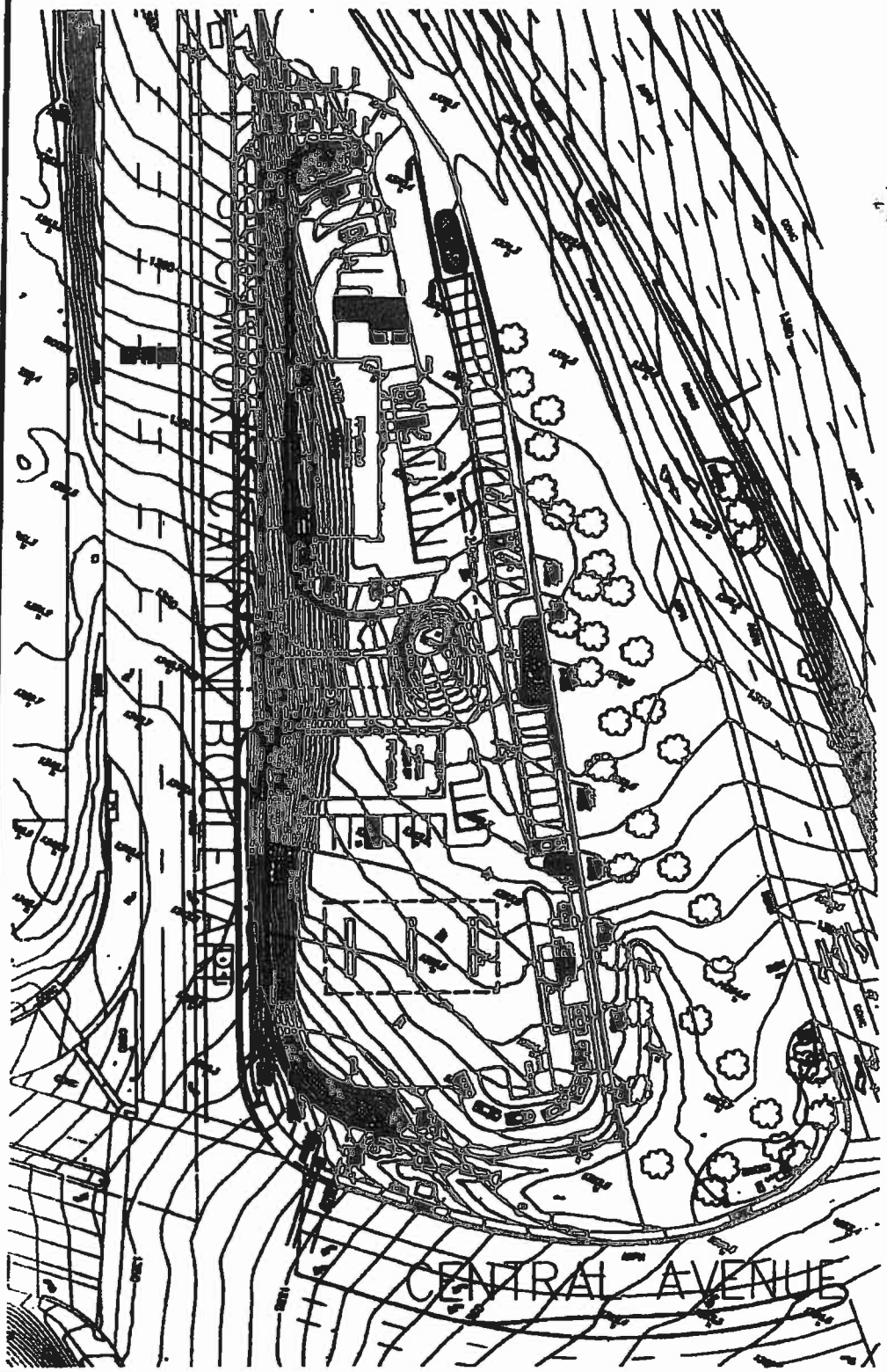
Land Use	ITE Code	Amount	ADT	AM PEAK In	AM PEAK Out	AM PEAK Total	PM PEAK In	PM PEAK Out	PM PEAK Total
Proposed Uses									
Convenience Market w/Gas Pumps	853	16 fs	8,682	133	133	266	153	153	306
Less Pass-by (25%)			-2,171	-33	-33	-66	-38	-38	-76
Subtotal			6,511	100	100	200	115	115	230
Fast Food w/Drive Thru	934	3.800 ksf	1,886	89	84	173	65	60	125
Less Pass-by (25%)			-472	-22	-21	-43	-16	-15	-31
Subtotal			1,414	67	63	130	49	45	94
Project Traffic (Driveway)			**10,568**	**222**	**217**	**439**	**218**	**213**	**431**
Project Traffic (Cumulative)			**7,925**	**167**	**163**	**330**	**164**	**160**	**324**

Notes:

fs: fueling station, ksf: 1,000 square feet. The trip rates for the project's land uses are based on the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition.*

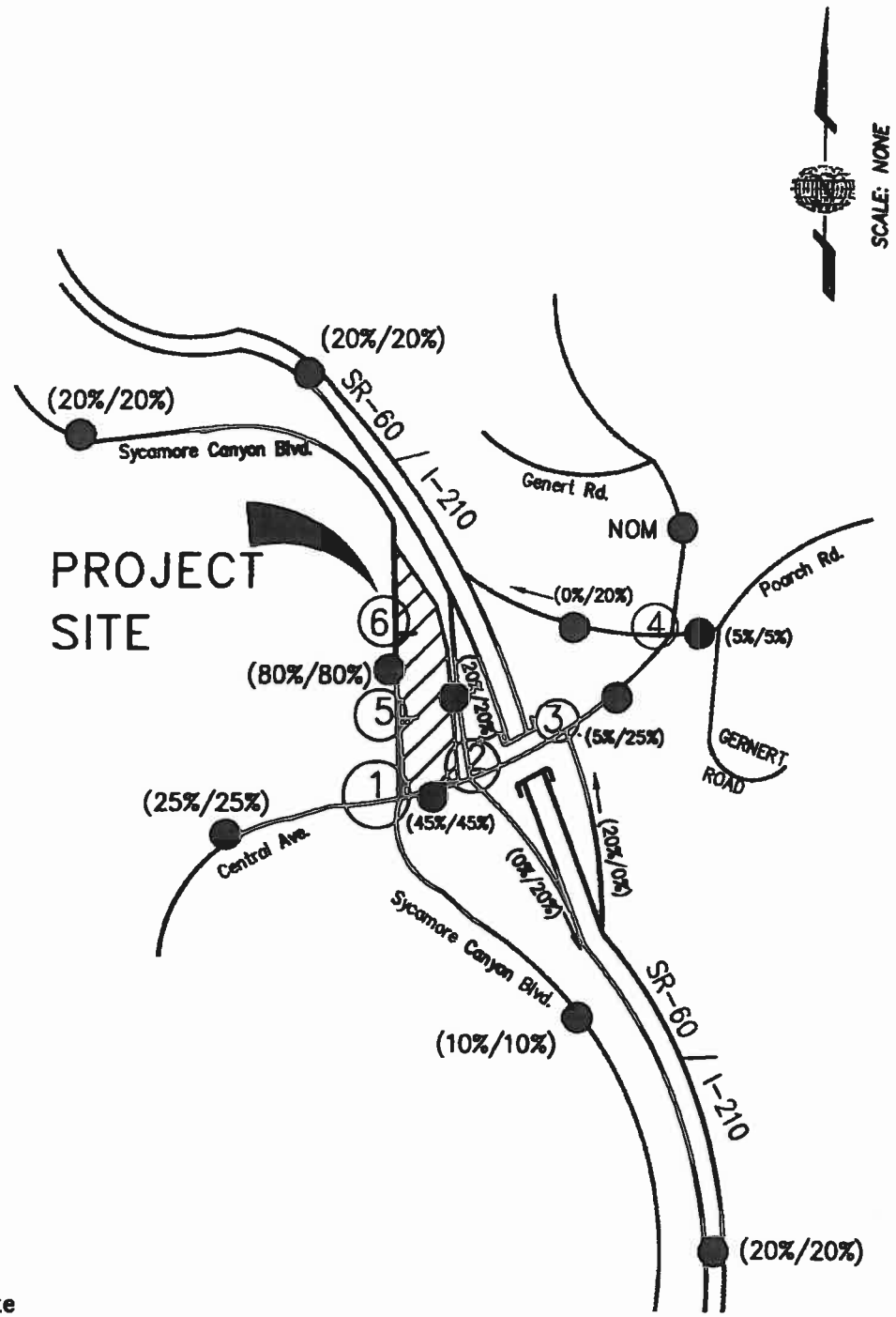
Table 2 – Cumulative Projects within 1.5 mile Radius of the Proposed Project Site

Map ID #	Case Number	Location	Project Description	Acres	Buildings Total Square Feet	Dwelling Units	Approval Date
D18	P13-0553 P13-0554 P13-0583 P14-0065	5940-5980 Sycamore Canyon Blvd	SPR, GPA, RZ: Apartment complex; Site Plan Review; GPA from Commercial to High Density Residential, Rezone from CO-SP to R-4-SP; SPA (Sycamore Highlands Specific Plan)		-	375	CC AP 03/17/2015
D13	P13-0607 P13-0608 P13-0609 P13-0854	SE cor Sycamore Canyon Blvd & Box Springs Rd	Multi-tenant industrial building; GPA, RZ, DR, SPA to remove site from Sycamore Highlands SP and add it to Sycamore Canyon Business Park SP		171,616	-	CC 5/13/14
C74	P14-0435	5005 Canyon Crest Dr	MCUP; Temporary use of 2 modular buildings for offices, Saint Andrew's Orthodox Church			ZA 5/22/14	
C78	P14-0457	5065 Sycamore Canyon Blvd	MCUP; Health & fitness club/studio under 4,000 sq ft within existing 92,419 sq ft 2-story office bldg	8.02			ZA 6/30/14
M34	P14-1053 P14-1054	Northerly side of Dan Kipper Drive, westerly of the intersection of Dan Kipper Drive and Sycamore Canyon Boulevard	Parcel Map; subdivide three existing parcels, totaling 13.08 acres into 5 lots to facilitate the development of 5 warehouse buildings ranging in size from 34,424 to 53,006 square feet in size	13.08	239,547		CPC AP 04/23/2015
D27	P16-0207	5030 Sycamore Canyon	DR; 1.9-acre parking lot expansion for an existing auto dealer (Raceway Nissan), including landscaping, site improvements and water quality measures	1.9			
G22	P16-0556 P16-0567 P15-1035	APN: 263-091-015	To permit eight industrial buildings ranging in size from 12,015 to 35,661 square feet. The following entitlements are requested 1) Specific Plan Amendment to amend the land use designation and establish development standards for properties located north of Alessandro Boulevard, south of Cottonwood Avenue, west of Old 215 Frontage Road, and east of Interstate 215 from the Retail Business Office and Industrial Support land use designations to the Industrial land use designation; 2) a Tentative Parcel Map for the subdivision of two parcels into six parcels, ranging in size from 27,099 square feet to 72,159 square feet; and 3) Design Review.		12 - 35800		
D43	P16-0578	1800 & 1900 Alessandro Boulevard	Design Review of a plot plan and building elevations for the construction of an 82,200-square-foot multi-tenant industrial warehouse building	5.71	82,200		DRC AP 02/10/2017
	P17-0360 P17-0361	1001 E Alessandro Boulevard	Proposal by Chad Hamilton of Northwest Commercial Advisors to consider a Conditional Use Permit and Design Review for the construction of a 1,857 square foot Jack In The Box drive-thru restaurant and associated parking on a vacant 0.45 acre parcel, located at 1001 E. Alessandro Boulevard, situated on the southeast corner of Alessandro Boulevard and Barton Street, in the CR – Commercial Retail Zone, in Ward 4.	0.45	1,857		



Darnell & ASSOCIATES, INC.
4411 MERCURY STREET, SUITE 207A
SAN DIEGO, CA 92111
(619) 233-9373
DWG: 170805-AA DATE: 10-27-17 BY: JABMA

FIGURE 1
PROPOSED SITE PLAN



LEGEND

▨ – Project Site

(1) – INTERSECTION IN%/OUT% (SEE FIGURES 3 AND 4)

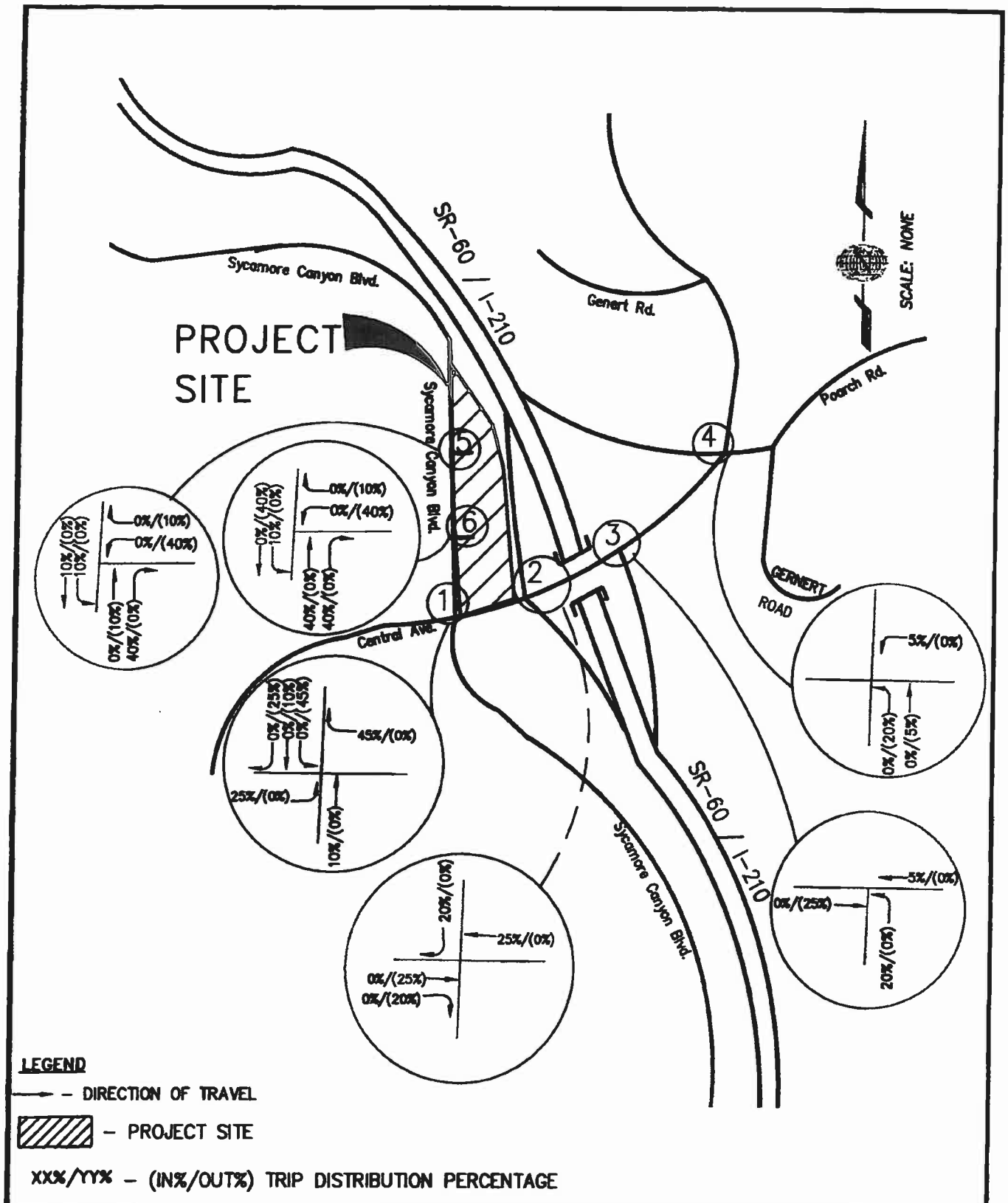
XX%/YY% – (IN%/OUT%) Project Trip Distribution Percentage

Darnell & ASSOCIATES
4411 MERCURY STREET, SUITE 207A
SAN DIEGO, CA 92111
(619) 233-9373

DWG: 170605-AA DATE: 10-27-17 BY: JABNLA

FIGURE 2

PROJECT TRIP DISTRIBUTION



LEGEND

→ – DIRECTION OF TRAVEL

▨ – PROJECT SITE

XX%/YY% – (IN%/OUT%) TRIP DISTRIBUTION PERCENTAGE

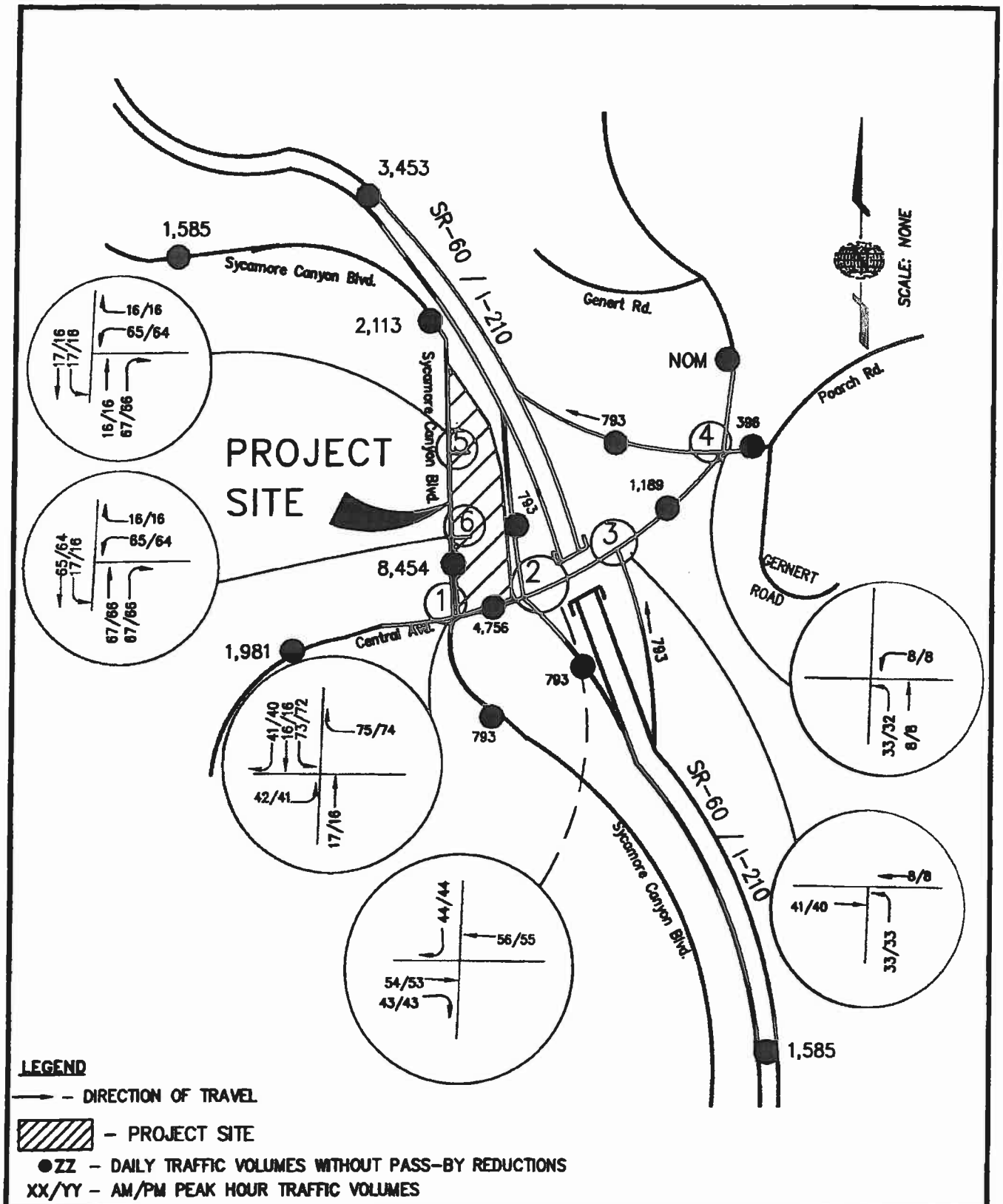
Darnell & ASSOCIATES, INC.
4411 MERCURY STREET, SUITE 207A
SAN DIEGO, CA 92111
(619) 233-8373

DWG: 170885-AA DATE: 10-27-17 BY: JB/MLA

FIGURE 3

INTERSECTION

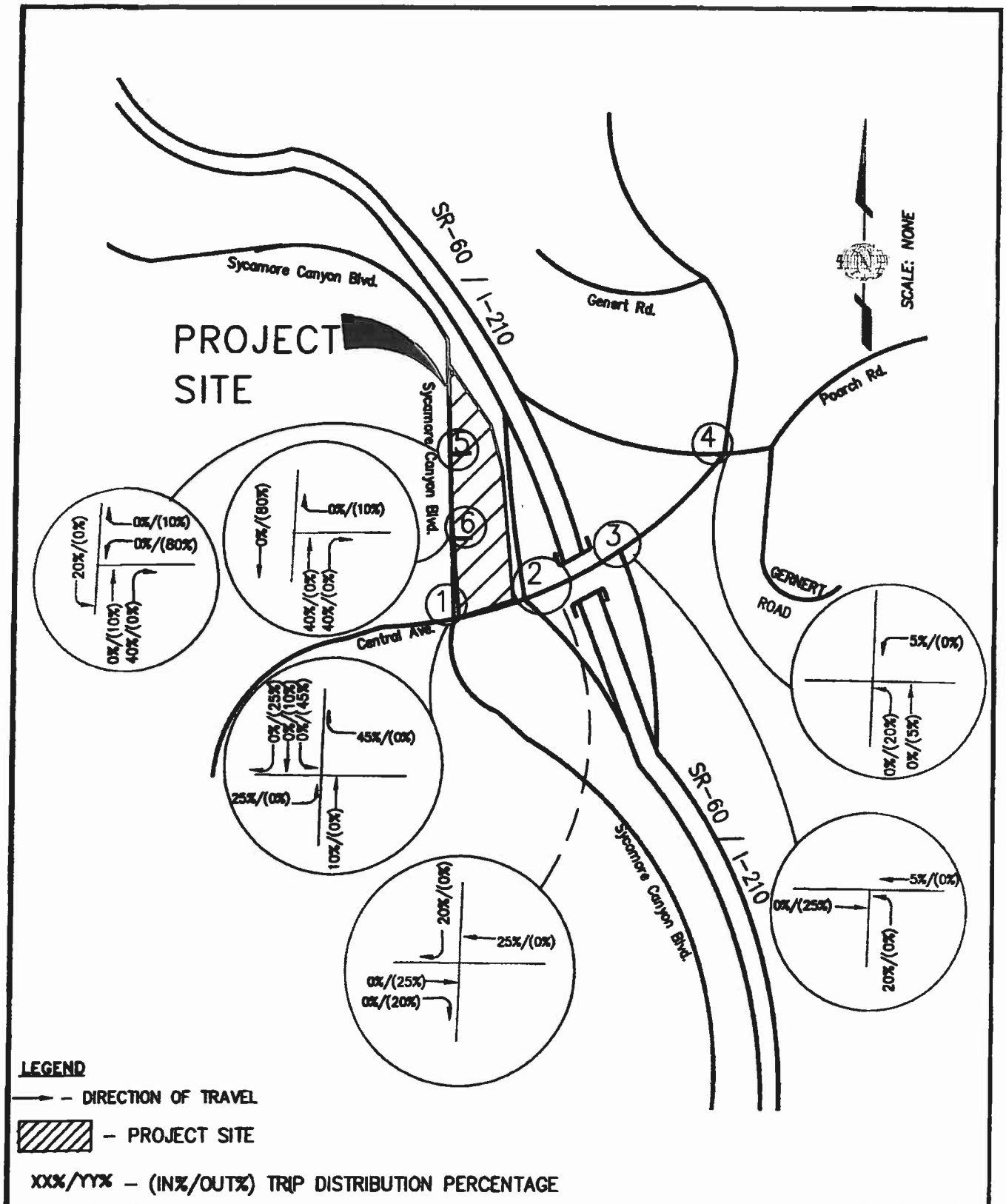
PROJECT TRIP DISTRIBUTION WITH FULL ACCESS AT PROJECT DRIVEWAYS



Darnell & ASSOCIATES, INC.
4411 MERCURY STREET, SUITE 207A
SAN DIEGO, CA 92111
(619) 233-6373

FIGURE 4

PROJECT TRIP ASSIGNMENT WITH FULL ACCESS AT PROJECT DRIVEWAYS

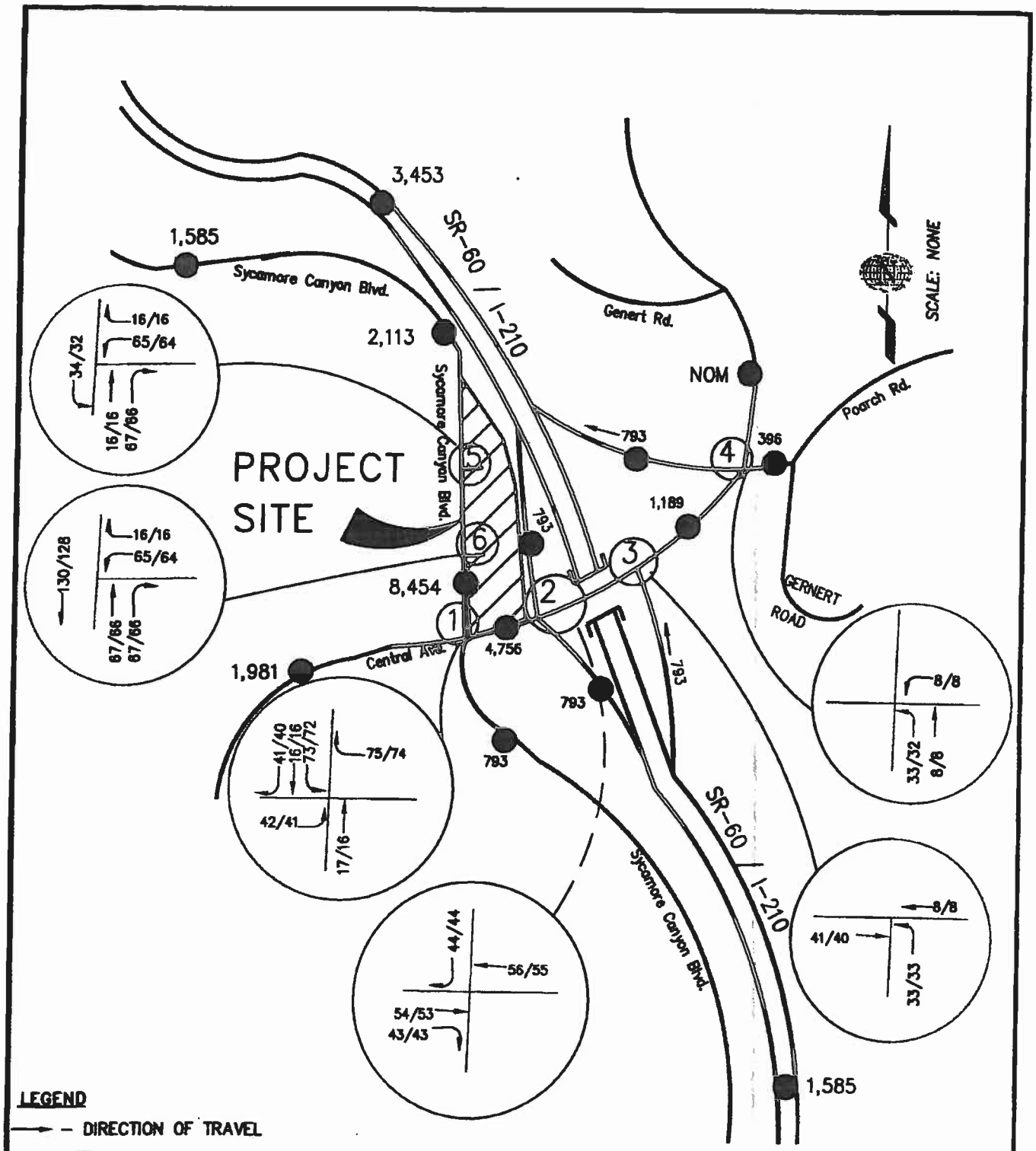


Darnell & ASSOCIATES, INC.
4411 MERCURY STREET, SUITE 207A
SAN DIEGO, CA 92111
(619) 233-9373

DWG: 170885-AA DATE: 10-27-17 BY: JAB/MLA

FIGURE 5

INTERSECTION
PROJECT TRIP DISTRIBUTION WITH
RIGHT IN/OUT AT PROJECT DRIVEWAYS



LEGEND

→ – DIRECTION OF TRAVEL

▨ – PROJECT SITE

●ZZ – DAILY TRAFFIC VOLUMES WITHOUT PASS-BY REDUCTIONS

XX/YY – AM/PM PEAK HOUR TRAFFIC VOLUMES

Darnell & ASSOCIATES, INC.
4411 MERCURY STREET, SUITE 207A
SAN DIEGO, CA 92111
(619) 233-9373

DWG: 170886-AA DATE: 10-27-17 BY: JAB/LA

FIGURE 6

PROJECT TRIP ASSIGNMENT WITH RIGHT IN/OUT AT PROJECT DRIVEWAYS

APPENDIX B

- **Existing Conditions Synchro Worksheets**

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	682	125	40	248	38	258	416	693	42	25	11
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	22	710	130	42	258	40	269	433	722	44	26	11
Adj No. of Lanes	1	3	1	2	2	0	1	1	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	67	1737	541	95	1021	156	691	742	630	56	142	64
Arrive On Green	0.04	0.34	0.34	0.01	0.11	0.11	0.39	0.40	0.40	0.03	0.04	0.04
Sat Flow, veh/h	1774	5085	1583	3442	3078	471	1774	1863	1583	1774	3539	1583
Grp Volume(v), veh/h	22	710	130	42	147	151	269	433	722	44	26	11
Grp Sat Flow(s),veh/h/ln	1774	1695	1583	1721	1770	1780	1774	1863	1583	1774	1770	1583
Q Serve(g_s), s	1.2	10.6	5.9	1.2	7.6	7.7	10.9	18.1	31.2	2.5	0.7	0.7
Cycle Q Clear(g_c), s	1.2	10.6	5.9	1.2	7.6	7.7	10.9	18.1	31.2	2.5	0.7	0.7
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	67	1737	541	95	587	590	691	742	630	56	142	64
V/C Ratio(X)	0.33	0.41	0.24	0.44	0.25	0.26	0.39	0.58	1.15	0.78	0.18	0.17
Avail Cap(c_a), veh/h	107	1737	541	173	587	590	691	1535	1305	160	2027	907
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.7	25.1	23.5	48.5	33.0	33.1	21.9	23.5	18.6	47.9	46.2	46.2
Incr Delay (d2), s/veh	2.8	0.7	1.0	3.2	1.0	1.0	0.4	0.7	71.5	20.8	0.6	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	0.6	5.1	2.7	0.6	3.9	4.0	5.4	9.4	26.0	1.5	0.4	0.3
LnGrp Delay(d),s/veh	49.5	25.8	24.5	51.7	34.0	34.1	22.2	24.2	90.1	68.6	46.8	47.4
LnGrp LOS	D	C	C	D	C	C	C	C	F	E	D	D
Approach Vol, veh/h		862			340			1424			81	
Approach Delay, s/veh		26.2			36.2			57.2			58.7	
Approach LOS		C			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	58.2	39.0	43.8	9.0	59.2	38.0	8.1	44.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	34.0	34.0	57.0	6.0	33.0	9.0	82.0
Max Q Clear Time (g_c+I1), s	3.2	12.6	12.9	2.7	3.2	9.7	4.5	33.2
Green Ext Time (p_c), s	0.0	4.9	6.5	0.2	0.0	1.5	0.0	6.4

Intersection Summary	
HCM 2010 Ctrl Delay	44.8
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1177	244	180	295	0	0	0	0	105	1	39
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	1863	1863
Adj Flow Rate, veh/h	0	1279	265	196	321	0				114	1	42
Adj No. of Lanes	0	2	1	2	2	0				1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2351	1052	502	2997	0				142	149	127
Arrive On Green	0.00	1.00	1.00	0.29	1.00	0.00				0.08	0.08	0.08
Sat Flow, veh/h	0	3632	1583	3442	3632	0				1774	1863	1583
Grp Volume(v), veh/h	0	1279	265	196	321	0				114	1	42
Grp Sat Flow(s),veh/h/ln	0	1770	1583	1721	1770	0				1774	1863	1583
Q Serve(g_s), s	0.0	0.0	0.0	6.2	0.0	0.0				8.7	0.1	3.4
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.2	0.0	0.0				8.7	0.1	3.4
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2351	1052	502	2997	0				142	149	127
V/C Ratio(X)	0.00	0.54	0.25	0.39	0.11	0.00				0.80	0.01	0.33
Avail Cap(c_a), veh/h	0	2351	1052	502	2997	0				311	326	277
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.74	0.74	0.99	0.99	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	43.6	0.0	0.0				61.9	58.0	59.5
Incr Delay (d2), s/veh	0.0	0.7	0.4	0.5	0.1	0.0				9.9	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.1	3.0	0.0	0.0				4.6	0.0	1.6
LnGrp Delay(d),s/veh	0.0	0.7	0.4	44.1	0.1	0.0				71.9	58.0	61.0
LnGrp LOS		A	A	D	A					E	E	E
Approach Vol, veh/h		1544			517						157	
Approach Delay, s/veh		0.6			16.8						68.9	
Approach LOS		A			B						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	38.0	96.0		16.0		134.0		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	20.0	91.0		24.0		116.0		
Max Q Clear Time (g_c+I1), s	8.2	2.0		10.7		2.0		
Green Ext Time (p_c), s	2.2	17.0		0.3		3.1		

Intersection Summary	
HCM 2010 Ctrl Delay	9.2
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1284	0	0	362	109	465
Number	2	12	1	6	3	18
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
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863
Adj Flow Rate, veh/h	1352	0	0	381	115	489
Adj No. of Lanes	2	0	0	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	2094	0	0	2094	1140	525
Arrive On Green	1.00	0.00	0.00	0.59	0.33	0.33
Sat Flow, veh/h	3725	0	0	3725	3442	1583
Grp Volume(v), veh/h	1352	0	0	381	115	489
Grp Sat Flow(s),veh/h/ln	1770	0	0	1770	1721	1583
Q Serve(g_s), s	0.0	0.0	0.0	6.4	3.0	38.9
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.4	3.0	38.9
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2094	0	0	2094	1140	525
V/C Ratio(X)	0.65	0.00	0.00	0.18	0.10	0.93
Avail Cap(c_a), veh/h	2094	0	0	2094	1666	767
HCM Platoon Ratio	2.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	12.1	30.1	42.1
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.2	0.0	14.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	3.2	1.4	19.0
LnGrp Delay(d),s/veh	1.3	0.0	0.0	12.3	30.1	56.0
LnGrp LOS	A			B	C	E
Approach Vol, veh/h	1352			381	604	
Approach Delay, s/veh	1.3			12.3	51.1	
Approach LOS	A			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		101.9				101.9		48.1
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		77.0				77.0		63.0
Max Q Clear Time (g_c+I1), s		2.0				8.4		40.9
Green Ext Time (p_c), s		23.2				22.8		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.0
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	0	0	718	1041	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	275	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	780	1132	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	3133	3180	566	488	0	0
Stage 1	2692	2692	-	-	-	-
Stage 2	441	488	-	-	-	-
Critical Hdwy	6.63	6.53	6.93	4.12	-	-
Critical Hdwy Stg 1	5.83	5.53	-	-	-	-
Critical Hdwy Stg 2	5.43	5.53	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	2.218	-	-
Pot Cap-1 Maneuver	10	10	468	1075	-	-
Stage 1	37	45	-	-	-	-
Stage 2	648	549	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	3	0	468	1075	-	-
Mov Cap-2 Maneuver	3	0	-	-	-	-
Stage 1	10	0	-	-	-	-
Stage 2	648	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	6.8
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1075	-	-	-	613	-	-
HCM Lane V/C Ratio	0.726	-	-	-	-	-	-
HCM Control Delay (s)	16.7	-	-	0	0	-	-
HCM Lane LOS	C	-	-	A	A	-	-
HCM 95th %tile Q(veh)	6.7	-	-	-	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	362	87
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	393	95

Major/Minor	Major2		
Conflicting Flow All	1132	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	613	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	613	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0
HCM LOS	

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	602	710	270	492	66	231	117	173	74	322	5
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	8	634	747	284	518	69	243	123	182	78	339	5
Adj No. of Lanes	1	3	1	2	2	0	1	1	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	14	2232	695	359	1682	223	275	261	222	251	447	200
Arrive On Green	0.01	0.44	0.44	0.10	0.54	0.54	0.16	0.14	0.14	0.14	0.13	0.13
Sat Flow, veh/h	1774	5085	1583	3442	3142	417	1774	1863	1583	1774	3539	1583
Grp Volume(v), veh/h	8	634	747	284	291	296	243	123	182	78	339	5
Grp Sat Flow(s),veh/h/ln	1774	1695	1583	1721	1770	1789	1774	1863	1583	1774	1770	1583
Q Serve(g_s), s	0.5	9.1	28.4	9.2	10.4	10.5	15.3	6.9	12.7	4.5	10.5	0.3
Cycle Q Clear(g_c), s	0.5	9.1	28.4	9.2	10.4	10.5	15.3	6.9	12.7	4.5	10.5	0.3
Prop In Lane	1.00		1.00	1.00		0.23	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	14	2232	695	359	947	958	275	261	222	251	447	200
V/C Ratio(X)	0.57	0.28	1.08	0.79	0.31	0.31	0.88	0.47	0.82	0.31	0.76	0.03
Avail Cap(c_a), veh/h	62	2232	695	453	947	958	389	850	723	251	1242	556
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	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.3	20.5	10.3	49.8	14.7	14.7	47.1	45.1	47.6	43.9	48.1	34.6
Incr Delay (d2), s/veh	32.2	0.3	56.1	7.1	0.8	0.8	15.7	1.3	7.4	0.7	2.7	0.0
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	0.4	4.3	23.0	4.7	5.3	5.4	8.7	3.6	6.0	2.3	5.3	0.1
LnGrp Delay(d),s/veh	88.6	20.8	66.4	56.9	15.5	15.6	62.8	46.4	55.0	44.6	50.8	34.7
LnGrp LOS	F	C	F	E	B	B	E	D	E	D	D	C
Approach Vol, veh/h		1389			871			548			422	
Approach Delay, s/veh		45.7			29.0			56.5			49.5	
Approach LOS		D			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	53.0	55.0	22.7	19.4	42.0	66.0	21.1	20.9
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	15.0	50.0	25.0	40.0	4.0	61.0	13.0	52.0
Max Q Clear Time (g_c+I1), s	11.2	30.4	17.3	12.5	2.5	12.5	6.5	14.7
Green Ext Time (p_c), s	0.4	7.2	0.4	1.8	0.2	3.5	1.2	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	43.5
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	315	645	657	681	0	0	0	0	12	3	48
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	1863	1863
Adj Flow Rate, veh/h	0	342	701	714	740	0				13	3	52
Adj No. of Lanes	0	2	1	2	2	0				1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1657	741	998	2901	0				103	108	92
Arrive On Green	0.00	0.78	0.78	0.58	1.00	0.00				0.06	0.06	0.06
Sat Flow, veh/h	0	3632	1583	3442	3632	0				1774	1863	1583
Grp Volume(v), veh/h	0	342	701	714	740	0				13	3	52
Grp Sat Flow(s),veh/h/ln	0	1770	1583	1721	1770	0				1774	1863	1583
Q Serve(g_s), s	0.0	2.0	30.2	12.2	0.0	0.0				0.6	0.1	2.6
Cycle Q Clear(g_c), s	0.0	2.0	30.2	12.2	0.0	0.0				0.6	0.1	2.6
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1657	741	998	2901	0				103	108	92
V/C Ratio(X)	0.00	0.21	0.95	0.72	0.26	0.00				0.13	0.03	0.57
Avail Cap(c_a), veh/h	0	3166	1416	1856	5291	0				391	411	349
HCM Platoon Ratio	1.00	1.67	1.67	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.96	0.96	0.86	0.86	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.0	8.0	14.7	0.0	0.0				36.5	36.3	37.4
Incr Delay (d2), s/veh	0.0	0.1	6.8	0.8	0.0	0.0				0.5	0.1	5.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.0	13.5	5.7	0.0	0.0				0.3	0.1	1.3
LnGrp Delay(d),s/veh	0.0	5.0	14.8	15.6	0.0	0.0				37.0	36.4	42.9
LnGrp LOS		A	B	B	A					D	D	D
Approach Vol, veh/h		1043			1454						68	
Approach Delay, s/veh		11.6			7.7						41.5	
Approach LOS		B			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	28.7	111.6		9.7		140.3		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	44.0	73.0		18.0		122.0		
Max Q Clear Time (g_c+I1), s	14.2	32.2		4.6		2.0		
Green Ext Time (p_c), s	9.5	6.0		0.1		10.8		

Intersection Summary	
HCM 2010 Ctrl Delay	10.2
HCM 2010 LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	295	0	0	1010	401	283
Number	2	12	1	6	3	18
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
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863
Adj Flow Rate, veh/h	311	0	0	1063	422	298
Adj No. of Lanes	2	0	0	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	2492	0	0	2492	750	345
Arrive On Green	0.70	0.00	0.00	0.70	0.22	0.22
Sat Flow, veh/h	3725	0	0	3725	3442	1583
Grp Volume(v), veh/h	311	0	0	1063	422	298
Grp Sat Flow(s),veh/h/ln	1770	0	0	1770	1721	1583
Q Serve(g_s), s	3.6	0.0	0.0	16.2	14.0	23.2
Cycle Q Clear(g_c), s	3.6	0.0	0.0	16.2	14.0	23.2
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2492	0	0	2492	750	345
V/C Ratio(X)	0.12	0.00	0.00	0.43	0.56	0.86
Avail Cap(c_a), veh/h	2492	0	0	2492	1346	619
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.1	0.0	0.0	8.0	44.6	48.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.5	0.7	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0	8.0	6.7	10.7
LnGrp Delay(d),s/veh	6.2	0.0	0.0	8.5	45.2	54.7
LnGrp LOS	A			A	D	D
Approach Vol, veh/h	311			1063	720	
Approach Delay, s/veh	6.2			8.5	49.1	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		117.2				117.2		32.8
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		90.0				90.0		50.0
Max Q Clear Time (g_c+I1), s		5.6				18.2		25.2
Green Ext Time (p_c), s		15.1				14.9		2.7

Intersection Summary	
HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	0	0	279	504	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	275	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	291	525	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	2006	2021	263	915	0	0
Stage 1	1106	1106	-	-	-	-
Stage 2	900	915	-	-	-	-
Critical Hdwy	6.63	6.53	6.93	4.12	-	-
Critical Hdwy Stg 1	5.83	5.53	-	-	-	-
Critical Hdwy Stg 2	5.43	5.53	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	2.218	-	-
Pot Cap-1 Maneuver	58	58	736	745	-	-
Stage 1	279	285	-	-	-	-
Stage 2	396	351	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	35	0	736	745	-	-
Mov Cap-2 Maneuver	35	0	-	-	-	-
Stage 1	170	0	-	-	-	-
Stage 2	396	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	4.6
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	745	-	-	-	1038	-	-
HCM Lane V/C Ratio	0.39	-	-	-	-	-	-
HCM Control Delay (s)	12.9	-	-	0	0	-	-
HCM Lane LOS	B	-	-	A	A	-	-
HCM 95th %tile Q(veh)	1.9	-	-	-	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	850	28
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	885	29

Major/Minor	Major2		
Conflicting Flow All	525	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	1038	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1038	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0
HCM LOS	

Minor Lane/Major Mvmt

APPENDIX C

- **Opening Day 2019 Synchro Worksheets**
- **Opening Day 2019 plus Project Synchro Worksheets**

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	710	130	42	258	40	269	433	721	44	26	12
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	23	740	135	44	269	42	280	451	751	46	27	12
Adj No. of Lanes	1	3	1	2	2	0	1	1	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	67	1714	534	97	1006	155	704	752	639	59	140	63
Arrive On Green	0.04	0.34	0.34	0.01	0.11	0.11	0.40	0.40	0.40	0.03	0.04	0.04
Sat Flow, veh/h	1774	5085	1583	3442	3074	474	1774	1863	1583	1774	3539	1583
Grp Volume(v), veh/h	23	740	135	44	153	158	280	451	751	46	27	12
Grp Sat Flow(s),veh/h/ln	1774	1695	1583	1721	1770	1779	1774	1863	1583	1774	1770	1583
Q Serve(g_s), s	1.3	11.4	6.2	1.3	8.0	8.2	11.4	19.2	32.0	2.6	0.7	0.7
Cycle Q Clear(g_c), s	1.3	11.4	6.2	1.3	8.0	8.2	11.4	19.2	32.0	2.6	0.7	0.7
Prop In Lane	1.00		1.00	1.00		0.27	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	67	1714	534	97	579	582	704	752	639	59	140	63
V/C Ratio(X)	0.34	0.43	0.25	0.46	0.27	0.27	0.40	0.60	1.18	0.78	0.19	0.19
Avail Cap(c_a), veh/h	106	1714	534	171	579	582	704	1514	1287	158	2000	895
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.3	25.9	24.2	49.2	33.9	33.9	21.8	23.7	18.6	48.4	46.9	46.9
Incr Delay (d2), s/veh	3.0	0.8	1.1	3.3	1.1	1.1	0.4	0.8	85.1	19.7	0.7	1.5
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	0.7	5.5	2.9	0.7	4.1	4.2	5.7	10.1	29.0	1.6	0.4	0.3
LnGrp Delay(d),s/veh	50.2	26.7	25.4	52.5	35.0	35.1	22.1	24.5	103.7	68.2	47.5	48.3
LnGrp LOS	D	C	C	D	C	D	C	C	F	E	D	D
Approach Vol, veh/h		898			355			1482			85	
Approach Delay, s/veh		27.1			37.2			64.2			58.8	
Approach LOS		C			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	57.0	39.0	45.0	9.0	58.0	38.0	8.3	45.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	34.0	34.0	57.0	6.0	33.0	9.0	82.0
Max Q Clear Time (g_c+I1), s	3.3	13.4	13.4	2.7	3.3	10.2	4.6	34.0
Green Ext Time (p_c), s	0.0	5.1	6.8	0.2	0.0	1.5	0.0	6.7

Intersection Summary	
HCM 2010 Ctrl Delay	48.8
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1225	254	188	307	0	0	0	0	110	2	41
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	1863	1863
Adj Flow Rate, veh/h	0	1332	276	204	334	0				120	2	45
Adj No. of Lanes	0	2	1	2	2	0				1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2342	1048	501	2986	0				148	156	132
Arrive On Green	0.00	1.00	1.00	0.29	1.00	0.00				0.08	0.08	0.08
Sat Flow, veh/h	0	3632	1583	3442	3632	0				1774	1863	1583
Grp Volume(v), veh/h	0	1332	276	204	334	0				120	2	45
Grp Sat Flow(s),veh/h/ln	0	1770	1583	1721	1770	0				1774	1863	1583
Q Serve(g_s), s	0.0	0.0	0.0	6.6	0.0	0.0				9.1	0.1	3.7
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.6	0.0	0.0				9.1	0.1	3.7
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2342	1048	501	2986	0				148	156	132
V/C Ratio(X)	0.00	0.57	0.26	0.41	0.11	0.00				0.81	0.01	0.34
Avail Cap(c_a), veh/h	0	2342	1048	501	2986	0				310	325	276
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.71	0.71	0.99	0.99	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	44.0	0.0	0.0				61.9	57.8	59.4
Incr Delay (d2), s/veh	0.0	0.7	0.4	0.5	0.1	0.0				10.0	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.1	3.1	0.0	0.0				4.9	0.1	1.7
LnGrp Delay(d),s/veh	0.0	0.7	0.4	44.5	0.1	0.0				71.9	57.8	60.9
LnGrp LOS		A	A	D	A					E	E	E
Approach Vol, veh/h		1608			538						167	
Approach Delay, s/veh		0.7			16.9						68.8	
Approach LOS		A			B						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	37.5	96.0		16.5		133.5		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	20.0	91.0		24.0		116.0		
Max Q Clear Time (g_c+I1), s	8.6	2.0		11.1		2.0		
Green Ext Time (p_c), s	2.2	18.4		0.4		3.2		

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1336	0	0	377	114	484
Number	2	12	1	6	3	18
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
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863
Adj Flow Rate, veh/h	1406	0	0	397	120	509
Adj No. of Lanes	2	0	0	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	2056	0	0	2056	1182	544
Arrive On Green	1.00	0.00	0.00	0.58	0.34	0.34
Sat Flow, veh/h	3725	0	0	3725	3442	1583
Grp Volume(v), veh/h	1406	0	0	397	120	509
Grp Sat Flow(s),veh/h/ln	1770	0	0	1770	1721	1583
Q Serve(g_s), s	0.0	0.0	0.0	7.0	3.1	41.2
Cycle Q Clear(g_c), s	0.0	0.0	0.0	7.0	3.1	41.2
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2056	0	0	2056	1182	544
V/C Ratio(X)	0.68	0.00	0.00	0.19	0.10	0.94
Avail Cap(c_a), veh/h	2056	0	0	2056	1636	753
HCM Platoon Ratio	2.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	13.1	29.6	42.1
Incr Delay (d2), s/veh	1.5	0.0	0.0	0.2	0.0	15.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	3.5	1.5	20.3
LnGrp Delay(d),s/veh	1.5	0.0	0.0	13.3	29.6	57.6
LnGrp LOS	A			B	C	E
Approach Vol, veh/h	1406			397	629	
Approach Delay, s/veh	1.5			13.3	52.2	
Approach LOS	A			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		99.5				99.5		50.5
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		77.0				77.0		63.0
Max Q Clear Time (g_c+I1), s		2.0				9.0		43.2
Green Ext Time (p_c), s		25.1				24.5		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	16.5
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	0	0	747	1083	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	275	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	812	1177	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	3260	3310	589	509	0	0
Stage 1	2801	2801	-	-	-	-
Stage 2	459	509	-	-	-	-
Critical Hdwy	6.63	6.53	6.93	4.12	-	-
Critical Hdwy Stg 1	5.83	5.53	-	-	-	-
Critical Hdwy Stg 2	5.43	5.53	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	2.218	-	-
Pot Cap-1 Maneuver	8	8	452	1056	-	-
Stage 1	32	40	-	-	-	-
Stage 2	635	537	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	2	0	452	1056	-	-
Mov Cap-2 Maneuver	2	0	-	-	-	-
Stage 1	7	0	-	-	-	-
Stage 2	635	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	7.6
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1056	-	-	-	589	-	-
HCM Lane V/C Ratio	0.769	-	-	-	-	-	-
HCM Control Delay (s)	18.7	-	-	0	0	-	-
HCM Lane LOS	C	-	-	A	A	-	-
HCM 95th %tile Q(veh)	7.9	-	-	-	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	377	91
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	410	99

Major/Minor	Major2		
Conflicting Flow All	1177	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	589	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	589	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0
HCM LOS	

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	627	739	281	512	69	241	122	180	77	335	6
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	9	660	778	296	539	73	254	128	189	81	353	6
Adj No. of Lanes	1	3	1	2	2	0	1	1	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	17	2196	684	359	1652	223	285	269	228	260	461	206
Arrive On Green	0.01	0.43	0.43	0.10	0.53	0.53	0.16	0.14	0.14	0.15	0.13	0.13
Sat Flow, veh/h	1774	5085	1583	3442	3134	423	1774	1863	1583	1774	3539	1583
Grp Volume(v), veh/h	9	660	778	296	304	308	254	128	189	81	353	6
Grp Sat Flow(s),veh/h/ln	1774	1695	1583	1721	1770	1788	1774	1863	1583	1774	1770	1583
Q Serve(g_s), s	0.6	9.8	28.2	9.8	11.3	11.4	16.2	7.3	13.4	4.7	11.2	0.3
Cycle Q Clear(g_c), s	0.6	9.8	28.2	9.8	11.3	11.4	16.2	7.3	13.4	4.7	11.2	0.3
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	17	2196	684	359	932	942	285	269	228	260	461	206
V/C Ratio(X)	0.54	0.30	1.14	0.82	0.33	0.33	0.89	0.48	0.83	0.31	0.77	0.03
Avail Cap(c_a), veh/h	61	2196	684	446	932	942	383	837	711	260	1223	547
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	1.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.1	21.5	10.5	50.8	15.6	15.7	47.6	45.5	48.1	44.2	48.7	34.8
Incr Delay (d2), s/veh	24.8	0.4	79.0	9.6	0.9	0.9	17.8	1.3	7.5	0.7	2.7	0.1
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	0.4	4.7	27.4	5.1	5.7	5.9	9.4	3.9	6.4	2.4	5.6	0.2
LnGrp Delay(d),s/veh	81.9	21.8	89.5	60.4	16.5	16.6	65.3	46.8	55.6	44.8	51.4	34.9
LnGrp LOS	F	C	F	E	B	B	E	D	E	D	D	C
Approach Vol, veh/h		1447			908			571			440	
Approach Delay, s/veh		58.6			30.9			58.0			49.9	
Approach LOS		E			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	51.3	55.0	23.6	20.1	40.3	66.0	22.0	21.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	15.0	50.0	25.0	40.0	4.0	61.0	13.0	52.0
Max Q Clear Time (g_c+I1), s	11.8	30.2	18.2	13.2	2.6	13.4	6.7	15.4
Green Ext Time (p_c), s	0.3	7.6	0.4	1.9	0.2	3.7	1.2	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	49.9
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	328	671	684	709	0	0	0	0	13	4	50
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	1863	1863
Adj Flow Rate, veh/h	0	357	729	743	771	0				14	4	54
Adj No. of Lanes	0	2	1	2	2	0				1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1706	763	1004	2938	0				101	106	90
Arrive On Green	0.00	0.81	0.81	0.58	1.00	0.00				0.06	0.06	0.06
Sat Flow, veh/h	0	3632	1583	3442	3632	0				1774	1863	1583
Grp Volume(v), veh/h	0	357	729	743	771	0				14	4	54
Grp Sat Flow(s),veh/h/ln	0	1770	1583	1721	1770	0				1774	1863	1583
Q Serve(g_s), s	0.0	2.1	34.5	14.0	0.0	0.0				0.7	0.2	3.0
Cycle Q Clear(g_c), s	0.0	2.1	34.5	14.0	0.0	0.0				0.7	0.2	3.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1706	763	1004	2938	0				101	106	90
V/C Ratio(X)	0.00	0.21	0.96	0.74	0.26	0.00				0.14	0.04	0.60
Avail Cap(c_a), veh/h	0	2912	1303	1707	4866	0				360	378	321
HCM Platoon Ratio	1.00	1.67	1.67	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.95	0.95	0.85	0.85	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	4.7	7.8	16.0	0.0	0.0				39.8	39.5	40.8
Incr Delay (d2), s/veh	0.0	0.1	9.9	0.9	0.0	0.0				0.6	0.1	6.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.0	16.1	6.7	0.0	0.0				0.3	0.1	1.4
LnGrp Delay(d),s/veh	0.0	4.7	17.8	16.9	0.0	0.0				40.4	39.7	47.0
LnGrp LOS		A	B	B	A					D	D	D
Approach Vol, veh/h		1086			1514						72	
Approach Delay, s/veh		13.5			8.3						45.3	
Approach LOS		B			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	30.9	109.0		10.1		139.9		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	44.0	73.0		18.0		122.0		
Max Q Clear Time (g_c+I1), s	16.0	36.5		5.0		2.0		
Green Ext Time (p_c), s	9.8	6.3		0.1		11.6		

Intersection Summary	
HCM 2010 Ctrl Delay	11.4
HCM 2010 LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	307	0	0	1051	418	295
Number	2	12	1	6	3	18
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
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863
Adj Flow Rate, veh/h	323	0	0	1106	440	311
Adj No. of Lanes	2	0	0	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	2465	0	0	2465	778	358
Arrive On Green	0.70	0.00	0.00	0.70	0.23	0.23
Sat Flow, veh/h	3725	0	0	3725	3442	1583
Grp Volume(v), veh/h	323	0	0	1106	440	311
Grp Sat Flow(s),veh/h/ln	1770	0	0	1770	1721	1583
Q Serve(g_s), s	3.9	0.0	0.0	17.8	14.7	24.4
Cycle Q Clear(g_c), s	3.9	0.0	0.0	17.8	14.7	24.4
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2465	0	0	2465	778	358
V/C Ratio(X)	0.13	0.00	0.00	0.45	0.57	0.87
Avail Cap(c_a), veh/h	2465	0	0	2465	1332	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.5	0.0	0.0	8.7	44.4	48.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.6	0.6	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.0	8.8	7.0	11.4
LnGrp Delay(d),s/veh	6.7	0.0	0.0	9.2	45.0	55.0
LnGrp LOS	A			A	D	D
Approach Vol, veh/h	323			1106	751	
Approach Delay, s/veh	6.7			9.2	49.1	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		115.8				115.8		34.2
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		90.0				90.0		50.0
Max Q Clear Time (g_c+I1), s		5.9				19.8		26.4
Green Ext Time (p_c), s		16.2				15.9		2.8

Intersection Summary	
HCM 2010 Ctrl Delay	22.6
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	0	0	291	525	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	275	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	303	547	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	2089	2105	273	952	0	0
Stage 1	1153	1153	-	-	-	-
Stage 2	936	952	-	-	-	-
Critical Hdwy	6.63	6.53	6.93	4.12	-	-
Critical Hdwy Stg 1	5.83	5.53	-	-	-	-
Critical Hdwy Stg 2	5.43	5.53	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	2.218	-	-
Pot Cap-1 Maneuver	51	51	725	722	-	-
Stage 1	264	271	-	-	-	-
Stage 2	381	337	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	30	0	725	722	-	-
Mov Cap-2 Maneuver	30	0	-	-	-	-
Stage 1	153	0	-	-	-	-
Stage 2	381	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	4.8
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	722	-	-	-	1018	-	-
HCM Lane V/C Ratio	0.42	-	-	-	-	-	-
HCM Control Delay (s)	13.5	-	-	0	0	-	-
HCM Lane LOS	B	-	-	A	A	-	-
HCM 95th %tile Q(veh)	2.1	-	-	-	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	884	30
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	921	31

Major/Minor	Major2		
Conflicting Flow All	547	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	1018	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1018	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0
HCM LOS	

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	69	710	130	42	258	124	269	452	721	124	44	56
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	72	740	135	44	269	129	280	471	751	129	46	58
Adj No. of Lanes	1	3	1	2	2	0	1	1	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	1528	476	90	604	282	789	769	654	157	202	90
Arrive On Green	0.07	0.30	0.30	0.01	0.09	0.09	0.44	0.41	0.41	0.09	0.06	0.06
Sat Flow, veh/h	1774	5085	1583	3442	2345	1094	1774	1863	1583	1774	3539	1583
Grp Volume(v), veh/h	72	740	135	44	201	197	280	471	751	129	46	58
Grp Sat Flow(s),veh/h/ln	1774	1695	1583	1721	1770	1670	1774	1863	1583	1774	1770	1583
Q Serve(g_s), s	4.6	13.9	7.6	1.5	12.6	13.1	12.1	23.1	38.9	8.3	1.4	4.2
Cycle Q Clear(g_c), s	4.6	13.9	7.6	1.5	12.6	13.1	12.1	23.1	38.9	8.3	1.4	4.2
Prop In Lane	1.00		1.00	1.00		0.66	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	122	1528	476	90	456	430	789	769	654	157	202	90
V/C Ratio(X)	0.59	0.48	0.28	0.49	0.44	0.46	0.36	0.61	1.15	0.82	0.23	0.64
Avail Cap(c_a), veh/h	152	1528	476	148	456	430	789	1168	993	259	1702	761
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.6	33.3	31.1	57.0	45.3	45.5	21.3	26.9	22.4	52.2	52.4	53.7
Incr Delay (d2), s/veh	4.4	1.1	1.5	4.1	3.0	3.4	0.3	0.8	78.1	10.1	0.6	7.4
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	2.4	6.7	3.5	0.8	6.6	6.5	6.0	12.1	31.1	4.5	0.7	2.0
LnGrp Delay(d),s/veh	57.0	34.4	32.6	61.0	48.4	49.0	21.6	27.6	100.5	62.2	53.0	61.1
LnGrp LOS	E	C	C	E	D	D	C	C	F	E	D	E
Approach Vol, veh/h		947			442			1502			233	
Approach Delay, s/veh		35.9			49.9			62.9			60.1	
Approach LOS		D			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	41.6	40.0	56.8	11.7	46.6	35.0	15.3	53.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	35.0	34.0	56.0	10.0	30.0	17.0	73.0
Max Q Clear Time (g_c+I1), s	3.5	15.9	14.1	6.2	6.6	15.1	10.3	40.9
Green Ext Time (p_c), s	0.0	5.5	7.5	0.5	0.1	2.1	0.2	7.2

Intersection Summary	
HCM 2010 Ctrl Delay	52.7
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1258	281	188	342	0	0	0	0	110	2	69
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	1863	1863
Adj Flow Rate, veh/h	0	1367	305	204	372	0				120	2	75
Adj No. of Lanes	0	2	1	2	2	0				1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2367	1059	475	2984	0				149	157	133
Arrive On Green	0.00	1.00	1.00	0.28	1.00	0.00				0.08	0.08	0.08
Sat Flow, veh/h	0	3632	1583	3442	3632	0				1774	1863	1583
Grp Volume(v), veh/h	0	1367	305	204	372	0				120	2	75
Grp Sat Flow(s),veh/h/ln	0	1770	1583	1721	1770	0				1774	1863	1583
Q Serve(g_s), s	0.0	0.0	0.0	6.7	0.0	0.0				9.1	0.1	6.3
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.7	0.0	0.0				9.1	0.1	6.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2367	1059	475	2984	0				149	157	133
V/C Ratio(X)	0.00	0.58	0.29	0.43	0.12	0.00				0.80	0.01	0.56
Avail Cap(c_a), veh/h	0	2367	1059	475	2984	0				309	325	276
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.64	0.64	0.99	0.99	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	45.3	0.0	0.0				61.9	57.8	60.6
Incr Delay (d2), s/veh	0.0	0.7	0.4	0.6	0.1	0.0				9.6	0.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.1	3.2	0.0	0.0				4.9	0.1	2.9
LnGrp Delay(d),s/veh	0.0	0.7	0.4	45.9	0.1	0.0				71.5	57.8	64.3
LnGrp LOS		A	A	D	A					E	E	E
Approach Vol, veh/h		1672			576						197	
Approach Delay, s/veh		0.6			16.3						68.6	
Approach LOS		A			B						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	36.4	97.0		16.6		133.4		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	19.0	92.0		24.0		116.0		
Max Q Clear Time (g_c+I1), s	8.7	2.0		11.1		2.0		
Green Ext Time (p_c), s	2.3	19.7		0.4		3.5		

Intersection Summary	
HCM 2010 Ctrl Delay	9.8
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1369	0	0	384	142	484
Number	2	12	1	6	3	18
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
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863
Adj Flow Rate, veh/h	1441	0	0	404	149	509
Adj No. of Lanes	2	0	0	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	2059	0	0	2059	1183	544
Arrive On Green	1.00	0.00	0.00	0.58	0.34	0.34
Sat Flow, veh/h	3725	0	0	3725	3442	1583
Grp Volume(v), veh/h	1441	0	0	404	149	509
Grp Sat Flow(s),veh/h/ln	1770	0	0	1770	1721	1583
Q Serve(g_s), s	0.0	0.0	0.0	7.2	4.0	41.7
Cycle Q Clear(g_c), s	0.0	0.0	0.0	7.2	4.0	41.7
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2059	0	0	2059	1183	544
V/C Ratio(X)	0.70	0.00	0.00	0.20	0.13	0.94
Avail Cap(c_a), veh/h	2059	0	0	2059	1592	732
HCM Platoon Ratio	2.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	13.2	30.2	42.6
Incr Delay (d2), s/veh	1.6	0.0	0.0	0.2	0.0	16.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	3.6	1.9	20.7
LnGrp Delay(d),s/veh	1.6	0.0	0.0	13.4	30.2	58.7
LnGrp LOS	A			B	C	E
Approach Vol, veh/h	1441			404	658	
Approach Delay, s/veh	1.6			13.4	52.2	
Approach LOS	A			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		98.9				98.9		51.1
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		78.0				78.0		62.0
Max Q Clear Time (g_c+I1), s		2.0				9.2		43.7
Green Ext Time (p_c), s		26.4				25.7		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	0	0	774	1090	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	275	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	841	1185	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	3334	3383	592	516	0	0
Stage 1	2867	2867	-	-	-	-
Stage 2	467	516	-	-	-	-
Critical Hdwy	6.63	6.53	6.93	4.12	-	-
Critical Hdwy Stg 1	5.83	5.53	-	-	-	-
Critical Hdwy Stg 2	5.43	5.53	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	2.218	-	-
Pot Cap-1 Maneuver	7	7	450	1050	-	-
Stage 1	29	37	-	-	-	-
Stage 2	630	533	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	1	0	450	1050	-	-
Mov Cap-2 Maneuver	1	0	-	-	-	-
Stage 1	6	0	-	-	-	-
Stage 2	630	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	8.6
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1050	-	-	-	585	-	-
HCM Lane V/C Ratio	0.801	-	-	-	-	-	-
HCM Control Delay (s)	20.6	-	-	0	0	-	-
HCM Lane LOS	C	-	-	A	A	-	-
HCM 95th %tile Q(veh)	9	-	-	-	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	384	91
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	417	99

Major/Minor	Major2		
Conflicting Flow All	1185	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	585	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	585	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	71	18	512	74	19	101
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	-	-	-	100	-
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	77	20	557	80	21	110

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	682	597	0	0	637	0
Stage 1	597	-	-	-	-	-
Stage 2	85	-	-	-	-	-
Critical Hdwy	6.08	6.23	-	-	4.12	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	6.03	-	-	-	-	-
Follow-up Hdwy	3.669	3.319	-	-	2.218	-
Pot Cap-1 Maneuver	430	502	-	-	947	-
Stage 1	532	-	-	-	-	-
Stage 2	888	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	420	502	-	-	947	-
Mov Cap-2 Maneuver	420	-	-	-	-	-
Stage 1	532	-	-	-	-	-
Stage 2	868	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.7	0	1.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	434	947	-
HCM Lane V/C Ratio	-	-	0.223	0.022	-
HCM Control Delay (s)	-	-	15.7	8.9	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	54	627	739	281	512	150	241	140	180	153	352	48
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	57	660	778	296	539	158	254	147	189	161	371	51
Adj No. of Lanes	1	3	1	2	2	0	1	1	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	2147	669	359	1256	367	285	271	230	282	509	228
Arrive On Green	0.06	0.42	0.42	0.10	0.46	0.46	0.16	0.15	0.15	0.16	0.14	0.14
Sat Flow, veh/h	1774	5085	1583	3442	2704	789	1774	1863	1583	1774	3539	1583
Grp Volume(v), veh/h	57	660	778	296	352	345	254	147	189	161	371	51
Grp Sat Flow(s),veh/h/ln	1774	1695	1583	1721	1770	1723	1774	1863	1583	1774	1770	1583
Q Serve(g_s), s	3.7	10.2	28.8	10.0	15.7	15.9	16.6	8.7	13.7	9.9	11.9	2.8
Cycle Q Clear(g_c), s	3.7	10.2	28.8	10.0	15.7	15.9	16.6	8.7	13.7	9.9	11.9	2.8
Prop In Lane	1.00		1.00	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	110	2147	669	359	822	801	285	271	230	282	509	228
V/C Ratio(X)	0.52	0.31	1.16	0.82	0.43	0.43	0.89	0.54	0.82	0.57	0.73	0.22
Avail Cap(c_a), veh/h	150	2147	669	436	822	801	375	676	575	330	1196	535
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	1.00	1.00	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.8	22.7	11.3	52.0	21.2	21.2	48.7	47.0	49.1	46.0	48.5	30.8
Incr Delay (d2), s/veh	3.7	0.4	89.4	10.0	1.6	1.6	18.7	1.7	7.2	1.8	2.0	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	1.9	4.8	29.1	5.2	8.1	7.9	9.6	4.6	6.5	5.0	6.0	1.4
LnGrp Delay(d),s/veh	57.5	23.1	100.7	61.9	22.8	22.9	67.4	48.7	56.3	47.8	50.5	31.3
LnGrp LOS	E	C	F	E	C	C	E	D	E	D	D	C
Approach Vol, veh/h		1495			993			590			583	
Approach Delay, s/veh		64.8			34.5			59.2			48.1	
Approach LOS		E			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	49.0	55.0	24.0	22.0	44.0	60.0	23.8	22.2
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	15.0	50.0	25.0	40.0	10.0	55.0	22.0	43.0
Max Q Clear Time (g_c+I1), s	12.0	30.8	18.6	13.9	5.7	17.9	11.9	15.7
Green Ext Time (p_c), s	0.4	8.1	0.4	3.2	0.5	5.0	2.2	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	53.0
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	360	696	684	743	0	0	0	0	13	4	77
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	1863	1863
Adj Flow Rate, veh/h	0	391	757	743	808	0				14	4	84
Adj No. of Lanes	0	2	1	2	2	0				1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1754	785	971	2928	0				130	137	116
Arrive On Green	0.00	0.83	0.83	0.56	1.00	0.00				0.07	0.07	0.07
Sat Flow, veh/h	0	3632	1583	3442	3632	0				1774	1863	1583
Grp Volume(v), veh/h	0	391	757	743	808	0				14	4	84
Grp Sat Flow(s),veh/h/ln	0	1770	1583	1721	1770	0				1774	1863	1583
Q Serve(g_s), s	0.0	2.4	41.2	16.7	0.0	0.0				0.7	0.2	5.2
Cycle Q Clear(g_c), s	0.0	2.4	41.2	16.7	0.0	0.0				0.7	0.2	5.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1754	785	971	2928	0				130	137	116
V/C Ratio(X)	0.00	0.22	0.96	0.77	0.28	0.00				0.11	0.03	0.72
Avail Cap(c_a), veh/h	0	2601	1164	1470	4288	0				317	333	283
HCM Platoon Ratio	1.00	1.67	1.67	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.94	0.94	0.84	0.84	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	4.6	7.9	19.4	0.0	0.0				43.6	43.3	45.6
Incr Delay (d2), s/veh	0.0	0.1	14.1	1.1	0.0	0.0				0.4	0.1	8.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.1	19.8	7.9	0.0	0.0				0.4	0.1	2.6
LnGrp Delay(d),s/veh	0.0	4.6	22.1	20.5	0.0	0.0				43.9	43.4	53.8
LnGrp LOS		A	C	C	A					D	D	D
Approach Vol, veh/h		1148			1551						102	
Approach Delay, s/veh		16.1			9.9						52.0	
Approach LOS		B			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	33.4	104.2		12.4		137.6		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	43.0	74.0		18.0		122.0		
Max Q Clear Time (g_c+I1), s	18.7	43.2		7.2		2.0		
Green Ext Time (p_c), s	9.7	6.7		0.2		12.2		

Intersection Summary	
HCM 2010 Ctrl Delay	14.0
HCM 2010 LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	339	0	0	1058	445	295
Number	2	12	1	6	3	18
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
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863
Adj Flow Rate, veh/h	357	0	0	1114	468	311
Adj No. of Lanes	2	0	0	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	2467	0	0	2467	779	358
Arrive On Green	0.70	0.00	0.00	0.70	0.23	0.23
Sat Flow, veh/h	3725	0	0	3725	3442	1583
Grp Volume(v), veh/h	357	0	0	1114	468	311
Grp Sat Flow(s),veh/h/ln	1770	0	0	1770	1721	1583
Q Serve(g_s), s	4.4	0.0	0.0	18.2	15.9	24.7
Cycle Q Clear(g_c), s	4.4	0.0	0.0	18.2	15.9	24.7
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2467	0	0	2467	779	358
V/C Ratio(X)	0.14	0.00	0.00	0.45	0.60	0.87
Avail Cap(c_a), veh/h	2467	0	0	2467	1292	594
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.7	0.0	0.0	8.7	45.2	48.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.6	0.7	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.0	9.0	7.6	11.5
LnGrp Delay(d),s/veh	6.8	0.0	0.0	9.3	46.0	56.0
LnGrp LOS	A			A	D	E
Approach Vol, veh/h	357			1114	779	
Approach Delay, s/veh	6.8			9.3	50.0	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		115.4				115.4		34.6
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		91.0				91.0		49.0
Max Q Clear Time (g_c+I1), s		6.4				20.2		26.7
Green Ext Time (p_c), s		17.0				16.7		2.9

Intersection Summary	
HCM 2010 Ctrl Delay	23.0
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	0	0	316	531	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	275	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	329	553	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	2155	2170	277	959	0	0
Stage 1	1211	1211	-	-	-	-
Stage 2	944	959	-	-	-	-
Critical Hdwy	6.63	6.53	6.93	4.12	-	-
Critical Hdwy Stg 1	5.83	5.53	-	-	-	-
Critical Hdwy Stg 2	5.43	5.53	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	2.218	-	-
Pot Cap-1 Maneuver	46	46	721	717	-	-
Stage 1	246	254	-	-	-	-
Stage 2	377	334	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	25	0	721	717	-	-
Mov Cap-2 Maneuver	25	0	-	-	-	-
Stage 1	133	0	-	-	-	-
Stage 2	377	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	5.3
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	717	-	-	-	1013	-	-
HCM Lane V/C Ratio	0.459	-	-	-	-	-	-
HCM Control Delay (s)	14.2	-	-	0	0	-	-
HCM Lane LOS	B	-	-	A	A	-	-
HCM 95th %tile Q(veh)	2.4	-	-	-	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	891	30
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	928	31

Major/Minor	Major2		
Conflicting Flow All	553	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	1013	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1013	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	67	17	216	72	18	436
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	-	-	-	100	-
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	73	18	235	78	20	474

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	503	274	0	0	313	0
Stage 1	274	-	-	-	-	-
Stage 2	229	-	-	-	-	-
Critical Hdwy	6.08	6.23	-	-	4.12	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	6.03	-	-	-	-	-
Follow-up Hdwy	3.669	3.319	-	-	2.218	-
Pot Cap-1 Maneuver	536	764	-	-	1247	-
Stage 1	744	-	-	-	-	-
Stage 2	750	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	527	764	-	-	1247	-
Mov Cap-2 Maneuver	527	-	-	-	-	-
Stage 1	744	-	-	-	-	-
Stage 2	738	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	562	1247	-
HCM Lane V/C Ratio	-	-	0.162	0.016	-
HCM Control Delay (s)	-	-	12.6	7.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	69	710	130	42	258	124	269	452	721	124	44	56
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	72	740	135	44	269	129	280	471	751	129	46	58
Adj No. of Lanes	1	3	1	2	2	0	1	1	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	1528	476	90	604	282	789	769	654	157	202	90
Arrive On Green	0.07	0.30	0.30	0.01	0.09	0.09	0.44	0.41	0.41	0.09	0.06	0.06
Sat Flow, veh/h	1774	5085	1583	3442	2345	1094	1774	1863	1583	1774	3539	1583
Grp Volume(v), veh/h	72	740	135	44	201	197	280	471	751	129	46	58
Grp Sat Flow(s),veh/h/ln	1774	1695	1583	1721	1770	1670	1774	1863	1583	1774	1770	1583
Q Serve(g_s), s	4.6	13.9	7.6	1.5	12.6	13.1	12.1	23.1	38.9	8.3	1.4	4.2
Cycle Q Clear(g_c), s	4.6	13.9	7.6	1.5	12.6	13.1	12.1	23.1	38.9	8.3	1.4	4.2
Prop In Lane	1.00		1.00	1.00		0.66	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	122	1528	476	90	456	430	789	769	654	157	202	90
V/C Ratio(X)	0.59	0.48	0.28	0.49	0.44	0.46	0.36	0.61	1.15	0.82	0.23	0.64
Avail Cap(c_a), veh/h	152	1528	476	148	456	430	789	1168	993	259	1702	761
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.6	33.3	31.1	57.0	45.3	45.5	21.3	26.9	22.4	52.2	52.4	53.7
Incr Delay (d2), s/veh	4.4	1.1	1.5	4.1	3.0	3.4	0.3	0.8	78.1	10.1	0.6	7.4
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	2.4	6.7	3.5	0.8	6.6	6.5	6.0	12.1	31.1	4.5	0.7	2.0
LnGrp Delay(d),s/veh	57.0	34.4	32.6	61.0	48.4	49.0	21.6	27.6	100.5	62.2	53.0	61.1
LnGrp LOS	E	C	C	E	D	D	C	C	F	E	D	E
Approach Vol, veh/h		947			442			1502			233	
Approach Delay, s/veh		35.9			49.9			62.9			60.1	
Approach LOS		D			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	41.6	40.0	56.8	11.7	46.6	35.0	15.3	53.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	35.0	34.0	56.0	10.0	30.0	17.0	73.0
Max Q Clear Time (g_c+I1), s	3.5	15.9	14.1	6.2	6.6	15.1	10.3	40.9
Green Ext Time (p_c), s	0.0	5.5	7.5	0.5	0.1	2.1	0.2	7.2

Intersection Summary	
HCM 2010 Ctrl Delay	52.7
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1258	281	188	342	0	0	0	0	110	2	69
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	1863	1863
Adj Flow Rate, veh/h	0	1367	305	204	372	0				120	2	75
Adj No. of Lanes	0	2	1	2	2	0				1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2367	1059	475	2984	0				149	157	133
Arrive On Green	0.00	1.00	1.00	0.28	1.00	0.00				0.08	0.08	0.08
Sat Flow, veh/h	0	3632	1583	3442	3632	0				1774	1863	1583
Grp Volume(v), veh/h	0	1367	305	204	372	0				120	2	75
Grp Sat Flow(s),veh/h/ln	0	1770	1583	1721	1770	0				1774	1863	1583
Q Serve(g_s), s	0.0	0.0	0.0	6.7	0.0	0.0				9.1	0.1	6.3
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.7	0.0	0.0				9.1	0.1	6.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2367	1059	475	2984	0				149	157	133
V/C Ratio(X)	0.00	0.58	0.29	0.43	0.12	0.00				0.80	0.01	0.56
Avail Cap(c_a), veh/h	0	2367	1059	475	2984	0				309	325	276
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.64	0.64	0.99	0.99	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	45.3	0.0	0.0				61.9	57.8	60.6
Incr Delay (d2), s/veh	0.0	0.7	0.4	0.6	0.1	0.0				9.6	0.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.1	3.2	0.0	0.0				4.9	0.1	2.9
LnGrp Delay(d),s/veh	0.0	0.7	0.4	45.9	0.1	0.0				71.5	57.8	64.3
LnGrp LOS		A	A	D	A					E	E	E
Approach Vol, veh/h		1672			576						197	
Approach Delay, s/veh		0.6			16.3						68.6	
Approach LOS		A			B						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	36.4	97.0		16.6		133.4		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	19.0	92.0		24.0		116.0		
Max Q Clear Time (g_c+I1), s	8.7	2.0		11.1		2.0		
Green Ext Time (p_c), s	2.3	19.7		0.4		3.5		

Intersection Summary	
HCM 2010 Ctrl Delay	9.8
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1369	0	0	384	142	484
Number	2	12	1	6	3	18
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
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863
Adj Flow Rate, veh/h	1441	0	0	404	149	509
Adj No. of Lanes	2	0	0	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	2059	0	0	2059	1183	544
Arrive On Green	1.00	0.00	0.00	0.58	0.34	0.34
Sat Flow, veh/h	3725	0	0	3725	3442	1583
Grp Volume(v), veh/h	1441	0	0	404	149	509
Grp Sat Flow(s),veh/h/ln	1770	0	0	1770	1721	1583
Q Serve(g_s), s	0.0	0.0	0.0	7.2	4.0	41.7
Cycle Q Clear(g_c), s	0.0	0.0	0.0	7.2	4.0	41.7
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2059	0	0	2059	1183	544
V/C Ratio(X)	0.70	0.00	0.00	0.20	0.13	0.94
Avail Cap(c_a), veh/h	2059	0	0	2059	1592	732
HCM Platoon Ratio	2.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	13.2	30.2	42.6
Incr Delay (d2), s/veh	1.6	0.0	0.0	0.2	0.0	16.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	3.6	1.9	20.7
LnGrp Delay(d),s/veh	1.6	0.0	0.0	13.4	30.2	58.7
LnGrp LOS	A			B	C	E
Approach Vol, veh/h	1441			404	658	
Approach Delay, s/veh	1.6			13.4	52.2	
Approach LOS	A			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		98.9				98.9		51.1
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		78.0				78.0		62.0
Max Q Clear Time (g_c+I1), s		2.0				9.2		43.7
Green Ext Time (p_c), s		26.4				25.7		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	0	0	774	1090	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	275	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	841	1185	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	3334	3383	592	516	0	0
Stage 1	2867	2867	-	-	-	-
Stage 2	467	516	-	-	-	-
Critical Hdwy	6.63	6.53	6.93	4.12	-	-
Critical Hdwy Stg 1	5.83	5.53	-	-	-	-
Critical Hdwy Stg 2	5.43	5.53	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	2.218	-	-
Pot Cap-1 Maneuver	7	7	450	1050	-	-
Stage 1	29	37	-	-	-	-
Stage 2	630	533	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	1	0	450	1050	-	-
Mov Cap-2 Maneuver	1	0	-	-	-	-
Stage 1	6	0	-	-	-	-
Stage 2	630	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	8.6
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1050	-	-	-	585	-	-
HCM Lane V/C Ratio	0.801	-	-	-	-	-	-
HCM Control Delay (s)	20.6	-	-	0	0	-	-
HCM Lane LOS	C	-	-	A	A	-	-
HCM 95th %tile Q(veh)	9	-	-	-	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	0	384	91
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	417	99

Major/Minor	Major2		
Conflicting Flow All	1185	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	585	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	585	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	142	18	512	74	37	82
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	-	-	-	100	-
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	154	20	557	80	40	89

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	713	597	0	0	637	0
Stage 1	597	-	-	-	-	-
Stage 2	116	-	-	-	-	-
Critical Hdwy	6.08	6.23	-	-	4.12	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	6.03	-	-	-	-	-
Follow-up Hdwy	3.669	3.319	-	-	2.218	-
Pot Cap-1 Maneuver	414	502	-	-	947	-
Stage 1	532	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	397	502	-	-	947	-
Mov Cap-2 Maneuver	397	-	-	-	-	-
Stage 1	532	-	-	-	-	-
Stage 2	821	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.3	0	2.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	407	947	-
HCM Lane V/C Ratio	-	-	0.427	0.042	-
HCM Control Delay (s)	-	-	20.3	9	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	2.1	0.1	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	18	568	74	0	224
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	20	617	80	0	243

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	755	658	0	0	698	0
Stage 1	658	-	-	-	-	-
Stage 2	97	-	-	-	-	-
Critical Hdwy	6.08	6.23	-	-	4.12	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	6.03	-	-	-	-	-
Follow-up Hdwy	3.669	3.319	-	-	2.218	-
Pot Cap-1 Maneuver	393	463	-	-	898	-
Stage 1	499	-	-	-	-	-
Stage 2	876	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	393	463	-	-	898	-
Mov Cap-2 Maneuver	393	-	-	-	-	-
Stage 1	499	-	-	-	-	-
Stage 2	876	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	463	898	-
HCM Lane V/C Ratio	-	-	0.042	-	-
HCM Control Delay (s)	-	-	13.1	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	54	627	739	281	512	150	241	140	180	153	352	48
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	57	660	778	296	539	158	254	147	189	161	371	51
Adj No. of Lanes	1	3	1	2	2	0	1	1	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	2147	669	359	1256	367	285	271	230	282	509	228
Arrive On Green	0.06	0.42	0.42	0.10	0.46	0.46	0.16	0.15	0.15	0.16	0.14	0.14
Sat Flow, veh/h	1774	5085	1583	3442	2704	789	1774	1863	1583	1774	3539	1583
Grp Volume(v), veh/h	57	660	778	296	352	345	254	147	189	161	371	51
Grp Sat Flow(s),veh/h/ln	1774	1695	1583	1721	1770	1723	1774	1863	1583	1774	1770	1583
Q Serve(g_s), s	3.7	10.2	28.8	10.0	15.7	15.9	16.6	8.7	13.7	9.9	11.9	2.8
Cycle Q Clear(g_c), s	3.7	10.2	28.8	10.0	15.7	15.9	16.6	8.7	13.7	9.9	11.9	2.8
Prop In Lane	1.00		1.00	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	110	2147	669	359	822	801	285	271	230	282	509	228
V/C Ratio(X)	0.52	0.31	1.16	0.82	0.43	0.43	0.89	0.54	0.82	0.57	0.73	0.22
Avail Cap(c_a), veh/h	150	2147	669	436	822	801	375	676	575	330	1196	535
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	1.00	1.00	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.8	22.7	11.3	52.0	21.2	21.2	48.7	47.0	49.1	46.0	48.5	30.8
Incr Delay (d2), s/veh	3.7	0.4	89.4	10.0	1.6	1.6	18.7	1.7	7.2	1.8	2.0	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	1.9	4.8	29.1	5.2	8.1	7.9	9.6	4.6	6.5	5.0	6.0	1.4
LnGrp Delay(d),s/veh	57.5	23.1	100.7	61.9	22.8	22.9	67.4	48.7	56.3	47.8	50.5	31.3
LnGrp LOS	E	C	F	E	C	C	E	D	E	D	D	C
Approach Vol, veh/h		1495			993			590			583	
Approach Delay, s/veh		64.8			34.5			59.2			48.1	
Approach LOS		E			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	49.0	55.0	24.0	22.0	44.0	60.0	23.8	22.2
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	15.0	50.0	25.0	40.0	10.0	55.0	22.0	43.0
Max Q Clear Time (g_c+I1), s	12.0	30.8	18.6	13.9	5.7	17.9	11.9	15.7
Green Ext Time (p_c), s	0.4	8.1	0.4	3.2	0.5	5.0	2.2	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	53.0
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	360	696	684	743	0	0	0	0	13	4	77
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	1863	1863
Adj Flow Rate, veh/h	0	391	757	743	808	0				14	4	84
Adj No. of Lanes	0	2	1	2	2	0				1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1754	785	971	2928	0				130	137	116
Arrive On Green	0.00	0.83	0.83	0.56	1.00	0.00				0.07	0.07	0.07
Sat Flow, veh/h	0	3632	1583	3442	3632	0				1774	1863	1583
Grp Volume(v), veh/h	0	391	757	743	808	0				14	4	84
Grp Sat Flow(s),veh/h/ln	0	1770	1583	1721	1770	0				1774	1863	1583
Q Serve(g_s), s	0.0	2.4	41.2	16.7	0.0	0.0				0.7	0.2	5.2
Cycle Q Clear(g_c), s	0.0	2.4	41.2	16.7	0.0	0.0				0.7	0.2	5.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1754	785	971	2928	0				130	137	116
V/C Ratio(X)	0.00	0.22	0.96	0.77	0.28	0.00				0.11	0.03	0.72
Avail Cap(c_a), veh/h	0	2601	1164	1470	4288	0				317	333	283
HCM Platoon Ratio	1.00	1.67	1.67	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.94	0.94	0.84	0.84	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	4.6	7.9	19.4	0.0	0.0				43.6	43.3	45.6
Incr Delay (d2), s/veh	0.0	0.1	14.1	1.1	0.0	0.0				0.4	0.1	8.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.1	19.8	7.9	0.0	0.0				0.4	0.1	2.6
LnGrp Delay(d),s/veh	0.0	4.6	22.1	20.5	0.0	0.0				43.9	43.4	53.8
LnGrp LOS		A	C	C	A					D	D	D
Approach Vol, veh/h		1148			1551						102	
Approach Delay, s/veh		16.1			9.9						52.0	
Approach LOS		B			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	33.4	104.2		12.4		137.6		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	43.0	74.0		18.0		122.0		
Max Q Clear Time (g_c+I1), s	18.7	43.2		7.2		2.0		
Green Ext Time (p_c), s	9.7	6.7		0.2		12.2		

Intersection Summary	
HCM 2010 Ctrl Delay	14.0
HCM 2010 LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	339	0	0	1058	445	295
Number	2	12	1	6	3	18
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
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863
Adj Flow Rate, veh/h	357	0	0	1114	468	311
Adj No. of Lanes	2	0	0	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	2467	0	0	2467	779	358
Arrive On Green	0.70	0.00	0.00	0.70	0.23	0.23
Sat Flow, veh/h	3725	0	0	3725	3442	1583
Grp Volume(v), veh/h	357	0	0	1114	468	311
Grp Sat Flow(s),veh/h/ln	1770	0	0	1770	1721	1583
Q Serve(g_s), s	4.4	0.0	0.0	18.2	15.9	24.7
Cycle Q Clear(g_c), s	4.4	0.0	0.0	18.2	15.9	24.7
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2467	0	0	2467	779	358
V/C Ratio(X)	0.14	0.00	0.00	0.45	0.60	0.87
Avail Cap(c_a), veh/h	2467	0	0	2467	1292	594
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.7	0.0	0.0	8.7	45.2	48.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.6	0.7	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.0	9.0	7.6	11.5
LnGrp Delay(d),s/veh	6.8	0.0	0.0	9.3	46.0	56.0
LnGrp LOS	A			A	D	E
Approach Vol, veh/h	357			1114	779	
Approach Delay, s/veh	6.8			9.3	50.0	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		115.4				115.4		34.6
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		91.0				91.0		49.0
Max Q Clear Time (g_c+I1), s		6.4				20.2		26.7
Green Ext Time (p_c), s		17.0				16.7		2.9

Intersection Summary	
HCM 2010 Ctrl Delay	23.0
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	0	0	316	531	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	275	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	329	553	0

Major/Minor	Minor1			Major1		
Conflicting Flow All	2155	2170	277	959	0	0
Stage 1	1211	1211	-	-	-	-
Stage 2	944	959	-	-	-	-
Critical Hdwy	6.63	6.53	6.93	4.12	-	-
Critical Hdwy Stg 1	5.83	5.53	-	-	-	-
Critical Hdwy Stg 2	5.43	5.53	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	2.218	-	-
Pot Cap-1 Maneuver	46	46	721	717	-	-
Stage 1	246	254	-	-	-	-
Stage 2	377	334	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	25	0	721	717	-	-
Mov Cap-2 Maneuver	25	0	-	-	-	-
Stage 1	133	0	-	-	-	-
Stage 2	377	0	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	5.3
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	717	-	-	-	1013	-	-
HCM Lane V/C Ratio	0.459	-	-	-	-	-	-
HCM Control Delay (s)	14.2	-	-	0	0	-	-
HCM Lane LOS	B	-	-	A	A	-	-
HCM 95th %tile Q(veh)	2.4	-	-	-	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	0	891	30
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	928	31

Major/Minor	Major2		
Conflicting Flow All	553	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	1013	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1013	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	134	17	216	72	36	418
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	-	-	-	100	-
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	146	18	235	78	39	454

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	534	274	0	0	313	0
Stage 1	274	-	-	-	-	-
Stage 2	260	-	-	-	-	-
Critical Hdwy	6.08	6.23	-	-	4.12	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	6.03	-	-	-	-	-
Follow-up Hdwy	3.669	3.319	-	-	2.218	-
Pot Cap-1 Maneuver	516	764	-	-	1247	-
Stage 1	744	-	-	-	-	-
Stage 2	723	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	500	764	-	-	1247	-
Mov Cap-2 Maneuver	500	-	-	-	-	-
Stage 1	744	-	-	-	-	-
Stage 2	700	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.1	0	0.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	520	1247	-
HCM Lane V/C Ratio	-	-	0.316	0.031	-
HCM Control Delay (s)	-	-	15.1	8	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.3	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	17	271	72	0	552
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	18	295	78	0	600

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	574	334	0	0	373	0
Stage 1	334	-	-	-	-	-
Stage 2	240	-	-	-	-	-
Critical Hdwy	6.08	6.23	-	-	4.12	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	6.03	-	-	-	-	-
Follow-up Hdwy	3.669	3.319	-	-	2.218	-
Pot Cap-1 Maneuver	492	707	-	-	1185	-
Stage 1	699	-	-	-	-	-
Stage 2	740	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	492	707	-	-	1185	-
Mov Cap-2 Maneuver	492	-	-	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	740	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	707	1185	-
HCM Lane V/C Ratio	-	-	0.026	-	-
HCM Control Delay (s)	-	-	10.2	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	69	710	130	42	258	124	269	452	721	124	44	56
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	72	740	135	44	269	129	280	471	751	129	46	58
Adj No. of Lanes	1	3	1	2	2	0	1	1	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	117	1442	1198	87	570	266	839	822	738	156	198	89
Arrive On Green	0.07	0.28	0.28	0.02	0.16	0.16	0.47	0.44	0.44	0.09	0.06	0.06
Sat Flow, veh/h	1774	5085	1583	3442	2345	1094	1774	1863	1583	1774	3539	1583
Grp Volume(v), veh/h	72	740	135	44	201	197	280	471	751	129	46	58
Grp Sat Flow(s),veh/h/ln	1774	1695	1583	1721	1770	1670	1774	1863	1583	1774	1770	1583
Q Serve(g_s), s	4.9	15.1	0.0	1.6	12.7	13.2	12.2	23.3	45.7	8.8	1.5	4.4
Cycle Q Clear(g_c), s	4.9	15.1	0.0	1.6	12.7	13.2	12.2	23.3	45.7	8.8	1.5	4.4
Prop In Lane	1.00		1.00	1.00		0.66	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	117	1442	1198	87	430	406	839	822	738	156	198	89
V/C Ratio(X)	0.62	0.51	0.11	0.51	0.47	0.49	0.33	0.57	1.02	0.83	0.23	0.65
Avail Cap(c_a), veh/h	144	1442	1198	139	430	406	839	1102	977	244	1606	719
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.1	37.1	4.0	59.9	44.4	44.6	20.3	25.8	22.8	55.4	55.7	57.1
Incr Delay (d2), s/veh	5.2	1.3	0.2	4.5	3.6	4.1	0.2	0.6	30.8	12.4	0.6	7.9
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	2.6	7.2	1.3	0.8	6.7	6.6	6.0	12.2	26.1	4.9	0.8	2.1
LnGrp Delay(d),s/veh	61.4	38.4	4.2	64.4	48.0	48.7	20.6	26.4	53.6	67.8	56.3	65.0
LnGrp LOS	E	D	A	E	D	D	C	C	F	E	E	E
Approach Vol, veh/h		947			442			1502			233	
Approach Delay, s/veh		35.2			49.9			38.9			64.8	
Approach LOS		D			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	34.7	40.0	63.4	11.9	39.7	35.0	15.8	59.4
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	35.0	34.0	56.0	10.0	30.0	17.0	73.0
Max Q Clear Time (g_c+I1), s	3.6	17.1	14.2	6.4	6.9	15.2	10.8	47.7
Green Ext Time (p_c), s	0.0	5.4	7.5	0.5	0.1	2.1	0.1	6.7

Intersection Summary	
HCM 2010 Ctrl Delay	41.3
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	54	627	739	281	512	150	241	140	180	153	352	48
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	57	660	778	296	539	158	254	147	189	161	371	51
Adj No. of Lanes	1	3	1	2	2	0	1	1	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	2157	926	360	1261	368	285	198	334	347	499	223
Arrive On Green	0.06	0.42	0.42	0.10	0.47	0.47	0.16	0.11	0.11	0.20	0.14	0.14
Sat Flow, veh/h	1774	5085	1583	3442	2704	789	1774	1863	1583	1774	3539	1583
Grp Volume(v), veh/h	57	660	778	296	352	345	254	147	189	161	371	51
Grp Sat Flow(s),veh/h/ln	1774	1695	1583	1721	1770	1723	1774	1863	1583	1774	1770	1583
Q Serve(g_s), s	3.7	10.1	20.9	9.9	15.6	15.7	16.5	9.0	0.3	9.5	11.9	2.8
Cycle Q Clear(g_c), s	3.7	10.1	20.9	9.9	15.6	15.7	16.5	9.0	0.3	9.5	11.9	2.8
Prop In Lane	1.00		1.00	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	110	2157	926	360	826	804	285	198	334	347	499	223
V/C Ratio(X)	0.52	0.31	0.84	0.82	0.43	0.43	0.89	0.74	0.57	0.46	0.74	0.23
Avail Cap(c_a), veh/h	150	2157	926	438	826	804	376	679	743	347	1201	537
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	1.00	1.00	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.6	22.5	6.4	51.7	20.9	21.0	48.5	51.1	41.7	42.0	48.6	30.9
Incr Delay (d2), s/veh	3.7	0.4	9.1	9.8	1.6	1.6	18.5	5.4	1.5	1.0	2.2	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	1.9	4.8	11.1	5.2	8.0	7.8	9.6	5.0	5.6	4.7	6.0	1.4
LnGrp Delay(d),s/veh	57.3	22.8	15.5	61.5	22.5	22.6	67.0	56.5	43.2	42.9	50.8	31.4
LnGrp LOS	E	C	B	E	C	C	E	E	D	D	D	C
Approach Vol, veh/h		1495			993			590			583	
Approach Delay, s/veh		20.3			34.2			56.7			46.9	
Approach LOS		C			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	49.4	55.0	23.9	21.6	44.4	60.0	28.0	17.5
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	15.0	50.0	25.0	40.0	10.0	55.0	22.0	43.0
Max Q Clear Time (g_c+I1), s	11.9	22.9	18.5	13.9	5.7	17.7	11.5	11.0
Green Ext Time (p_c), s	0.4	9.3	0.4	2.8	0.5	5.0	2.3	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	34.2
HCM 2010 LOS	C