Appendix A – Air Quality and GHG Asessments

MEMORANDUM

URBAN CROSSROADS

DATE: November 27, 2024
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JOB NO: 16357-02 AQ & GHG Assessment

RIVERSIDE DRIVE AIR QUALITY & GREENHOUSE GAS ASSESSMENT

Lindsay Leon,

Urban Crossroads, Inc. is pleased to provide the following Air Quality & Greenhouse Gas Assessment for the Riverside Drive (**Project**), which is located northwest of Riverside Drive at 32281 Riverside Drive in the City of Lake Elsinore.

PROJECT OVERVIEW

The Project is to consist of the development of 96 residential dwelling units, 200 parking spaces, a recreational clubhouse and a pool, as shown on Exhibit 1. The proposed Project is anticipated to have an opening year of 2026.

SUMMARY OF FINDINGS

Results of the assessment indicate that the Project would result in a less than significant with respect to air quality and greenhouse gases (GHG).

EXHIBIT 1: SITE PLAN



PROJECT AIR QUALITY IMPACTS

AIR QUALITY SETTING

SOUTH COAST AIR BASIN (SCAB)

The Project site is located in the SCAB within the jurisdiction of South Coast Air Quality Management District (SCAQMD) (1). The SCAQMD was created by the 1977 Lewis-Presley Air Quality Management Act, which merged four county air pollution control bodies into one regional district. Under the Act, the SCAQMD is responsible for bringing air quality in areas under its jurisdiction into conformity with federal and state air quality standards. As previously stated, the Project site is located within the SCAB, a 6,745-square mile subregion of the SCAQMD, which includes portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County.

The SCAB is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Los Angeles County portion of the Mojave Desert Air Basin is bounded by the San Gabriel Mountains to the south and west, the Los Angeles / Kern County border to the north, and the Los Angeles / San Bernardino County border to the east. The Riverside County portion of the Salton Sea Air Basin is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley.

Regional Climate

The regional climate has a substantial influence on air quality in the SCAB. In addition, the temperature, wind, humidity, precipitation, and amount of sunshine influence the air quality.

The annual average temperatures throughout the SCAB vary from the low to middle 60s degrees Fahrenheit (°F). Due to a decreased marine influence, the eastern portion of the SCAB shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the SCAB, with average minimum temperatures of 47°F in downtown Los Angeles and 36°F in San Bernardino. All portions of the SCAB have recorded maximum temperatures above 100°F.

Although the climate of the SCAB can be characterized as semi-arid, the air near the land surface is quite moist on most days because of the presence of a marine layer. This shallow layer of sea air is an important modifier of SCAB climate. Humidity restricts visibility in the SCAB, and the conversion of sulfur dioxide (SO_2) to sulfates (SO_4) is heightened in air with high relative humidity. The marine layer provides an environment for that conversion process, especially during the spring and summer months. The annual average relative humidity within the SCAB is 71 percent (%) along the coast and 59% inland. Since the ocean effect is dominant, periods of heavy early morning fog are frequent and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast.

More than 90% of the SCAB's rainfall occurs from November through April. The annual average rainfall varies from approximately nine inches in Riverside to fourteen inches in downtown Los Angeles. Monthly and yearly rainfall totals are extremely variable. Summer rainfall usually consists of widely scattered thunderstorms near the coast and slightly heavier shower activity in the eastern portion of the SCAB with frequency being higher near the coast.

Due to its generally clear weather, about three-quarters of available sunshine is received in the SCAB. The remaining one-quarter is absorbed by clouds. The ultraviolet portion of this abundant radiation

is a key factor in photochemical reactions. On the shortest day of the year there are approximately 10 hours of possible sunshine, and on the longest day of the year there are approximately 14½ hours of possible sunshine.

The importance of wind to air pollution is considerable. The direction and speed of the wind determines the horizontal dispersion and transport of the air pollutants. During the late autumn to early spring rainy season, the SCAB is subjected to wind flows associated with the traveling storms moving through the region from the northwest. This period also brings five to ten periods of strong, dry offshore winds, locally termed "Santa Anas" each year. During the dry season, which coincides with the months of maximum photochemical smog concentrations, the wind flow is bimodal, typified by a daytime onshore sea breeze and a nighttime offshore drainage wind. Summer wind flows are created by the pressure differences between the relatively cold ocean and the unevenly heated and cooled land surfaces that modify the general northwesterly wind circulation over southern California. Nighttime drainage begins with the radiational cooling of the mountain slopes. Heavy, cool air descends the slopes and flows through the mountain passes and canyons as it follows the lowering terrain toward the ocean. Another characteristic wind regime in the SCAB is the "Catalina Eddy," a low level cyclonic (counterclockwise) flow centered over Santa Catalina Island which results in an offshore flow to the southwest. On most spring and summer days, some indication of an eddy is apparent in coastal sections.

In the SCAB, there are two distinct temperature inversion structures that control vertical mixing of air pollution. During the summer, warm high-pressure descending (subsiding) air is undercut by a shallow layer of cool marine air. The boundary between these two layers of air is a persistent marine subsidence/inversion. This boundary prevents vertical mixing which effectively acts as an impervious lid to pollutants over the entire SCAB. The mixing height for the inversion structure is normally situated 1,000 to 1,500 feet above mean sea level.

A second inversion-type forms in conjunction with the drainage of cool air off the surrounding mountains at night followed by the seaward drift of this pool of cool air. The top of this layer forms a sharp boundary with the warmer air aloft and creates nocturnal radiation inversions. These inversions occur primarily in the winter when nights are longer and onshore flow is weakest. They are typically only a few hundred feet above mean sea level. These inversions effectively trap pollutants, such as nitrogen oxides (NO_X) and carbon monoxide (CO) from vehicles, as the pool of cool air drifts seaward. Winter is therefore a period of high levels of primary pollutants along the coastline.

Wind Patterns and Project Location

The distinctive climate of the Project area and the SCAB is determined by its terrain and geographical location. The SCAB is located in a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean in the southwest quadrant with high mountains forming the remainder of the perimeter.

Wind patterns across the south coastal region are characterized by westerly and southwesterly onshore winds during the day and easterly or northeasterly breezes at night. Winds are characteristically light although the speed is somewhat greater during the dry summer months than during the rainy winter season.

Criteria Pollutants

Both the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants representing safe levels that avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called "criteria" pollutants because the health and other effects of each pollutant are described in criteria documents. The six criteria pollutants are ozone (O_3) (precursor emissions include NO_X and reactive organic gases (ROG), CO, particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. Areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas. The Riverside County portion of the SCAB is designated as a nonattainment area for the federal O_3 and $PM_{2.5}$ standards and is also a nonattainment area for the state standards for O_3, PM_{10}, and $PM_{2.5}$.

Toxic Air Contaminants (TAC) Trend

In 1984, as a result of public concern for exposure to airborne carcinogens, CARB adopted regulations to reduce the amount of TAC emissions resulting from mobile and area sources, such as cars, trucks, stationary products, and consumer products. According to the Ambient and Emission Trends of Toxic Air Contaminants in California journal article (2) which was prepared for CARB, results show that between 1990-2012, ambient concentration and emission trends for the seven TACs responsible for most of the known cancer risk associated with airborne exposure in California have declined significantly (between 1990 and 2012). The seven TACs studied include those that are derived from mobile sources: diesel particulate matter (DPM), benzene (C_6H_6), and 1,3-butadiene (C_4H_6); those that are derived from stationary sources: perchloroethylene (C_2Cl_4) and hexavalent chromium (Cr(VI)); and those derived from photochemical reactions of emitted VOCs: formaldehyde (CH_2O) and acetaldehyde (C_2H_4O)[1]. The decline in ambient concentration and emission trends of these TACs are a result of various regulations CARB has implemented to address cancer risk.

RECEPTORS

Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly, and individuals with pre-existing respiratory or cardiovascular illness. Structures that house these persons or places where they gather are defined as "sensitive receptors". These structures typically include uses such as residences, hotels, and hospitals where an individual can remain for 24 hours. Consistent with the LST Methodology, the nearest land use where an individual could remain for 24 hours to the Project site has been used to determine construction and operational air quality impacts for emissions of PM_{10} and $PM_{2.5}$, since PM_{10} and $PM_{2.5}$ thresholds are based on a 24-hour averaging time.

Receptors in the Project study area are described below. All distances are measured from the Project site boundary to the outdoor living areas (e.g., backyards) or at the building façade, whichever is closer to the Project site. Receptors in the Project study area are shown on Exhibit 2 under the Localized Construction Emissions section later in the report.

[1] It should be noted that ambient DPM concentrations are not measured directly. Rather, a surrogate method using the coefficient of haze (COH) and elemental carbon (EC) is used to estimate DPM concentrations.

- Receptor R1 represents the existing residence at 3511 Lake Crest Drive, approximately 86 feet northeast of the Project site.
- Receptor R2 represents the existing single-family residence at 3499 Lake Crest Drive, approximately 85 feet northeast of the Project site.
- Receptor R3 represents the existing RV Park at 32390 Riverside Drive, approximately 210 feet southeast of the Project site.
- Receptor R4 represents the residence at 3606 Eisenhower Drive, approximately 24 feet southwest of the Project site.
- Receptor R5 represents the existing residence at 3708 Eisenhower Drive, approximately 18 feet southwest of the Project site.
- Receptor R6 represents the existing residence at 1114 Monroe Street, approximately 15 feet northwest of the Project site.

EXISTING AIR QUALITY

Existing air quality is measured at established SCAQMD air quality monitoring stations. Monitored air quality is evaluated in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect are shown in Table 1 (3).

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state and federal standards. At the time of this AQIA, the most recent state and federal standards were updated by CARB on May 4, 2016, and are presented in Table 1. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, PM_{10}, and $PM_{2.5}$ are not to be exceeded. All others are not to be equaled or exceeded. It should be noted that the three-year period is presented for informational purposes and is not the basis for how the state assigns attainment status. Attainment status for a pollutant means that the SCAQMD meets the standards set by the EPA or the California EPA (CalEPA). Conversely, nonattainment means that an area has monitored air quality that does not meet the NAAQS or CAAQS standards. In order to improve air quality in nonattainment areas, a State Implementation Plan (SIP) is drafted by CARB. The SIP outlines the measures that the state will take to improve air quality. Once nonattainment areas meet the standards and additional redesignation requirements, the EPA will designate the area as a maintenance area (4).

TABLE 1: AMBIENT AIR QUALITY STANDARDS (1 OF 2)

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	9 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			

See footnotes on next page …

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (5/4/16)**

TABLE 1: AMBIENT AIR QUALITY STANDARDS (2 OF 2)

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

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

11. On June 2, 2010, a new 1-hour 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.

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

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

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

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

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (5/4/16)**

REGULATORY BACKGROUND

FEDERAL REGULATIONS

The EPA is responsible for setting and enforcing the national ambient air quality standards (NAAQS) for O_3, CO, NO_X, SO_2, PM_{10}, and lead (Pb) (5). The EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of CARB.

The Federal Clean Air Act (CAA) was first enacted in 1955 and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance (6). The CAA also mandates that each state submit and implement state implementation plans (SIPs) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment and incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the Project site include Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions) (7) (8). Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O_3, NO_2, SO_2, PM_{10}, CO, $PM_{2.5}$, and Pb. The NAAQS were amended in July 1997 to include an additional standard for O_3 and to adopt a NAAQS for $PM_{2.5}$.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and NO_X. NO_X is a collective term that includes all forms of NO_X which are emitted as byproducts of the combustion process.

CALIFORNIA REGULATIONS

CARB

The CARB, which became part of the California EPA (CalEPA) in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. AB 2595 mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date. The CARB established the California ambient air quality standards (CAAQS) for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for SO_4, visibility, hydrogen sulfide (H_2S), and vinyl chloride (C_2H_3Cl). However, at this time, H_2S and C_2H_3Cl are not measured at any monitoring stations in the SCAB because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS (9) (10).

Local air quality management districts, such as the SCAQMD, regulate air emissions from stationary sources such as commercial and industrial facilities. All air pollution control districts have been formally designated as attainment or non-attainment for each CAAQS.

Serious non-attainment areas are required to prepare Air Quality Management Plans (AQMP) that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include:

- Application of Best Available Retrofit Control Technology to existing sources;
- Developing control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g. motor vehicle use generated by residential and commercial development);
- A District permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implementing reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled;
- Significant use of low emissions vehicles by fleet operators;
- Sufficient control strategies to achieve a 5% or more annual reduction in emissions or 15% or more in a period of three years for ROGs, NO_X, CO and PM_{10}. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than 5% per year under certain circumstances.

AQMP

Currently, the NAAQS and CAAQS are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of AQMP to meet the state and federal ambient air quality standards (11). AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy.

APPLICABLE REGULATORY REQUIRMENTS

SCAQMD Rules that are currently applicable during construction activity for this Project include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings) (12) (13).

SCAQMD RULE 403

This rule is intended to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (human-made) fugitive dust sources by requiring actions to prevent and reduce fugitive dust emissions. Rule 403 applies to any activity or human-made condition capable of generating fugitive dust and requires best available control measures to be applied to earth moving and grading activities. This rule is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust. PM_{10} suppression techniques are summarized below.

- Portions of a construction site to remain inactive longer than a period of three months will be seeded and watered until grass cover is grown or otherwise stabilized.

- All onsite roads will be paved as soon as feasible or watered periodically or chemically stabilized.
- All material transported offsite will be either sufficiently watered or securely covered to prevent excessive amounts of dust.
- The area disturbed by clearing, grading, earthmoving, or excavation operations will be minimized at all times.
- Where vehicles leave a construction site and enter adjacent public streets, the streets will be swept daily or washed down at the end of the workday to remove soil tracked onto the paved surface.

SCAQMD RULE 1113

This rule serves to limit the volatile organic compound (VOC) content of architectural coatings used on projects in the SCAQMD. Any person who supplies, sells, offers for sale, or manufactures any architectural coating for use on projects in the SCAQMD must comply with the current VOC standards set in this rule.

METHODOLOGY

The California Air Pollution Control Officers Association (CAPCOA) in conjunction with other California air districts, including SCAQMD, released CalEEMod 2022 in May 2022. CalEEMod periodically releases updates, as such the latest version available at the time of this report has been utilized in this analysis. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$) and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (14). Accordingly, the latest version of CalEEMod has been used for this Project to determine construction and operational air quality and GHG emissions.

Standards of Significance

The criteria used to determine the significance of potential Project-related air quality impacts are taken from the California Environmental Quality Act Guidelines (CEQA Guidelines) (14 CCR §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to air quality if it would (15):

- **Threshold 1**: Conflict with or obstruct implementation of the applicable air quality plan.
- **Threshold 2**: 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.
- **Threshold 3**: Expose sensitive receptors to substantial pollutant concentrations.
- **Threshold 4**: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

AIR QUALITY REGIONAL EMISSIONS THRESHOLDS

The SCAQMD has developed regional significance thresholds for criteria pollutants, as summarized at Table 2 (16). The SCAQMD's CEQA Air Quality Significance Thresholds (March 2023) indicate that any projects in the South Coast Air Basin (SCAB) with daily emissions that

exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact.

TABLE 2: MAXIMUM DAILY REGIONAL EMISSIONS THRESHOLDS

Pollutant	Construction	Operations
NO_X	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_X	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day

lbs/day – Pounds Per Day

AIR QUALITY LOCALIZED EMISSIONS THRESHOLDS

For this Project, the appropriate SRA for the LST analysis is the SCAQMD Lake Elsinore Area monitoring station (SRA 25). LSTs apply to CO, NO_2, PM_{10}, and $PM_{2.5}$. The SCAQMD produced look-up tables for projects less than or equal to 5 acres in size. The SCAQMD's screening look-up tables are utilized in determining localized impacts. It should be noted that since the look-up tables identify thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in Table 3 were calculated by interpolating the threshold values for the Project's disturbed acreage.

The acres disturbed is based on the equipment list and days in the site preparation and grading phase according to the anticipated maximum number of acres a given piece of equipment can pass over in an 8-hour workday. The equipment-specific grading rates are summarized in the CalEEMod user's guide, Appendix A: Calculation Details for CalEEMod (17). It should be noted that the disturbed area per day is representative of a piece of equipment making multiple passes over the same land area. In other words, one Rubber Tired Dozer can make multiple passes over the same land area totaling 0.5 acres in a given 8-hour day. Appendix A of the CalEEMod User Manual only identifies equipment-specific grading rates for Crawler Tractors, Graders, Rubber Tired Dozers, and Scrapers; therefore, Tractors/Loaders/Backhoes equipment that was included in the site preparation and grading phase was replaced with Crawler Tractors. For analytical purposes, emissions associated with peak demolition, site preparation, and grading activities are considered for purposes of localized significance thresholds (LSTs) since this phase represents the maximum localized emissions that would occur. The Project's construction activities could disturb a maximum of approximately 1 acre per day for demolition, 3.5 acres per day for site preparation, and 2.5 acres per day for grading activities. Any other construction phases of development would result in lesser emissions and consequently lesser impacts than what is disclosed herein. As such, Table 3 presents thresholds for localized construction emissions.

TABLE 3: MAXIMUM DAILY LOCALIZED EMISSIONS THRESHOLDS

Source	Activity	Emissions (lbs/day)			
		VOC	NO_X	PM_{10}	$PM_{2.5}$
Construction	Demolition	163 lbs/day	750 lbs/day	4 lbs/day	3 lbs/day
	Site Preparation	303 lbs/day	1,533 lbs/day	10 lbs/day	6 lbs/day
	Grading	257 lbs/day	1,244 lbs/day	8 lbs/day	5 lbs/day

[1]Source of localized significance threshold (LSTs) is provided on page 16.

CONSTRUCTION ACTIVITIES

Construction activities associated with the Project would result in emissions of VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$. Construction related emissions are expected from the following construction activities:

- Demolition
- Site Preparation
- Grading (Import/Export)
- Building Construction
- Paving
- Architectural Coating

Demolition Activities

The Project site is currently developed with existing concrete and asphalt surfaces that will be demolished, resulting in approximately 282 tons of debris.

Grading Activities

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). CalEEMod was utilized to calculate fugitive dust emissions resulting from this phase of activity. Per client provided data, the Project would require 4,069 cubic yards of import for earthwork activities. The CalEEMod default trip length of 20-miles will be used to analyze the emissions associated with export activities.

On-Road Trips

Construction generates on-road vehicle emissions from vehicle usage for workers, vendors, and haul trucks commuting to and from the site. Worker and hauling trips are based on CalEEMod defaults. It should be noted that for vendor trips, specifically, CalEEMod only assigns vendor trips to the Building Construction phase. Vendor trips would likely occur during all phases of construction. As such, the CalEEMod defaults for vendor trips have been adjusted based on a ratio of the total vendor trips to the number of days of each subphase of activity.

CONSTRUCTION DURATION

For purposes of analysis, construction of Project is expected to commence in May 2025 and would last through May 2026. The construction schedule utilized in the analysis represents a "conservative" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as time passes and the analysis year increases due to emission regulations becoming more stringent[2]. The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per CEQA Guidelines (18).

TABLE 4: CONSTRUCTION DURATION

Construction Activity	Start Date	End Date	Days
Demolition	5/1/2025	5/12/2025	8
Site Preparation	5/13/2025	5/19/2025	5
Grading	5/20/2025	6/16/2025	20
Building Construction	6/17/2025	5/4/2026	230
Paving	4/9/2026	5/4/2026	18
Architectural Coating	4/9/2026	5/4/2026	18

CONSTRUCTION EQUIPMENT

CalEEMod default parameters for equipment have been used. Consistent with industry standards and typical construction practices, each piece of equipment will operate up to a total of eight (8) hours per day, or more than two-thirds of the period during which construction activities are allowed pursuant to the code.

TABLE 5: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Construction Activity	Equipment	Amount	Hours Per Day
Demolition	Concrete/Industrial Saws	1	8
	Excavators	3	8
	Rubber Tired Dozers	2	8
Site Preparation	Rubber Tired Dozers	3	8
	Crawler Tractors	4	8

[2] As shown in the CalEEMod User's Guide Version 2022, Appendix G "Table G-11. Statewide Average Annual Offoad Equipment Emission Factors" as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

Grading	Excavators	1	8
	Graders	1	8
	Rubber Tired Dozers	1	8
Building Construction	Crawler Tractors	3	8
	Forklifts	3	8
	Generator Sets	1	8
	Tractors/Loaders/Backhoes	3	8
	Welders	1	8
Paving	Cement and Mortar Mixers	2	8
	Pavers	1	8
	Paving Equipment	2	8
	Rollers	2	8
	Tractors/Loaders/Backhoes	1	8
Architectural Coating	Air Compressors	1	8

REGIONAL CONSTRUCTION EMISSIONS SUMMARY

The estimated maximum daily construction emissions are summarized in Table 6, and as shown, the Project construction-source emissions would not exceed SCAQMD regional thresholds. Thus, the Project would result in a less than significant impact associated with construction activities. Detailed Construction model outputs are presented in Attachment A.

TABLE 6: REGIONAL CONSTRUCTION EMISSIONS SUMMARY

Source	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
2025	4.13	37.54	33.78	0.05	7.82	4.52
2026	36.28	16.52	30.46	0.04	2.04	0.90
Winter						
2025	1.14	8.31	15.18	0.02	1.31	0.53
2026	1.07	7.83	14.88	0.02	1.26	0.49
Maximum Daily Emissions	**36.28**	**37.54**	**33.78**	**0.05**	**7.82**	**4.52**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	NO	NO	NO	NO	NO	NO

[1]PM_{10} and $PM_{2.5}$ source emissions reflect 3x daily watering per SCAQMD Rule 403 for fugitive dust.

REGIONAL OPERATIONAL EMISSIONS

Operational activities associated with the Project would result in emissions of VOCs, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. Operational related emissions are expected from the following primary sources: area source emissions, energy source emissions, and mobile source emissions.

The Project related operational air quality impacts derive primarily from vehicle trips generated by the Project. Trip characteristics available from the *Riverside Drive Condos Traffic Scope* were utilized in this analysis. Trip lengths were based on CalEEMod defaults. As evaluated in the *Riverside Drive Condos Traffic Scope,* the Project is expected to generate a total of 647 two-way trips per day (19).

The estimated operation-source emissions from the Project are summarized in Table 7. Detailed operation model outputs are presented in Attachment A. As shown in Table 7, operational-source emissions would not exceed the applicable SCAQMD regional thresholds for emissions of any criteria pollutant.

TABLE 7: TOTAL PROJECT REGIONAL OPERATIONAL EMISSIONS

Source	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
Mobile Source	2.57	2.17	19.95	0.05	4.26	1.11
Area Source	2.71	1.65	6.13	0.01	0.13	0.13
Energy Source	0.02	0.31	0.13	0.00	0.03	0.03
Total Maximum Daily Emissions	**5.29**	**4.13**	**26.21**	**0.06**	**4.41**	**1.26**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	NO	NO	NO	NO	NO	NO
Winter						
Mobile Source	2.39	2.33	16.93	0.05	3.78	0.98
Area Source	2.22	1.59	0.68	0.01	0.01	0.01
Energy Source	0.02	0.31	0.13	0.00	0.03	0.03
Total Maximum Daily Emissions	**4.63**	**4.24**	**17.75**	**0.06**	**3.81**	**1.02**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	NO	NO	NO	NO	NO	NO

LOCALIZED CONSTRUCTION EMISSIONS

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (LST Methodology) (20). The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the federal and/or state ambient air quality standards (NAAQS/CAAQS). Collectively, these are referred to as Localized Significance Thresholds (LSTs). SCAQMD established LSTs in response to

the SCAQMD Governing Board's Environmental Justice Initiative I-4[3]. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the sensitive receptor. The SCAQMD states that lead agencies can use LSTs as another indicator of significance in its air quality impact analyses. It should be noted that SCAQMD also states that Projects that are statutorily or categorically exempt under CEQA would not be subject to LST analyses. Projects exempt from CEQA also include infill projects that meet the H&S Code provisions. As such, although not required for this Project, LST analysis is presented to further underscore that there are in fact no significant impacts associated with the Project.

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Project's potential to cause an individual or cumulatively significant impact. The nearest land use where an individual could remain for 24 hours to the Project site has been used to determine localized construction and operational air quality impacts for emissions of PM_{10} and $PM_{2.5}$ (since PM_{10} and $PM_{2.5}$ thresholds are based on a 24-hour averaging time). The nearest receptor used for evaluation of localized impacts of PM_{10} and $PM_{2.5}$ is location R6, represented by the existing residence at 1114 Monroe Street, approximately 15 feet (5 meters) northwest of the Project site. Receptors in the Project study area shown on Exhibit 2.

As previously stated, and consistent with LST Methodology, the nearest industrial/commercial use to the Project site is used to determine construction and operational LST air impacts for emissions of NO_X and CO as the averaging periods for these pollutants are shorter (8 hours or less) and it is reasonable to assume that an individual could be present at these sites for periods of one to 8 hours. It should be noted that the existing residence (R6) is located at a closer distance than the nearest industrial/commercial use. As such, the same receptor will be used for evaluation of localized NO_x and CO.

It should be noted that the *LST Methodology* explicitly states that "*It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters* (20)." As such, for evaluation of localized PM_{10}, $PM_{2.5}$, NO_x and CO, a 25-meter distance will be used.

[3] The purpose of SCAQMD's Environmental Justice program is to ensure that everyone has the right to equal protection from air pollution and fair access to the decision-making process that works to improve the quality of air within their communities. Further, the SCAQMD defines Environmental Justice as "…equitable environmental policymaking and enforcement to protect the health of all residents, regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location, from the health effects of air pollution."

EXHIBIT 2: SENSITIVE RECEPTOR LOCATIONS



LEGEND:

Table 8 identifies the localized impacts at the nearest receptor location in the vicinity of the Project. Outputs from the model runs for construction LSTs are provided in Attachment A. For analytical purposes, emissions associated with peak demolition, site preparation, and grading activities are considered for purposes of LSTs since these phases represent the maximum localized emissions that would occur. Any other construction phases of development that overlap would result in lesser emissions and consequently lesser impacts than what is disclosed herein. As shown in Table 8, emissions resulting from the Project construction will not exceed the numerical thresholds of significance established by the SCAQMD for any criteria pollutant. Thus, a less than significant impact would occur for localized Project-related construction-source emissions and no mitigation is required.

TABLE 8: PROJECT LOCALIZED CONSTRUCTION IMPACTS

On-Site Emissions	Emissions (lbs/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Demolition				
Maximum Daily Emissions	**22.20**	**19.92**	**1.68**	**0.96**
SCAQMD Localized Threshold	163	750	4	3
Threshold Exceeded?	NO	NO	NO	NO
Site Preparation				
Maximum Daily Emissions	**37.46**	**32.43**	**7.59**	**4.46**
SCAQMD Localized Threshold	303	1,533	10	6
Threshold Exceeded?	NO	NO	NO	NO
Grading				
Maximum Daily Emissions	**20.64**	**19.61**	**3.40**	**1.99**
SCAQMD Localized Threshold	257	1,244	8	5
Threshold Exceeded?	NO	NO	NO	NO

LOCALIZED OPERATIONAL EMISSIONS

The Project consists of the development of 96 residential dwelling units, 200 parking spaces, a recreational clubhouse and a pool on 4.95 acres. According to SCAQMD LST methodology, LSTs would apply to the operational phase of a proposed project, if the project includes stationary sources, or attracts mobile sources that may spend long periods queuing and idling at the site (e.g., transfer facilities and warehouse buildings). The proposed project does not include such uses, and thus, due to the lack of significant stationary source emissions, no LST analysis is needed for operations.

AIR QUALITY IMPACTS – CONSISTENCY WITH THRESHOLD NO. 1

Would the Project conflict with or obstruct implementation of the applicable air quality plan?

The Project site is located within the SCAB, which is characterized by relatively poor air quality. The SCAQMD has jurisdiction over an approximately 10,743 square-mile area consisting of the

four-county Basin and the Los Angeles County and Riverside County portions of what use to be referred to as the Southeast Desert Air Basin. In these areas, the SCAQMD is principally responsible for air pollution control, and works directly with the Southern California Association of Governments (SCAG), county transportation commissions, local governments, as well as state and federal agencies to reduce emissions from stationary, mobile, and indirect sources to meet state and federal ambient air quality standards.

Currently, these state and federal air quality standards are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of AQMPs to meet the state and federal ambient air quality standards. AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy.

In December 2022, the SCAQMD released the Final 2022 AQMP (2022 AQMP). The 2022 AQMP continues to evaluate current integrated strategies and control measures to meet the CAAQS, as well as explore new and innovative methods to reach its goals. Some of these approaches include utilizing incentive programs, recognizing existing co-benefit programs from other sectors, and developing a strategy with fair-share reductions at the federal, state, and local levels (21). Similar to the 2016 AQMP, the 2022 AQMP incorporates scientific and technological information and planning assumptions, including the 2020-2045 RTP/SCS, a planning document that supports the integration of land use and transportation to help the region meet the federal CAA requirements (22). The Project's consistency with the AQMP will be determined using the 2022 AQMP as discussed below.

SCAG adopted the 2020-*2045 Regional Transportation Plan/Sustainable Communities Strategy* (2020-2045 RTP/SCS), a planning document that supports the integration of land use and transportation to help the region meet the federal metropolitan planning organization (MPO) requirements under the Sustainable communities and Climate Protection Act. The proposed Project would be developed in accordance with all applicable rules and regulations contained in those plans. It should be noted that although the 2024-2050 RTP was released after approval of the 2022 AQMP, the 2022 AQMP is reliant in part upon the general plan land use designations. The Project site carries a Residential Mixed Use (RMU) general plan land use designation, which is the same designation assumed by both the 2020-2045 RTP and the 2024-2050 RTP.

Criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the 1993 CEQA Handbook (23). These indicators are discussed below.

The proposed Project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

The violations that under this criterion refer to are the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if regional or localized significance thresholds were exceeded.

CAAQS and NAAQS violations would occur if regional or localized significance thresholds were exceeded. As evaluated, the Project's regional and localized construction and operational-source emissions would not exceed applicable regional significance thresholds. As such, a less than significant impact is expected.

On the basis of the preceding discussion, the Project is determined to be consistent with the first criterion.

The Project will not exceed the assumptions in the AQMP based on the years of Project build-out phase.

The 2022 AQMP demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under federal law. Growth projections from local general plans adopted by cities in the district are provided to the SCAG, which develops regional growth forecasts, which are then used to develop future air quality forecasts for the AQMP. Development consistent with the growth projections in City of Lake Elsinore General Plan is considered to be consistent with the AQMP.

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. Irrespective of the site's land use designation, development of the site to its maximum potential would likely occur, with disturbance of the entire site occurring during construction activities. As such, when considering that no emissions thresholds will be exceeded, a less than significant impact would result.

The City of Lake Elsinore General Plan designates the Project site as "Residential Mixed Use (RMU)" uses. The RMU designation allows for a mix of residential and non-residential uses, such as retail, service, civic, and professional office, within a single proposed development area with an emphasis on high density residential uses. This RMU allows for residential densities between 19 and 24 dwelling units per net acre (24).

The Project consists of the development of 96 residential dwelling units, 200 parking spaces, a recreational clubhouse and a pool on 4.95 acres. The Project is consistent with the current land use and zoning designation.

As previously stated, the Project is consistent with the current land use and zoning designation. As such, the proposed Project would not conflict with the goals and objectives of the AQMP. Furthermore, the Project, as evaluated herein, would not exceed the regional or localized air quality significance thresholds.

On the basis of the preceding discussion, the Project is determined to be consistent with the AQMP and a less than significant impact is expected.

AIR QUALITY IMPACTS – CONSISTENCY WITH THRESHOLD NO. 2

Would the Project 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?

The CAAQS designates the Project site as nonattainment for O_3, PM_{10}, and $PM_{2.5}$ while the NAAQS designates the Project site as nonattainment for O_3 and $PM_{2.5}$.

The SCAQMD has published a report on how to address cumulative impacts from air pollution: White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution (25). In this report the SCAQMD clearly states (Page D-3):

> *"…the SCAQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for TAC emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.*
>
> *Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."*

Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also not cause a cumulatively considerable increase in emissions for those pollutants for which SCAB is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable.

CONSTRUCTION IMPACTS

The Project-specific evaluation of emissions presented in the preceding analysis demonstrates that proposed Project construction-source air pollutant emissions would not result in exceedances of regional thresholds. Therefore, proposed Project construction-source emissions would be considered less than significant on a project-specific and cumulative basis.

OPERATIONAL IMPACTS

The Project-specific evaluation of emissions presented in the preceding analysis demonstrates that proposed Project operational-source air pollutant emissions would not result in exceedances of regional thresholds. Therefore, the proposed Project operational-source emissions would be considered less than significant on a project-specific and cumulative basis.

AIR QUALITY IMPACTS – CONSISTENCY WITH THRESHOLD NO. 3

Would the expose sensitive receptors to substantial pollutant concentrations?

The potential impact of Project-generated air pollutant emissions at sensitive receptors has also been considered. Results of the LST analysis indicate that the Project will not exceed the SCAQMD localized significance thresholds during construction. Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations during Project construction.

Additionally, the Project will not exceed the SCAQMD localized significance thresholds during operational activity. Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations as the result of Project operations.

CO "HOT SPOT" ANALYSIS

A CO hotspot is defined as a localized concentration of carbon monoxide exceeding the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm. At the time the most recent CEQA Air Quality Handbook (1993) was published by SCAQMD, the air basin was designated as non-attainment, requiring projects to perform hotspot analyses to ensure they did not worsen the existing conditions. Over the last two decades, background CO concentrations have been significantly reduced due to regulatory controls on tailpipe emissions, which have culminated in the air basin achieving attainment status for CO.

The 2003 AQMP's findings underscore that CO hotspots are highly unlikely due to the reduced background concentrations and the effectiveness of California's air quality management strategies. The substantial reduction in CO levels from the vehicle fleet and the state's attainment status for CO further diminish the need for detailed microscale hotspot analyses, reinforcing that existing monitoring and regulatory frameworks adequately address potential air quality concerns.

As summarized in the 2003 AQMP, even at one of the busiest intersections at that time, only 0.7 ppm of CO is attributable to vehicular traffic and the remaining 7.7 ppm were due to ambient background conditions. Within the Project vicinity, the background air quality 1-hour and 8-hour concentrations are well below the applicable AAQS. As such, Project-related traffic at any intersections within the air basin would not cause or contribute to a CO hotspot since the background concentrations are low and any contribution from project traffic would be negligible. The Project would not significantly contribute to the formation of a CO hotspot.

TAC ANALYSIS

Construction Activity

During short-term construction activity, the Project will also result in some DPM which is a listed carcinogen and TAC in the State of California. The 2015 Office of Environmental Health Hazard Assessment (OEHHA) revised risk assessment guidelines suggest that construction projects as short as 2-6 months may warrant evaluation. Notwithstanding, based on Urban Crossroad's professional opinion and experience in preparing health risk assessments for development projects, given the distance of the Project from surrounding sensitive receptors, the dominant wind patterns blowing to the northwest away for receptors, and the annual $PM_{2.5}$ emissions from equipment during each year of construction, any DPM generated from construction activity would result in less than significant ground level concentrations of DPM and not result in a significant health risks and no further evaluation is required.

Furthermore, many air districts throughout the state, including the SCAQMD, are currently evaluating the applicability of age sensitivity factors and have not established CEQA guidance. More specifically in their response to comments received on SCAQMD New Source Review rule, the SCAQMD explicitly states that:

> *"The Proposed Amended Rules are separate from the CEQA significance thresholds. The SCAQMD staff is currently evaluating how to implement the Revised OEHHA Guidelines under CEQA. The SCAQMD staff will evaluate a variety of options on how to evaluate health risks under the Revised OEHHA Guidelines under CEQA. The SCAQMD staff will conduct public*

workshops to gather input before bringing recommendations to the Governing Board. In the interim, staff will continue to use the previous guidelines for CEQA determinations."

Operational

TACs analysis apply to the operational phase of a proposed project, if the project includes stationary sources, or attracts mobile sources that may spend long periods queuing and idling at the site (e.g., transfer facilities and warehouse buildings). The proposed Project does not include such uses, and thus, due to the lack of significant stationary source emissions, no TAC analysis is needed for operations.

FRIANT RANCH CASE

In December 2018, in the case of Sierra Club v. County of Fresno (2018) 6 Cal.5th 502, the California Supreme Court held that an Environmental Impact Report's (EIR) air quality analysis must meaningfully connect the identified air quality impacts to the human health consequences of those impacts, or meaningfully explain why that analysis cannot be provided.

Most local agencies, including the City of Lake Elsinore, lack the data to do their own assessment of potential health impacts from criteria air pollutant emissions, as would be required to establish customized, locally-specific thresholds of significance based on potential health impacts from an individual development project. The use of national or "generic" data to fill the gap of missing local data would not yield accurate results because such data does not capture local air patterns, local background conditions, or local population characteristics, all of which play a role in how a population experiences air pollution. Because it is impracticable to accurately isolate the exact cause of a human disease (for example, the role a particular air pollutant plays compared to the role of other allergens and genetics in causing asthma), existing scientific tools cannot accurately estimate health impacts of the Project's air emissions without undue speculation. Instead, readers are directed to the Project's air quality impact analysis above, which provides extensive information concerning the quantifiable and non-quantifiable health risks related to the Project's construction and long-term operation.

Notwithstanding, this AQIA does evaluate the proposed Project's localized impact to air quality for emissions of CO, NO_X, PM_{10}, and $PM_{2.5}$ by comparing the proposed Project's on-site emissions to the SCAQMD's applicable LST thresholds. The LST analysis above determined that the Project would not result in emissions exceeding SCAQMD's LSTs. Therefore, the proposed Project would not be expected to exceed the most stringent applicable federal or state ambient air quality standards for emissions of CO, NO_X, PM_{10}, and $PM_{2.5}$.

As the Project's emissions would comply with federal, state, and local air quality standards, the proposed Project's emissions are not sufficiently high enough to use a regional modeling program to correlate health effects on a basin-wide level and would not provide a reliable indicator of health effects if modeled.

AIR QUALITY IMPACTS – CONSISTENCY WITH THRESHOLD NO. 4

Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The potential for the Project to generate objectionable odors has also been considered. Land uses generally associated with odor complaints include:

- Agricultural uses (livestock and farming)
- Wastewater treatment plants
- Food processing plants
- Chemical plants
- Composting operations
- Refineries
- Landfills
- Dairies
- Fiberglass molding facilities

The Project does not contain land uses typically associated with emitting objectionable odors. Potential odor sources associated with the proposed Project may result from construction equipment exhaust and the application of asphalt and architectural coatings during construction activities and the temporary storage of typical solid waste (refuse) associated with the proposed Project's (long-term operational) uses. Standard construction requirements would minimize odor impacts from construction. The construction odor emissions would be temporary, short-term, and intermittent in nature and would cease upon completion of the respective phase of construction and is thus considered less than significant. It is expected that Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with the solid waste regulations. The proposed Project would also be required to comply with SCAQMD Rule 402 to prevent occurrences of public nuisances. Therefore, odors associated with the proposed Project construction and operations would be less than significant and no mitigation is required (26).

PROJECT GHG ANALYSIS

CLIMATE CHANGE SETTING

Global climate change (GCC) is the change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms. The majority of scientists believe that the climate shift taking place since the Industrial Revolution is occurring at a quicker rate and magnitude than in the past. Scientific evidence suggests that GCC is the result of increased concentrations of GHGs in the earth's atmosphere, including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases. The majority of scientists believe that this increased rate of climate change is the result of GHGs resulting from human activity and industrialization over the past 200 years.

An individual project like the proposed Project evaluated in this memo cannot generate enough GHG emissions to affect a discernible change in global climate. However, the proposed Project may participate in the potential for GCC by its incremental contribution of GHGs combined with the cumulative increase of all other sources of GHGs, which when taken together constitute potential influences on GCC. Because these changes may have serious environmental

consequences, this memo will evaluate the potential for the proposed Project to have a significant effect upon the environment as a result of its potential contribution to the greenhouse effect.

GCC refers to the change in average meteorological conditions on the earth with respect to temperature, wind patterns, precipitation and storms. Global temperatures are regulated by naturally occurring atmospheric gases such as water vapor, CO_2, N_2O, CH_4, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These particular gases are important due to their residence time (duration they stay) in the atmosphere, which ranges from 10 years to more than 100 years. These gases allow solar radiation into the earth's atmosphere, but prevent radiative heat from escaping, thus warming the earth's atmosphere. GCC can occur naturally as it has in the past with the previous ice ages.

Gases that trap heat in the atmosphere are often referred to as GHGs. GHGs are released into the atmosphere by both natural and anthropogenic activity. Without the natural GHG effect, the earth's average temperature would be approximately 61 degrees Fahrenheit (°F) cooler than it is currently. The cumulative accumulation of these gases in the earth's atmosphere is considered to be the cause for the observed increase in the earth's temperature.

For the purposes of this analysis, emissions of CO_2, CH_4, and N_2O were evaluated because these gases are the primary contributors to GCC from development projects. Although there are other substances such as fluorinated gases that also contribute to GCC, these fluorinated gases were not evaluated as their sources are not well-defined and do not contain accepted emissions factors or methodology to accurately calculate these gases.

REGULATORY SETTING

EXECUTIVE ORDER S-3-05

Former California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following reduction targets for GHG emissions:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80% below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an executive order, the goals are not legally enforceable for local governments or the private sector.

ASSEMBLY BILL (AB) 32

The California State Legislature enacted AB 32, which requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. "GHGs" as defined under AB 32 include CO_2, CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride, has also been added to the list of GHGs. CARB is the state agency charged with monitoring and regulating sources of GHGs. Pursuant to AB 32, CARB adopted regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 states the following:

"Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems."

CARB approved the 1990 GHG emissions level of 427 million metric ton of CO_2 equivalent per year ($MMTCO_2e$) on December 6, 2007 (27). Therefore, emissions generated in California in 2020 are required to be equal to or less than 427 $MMTCO_2e$. Emissions in 2020 in a "business as usual" (BAU) scenario were estimated to be 596 $MMTCO_2e$, which do not account for reductions from AB 32 regulations (28). At that level, a 28.4% reduction was required to achieve the 427 $MMTCO_2e$ 1990 inventory. In October 2010, CARB prepared an updated BAU 2020 forecast to account for the recession and slower forecasted growth. The forecasted inventory without the benefits of adopted regulation is now estimated at 545 $MMTCO_2e$. Therefore, under the updated forecast, a 21.7% reduction from BAU is required to achieve 1990 levels (29).

Progress in Achieving AB 32 Targets and Remaining Reductions Required

The State has made steady progress in implementing AB 32 and achieving targets included in Executive Order S-3-05. The progress is shown in updated emission inventories prepared by CARB for 2000 through 2012 (30). The State has achieved the Executive Order S-3-05 target for 2010 of reducing GHG emissions to 2000 levels. As shown below, the 2010 emission inventory achieved this target.

- 1990: 427 $MMTCO_2e$ (AB 32 2020 target)
- 2000: 463 $MMTCO_2e$ (an average 8% reduction needed to achieve 1990 base)
- 2010: 450 $MMTCO_2e$ (an average 5% reduction needed to achieve 1990 base)

CARB has also made substantial progress in achieving its goal of achieving 1990 emissions levels by 2020. As described earlier in this section, CARB revised the 2020 BAU inventory forecast to account for new lower growth projections, which resulted in a new lower reduction from BAU to achieve the 1990 base. The previous reduction from 2020 BAU needed to achieve 1990 levels was 28.4% and the latest reduction from 2020 BAU is 21.7%.

- 2020: 545 $MMTCO_2e$ BAU (an average 21.7% reduction from BAU needed to achieve 1990 base)

SENATE BILL (SB) 32

On September 8, 2016, Governor Jerry Brown signed SB 32 and its companion bill, AB 197. SB 32 requires the state to reduce statewide GHG emissions to 40% below 1990 levels by 2030, a reduction target that was first introduced in Executive Order B-30-15. The new legislation builds upon the AB 32 goal of 1990 levels by 2020 and provides an intermediate goal to achieving S-3-05, which sets a statewide GHG reduction target of 80% below 1990 levels by 2050. AB 197 creates a legislative committee to oversee regulators to ensure that CARB not only responds to the Governor, but also the Legislature (31).

AB 1279

AB 1279 addresses pivotal issues concerning climate change and environmental sustainability throughout the state. While specific provisions necessitate direct reference to the bill's text or authoritative summaries, such legislation typically seeks to bolster California's endeavors in curbing GHG emissions, promoting renewable energy sources, enhancing air and water quality standards, and instituting policies aimed at both mitigating and adapting to the repercussions of climate change. AB 1279 underscores California's enduring commitment to confronting the climate crisis and advancing comprehensive environmental stewardship through statutory measure. AB 1279 sets goals to achieve net zero GHG emissions by 2045 and maintain net negative emissions thereafter. By the same year, it aims to reduce statewide GHG emissions to at least 85% below 1990 levels.

AB 197

A condition of approval for SB 32 was the passage of AB 197. AB 197 requires that CARB consider the social costs of GHG emissions and prioritize direct reductions in GHG emissions at mobile sources and large stationary sources. AB 197 also gives the California legislature more oversight over CARB through the addition of two legislatively appointed members to the CARB Board and the establishment a legislative committee to make recommendations about CARB programs to the legislature.

EXECUTIVE ORDER B-55-18 AND SB 100

Executive Order B-55-18 and SB 100. SB 100 and Executive Order B-55-18 were signed by Governor Brown on September 10, 2018. Under the existing RPS, 25% of retail sales are required to be from renewable sources by December 31, 2016, 33% by December 31, 2020, 40% by December 31, 2024, 45% by December 31, 2027, and 50% by December 31, 2030. SB 100 raises California’s RPS requirement to 50% renewable resources target by December 31, 2026, and to achieve a 60% target by December 31, 2030. SB 100 also requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours of those products sold to their retail end-use customers achieve 44% of retail sales by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030. In addition to targets under AB 32 and SB 32, Executive Order B-55-18 establishes a carbon neutrality goal for the state of California by 2045; and sets a goal to maintain net negative emissions thereafter. The Executive Order directs the California Natural Resources Agency (CNRA), California Environmental Protection Agency (CalEPA), the Department of Food and Agriculture (CDFA), and CARB to include sequestration targets in the Natural and Working Lands Climate Change Implementation Plan consistent with the carbon neutrality goal.

TITLE 24 CALIFORNIA CODE OF REGULATIONS (CCR)

California Code of Regulations (CCR) Title 24 Part 6: The California Energy Code was first adopted in 1978 in response to a legislative mandate to reduce California’s energy consumption.

The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. CCR, Title 24, Part 11: California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, industrial, commercial, and school buildings that went in effect on August 1, 2009, and is administered by the California Building Standards Commission.

CALGreen is updated on a regular basis, with the most recent approved update consisting of the 2022 California Green Building Code Standards that became effective on January 1, 2023. As construction of the Project is anticipated to be completed in 2026, the Project would be required to comply with the Title 24 standards in place at that time.

SCAQMD

SCAQMD is the agency responsible for air quality planning and regulation in the SCAB. The SCAQMD addresses the impacts to climate change of projects subject to SCAQMD permit as a lead agency if they are the only agency having discretionary approval for the project and acts as a responsible agency when a land use agency must also approve discretionary permits for the project. The SCAQMD acts as an expert commenting agency for impacts to air quality. This expertise carries over to GHG emissions, so the agency helps local land use agencies through the development of models and emission thresholds that can be used to address GHG emissions.

In 2008, SCAQMD formed a Working Group to identify GHG emissions thresholds for land use projects that could be used by local lead agencies in the SCAB. The Working Group developed several different options that are contained in the SCAQMD Draft Guidance Document – Interim CEQA GHG Significance Threshold, that could be applied by lead agencies. The working group has not provided additional guidance since the release of the interim guidance in 2008. The SCAQMD Board has not approved the thresholds; however, the Guidance Document provides substantial evidence supporting the approaches to significance of GHG emissions that can be considered by the lead agency in adopting its own threshold. The current interim thresholds consist of the following tiered approach:

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
- Tier 2 consists of determining whether the project is consistent with a GHG reduction plan. If a project is consistent with a qualifying local GHG reduction plan, it does not have significant GHG emissions.
- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to the project's operational emissions. If a project's emissions are below one of the following screening thresholds, then the project is less than significant:
    - Residential and commercial land use: 3,000 metric ton of CO_2 equivalent ($MTCO_2e/yr$)
    - Industrial land use: 10,000 $MTCO_2e/yr$
    - Based on land use type: residential: 3,500 $MTCO_2e/yr$; commercial: 1,400 $MTCO_2e/yr$; or mixed use: 3,000 $MTCO_2e/yr$
- Tier 4 has the following options:
    - Option 1: Reduce Business-as-Usual (BAU) emissions by a certain percentage; this percentage is currently undefined.
    - Option 2: Early implementation of applicable AB 32 Scoping Plan measures

  - Option 3: 2020 target for service populations (SP), which includes residents and employees: 4.8 $MTCO_2e$ per SP per year for projects and 6.6 $MTCO_2e$ per SP per year for plans;
  - Option 3, 2035 target: 3.0 $MTCO_2e$ per SP per year for projects and 4.1 $MTCO_2e$ per SP per year for plans
- Tier 5 involves mitigation offsets to achieve target significance threshold.

The SCAQMD's interim thresholds used the Executive Order S-3-05-year 2050 goal as the basis for the Tier 3 screening level. Achieving the Executive Order's objective would contribute to worldwide efforts to cap CO_2 concentrations at 450 ppm, thus stabilizing global climate.

SCAQMD only has authority over GHG emissions from development projects that include air quality permits. At this time, it is unknown if the project would include stationary sources of emissions subject to SCAQMD permits. Notwithstanding, if the Project requires a stationary permit, it would be subject to the applicable SCAQMD regulations.

SCAQMD Regulation XXVII, adopted in 2009 includes the following rules:

- Rule 2700 defines terms and post global warming potentials.
- Rule 2701, Southern California (SoCal) Climate Solutions Exchange, establishes a voluntary program to encourage, quantify, and certify voluntary, high quality certified GHG emission reductions in the SCAQMD.
- Rule 2702, GHG Reduction Program created a program to produce GHG emission reductions within the SCAQMD. The SCAQMD will fund projects through contracts in response to requests for proposals or purchase reductions from other parties.

SCAQMD is the agency responsible for air quality planning and regulation in the SCAB. The SCAQMD addresses the impacts to climate change of projects subject to SCAQMD permit as a lead agency if they are the only agency having discretionary approval for the project and acts as a responsible agency when a land use agency must also approve discretionary permits for the project. The SCAQMD acts as an expert commenting agency for impacts to air quality. This expertise carries over to GHG emissions, so the agency helps local land use agencies through the development of models and emission thresholds that can be used to address GHG emissions.

CITY OF LAKE ELSINORE CLIMATE ACTION PLAN (CAP)

The City of Lake Elsinore CAP is a comprehensive document to ensure that the City reduces community-wide GHG emissions (32). The CAP was prepared concurrently with the City's General Plan and EIR, to serve as the City's primary information and policy document for GHG emissions reductions in order to analyze and reduce potentially significant GHG emissions resulting from development under the City of Lake Elsinore General Plan.

The City's CAP, adopted in 2011, certified that the City's target is consistent with AB 32's 2020 goals. The CAP includes a "Project-Level CAP Consistency Worksheet" to determine if further analysis is required. It should be noted that the "Project-Level CAP Consistency Worksheet" is generally applicable to traditional land use development projects and is included as Attachment B. As the Project's Opening Year is 2026, at the time the analysis was prepared, an updated CAP

has not been formally adopted. Consistency with the CAP is identified under GHG impacts of the report.

GHG IMPACTS

STANDARDS OF SIGNIFICANCE

According to the CEQA Guidelines Appendix G thresholds, to determine whether impacts from GHG emissions are significant. Would the project:

- **Threshold 1**: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
- **Threshold 2**: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?

The evaluation of an impact under CEQA requires measuring data from a project against both existing conditions and a "threshold of significance." For establishing significance thresholds, the Office of Planning and Research's amendments to the CEQA Guidelines Section 15064.7(c) state "[w]hen adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence."

CEQA Guidelines Section 15064.4(a) further states, ". . . A lead agency shall have discretion to determine, in the context of a particular project, whether to: (1) Use a model or methodology to quantify GHG emissions resulting from a project, and which model or methodology to use . . .; or (2) Rely on a qualitative analysis or performance-based standards."

CEQA Guidelines Section 15064.4 provides that a lead agency should consider the following factors, among others, in assessing the significance of impacts from GHG emissions:

- **Consideration #1:** The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting.
- **Consideration #2:** Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- **Consideration #3:** The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of GHG emissions. In determining the significance of impacts, the lead agency may consider a project's consistency with the State's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is not cumulatively considerable.

Discussion on Establishment of Significance Thresholds

Based on the foregoing guidance, the City of Lake Elsinore has elected to rely on compliance with a local air district threshold in the determination of significance of Project-related GHG emissions. Specifically, the City has selected the interim 3,000 $MTCO_2e$ per year threshold recommended by SCAQMD staff for residential and commercial sector projects against which to compare Project-related GHG emissions.

The 3,000 $MTCO_2e$ per year threshold is based on a 90 percent emission "capture" rate methodology. Prior to its use by the SCAQMD, the 90 percent emissions capture approach was one of the options suggested by the California Air Pollution Control Officers Association (CAPCOA) in their CEQA & Climate Change white paper (2008). A 90 percent emission capture rate means that unmitigated GHG emissions from the top 90 percent of all GHG-producing projects within a geographic area – the SCAB in this instance – would be subject to a detailed analysis of potential environmental impacts from GHG emissions, while the bottom 10 percent of all GHG-producing projects would be excluded from detailed analysis. A GHG significance threshold based on a 90 percent emission capture rate is appropriate to address the long-term adverse impacts associated with global climate change because medium and large projects will be required to implement measures to reduce GHG emissions, while small projects, which are generally infill development projects that are not the focus of the State's GHG reduction targets, are allowed to proceed. Further, a 90 percent emission capture rate sets the emission threshold low enough to capture a substantial proportion of future development projects and demonstrate that cumulative emissions reductions are being achieved while setting the emission threshold high enough to exclude small projects that will, in aggregate, contribute approximate 1 percent of projected statewide GHG emissions in the Year 2050 (33).

In setting the threshold at 3,000 $MTCO_2e$ per year, SCAQMD researched a database of projects kept by the Governor's Office of Planning and Research (OPR). That database contained 798 projects, 87 of which were removed because they were very large projects and/or outliers that would skew emissions values too high, leaving 711 as the sample population to use in determining the 90th percentile capture rate. The SCAQMD analysis of the 711 projects within the sample population combined commercial, residential, and mixed-use projects. It should be noted that the sample of projects included warehouses and other light industrial land uses but did not include industrial processes (i.e., oil refineries, heavy manufacturing, electric generating stations, mining operations, etc.). Emissions from each of these projects were calculated by SCAQMD to provide a consistent method of emissions calculations across the sample population and from projects within the sample population. In calculating the emissions, the SCAQMD analysis determined that the 90th percentile ranged between 2,983 to 3,143 $MTCO_2e$ per year. The SCAQMD set their significance threshold at the low-end value of the range when rounded to the nearest hundred tons of emissions (i.e., 3,000 $MTCO_2e$ per year) to define small projects that are considered less than significant and do not need to provide further analysis.

The City understands that the 3,000 $MTCO_2e$ per year threshold for residential/commercial uses was proposed by SCAQMD a decade ago and was adopted as an interim policy; however, no permanent, superseding policy or threshold has since been adopted. The 3,000 $MTCO_2e$ per year threshold was developed and recommended by SCAQMD, an expert agency, based on substantial evidence as provided in the Draft Guidance Document – Interim CEQA Greenhouse Gas Significance Threshold (2008) document and subsequent Working Group meetings (latest of

which occurred in 2010). SCAQMD has not withdrawn its support of the interim threshold and all documentation supporting the interim threshold remains on the SCAQMD website on a page that provides guidance to CEQA practitioners for air quality analysis (and where all SCAQMD significance thresholds for regional and local criteria pollutants and toxic air contaminants also are listed). Further, as stated by SCAQMD, this threshold "uses the Executive Order S-3-05 goal [80 percent below 1990 levels by 2050] as the basis for deriving the screening level" and, thus, remains valid for use in 2022 (33). Lastly, this threshold has been used for hundreds, if not thousands of GHG analyses performed for projects located within the SCAQMD jurisdiction.

Thus, for purposes of analysis in this analysis, if Project-related GHG emissions do not exceed the 3,000 $MTCO_2e$ per year threshold, then Project-related GHG emissions would clearly have a less-than-significant impact pursuant to Threshold GHG-1. On the other hand, if Project-related GHG emissions exceed 3,000 $MTCO_2e$ per year, the Project would be considered a substantial source of GHG emissions.

GHG IMPACTS – CONSISTENCY WITH THRESHOLD NO. 1

Would the Project have the potential to generate direct or indirect GHG emissions that would result in a significant impact on the environment?

CONSTRUCTION GHG EMISSIONS

For construction phase Project emissions, GHGs are quantified and amortized over the life of the Project. To amortize the emissions over the life of the Project, the SCAQMD recommends calculating the total GHG emissions for the construction activities, dividing it by a 30-year Project life then adding that number to the annual operational phase GHG emissions (34). As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions. The amortized construction emissions are presented in Table 9.

TABLE 9: PROJECT CONSTRUCTION GHG EMISSIONS

Year	Emission (MT/year)				
	CO_2	CH_4	N_2O	Refrigerants	Total CO_2e
2025	256.31	0.01	0.01	0.14	259.45
2026	130.74	0.00	0.00	0.07	132.07
Total Construction GHG Emissions	387.06	0.01	0.01	0.22	391.52
Amortized GHG Emissions	**12.90**	**4.71E-04**	**4.35E-04**	**7.28E-03**	**13.05**

PROJECT GHG EMISSIONS

The estimated GHG emissions for the Project land use are summarized on Table 10. The estimated GHG emission includes emissions from Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), and Refrigerants (R). As shown on Table 10, the Project would generate a total of approximately 944.57 $MTCO_2e$/yr. Detailed operation model outputs for the proposed Project are presented in Attachment A.

TABLE 10: TOTAL PROJECT GHG EMISSIONS

Source	Emission (MT/year)				
	CO_2	CH_4	N_2O	Refrigerants	Total CO_2e
Annual construction-related emissions amortized over 30 years	12.90	4.71E-04	4.35E-04	7.28E-03	13.05
Mobile	697.56	0.03	0.03	1.10	709.75
Area	24.58	0.00	0.00	0.00	24.61
Energy	162.27	0.02	0.00	0.00	163.02
Water	5.59	0.13	0.00	0.00	9.77
Waste	6.94	0.69	0.00	0.00	24.28
Refrigerants	0.00	0.00	0.00	0.10	0.10
Total CO_2e (All Sources)	**944.57**				

A numerical threshold for determining the significance of GHG emissions in the SCAB has not been established by the SCAQMD for Projects where it is not the lead agency. As an interim threshold based on guidance provided in the CAPCOA *CEQA and Climate Change* handbook, the City has opted to use a non-zero threshold approach based on Approach 2 of the handbook. Threshold 2.5 (Unit-Based Thresholds Based on Market Capture) establishes a numerical threshold based on capture of approximately 90% of emissions from future development. The latest threshold developed by SCAQMD using this method is 3,000 $MTCO_2e$/yr for all projects (35).

The Project would result in approximately 944.57 $MTCO_2e$/yr; the proposed Project would not exceed the SCAQMD's numeric threshold of 3,000 $MTCO_2e$/yr. Thus, the Project would result in a less than significant impact with respect to GHG emissions.

GHG IMPACTS – CONSISTENCY WITH THRESHOLD NO. 2

Would the Project have the potential to conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs?

Pursuant to 15604.4 of the CEQA Guidelines, a lead agency may rely on qualitative analysis or performance-based standards to determine the significance of impacts from GHG emissions (36).

The 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan) lays out a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045, as directed by AB 1279. The actions and outcomes in the plan will achieve significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action on natural and working lands to reduce emissions and sequester carbon, and the capture and storage of carbon (37). The 2022 Scoping Plan Appendix D indicates that a project can demonstrate consistency with the Scoping Plan by aligning with an approved CAP. This approach allows local jurisdictions to tailor their climate strategies while still contributing to the broader state goals outlined in the Scoping Plan. By ensuring that local CAPs are in harmony with the Scoping Plan's objectives, projects can effectively show their

commitment to California's climate targets. Projects that are consistent with a CAP are presumed to be consistent with the 2022 Scoping Plan. As shown in Table 11, the Project aligns with the policies outlined in the City's CAP and, as a result, is in compliance with the 2022 Scoping Plan

Finally, the Project is consistent with the general plan land use designation, density, building intensity, and applicable policies specified for the Project area in SCAG's Sustainable Community Strategy/Regional Transportation Plan, which pursuant to SB 375 calls for the integration of transportation, land-use and housing policies to plan for achievement of the GHG-emissions target for the region. Thus, a less than significant impact related to GHG emissions from Project construction and operation would occur and no mitigation is required.

CONSISTENCY WITH CITY OF LAKE ELSINORE CAP

The City's CAP, adopted in 2011, certified that the City's target is consistent with AB 32's 2020 goals (32). As the Project's Opening Year is 2026, at the time this analysis was prepared, an updated CAP has not been formally adopted. Table 11 consists of an analysis of Project consistency with the policies in the CAP and CAP worksheet, which in included in Attachment B.

TABLE 11: PROJECT CONSISTENCY WITH CITY OF LAKE ELSINORE CAP

CAP Measure	Applicability to Proposed Project	Remarks
Measure T-1.2: Pedestrian Infrastructure	Applicable	This measure requires the installation of sidewalks along new and reconstructed streets and sidewalks or paths to internally link all uses and provide connections to neighborhood activity centers, major destinations, and transit facilities contiguous with the project site. The Project would be required to provide sidewalks along Riverside Drive and all internal streets. This measure is implemented by the Department of Public Works and Building Department through policy development, development review, and conditions of approval. The proposed Project elements would be required to comply with conditions of approval imposed by the City. As such, the proposed Project would not conflict with this measure.
Measure T-1.4: Bicycle Infrastructure	Applicable	This measure requires new development to implement and connect to the network of Class I, II and III bikeways, trails and safety features identified in the General Plan, Bike Plan. Consistent with the City's General Plan a Class II bicycle lane is required along Riverside Drive within the study area. This measure is implemented by the Department of Public Works, Community Services Department, and Building Department through policy development, development review, and conditions of

TABLE 11: PROJECT CONSISTENCY WITH CITY OF LAKE ELSINORE CAP

CAP Measure	Applicability to Proposed Project	Remarks
		approval. The proposed Project elements would be required to comply with conditions of approval imposed by the City. As such, the proposed Project would not conflict with this measure.
Measure T-1.5: Bicycle Parking Standards	Not Applicable	This measure requires the City to enforce short-term and long-term bicycle parking standards for new non-residential developments. This measure is implemented by the Department of Public Works and Building Department through development review and conditions of approval. The measure is not applicable to the Project since the Project proposes residential land uses. As such, the proposed Project would not conflict with this measure.
Measure T-2.1: Designated Parking for Fuel Efficient Vehicles	Not Applicable	This measure requires new non-residential developments to designate 10% of total parking spaces for low-emitting, fuel-efficient vehicles. This measure is implemented by the Department of Planning, Public Works and Building through development review and conditions of approval. The measure is not applicable to the Project since the Project proposes residential land uses. As such, the proposed Project would not conflict with this measure
Measure T-4.1: Commute Trip Reduction Program	Not Applicable	This measure requires the City to institute a commute trip reduction program for employers with fewer than 100 employees. This measure is implemented by the Department of Planning through amendment to the Municipal Code. The measure is not applicable to the Project since the Project proposes residential land uses. As such, the proposed Project would not conflict with this measure.
Measure E-1.1: Tree Planting Requirements	Applicable	This measure requires new developments to plant at minimum one 15-gallon non-deciduous, umbrella-form tree per 30 linear feet of boundary length near buildings. This measure is implemented by the Departments of Planning, Public Works, and Parks and Recreation through City ordinance, development review process, and conditions of approval. The proposed

TABLE 11: PROJECT CONSISTENCY WITH CITY OF LAKE ELSINORE CAP

CAP Measure	Applicability to Proposed Project	Remarks
		Project elements would be required to comply with the City ordinances and conditions of approval. As such, the proposed Project would not conflict with this measure.
Measure E-1.2: Cool Roof Requirements	Not Applicable	This measure requires new non-residential development to use roofing materials having solar reflectance, thermal emittance, or Solar Reflectance Index consistent with CALGreen Tier 1 values. This measure is implemented by the Departments of Planning and Building through City ordinance, development review process, and conditions of approval. The measure is not applicable to the Project since the Project proposes residential land uses. As such, the proposed Project would not conflict with this measure.
Measure E-1.3: Energy Efficient Building Standards	Applicable	This measure requires that new construction exceed the California Energy Code requirements through either the performance-based or prescriptive approach described in the California Green Building Code. This measure is implemented by the Departments of Planning, Public Works, and Building through City ordinance, development review process, and conditions of approval. The proposed Project elements would be required to comply with the City ordinances and conditions of approval. As such, the proposed Project would not conflict with this measure.
Measure E-3.2: Energy Efficient Street and Traffic Signal Lights	Applicable	This measure requires the City to work with Southern California Edison to replace existing high-pressure sodium streetlights and traffic lights with high efficiency alternatives, such as Low Emitting Diode (LED) lights; replace existing City owned traffic lights with LED lights; require any new street and traffic lights to be LED. This measure is currently being implemented by the Department of Public Works through renovation. The Planning Department obtains compliance through Municipal Code amendment, the development and review process, and conditions of approval.

TABLE 11: PROJECT CONSISTENCY WITH CITY OF LAKE ELSINORE CAP

CAP Measure	Applicability to Proposed Project	Remarks
		This measure would apply to any traffic lights replaced or installed as part of the Project. The proposed Project elements would be required to comply with the municipal code and conditions of approval. As such, the proposed Project would not conflict with this measure.
Measure E-4.1: Landscaping Ordinance	Applicable	This measure requires the City to enforce the City's AB 1881 Landscaping Ordinance, which requires that landscaping be water efficient, thereby consuming less energy and reducing emissions. This measure is implemented by the Departments of Building and Planning through City ordinance, development and review process, and conditions of approval. The proposed Project elements would be required to comply with these landscape requirements. As such, the proposed Project would not conflict with this measure.
Measure E-4.2: Indoor Water Conservation Requirements	Applicable	This measure requires that development projects reduce indoor water consumption. This measure is implemented by the Departments of Building and Planning through amendments to the Municipal Code and conditions of approval. The proposed Project elements would be required to comply with the City's Municipal Code and conditions of approval. As such, the proposed Project would not conflict with this measure. The proposed Project was analyzed with this measure, and no conflicts were identified.
Measure E-5.1: Renewable Energy Incentives	Applicable	This measure facilitates the voluntary installation of small-scale renewable energy systems, such as solar photovoltaic and solar hot water systems, by connecting residents and businesses with technical and financial assistance through the City website. This measure is implemented by the Departments of Building and Planning through outreach and incentive programs. No elements of the proposed Project would conflict with this measure.

TABLE 11: PROJECT CONSISTENCY WITH CITY OF LAKE ELSINORE CAP

CAP Measure	Applicability to Proposed Project	Remarks
Measure S-1.4: Construction and Demolition Waste Diversion	Applicable	This measure requires development projects to divert, recycle or salvage nonhazardous construction and demolition debris generated at the site, and requires all construction and demolition projects to be accompanied by a waste management plan for the project. This measure is implemented by the Departments of Planning and Building through City contracts, Municipal Code amendments, development and review process, and conditions of approval. The proposed Project project-specific elements would be required to comply with the City's Municipal Code and conditions of approval. As such, the proposed Project would not conflict with this measure.

CONCLUSION

Results of the assessment indicate that the Project is not anticipated to result in a significant impact during construction or operational activities associated with air quality and GHG.

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ATTACHMENT A
CALEEMOD PROPOSED PROJECT EMISSIONS MODEL OUTPUTS

16357 - Riverside Drive Detailed Report

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Data Field	Value
Project Name	16357 - Riverside Drive
Construction Start Date	5/1/2025
Operational Year	2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	9.20
Location	32281 Riverside Dr, Lake Elsinore, CA 92530, USA
County	Riverside-South Coast
City	Lake Elsinore
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5525
EDFZ	11
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Mid Rise	96.0	Dwelling Unit	2.08	91,149	5,042	—	310	—

Parking Lot	200	Space	1.81	0.00	0.00	—	—	—
Other Asphalt Surfaces	1.04	Acre	1.04	0.00	0.00	—	—	—
Recreational Swimming Pool	1.07	1000sqft	0.02	1,075	0.00	—	—	—
Health Club	0.12	1000sqft	< 0.005	117	0.00	—	—	Spa

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	36.7	36.3	37.5	33.8	0.05	1.93	5.89	7.82	1.78	2.74	4.52	—	5,775	5,775	0.23	0.31	5.58	5,798
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.34	1.14	8.31	15.2	0.02	0.32	0.99	1.31	0.30	0.23	0.53	—	2,818	2,818	0.11	0.09	0.11	2,847
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.05	1.99	5.50	8.04	0.01	0.24	0.65	0.88	0.22	0.19	0.41	—	1,548	1,548	0.06	0.06	0.87	1,567
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.37	0.36	1.00	1.47	< 0.005	0.04	0.12	0.16	0.04	0.04	0.07	—	256	256	0.01	0.01	0.14	259

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.91	4.13	37.5	33.8	0.05	1.93	5.89	7.82	1.78	2.74	4.52	—	5,775	5,775	0.23	0.31	4.60	5,798
2026	36.7	36.3	16.5	30.5	0.04	0.61	1.43	2.04	0.56	0.34	0.90	—	5,115	5,115	0.21	0.12	5.58	5,161
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.34	1.14	8.31	15.2	0.02	0.32	0.99	1.31	0.30	0.23	0.53	—	2,818	2,818	0.11	0.09	0.11	2,847
2026	1.26	1.07	7.83	14.9	0.02	0.27	0.99	1.26	0.25	0.23	0.49	—	2,794	2,794	0.09	0.09	0.10	2,823
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.81	0.68	5.50	8.04	0.01	0.24	0.65	0.88	0.22	0.19	0.41	—	1,548	1,548	0.06	0.06	0.87	1,567
2026	2.05	1.99	2.34	4.34	0.01	0.08	0.26	0.34	0.08	0.06	0.14	—	790	790	0.02	0.02	0.45	798
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.15	0.12	1.00	1.47	< 0.005	0.04	0.12	0.16	0.04	0.04	0.07	—	256	256	0.01	0.01	0.14	259
2026	0.37	0.36	0.43	0.79	< 0.005	0.02	0.05	0.06	0.01	0.01	0.03	—	131	131	< 0.005	< 0.005	0.07	132

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.64	5.29	4.13	26.2	0.06	0.19	4.22	4.41	0.19	1.07	1.26	49.5	8,020	8,069	5.31	0.25	17.8	8,296
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	4.95	4.63	4.24	17.7	0.06	0.19	4.22	4.41	0.19	1.07	1.26	49.5	7,705	7,754	5.32	0.26	1.03	7,966
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.83	4.60	2.57	19.6	0.04	0.07	3.75	3.81	0.07	0.95	1.02	49.5	5,368	5,418	5.26	0.24	7.22	5,626
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.88	0.84	0.47	3.57	0.01	0.01	0.68	0.70	0.01	0.17	0.19	8.20	889	897	0.87	0.04	1.20	932

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	2.77	2.57	2.17	20.0	0.05	0.04	4.22	4.26	0.03	1.07	1.11	—	4,978	4,978	0.21	0.22	17.2	5,067
Area	2.83	2.71	1.65	6.13	0.01	0.13	—	0.13	0.13	—	0.13	0.00	2,036	2,036	0.04	< 0.005	—	2,038
Energy	0.04	0.02	0.31	0.13	< 0.005	0.03	—	0.03	0.03	—	0.03	—	980	980	0.09	0.01	—	985
Water	—	—	—	—	—	—	—	—	—	—	—	7.62	26.2	33.8	0.78	0.02	—	59.0
Waste	—	—	—	—	—	—	—	—	—	—	—	41.9	0.00	41.9	4.19	0.00	—	147
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.58	0.58
Total	5.64	5.29	4.13	26.2	0.06	0.19	4.22	4.41	0.19	1.07	1.26	49.5	8,020	8,069	5.31	0.25	17.8	8,296
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	2.60	2.39	2.33	16.9	0.05	0.04	4.22	4.26	0.03	1.07	1.11	—	4,677	4,677	0.22	0.23	0.45	4,752
Area	2.32	2.22	1.59	0.68	0.01	0.13	—	0.13	0.13	—	0.13	0.00	2,021	2,021	0.04	< 0.005	—	2,023
Energy	0.04	0.02	0.31	0.13	< 0.005	0.03	—	0.03	0.03	—	0.03	—	980	980	0.09	0.01	—	985
Water	—	—	—	—	—	—	—	—	—	—	—	7.62	26.2	33.8	0.78	0.02	—	59.0
Waste	—	—	—	—	—	—	—	—	—	—	—	41.9	0.00	41.9	4.19	0.00	—	147
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.58	0.58

Total	4.95	4.63	4.24	17.7	0.06	0.19	4.22	4.41	0.19	1.07	1.26	49.5	7,705	7,754	5.32	0.26	1.03	7,966
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	2.31	2.12	2.12	15.7	0.04	0.03	3.75	3.78	0.03	0.95	0.98	—	4,213	4,213	0.19	0.21	6.64	4,287
Area	2.49	2.47	0.15	3.78	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	148	148	< 0.005	< 0.005	—	149
Energy	0.04	0.02	0.31	0.13	< 0.005	0.03	—	0.03	0.03	—	0.03	—	980	980	0.09	0.01	—	985
Water	—	—	—	—	—	—	—	—	—	—	—	7.62	26.2	33.8	0.78	0.02	—	59.0
Waste	—	—	—	—	—	—	—	—	—	—	—	41.9	0.00	41.9	4.19	0.00	—	147
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.58	0.58
Total	4.83	4.60	2.57	19.6	0.04	0.07	3.75	3.81	0.07	0.95	1.02	49.5	5,368	5,418	5.26	0.24	7.22	5,626
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.42	0.39	0.39	2.86	0.01	0.01	0.68	0.69	0.01	0.17	0.18	—	698	698	0.03	0.03	1.10	710
Area	0.45	0.45	0.03	0.69	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	24.6	24.6	< 0.005	< 0.005	—	24.6
Energy	0.01	< 0.005	0.06	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	162	162	0.02	< 0.005	—	163
Water	—	—	—	—	—	—	—	—	—	—	—	1.26	4.33	5.59	0.13	< 0.005	—	9.77
Waste	—	—	—	—	—	—	—	—	—	—	—	6.94	0.00	6.94	0.69	0.00	—	24.3
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.10	0.10
Total	0.88	0.84	0.47	3.57	0.01	0.01	0.68	0.70	0.01	0.17	0.19	8.20	889	897	0.87	0.04	1.20	932

3. Construction Emissions Details

3.1. Demolition (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	2.86	2.40	22.2	19.9	0.03	0.92	—	0.92	0.84	—	0.84	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	0.76	0.76	—	0.12	0.12	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.49	0.44	< 0.005	0.02	—	0.02	0.02	—	0.02	—	75.1	75.1	< 0.005	< 0.005	—	75.3
Demolition	—	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.09	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.4	12.4	< 0.005	< 0.005	—	12.5
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.07	1.16	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	211	211	0.01	0.01	0.78	215
Vendor	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	0.00
Hauling	0.03	0.01	0.68	0.17	< 0.005	0.01	0.16	0.17	0.01	0.05	0.06	—	612	612	0.01	0.10	1.30	642

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.31	4.31	< 0.005	< 0.005	0.01	4.37
Vendor	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	0.00
Hauling	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.4	13.4	< 0.005	< 0.005	0.01	14.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.71	0.71	< 0.005	< 0.005	< 0.005	0.72
Vendor	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	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.22	2.22	< 0.005	< 0.005	< 0.005	2.33

3.3. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.82	4.05	37.5	32.4	0.05	1.93	—	1.93	1.78	—	1.78	—	5,528	5,528	0.22	0.04	—	5,547
Dust From Material Movement	—	—	—	—	—	—	5.66	5.66	—	2.69	2.69	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.06	0.51	0.44	< 0.005	0.03	—	0.03	0.02	—	0.02	—	75.7	75.7	< 0.005	< 0.005	—	76.0
Dust From Material Movement	—	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.09	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.5	12.5	< 0.005	< 0.005	—	12.6
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.08	1.35	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	247	247	0.01	0.01	0.91	250
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.15	3.15	< 0.005	< 0.005	0.01	3.19

Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.52	0.52	< 0.005	< 0.005	< 0.005	0.53
Vendor	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	0.00
Hauling	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	0.00

3.5. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.73	2.30	20.6	19.6	0.03	1.15	—	1.15	1.05	—	1.05	—	3,134	3,134	0.13	0.03	—	3,145
Dust From Material Movement	—	—	—	—	—	—	2.26	2.26	—	0.94	0.94	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	1.13	1.07	< 0.005	0.06	—	0.06	0.06	—	0.06	—	172	172	0.01	< 0.005	—	172

Dust From Material Movement	—	—	—	—	—	—	0.12	0.12	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.21	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	28.4	28.4	< 0.005	< 0.005	—	28.5
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.07	1.16	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	211	211	0.01	0.01	0.78	215
Vendor	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.6	30.6	< 0.005	< 0.005	0.09	32.1
Hauling	0.07	0.03	1.95	0.48	0.01	0.03	0.46	0.49	0.03	0.13	0.16	—	1,754	1,754	0.03	0.28	3.74	1,841
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.8	10.8	< 0.005	< 0.005	0.02	10.9
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.68	1.68	< 0.005	< 0.005	< 0.005	1.76
Hauling	< 0.005	< 0.005	0.11	0.03	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	96.1	96.1	< 0.005	0.02	0.09	101
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.79	1.79	< 0.005	< 0.005	< 0.005	1.81

Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.28	0.28	< 0.005	< 0.005	< 0.005	0.29
Hauling	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.9	15.9	< 0.005	< 0.005	0.01	16.7

3.7. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.00	0.84	7.66	11.0	0.02	0.32	—	0.32	0.29	—	0.29	—	1,640	1,640	0.07	0.01	—	1,646
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.00	0.84	7.66	11.0	0.02	0.32	—	0.32	0.29	—	0.29	—	1,640	1,640	0.07	0.01	—	1,646
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.39	0.32	2.97	4.27	0.01	0.12	—	0.12	0.11	—	0.11	—	635	635	0.03	0.01	—	638
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.07	0.06	0.54	0.78	< 0.005	0.02	—	0.02	0.02	—	0.02	—	105	105	< 0.005	< 0.005	—	106
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.37	0.31	0.30	5.38	0.00	0.00	0.91	0.91	0.00	0.21	0.21	—	981	981	0.04	0.03	3.61	996
Vendor	0.01	0.01	0.30	0.09	< 0.005	< 0.005	0.08	0.08	< 0.005	0.02	0.03	—	275	275	0.01	0.04	0.78	289
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.33	0.29	0.34	4.06	0.00	0.00	0.91	0.91	0.00	0.21	0.21	—	902	902	0.04	0.03	0.09	913
Vendor	0.01	0.01	0.32	0.10	< 0.005	< 0.005	0.08	0.08	< 0.005	0.02	0.03	—	276	276	0.01	0.04	0.02	288
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.11	0.14	1.66	0.00	0.00	0.35	0.35	0.00	0.08	0.08	—	354	354	0.02	0.01	0.60	359
Vendor	< 0.005	< 0.005	0.12	0.04	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	107	107	< 0.005	0.02	0.13	112
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.03	0.30	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	58.6	58.6	< 0.005	< 0.005	0.10	59.4
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	17.7	17.7	< 0.005	< 0.005	0.02	18.5
Hauling	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	0.00

3.9. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.94	0.78	7.23	11.0	0.02	0.27	—	0.27	0.25	—	0.25	—	1,640	1,640	0.07	0.01	—	1,645
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.94	0.78	7.23	11.0	0.02	0.27	—	0.27	0.25	—	0.25	—	1,640	1,640	0.07	0.01	—	1,645
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	0.19	1.75	2.67	< 0.005	0.07	—	0.07	0.06	—	0.06	—	398	398	0.02	< 0.005	—	399
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.32	0.49	< 0.005	0.01	—	0.01	0.01	—	0.01	—	65.9	65.9	< 0.005	< 0.005	—	66.1
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.33	0.29	0.27	5.00	0.00	0.00	0.91	0.91	0.00	0.21	0.21	—	960	960	0.04	0.03	3.25	974
Vendor	0.01	0.01	0.29	0.09	< 0.005	< 0.005	0.08	0.08	< 0.005	0.02	0.03	—	271	271	0.01	0.04	0.74	284
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.31	0.28	0.30	3.79	0.00	0.00	0.91	0.91	0.00	0.21	0.21	—	883	883	0.01	0.03	0.08	894
Vendor	0.01	0.01	0.30	0.09	< 0.005	< 0.005	0.08	0.08	< 0.005	0.02	0.03	—	271	271	0.01	0.04	0.02	284
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.08	0.96	0.00	0.00	0.22	0.22	0.00	0.05	0.05	—	217	217	< 0.005	0.01	0.34	220
Vendor	< 0.005	< 0.005	0.07	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	65.8	65.8	< 0.005	0.01	0.08	68.9
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.18	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	35.9	35.9	< 0.005	< 0.005	0.06	36.4
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.9	10.9	< 0.005	< 0.005	0.01	11.4
Hauling	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	0.00

3.11. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.99	0.83	7.46	10.4	0.02	0.31	—	0.31	0.28	—	0.28	—	1,598	1,598	0.06	0.01	—	1,604
Paving	0.41	0.41	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.37	0.51	< 0.005	0.02	—	0.02	0.01	—	0.01	—	78.8	78.8	< 0.005	< 0.005	—	79.1
Paving	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.0	13.0	< 0.005	< 0.005	—	13.1
Paving	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.08	1.44	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	276	276	0.01	0.01	0.93	280
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	12.7	12.7	< 0.005	< 0.005	0.02	12.8

Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.10	2.10	< 0.005	< 0.005	< 0.005	2.13
Vendor	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	0.00
Hauling	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	0.00

3.13. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.19	0.16	1.14	1.51	< 0.005	0.03	—	0.03	0.03	—	0.03	—	178	178	0.01	< 0.005	—	179
Architectural Coatings	33.6	33.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.78	8.78	< 0.005	< 0.005	—	8.81

Architectural	1.66	1.66	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.45	1.45	< 0.005	< 0.005	—	1.46
Architectural Coatings	0.30	0.30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.05	1.00	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	192	192	0.01	0.01	0.65	195
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.82	8.82	< 0.005	< 0.005	0.01	8.94
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.46	1.46	< 0.005	< 0.005	< 0.005	1.48
Vendor	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	0.00
Hauling	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	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	2.77	2.57	2.17	20.0	0.05	0.04	4.22	4.26	0.03	1.07	1.11	—	4,978	4,978	0.21	0.22	17.2	5,067
Parking Lot	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	0.00
Other Asphalt Surfaces	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	0.00
Recreational Swimming Pool	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	0.00
Health Club	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	0.00
Total	2.77	2.57	2.17	20.0	0.05	0.04	4.22	4.26	0.03	1.07	1.11	—	4,978	4,978	0.21	0.22	17.2	5,067
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	2.60	2.39	2.33	16.9	0.05	0.04	4.22	4.26	0.03	1.07	1.11	—	4,677	4,677	0.22	0.23	0.45	4,752
Parking Lot	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	0.00

Other Asphalt Surfaces	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	0.00
Recreational Swimming Pool	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	0.00
Health Club	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	0.00
Total	2.60	2.39	2.33	16.9	0.05	0.04	4.22	4.26	0.03	1.07	1.11	—	4,677	4,677	0.22	0.23	0.45	4,752
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.42	0.39	0.39	2.86	0.01	0.01	0.68	0.69	0.01	0.17	0.18	—	698	698	0.03	0.03	1.10	710
Parking Lot	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	0.00
Other Asphalt Surfaces	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	0.00
Recreational Swimming Pool	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	0.00
Health Club	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	0.00
Total	0.42	0.39	0.39	2.86	0.01	0.01	0.68	0.69	0.01	0.17	0.18	—	698	698	0.03	0.03	1.10	710

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	515	515	0.05	0.01	—	518
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	65.5	65.5	0.01	< 0.005	—	65.9
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Recreational Swimming Pool	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Health Club	—	—	—	—	—	—	—	—	—	—	—	—	1.06	1.06	< 0.005	< 0.005	—	1.07
Total	—	—	—	—	—	—	—	—	—	—	—	—	582	582	0.06	0.01	—	585
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	515	515	0.05	0.01	—	518
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	65.5	65.5	0.01	< 0.005	—	65.9
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Recreational Swimming Pool	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Health Club	—	—	—	—	—	—	—	—	—	—	—	—	1.06	1.06	< 0.005	< 0.005	—	1.07

Total	—	—	—	—	—	—	—	—	—	—	—	—	582	582	0.06	0.01	—	585
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	85.3	85.3	0.01	< 0.005	—	85.8
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	10.8	10.8	< 0.005	< 0.005	—	10.9
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Recreational Swimming Pool	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Health Club	—	—	—	—	—	—	—	—	—	—	—	—	0.18	0.18	< 0.005	< 0.005	—	0.18
Total	—	—	—	—	—	—	—	—	—	—	—	—	96.3	96.3	0.01	< 0.005	—	96.9

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.04	0.02	0.31	0.13	< 0.005	0.03	—	0.03	0.03	—	0.03	—	397	397	0.04	< 0.005	—	398
Parking Lot	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
Other Asphalt Surfaces	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

Recreational	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
Health Club	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.61	1.61	< 0.005	< 0.005	—	1.61
Total	0.04	0.02	0.31	0.13	< 0.005	0.03	—	0.03	0.03	—	0.03	—	398	398	0.04	< 0.005	—	399
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.04	0.02	0.31	0.13	< 0.005	0.03	—	0.03	0.03	—	0.03	—	397	397	0.04	< 0.005	—	398
Parking Lot	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
Other Asphalt Surfaces	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
Recreational Swimming Pool	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
Health Club	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.61	1.61	< 0.005	< 0.005	—	1.61
Total	0.04	0.02	0.31	0.13	< 0.005	0.03	—	0.03	0.03	—	0.03	—	398	398	0.04	< 0.005	—	399
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.01	< 0.005	0.06	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	65.7	65.7	0.01	< 0.005	—	65.9
Parking Lot	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
Other Asphalt Surfaces	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

Recreational Swimming Pool	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
Health Club	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.27	0.27	< 0.005	< 0.005	—	0.27
Total	0.01	< 0.005	0.06	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	65.9	65.9	0.01	< 0.005	—	66.1

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.19	0.09	1.59	0.68	0.01	0.13	—	0.13	0.13	—	0.13	0.00	2,021	2,021	0.04	< 0.005	—	2,023
Consumer Products	1.96	1.96	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.17	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.51	0.48	0.05	5.45	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	14.6	14.6	< 0.005	< 0.005	—	14.6
Total	2.83	2.71	1.65	6.13	0.01	0.13	—	0.13	0.13	—	0.13	0.00	2,036	2,036	0.04	< 0.005	—	2,038
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.19	0.09	1.59	0.68	0.01	0.13	—	0.13	0.13	—	0.13	0.00	2,021	2,021	0.04	< 0.005	—	2,023

Consum Products	1.96	1.96	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.17	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	2.32	2.22	1.59	0.68	0.01	0.13	—	0.13	0.13	—	0.13	0.00	2,021	2,021	0.04	< 0.005	—	2,023
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	22.9	22.9	< 0.005	< 0.005	—	22.9
Consumer Products	0.36	0.36	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.03	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.06	0.06	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.65	1.65	< 0.005	< 0.005	—	1.66
Total	0.45	0.45	0.03	0.69	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	24.6	24.6	< 0.005	< 0.005	—	24.6

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	7.48	25.7	33.2	0.77	0.02	—	57.9

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Recreational Swimming Pool	—	—	—	—	—	—	—	—	—	—	—	0.12	0.41	0.53	0.01	< 0.005	—	0.94
Health Club	—	—	—	—	—	—	—	—	—	—	—	0.01	0.04	0.06	< 0.005	< 0.005	—	0.10
Total	—	—	—	—	—	—	—	—	—	—	—	7.62	26.2	33.8	0.78	0.02	—	59.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	7.48	25.7	33.2	0.77	0.02	—	57.9
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Recreational Swimming Pool	—	—	—	—	—	—	—	—	—	—	—	0.12	0.41	0.53	0.01	< 0.005	—	0.94
Health Club	—	—	—	—	—	—	—	—	—	—	—	0.01	0.04	0.06	< 0.005	< 0.005	—	0.10
Total	—	—	—	—	—	—	—	—	—	—	—	7.62	26.2	33.8	0.78	0.02	—	59.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	1.24	4.26	5.49	0.13	< 0.005	—	9.59

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Recreational Swimming Pool	—	—	—	—	—	—	—	—	—	—	—	0.02	0.07	0.09	< 0.005	< 0.005	—	0.15
Health Club	—	—	—	—	—	—	—	—	—	—	—	< 0.005	0.01	0.01	< 0.005	< 0.005	—	0.02
Total	—	—	—	—	—	—	—	—	—	—	—	1.26	4.33	5.59	0.13	< 0.005	—	9.77

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	38.2	0.00	38.2	3.82	0.00	—	134
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Recreational Swimming Pool	—	—	—	—	—	—	—	—	—	—	—	3.30	0.00	3.30	0.33	0.00	—	11.6

Health Club	—	—	—	—	—	—	—	—	—	—	—	0.36	0.00	0.36	0.04	0.00	—	1.26
Total	—	—	—	—	—	—	—	—	—	—	—	41.9	0.00	41.9	4.19	0.00	—	147
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	38.2	0.00	38.2	3.82	0.00	—	134
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Recreational Swimming Pool	—	—	—	—	—	—	—	—	—	—	—	3.30	0.00	3.30	0.33	0.00	—	11.6
Health Club	—	—	—	—	—	—	—	—	—	—	—	0.36	0.00	0.36	0.04	0.00	—	1.26
Total	—	—	—	—	—	—	—	—	—	—	—	41.9	0.00	41.9	4.19	0.00	—	147
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	6.33	0.00	6.33	0.63	0.00	—	22.2
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Recreational Swimming Pool	—	—	—	—	—	—	—	—	—	—	—	0.55	0.00	0.55	0.05	0.00	—	1.91

Health Club	—	—	—	—	—	—	—	—	—	—	—	0.06	0.00	0.06	0.01	0.00	—	0.21
Total	—	—	—	—	—	—	—	—	—	—	—	6.94	0.00	6.94	0.69	0.00	—	24.3

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.58	0.58
Recreational Swimming Pool	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005
Health Club	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.58	0.58
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.58	0.58
Recreational Swimming Pool	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005

Health Club	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.58	0.58
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.10	0.10
Recreational Swimming Pool	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005
Health Club	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.10	0.10

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	5/1/2025	5/12/2025	5.00	8.00	—
Site Preparation	Site Preparation	5/13/2025	5/19/2025	5.00	5.00	—
Grading	Grading	5/20/2025	6/16/2025	5.00	20.0	—
Building Construction	Building Construction	6/17/2025	5/4/2026	5.00	230	—
Paving	Paving	4/9/2026	5/4/2026	5.00	18.0	—
Architectural Coating	Architectural Coating	4/9/2026	5/4/2026	5.00	18.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40

Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Crawler Tractors	Diesel	Average	4.00	8.00	87.0	0.43
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Crawler Tractors	Diesel	Average	3.00	8.00	87.0	0.43
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Cement and Mortar Mixers	Diesel	Average	2.00	8.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	8.88	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT

Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	1.00	10.2	HHDT,MHDT
Grading	Hauling	25.4	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	69.6	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	9.00	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	20.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	13.9	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	184,577	61,526	176	58.5	7,449

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	282	—
Site Preparation	—	—	17.5	0.00	—
Grading	4,069	—	50.0	0.00	—
Paving	0.00	0.00	0.00	0.00	2.85

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Apartments Mid Rise	—	0%
Parking Lot	1.81	100%
Other Asphalt Surfaces	1.04	100%
Recreational Swimming Pool	0.00	0%

Health Club	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	349	0.03	< 0.005
2026	0.00	346	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Mid Rise	647	437	371	210,791	5,959	4,023	3,413	1,941,203
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Recreational Swimming Pool	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Health Club	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Mid Rise	—
Wood Fireplaces	0

Gas Fireplaces	96
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
184576.725	61,526	176	58.5	7,449

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Mid Rise	543,279	346	0.0330	0.0040	1,237,710
Parking Lot	69,067	346	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	346	0.0330	0.0040	0.00
Recreational Swimming Pool	0.00	346	0.0330	0.0040	0.00
Health Club	1,120	346	0.0330	0.0040	5,025

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Mid Rise	3,904,682	97,710
Parking Lot	0.00	0.00
Other Asphalt Surfaces	0.00	0.00
Recreational Swimming Pool	63,579	0.00
Health Club	6,920	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Mid Rise	71.0	—
Parking Lot	0.00	—
Other Asphalt Surfaces	0.00	—
Recreational Swimming Pool	6.13	—
Health Club	0.67	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Mid Rise	Average room A/C & Other residential A/C and heat pumps	User Defined	750	< 0.005	2.50	2.50	10.0
Apartments Mid Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

Recreational Swimming Pool	Other commercial A/C and heat pumps	User Defined	750	< 0.005	4.00	4.00	18.0
Recreational Swimming Pool	Stand-alone retail refrigerators and freezers	User Defined	150	0.04	1.00	0.00	1.00
Health Club	Other commercial A/C and heat pumps	User Defined	750	< 0.005	4.00	4.00	18.0
Health Club	Stand-alone retail refrigerators and freezers	User Defined	150	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	28.1	annual days of extreme heat
Extreme Precipitation	5.25	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	35.1	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	3	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	3	1	1	3
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A

Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	78.0
AQ-PM	52.7
AQ-DPM	43.0
Drinking Water	31.7
Lead Risk Housing	41.0
Pesticides	0.00
Toxic Releases	38.4
Traffic	51.1
Effect Indicators	—
CleanUp Sites	0.00
Groundwater	0.00
Haz Waste Facilities/Generators	4.94
Impaired Water Bodies	51.2
Solid Waste	0.00

Sensitive Population	—
Asthma	66.7
Cardio-vascular	98.8
Low Birth Weights	87.7
Socioeconomic Factor Indicators	—
Education	74.0
Housing	77.6
Linguistic	64.1
Poverty	89.1
Unemployment	93.5

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	10.84306429
Employed	9.39304504
Median HI	16.38650071
Education	—
Bachelor's or higher	7.827537534
High school enrollment	100
Preschool enrollment	6.249197998
Transportation	—
Auto Access	26.42114718
Active commuting	41.79391762
Social	—
2-parent households	10.85589632
Voting	8.546131143

Neighborhood	—
Alcohol availability	60.50301553
Park access	40.20274605
Retail density	16.50198896
Supermarket access	27.69151803
Tree canopy	17.77235981
Housing	—
Homeownership	27.19106891
Housing habitability	30.46323624
Low-inc homeowner severe housing cost burden	60.18221481
Low-inc renter severe housing cost burden	35.27524702
Uncrowded housing	18.27280893
Health Outcomes	—
Insured adults	17.0537662
Arthritis	0.0
Asthma ER Admissions	50.4
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	32.5
Cognitively Disabled	39.7
Physically Disabled	43.7
Heart Attack ER Admissions	3.3
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0

Obesity	0.0
Pedestrian Injuries	82.9
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.4
SLR Inundation Area	0.0
Children	10.0
Elderly	93.7
English Speaking	45.4
Foreign-born	53.0
Outdoor Workers	18.5
Climate Change Adaptive Capacity	—
Impervious Surface Cover	71.9
Traffic Density	30.8
Traffic Access	23.0
Other Indices	—
Hardship	90.2
Other Decision Support	—
2016 Voting	23.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	64.0

Healthy Places Index Score for Project Location (b)	8.00
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Based on site plan Total Project site is 4.95 acres
Construction: Construction Phases	Based on client provided information and 2026 OY. Building Construction, Paving, and Architectural Coating overlap to present a conservative analysis
Operations: Hearths	SCAQMD Rule 445 no wood burning devices. Wood burning devices added to gas devices.
Construction: Off-Road Equipment	Based on client data. T/L/B replaced with Crawler Tractor to accurately calculate disturbance for Site Preparation and Grading phases. Standard 8 hours work days.
Operations: Vehicle Data	Trip characteristics based on information provided in the TA Scope.
Operations: Refrigerants	As of 1 January 2022, new commercial refrigeration equipment may not use refrigerants with a GWP of 150 or greater. Further, R-404A (the CalEEMod default) is unacceptable for new supermarket and cold storage systems as of 1 January 2019 and 2023, respectively. Beginning 1 January 2025, all new air conditioning equipment may not use refrigerants with a GWP of 750 or greater.

Construction: Trips and VMT	Vendor Trips adjusted based on CalEEMod defaults for Building Construction and number of days for Demolition, Site Preparation, Grading, and Building Construction
Construction: Architectural Coatings	SCAQMD Rule 1113
Operations: Architectural Coatings	SCAQMD Rule 1113
Operations: Water and Waste Water	Indoor water consumption reduced by 20%, consistent with CalGreen Title 24 Standards

ATTACHMENT B
CITY OF LAKE ELSINORE CAP WORKSHEET

Appendix D: Project-Level CAP Consistency Worksheet

The City of Lake Elsinore Climate Action Plan (CAP) is a comprehensive and program-level document to ensure that the City reduces community-wide GHG emissions consistent with AB 32 and Executive Order S-3-05. Once the CAP is adopted following environmental review, later projects consistent with the General Plan growth potential and CAP may tier from and/or incorporate the CAP by reference in their cumulative GHG impact analyses. This appendix is a project level worksheet that an applicant may use to demonstrate consistency with the General Plan growth potential and CAP. In addition, project-level GHG emissions impact analyses can utilize the California Emissions Estimator Model (CalEEMod), or other appropriate software, to determine compliance[1].

1. Is the project consistent with the General Plan land use designation?

2. Is the project consistent with the General Plan population and employment projections for the site, upon which the CAP modeling is based?

3. Does the project incorporate the following CAP measures as binding and enforceable components of the project? Until these measures have been formally adopted by the City and incorporated in to applicable codes, the requirements must be incorporated as mitigation measures applicable to the project (CEQA Guidelines, Section 15183.5(b)(2)).

T-1.2 Pedestrian Infrastructure

- Does the project provide sidewalks along new and reconstructed streets?
- Does the project provide sidewalks or paths to internally link all uses in a project where applicable?
- Does the project provide connections to neighborhood activity centers, major destinations, and transit contiguous to site?

T-1.4 Bicycle Infrastructure

- Where applicable, does the project implement the network of Class I, II and II bikeways, trails and safety features identified in the General Plan, Bike Lane Master Plan, Trails Master Plan and Western Riverside County Non-Motorized Transportation plan?
- Does the project, where applicable, provide connections to the network identified in those plans?

[1] CalEEMod was created by the South Coast Air Quality Management District (SCAQMD) in collaboration with the other California Air Districts to provide an accurate and comprehensive tool for quantifying GHG impacts from land use projects throughout California. This model is available for public download on CalEEMod's website located at http://www.caleemod.com/.

T-1.5 Bicycle Parking

- Does new, non-residential development that is anticipated to generate visitor traffic provide permanently anchored bicycle racks within 200 feet of the visitor entrance, readily visible to passers-by, for 5% of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack?
- Does the development propose a building with over 10 tenant spaces? If so, does it provide secure bicycle parking for 5% of tenant-occupied motorized vehicle parking capacity, with a minimum of one space?

T-2.1 Designated Parking for Fuel-Efficient Vehicles

- Does a non-residential development designate 10% of its total parking spaces for "Clean Air Vehicles?"

E-1.1 Tree Planting

- Does the developer provide a 15-gal non-deciduous, umbrella-form tree per 30 linear feet of boundary length, near buildings, or to shade pavement in parking lots and streets?

E-1.2 Cool Roof Requirements

- Does the new non-residential development use roofing materials having solar reflectance, thermal emittance or Solar Reflectance Index 3 per CalGreen Tier 1 values?

E-1.3 Energy Efficient Building Standards

- Does new construction achieve CalGreen Tier 1 energy efficiency standards?

E-3.2 Energy Efficient Street and Traffic Signal Lights

- Does the project involve the installation of street or traffic signal lights? If so, are they Low Emitting Diode (LED) lights?

E-4.1 Landscaping

- Does the development comply with the City's AB 1881 Landscaping Ordinance?

E-4.2 Indoor Water Conservation Requirements

- Does the development reduce indoor water consumption by 30%, consistent with CalGreen Tier 1, Section A5.303.2.3.1?

S-1.4: Construction and Demolition Waste Diversion

- Is the project accompanied by a waste management plan that demonstrates how 65% of the nonhazardous construction and demolition debris generated at the site will be recycled or salvaged?

If it is determined that a proposed project does not fall within the assumptions of the General Plan and/or is not consistent with the CAP, incorporating all applicable measures as binding and enforceable components of the project, further CEQA analysis would be required. The applicant must demonstrate to the City's satisfaction how the project will achieve its share of the established targets through the use of alternative design components and/or operational protocols to achieve equivalent reductions, or use permanent, verifiable and enforceable offsets that would result in emissions reductions in the City to achieve remaining reductions. The project would also be required to demonstrate that it would not substantially interfere with implementation of the CAP strategies or measures.

Appendix B1 – Biological Survey

BioCultural LLC
ENVIRONMENTAL CONSULTANTS

Biological Survey
For
Riverside County Assessor's Parcel Number 379315033



Prepared for
Elevated Entitlements

Prepared by
Biocultural LLC
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August 2023

Revised: October 2024

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Appendix B. Site Photographs

Appendix C. Regulatory Context

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Attachment 1. Burrowing Owl Survey for Riverside County Assessor's Parcel Number 379315003

CERTIFICATION

I hereby certify that the statements furnished below 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.



Ricardo Montijo

August 7, 2023,
Date

1 INTRODUCTION

Elevated Entitlements, a professional urban planning firm with considerable experience in city planning, zoning, and land use entitlements was retained, for among other things, to conduct biological surveys and studies for a project to the northwest of Lake Elsinore, Riverside County, California. The property, totaling approximately 4.95 acres, is designated Riverside County Assessors Parcel Number (APN) 379-315-033 and it occurs on portions of Section 28 of Township 6 South, Range 5 West, as depicted on the Alberhill USGS 7.5-minute Quadrangle (Figure 1 - 3).

1.1 Property Description

1.1.1 Geographic Setting

The project site consists of a single parcel, designated APN 379-315-033, located on Riverside Road in Lake Elsinore, Riverside County, California (Figure 2). The project site is relatively flat (Appendix B, Photographs 1 - 3).

1.1.2 Adjacent Lands

The property is situated in Lake Elsinore in a rural residential/commercial area. Adjacent properties include open space to the northwest and southwest and rural residential areas elsewhere (Appendix B, Photograph 4 and see Figure 2). The Leach Canyon Canal is located beyond (and parallel to) the eastern property boundary. Open space areas are separated from the project site by existing roads and development.

Figure 1. Location and Vicinity Map

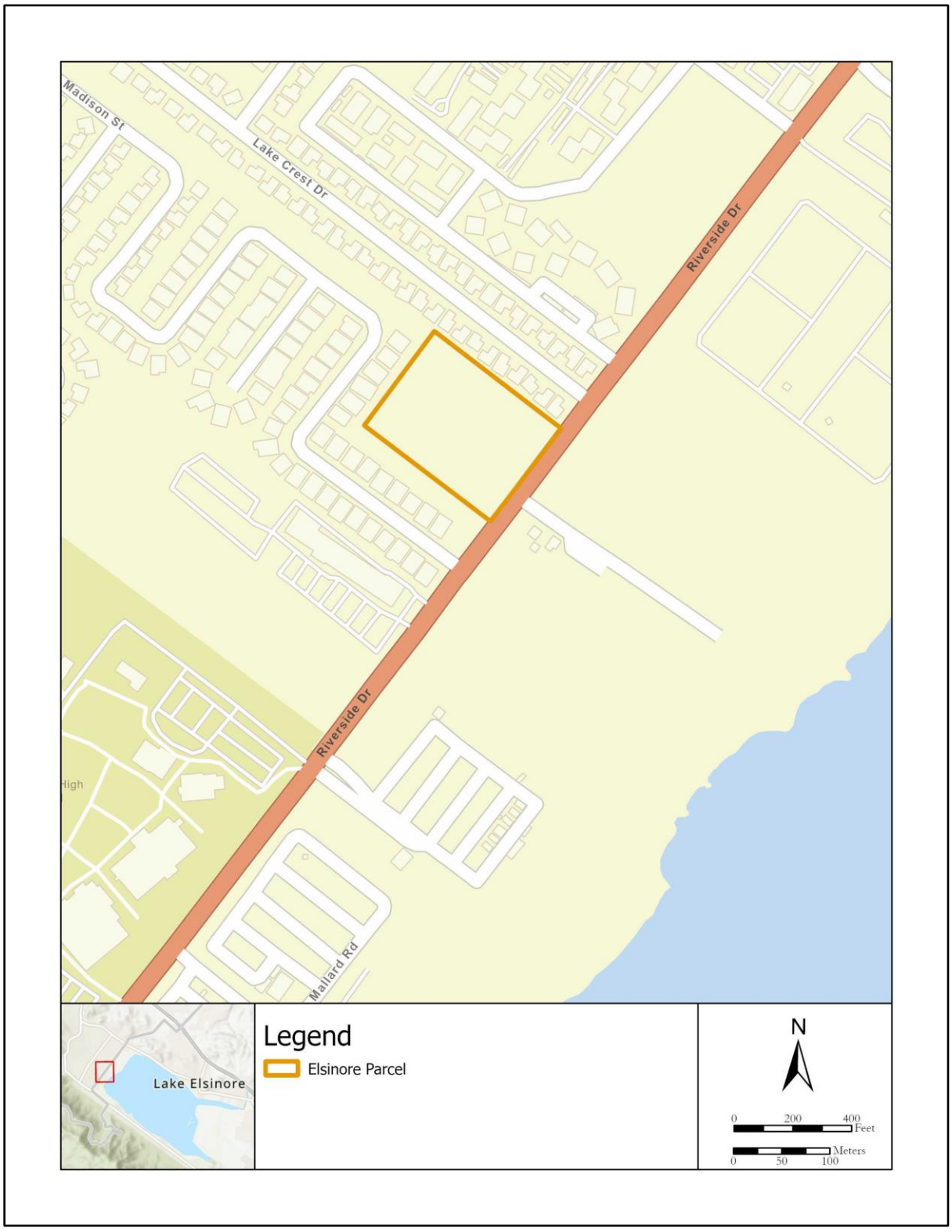


Figure 2. Parcels and Project Site



1.1.3 Geology, Hydrology, Soils and Climate

Geology, hydrology, soils and climate determine the natural botanic composition at a given site. Many plants of limited geographic distribution are associated with specific soil types. The geology of the area was well-described by Kennedy and Morton (2003).

The Elsinore Valley, part of the Elsinore Trough, is a graben between the Santa Ana Block to the southwest and the Perris Block on the northeast. It is a complex graben, divided lengthwise into several smaller sections by transverse faults. one of several graben valleys that comprise the Elsinore Trough. Created by the Elsinore Fault Zone, it lies between the Wildomar Fault on the east and the Willard Fault on the west, at the foot of the Santa Ana Mountains. The natural Lake Elsinore is a sag pond on the Wildomar Fault. The area is between the Elsinore Mountains to the west, which are a part of the larger Santa Ana Mountain Range, and the older and more eroded slopes of the Temescal Mountains to the east.

The Alberhill quadrangle is characterized by rolling hills generally sloping toward the lake to the south. Mining, which has a long history here, has altered the Alberhill terrain as various companies have extracted clay and aggregates for over 100 years.

The site is relatively flat with a channelized drainage northeast of the property that flows directly into Lake Elsinore. Elevation is approximately 1,280 feet (Figure 3). Garretson fine sandy loam is the only designated Soil type on the project site, according to the Natural Resources Conservation Service (NRCS) (Figure 4). The Garretson series is a member of the fine-loamy, mixed, nonacid, thermic family of Typic Xerorthents. Typically, Garretson soils have brown and yellowish brown, slightly acid, gravelly very fine sandy loam and gravelly loam A horizons and yellowish brown, brown and grayish brown, slightly acid and neutral, gravelly loam C horizons. They occur on nearly level to strongly sloping fans and floodplains at elevations of 50 to 3,000

Figure 3. Property and Adjacent Area Elevation

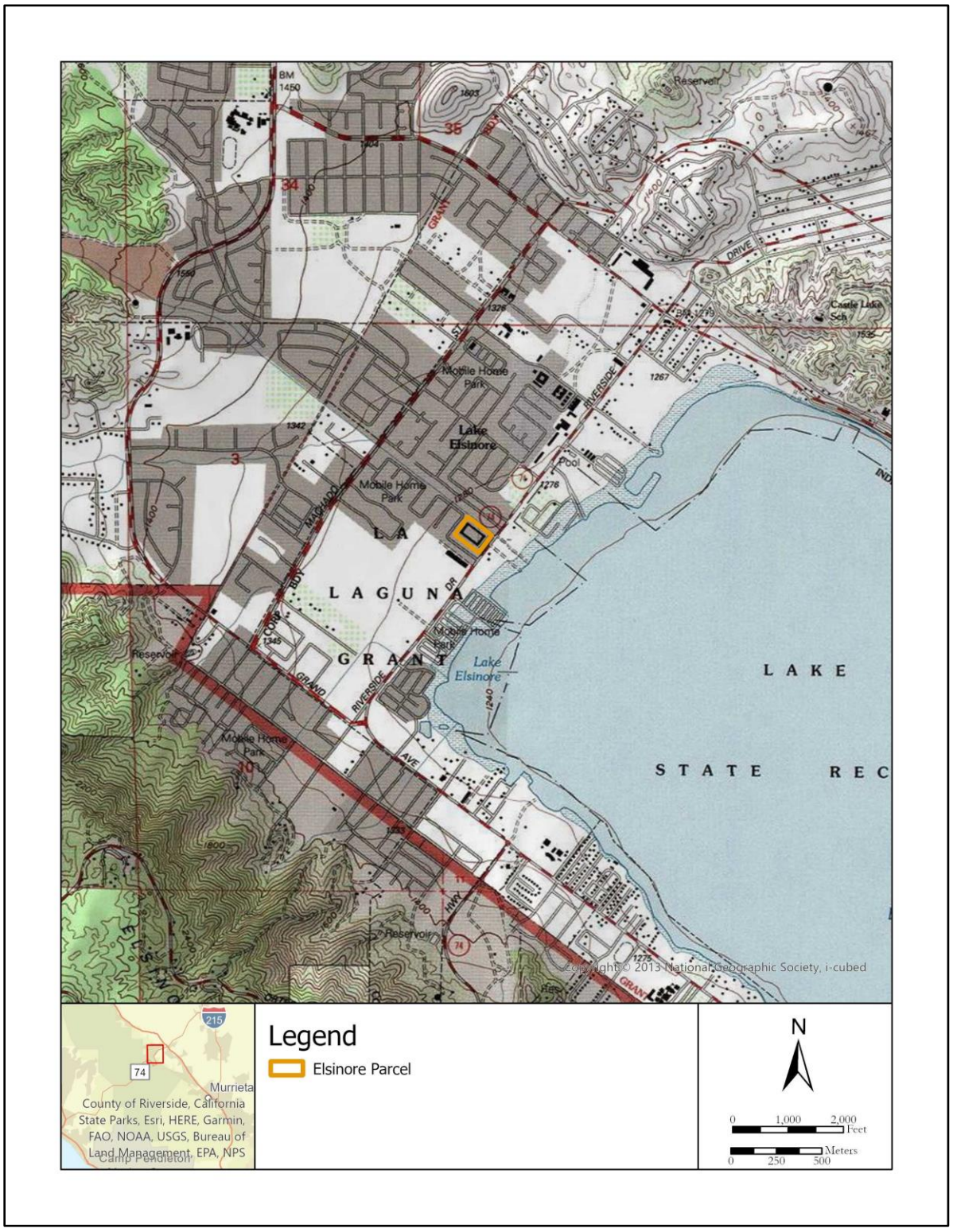
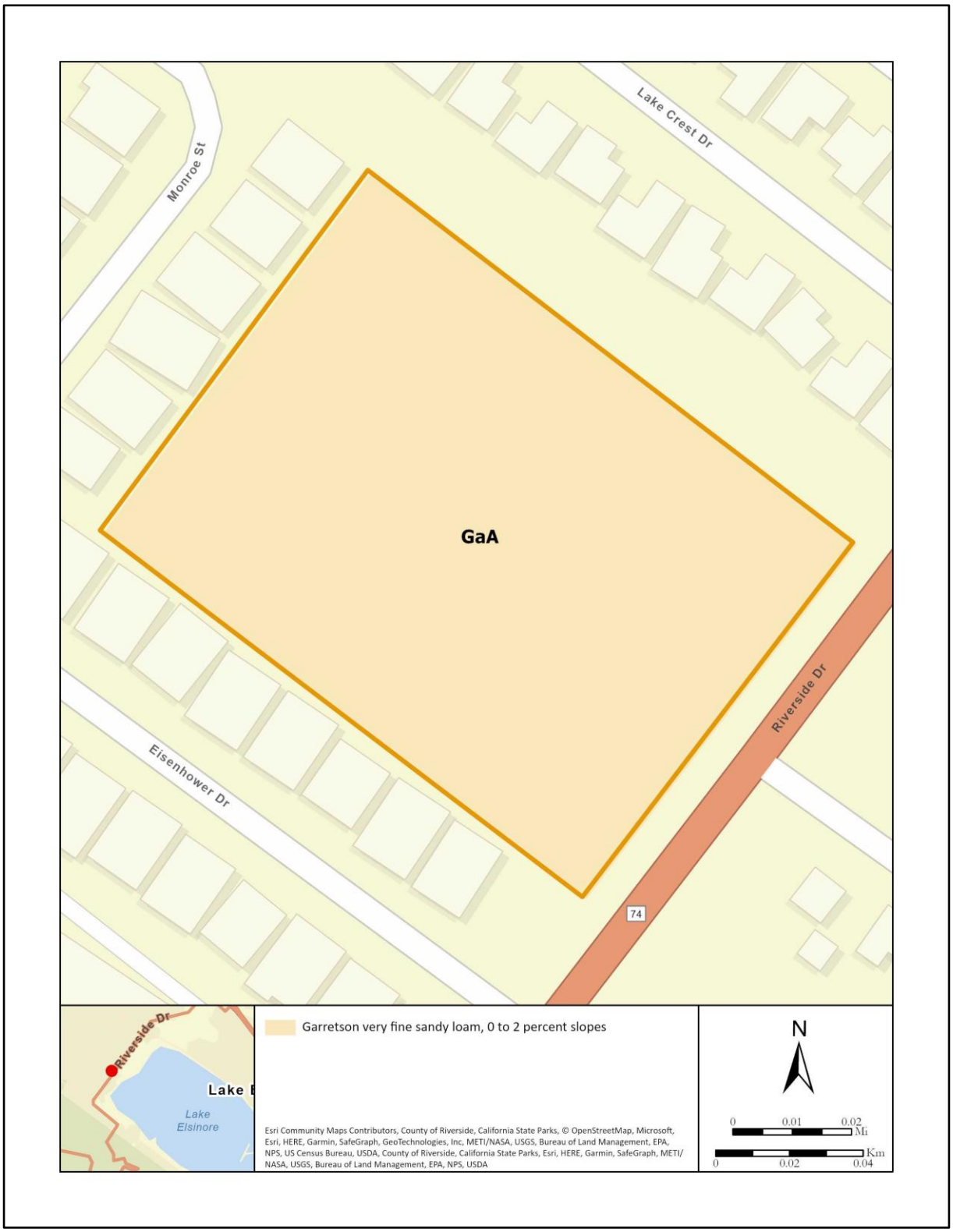


Figure 4. Property Soils



feet and formed in medium textured alluvium, dominantly from sedimentary formations.

This region gets 12 inches of rain per year and the number of days with any measurable precipitation is 33, which is generally consistent with comparable areas in Southern California. There are 276 sunny days per year here with a July elevated temperature around 98 degrees Fahrenheit and a January low of 36. Garretson soil is not considered hydric.

The project site is located approximately two (2) miles west of the nearest MSHCP-designated core and linkage areas and all construction is outside of existing roads and development.

2 METHODS

2.1 Background Analysis

BioCultural reviewed pertinent species records prior to undertaking field surveys. The analysis included a review of records from the following sources:

- A review of observations reported to the California Natural Diversity Database (2023);
- A review of collection records from participating herbaria in California available through the Consortium of California Herbaria, 2023;
- A review of documented occurrences of common and rare plants for California in Calflora, 2023;
- Species descriptions from the Jepson Online Interchange, 2023;
- Geological maps available from the US Geological Survey (i.e., Kennedy and Morton 2003);
- The Western Riverside County Multiple Species Habitat Conservation Plan (Dudek, 2003).
- Soils data from the Natural Resources Conservation Service and available from the Web Soil Survey, 2023; and,
- Aerial photographs from Google Earth, ESRI, Digital Globe, GeoEye, US Department of Agriculture, US Geological Survey, i-cubed, Aerogrid and Getmapping.

The background analysis yielded data that were compiled in a Geographic Information System (GIS) using ArcGIS Pro 3.1. These data were modified and uploaded to an ESRI mobile application for use in the field as reference and for collecting field data.

2.2 Field Surveys

Biologist Ricardo Montijo and field assistants Gregorio Pacheco and William Castillo conducted biological surveys on 21 June 2023.[1] Rainfall was above average before the survey: precipitation records date back to 2000, the 2022-2023 rainy season ended at 125% above normal (Table 1).

Table 1. Rainfall totals in inches for Water Year 2022-2023[2]

OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Water Year to Date	Percent Average to Date	Percent Total of Water Year
0.53	1.11	1.24	4.26	2.34	5.34	0.00	0.26	0.00	15.08	124	121

The biologist noted weather and site conditions, and recorded plants detected. Wildlife species were detected by observation and vocalization, as with birds. Plants not readily identified in the field were collected, pressed, and keyed out later. The day was clear and sunny. Weather peaked at approximately 86° Fahrenheit (F). The property was systematically surveyed by walking all accessible portions ensuring that all habitats were afforded sufficient coverage to be defensible and properly inventoried. The investigation team walked roughly parallel transects, oriented northwest to southeast and spaced approximately 5 to 12 meters. The greatest focus for rare plants was in areas likely to support target species.

Scientific nomenclature and common names of plants in this report follow Baldwin et al. (2012). Natural vegetation community descriptions would have followed Sawyer et al. (2009), but there were no native vegetation types.

A complete list of plants observed is included as Appendix A of this report. All plant nomenclature in this report follows Baldwin *et al.* (2012).

---

[1] The survey was conducted during the flowering season smooth tarplant (*Centromadia pungens* ssp. *laevis*), the plant most likely to occur on the site. Subsequent burrowing owl surveys overlapped the growing/flowering season for this species.

[2] WY = Water year. The water year starts on October 1 of the previous reference year and ends on September 30 of the reference year.

3 RESULTS

3.1 Site Conditions

3.1.1 Site and Adjacent Lands

The site is designated a Residential Mixed-Use area by the City of Lake Elsinore. Residences are visible to the north, west and across the channel to the east. The adjacent Leach Canyon channel is not part of the proposed project.

3.1.2 Vegetation

The site is disturbed and devoid of native vegetation and could be considered developed due to the prevalence of non-native invasive plants, non-native ornamental plants, and hardscape that covers nearly 100% of the site. Although BioCultural biologists and field surveyors were unable to determine its past use, aerial imagery from 1938, 1967, 1978, and 1985 suggests that the site was part of a large agricultural operation. Ornamental trees were planted around a courtyard and what appears to be a swimming pool is visible in historical aerial images of the property's southern portion..

3.1.2.1 Non-native Grassland

Non-native Grasslands occur where existing remnant concrete and asphalt are absent of plants, non-native species such as Russian thistle (*Salsola tragus*), short-pod mustard (*Hirschfeldia incana*), wall barley (*Hordeum murinum*), cheesebush (*Malva parviflora*), tumbleweed (*Amaranthus albus*), puncture vine (*Tribulus terrestris*), and salt cedar (*Tamarix ramosissima*) (Photographs 1 and 2). Mixed in with these species are non-native annual grasses such as ripgut brome (*Bromus diandrus*), slender wild oats (*Avena barbata*), stinknet (*Oncosiphon pilulifer*), prickly lettuce (*Lactuca serriola*), common groundsel (*Senecio vulgaris*), pokeweed (*Phytolacca americana*), and the native common fiddleneck (*Amsinckia intermedia*), rigid fiddleneck (*Amsinckia retrorsa*), and Jimsonweed (*Datura wrightii*).

Among these plants are ornamental plants like oleander (*Nerium oleander*), Mexican fan palm (*Washingtonia robusta*), lemon tree (*Citrus limon*), Chinese pistach (*Pistacia chinensis*), and walnut (*Juglans* cf *hindsii*, possibly *regia* x *hindsii*) (Photograph 3).

3.1.2.2 Developed/Landscaped

Developed and landscaped areas include those areas within the property which were previously cleared. They include a central concrete courtyard and possible pool (**Hardscape)**. Some invasive annuals and native herbs grow in these areas, including the non-native stinknet, red brome, red-stemmed filaree (*Erodium cicutarium*), and short-pod mustard (*Hirschfeldia incana*). Adjacent properties have red gum (*Eucalyptus camaldulensis*) commonly used for landscaping and as wind breaks throughout Riverside County and elsewhere in California.

3.1.3 Wildlife

The vegetation community and land cover types discussed above provide habitat for a limited number of wildlife species. Wildlife observed during the field survey consisted primarily of avian species typical of wildlife found in urban areas of Riverside County. Common birds observed on the site included native lesser goldfinch (*Spinus psaltria*), American crow (*Corvus brachyrhynchos*), house finch (*Haemorhous mexicanus*), mourning dove (*Zenaida macroura*), great tailed grackle (*Quiscalus mexicanus*), American kestrel (*Falco spaerverius*), American crow (*Corvus brachyrhynchos*), mourning dove (*Zenaida maroura*), northern mockingbird (*Mimus polyglottos*), Anna's hummingbird (*Calypte anna*), and house finch (*Haemorhous mexicanus*). European starling (*Sturnus vulgaris*), Eurasian collared dove (*Streptopelia decaocto*), and house sparrow (*Passer domesticus*) were non-native species found during the survey.

California ground squirrel (*Spermophilus beecheyi*) was the most commonly observed vertebrate species on the site. Side-blotched lizard (*Uta stansburiana*) was the only other vertebrate detected during the survey.

3.2 Sensitive Habitats

Sensitive habitats identified in the CNDDB (CDFW 2020) do not occur on the project site. There are also no aquatic features (streams, swales, ponds, ephemeral pools, or the like) on the project site and thus no areas of local, state, or federal waters/wetlands jurisdiction. The Leach Canyon Channel is located adjacent to (north and east of) the property. It is outside of the project boundary. As designed, the project site will drain water to adjacent properties and not directly

into the channel. The proposed site will be graded such that the runoff generated will continue to drain from north to south. BMPs will be designed to ensure that the implemented BMP will address their Design Capture Volume.

3.3 Sensitive Plants

Endangered, rare, or threatened plant species, as defined in Section 15380(b) of the CEQA Guidelines (14 CCR 15000 et seq.), are referred to as "special-status plant species" in this report and include endangered or threatened plant species recognized in the context of CESA and FESA (CDFW 2018b).

Appendix D summarizes special-status species reported in a query of CNDDB and CNPS Inventory for the USGS 7.5-minute quadrangle and the surrounding eight topographic quadrangles. For each species evaluated, a determination was made regarding the potential for the species to occur on the project site based on information gathered during the field reconnaissance, including the location of the site, habitats present, current site conditions, known range, habitat associations, preferred soil substrate, life form, elevation, and blooming period. Species that are either not expected to occur or have a low potential to occur are briefly discussed and are not analyzed further in this report.

3.4 Sensitive Wildlife

Sensitive wildlife species are those that are considered federally- or state- threatened or endangered. In addition, a wildlife species may be considered sensitive if it is included on the CDFW's Special Animals List (CDFW Natural Diversity Database 2023) as a candidate for federal or State listing, State Species of Special Concern, State Watch List species, State Fully Protected species, or federal Bird of Conservation Concern. Additionally, avian nesting species are considered sensitive as well, under the Migratory Bird Treaty Act (MBTA) and the California Fish and Game Code.

3.5 Preliminary Sensitive Species Analysis

The preliminary analysis of known and documented occurrences of the species evaluated in the study revealed populations of several sensitive species near the property (Figure 5 and Figures 5a

through 5i). The nine (9) quadrangle CNDDB search yielded a list of 51 sensitive plants and 61 rare animals. Many sensitive plants and animals have been documented within one mile of the project. Many more species are not likely to occur due to the absence of native or usable non-native habitats. The following summaries are for sensitive species likely to occur on the project site.

3.5.1 Plants

3.5.1.1 Smooth Tarplant

Smooth tarplant (*Centromadia pungens* ssp. *laevis*) is an annual herb that occurs in shadscale scrub, valley grasslands and vernal pools and playas with alkaline soils. It occurs from the central valley down to Baja California at elevation ranges from 90 to 500 meters (270 to 1640 feet). It blooms from April through September. Although it is not listed by the USFWS or the CDFW, it is designated List 1B.1 (rare, threatened, or endangered in CA and elsewhere) by the CNPS Inventory.

The site's soil and vegetation associations can support this species.

3.5.2 Wildlife

3.5.2.1 Cooper's Hawk

Cooper's hawk is often found in riparian woodlands near stream courses or other water. It is also found in residential areas with mature trees in the winter. The Cooper's hawk is a winter visitor over much of Southern California but nests locally infrequently. The breeding season for this species is typically between March and August, so the species is usually present from September to March, typically (Zeiner et. al. 1990). Where they nest, the nests are typically built-in woodlands or riparian areas and consist of a platform of sticks. Cooper's hawks will also sometimes use abandoned corvid nests (Ehrlich et. al. 1988). Cooper's hawks feed primarily on small birds and mammals.

Cooper's hawk is a permanent resident species of Lake Elsinore and has been detected in the Project Area. It could nest in the site's trees, although this is unlikely.

3.5.2.2 Southern California Legless Lizard

The Southern California legless lizard is a limbless wide-ranging lizard that occurs in loose sandy soils, from inland foothills to coastal dunes in coastal Southern California. The Southern California legless lizard can normally be found under detritus or leaf litter. It is nearly endemic to California ranging from the Coast, Transverse, and Peninsular Ranges to Baja California (Hunt 1983; Jennings and Hayes 1994). Based on the field investigation, suitable habitat is present throughout the site for this species.

3.5.2.3 Pallid Bat

Pallid bats are usually found in arid or semi-arid habitats, often in mountainous or rocky areas near water. They are also found over open, sparsely vegetated grasslands. They roost in cracks and crevices during the day, including tile roofs, exfoliating bark of trees, or rocky outcrops. At night, this species will often use a night roost that is closer to their foraging area.

The size of pallid bats varies greatly depending on their habitat. Bats in areas of low primary productivity, such as the desert, tend to be smaller due to less availability of resources. The bats that reside in areas with more primary productivity, such as coastal regions, tend to be on the larger side. Larger pallid bats also have craniums that allow them to eat larger and harder prey more easily.

Pallid bats may use on-site resources to roost or forage.

3.5.2.4 California Glossy Snake

The California glossy snake most commonly occurs in arid regions and prefers open sandy areas with scattered shrubs. This species also occurs in rocky areas. It occurs in chaparral, sagebrush, valley-foothill hardwood, pine-juniper, and annual grasslands. According to the CDFW, standing water is not an important habitat element for this species.

The California glossy snake subspecies is a habitat generalist that utilizes scrub and grassland habitats, often with loose or sandy soils. The site may serve as a habitat for glossy snakes moving through the area.

3.5.2.5 Burrowing Owl

Burrowing owls are small owls that prefer open grasslands, deserts, and agricultural fields. They are also found in areas with low vegetation such as airports, golf courses, and vacant lots. According to Audubon California, burrowing owls are found throughout the western United States to Southern California. They are known for their distinctive behaviors such as bobbing up and down when approached too closely and diving into their burrows rather than taking flight. Burrowing owls are also noteworthy because they mostly nest in holes in the ground made by fossorial mammals, as opposed to trees. They also readily use clay pipes, concrete pipe stands, and other manufactured features. Recent reports suggest that the population of burrowing owls is declining in California (Audubon California 2022).

Ground squirrel burrows and detritus present on the site may serve as suitable burrows for this species and BioCultural completed surveys for this species on the property with negative results (refer to attached report).

3.5.2.6 Red-diamondback Rattlesnake

The Red-diamondback Rattlesnake is a venomous snake that inhabits a wide range of habitats, including coastal foothills, desert slopes, and rocky canyons. It also inhabits lower woodlands and cultivated fields but avoids the desert floor and areas above 5,000 feet. The snake is mostly terrestrial and spends most of its time on the ground. It may hide in and under crevices in rocks and rodent burrows when it feels threatened and may only travel a couple of miles throughout its life.

The species occurs from the southwestern corner of California south to the tip of Baja California. It is easily recognized by its diamond-shaped markings, angular head, and the rattle at the end of its tail. The Red-diamondback Rattlesnake preys on rodents, squirrels, rabbits, lizards, and occasionally snakes.

There is a slight chance that this species uses the site as habitat.

3.5.2.7 Monarch Butterfly

The Monarch butterfly is known for its astonishing long-distance annual migration and reliance on milkweed as its larval host plant. It prefers central and southern California's warm, mild winters and does not fare well at temperatures below 50 degrees Fahrenheit. It clusters in groves of eucalyptus, Monterey cypress, or Monterey pines because the trees act as a blanket and umbrella during winter storms.

In California, monarchs are included on CDFW *Terrestrial and Vernal Pool Invertebrates of Conservation Priority* list and are identified as a "Species of Greatest Conservation Need in California's State Wildlife Action Plan." The CDFW has instituted numerous conservation programs, policies, laws, reserves, and habitat restoration projects throughout the state to facilitate the health and migration of the western population of the monarch butterfly.

The trees on the project site are probably not ideal for overwintering monarchs, but the site could still serve as foraging habitat.

3.5.2.8 San Bernardino Ringneck Snake

Ring-necked Snake, has a very wide range, occurring along the entire east coast of the United States west to the Great Lakes and southwest from there through the Midwest into Arizona, with scattered isolated populations throughout most of the western states including the western half of California, Oregon west of the Cascades, and south-central Washington (McGinnis 2022; Stebbins 2012).

It is unlikely that ring-necked snake makes extensive use of the site given the disturbed nature of the property. It is unlikely to be impacted by the project.

3.5.2.9 White-tailed Kite

The White-tailed Kite prefers to live near open areas including grasslands, open woodlands, fields, marshes, and savannas, where it can hunt small mammals. The bird is found in a wide variety of open habitats in North America, including open oak grassland, desert grassland, farm country, and marshes. The main requirements for this species are trees for perching and nesting

and open ground with high rodent populations. Records indicate the nearby confirmed presence of the species, and it could occur on the property.

3.5.2.10 California Horned Lark

The California horned lark is the dominant breeding race of horned lark in coastal California from San Diego County to Humboldt County. Horned larks are the only true larks in North America. They nest in sparse grasslands, avoiding dense scrub and become scarce and locally distributed in heavily forested areas (Garrett and Dunn 1981).

Infrequent, small patches (less than 15 feet of bare or nearly bare soil exist on the project site. Although the size of these patches is unlikely to support nesting habitat for them, California horned larks may forage on the site. Impacts to this species are unlikely.

3.5.2.11 Western Mastiff Bat

The Western Mastiff Bat is a species of bat that is found in the southwestern United States and Mexico. The bat has a wingspan of up to 20 inches and is known for its large ears. The bat's fur is brownish gray on the back and lighter on the belly.

The Western Mastiff Bat prefers arid habitats such as deserts, scrublands, and grasslands. It roosts in caves, mines, rock crevices, and buildings. The bat feeds on insects such as moths, beetles, and flies.

While this species may forage on the project site, it is unlikely to roost there. No impacts apart from potential foraging habitat loss are expected.

3.5.2.12 Yuma Myotis

The Yuma Myotis is a species of vesper bat native to western North America that occurs in a variety of western lowland habitats, from arid thorn scrub to coniferous forest, but always close to standing water such as lakes and ponds. When not close to a body of water, the Yuma Myotis can be found in colonies up to thousands roosting in caves, attics, buildings, mines, underneath bridges, and other similar structures.

This species may use the property as potential foraging habitat given its proximity to Lake Elsinore.

3.5.2.13 Western Spadefoot Toad

The Western Spadefoot Toad is found in California's Central Valley and adjacent foothills and in the Coast Ranges just south of Monterey County to northern Baja California, Mexico. It has been observed at elevations ranging from sea level to almost 4,600 feet. The habitat of the Western Spadefoot ranges from northern Baja California in Mexico to central California. In California, the Western Spadefoot is found in the Coastal Ranges south of Monterey County, the Central Valley and the Central Valley's adjacent foothills. Locally, they are known from Lake Elsinore and surrounding areas including documented occurrences in puddles adjacent to Riverside Drive, but there is no suitable habitat on the project site.

Figure 5. Special Status Species within the Site's Vicinity (a through i)

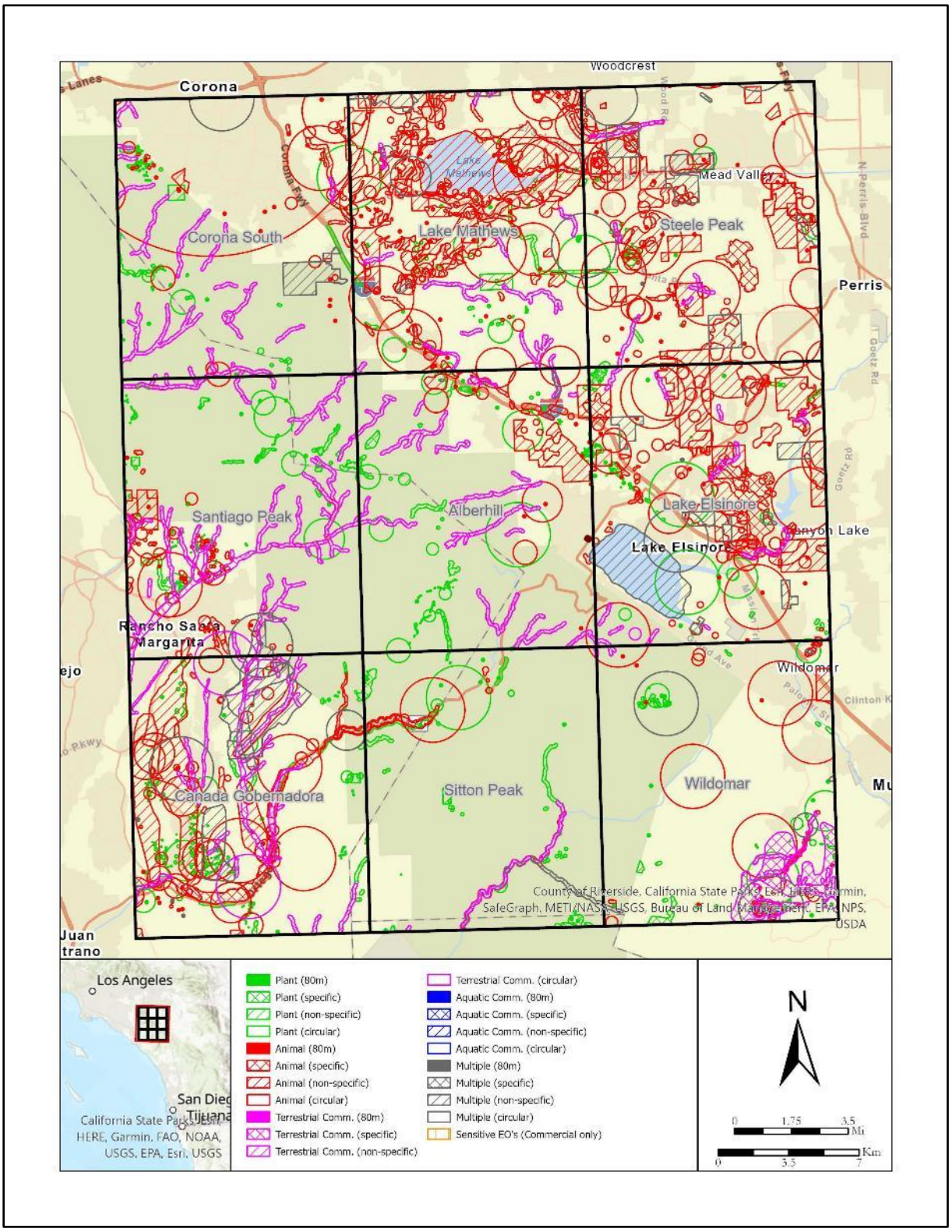


Figure 6a. Special Status Species within the Site's Vicinity (Corona South)

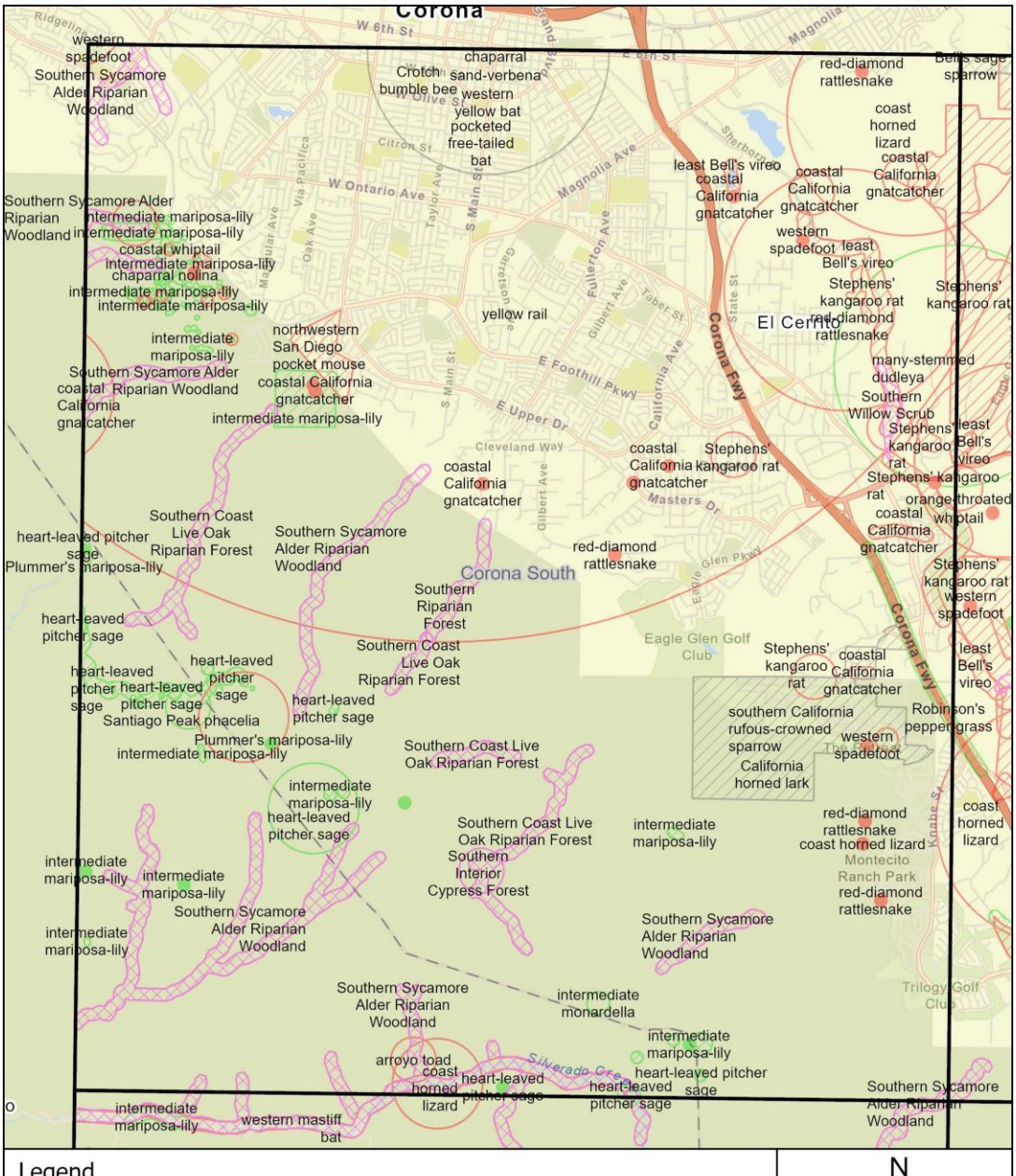


Figure 7b. Special Status Species within the Site's Vicinity (Lake Matthews)

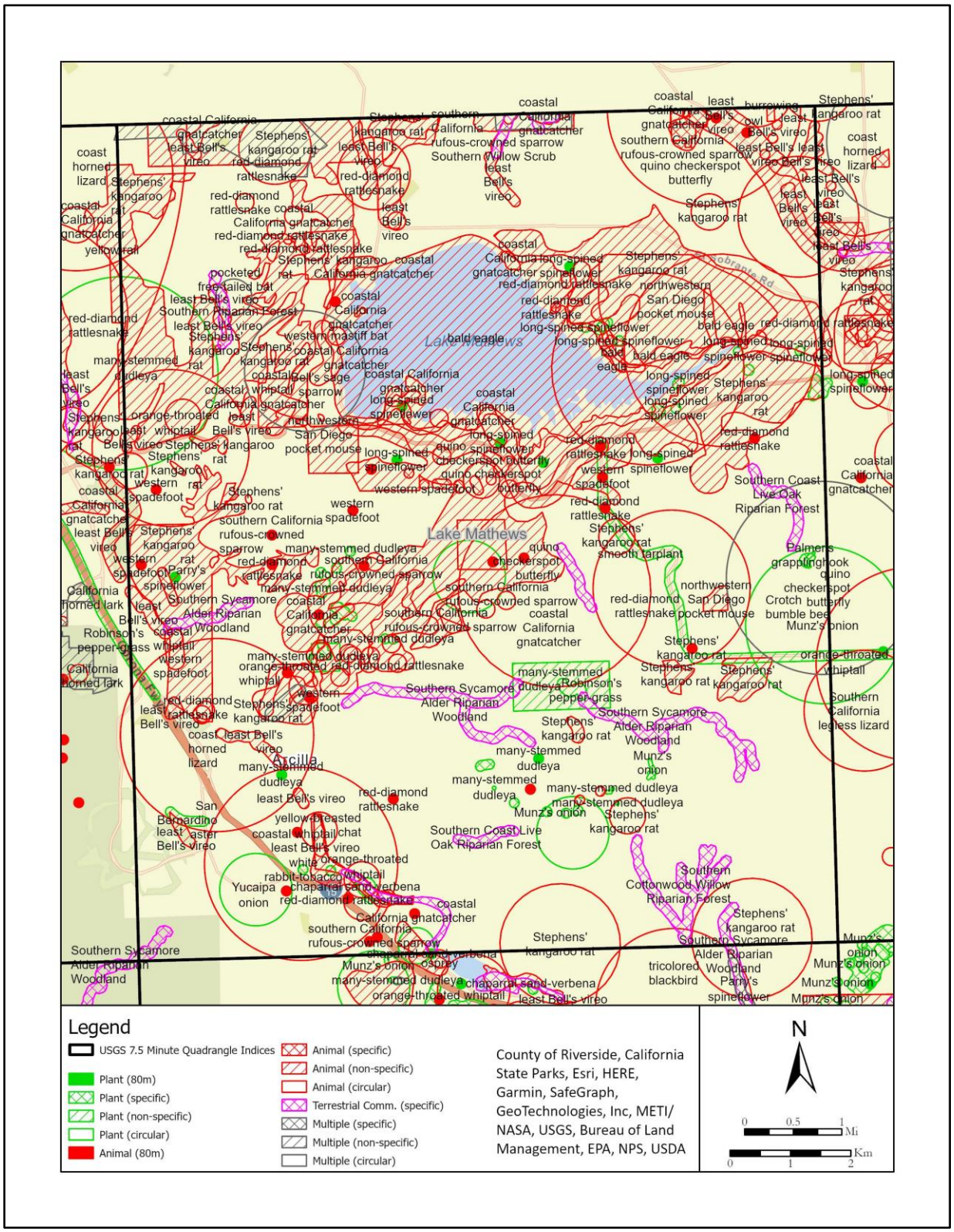


Figure 8c. Special Status Species within the Site's Vicinity (Steel Peak)

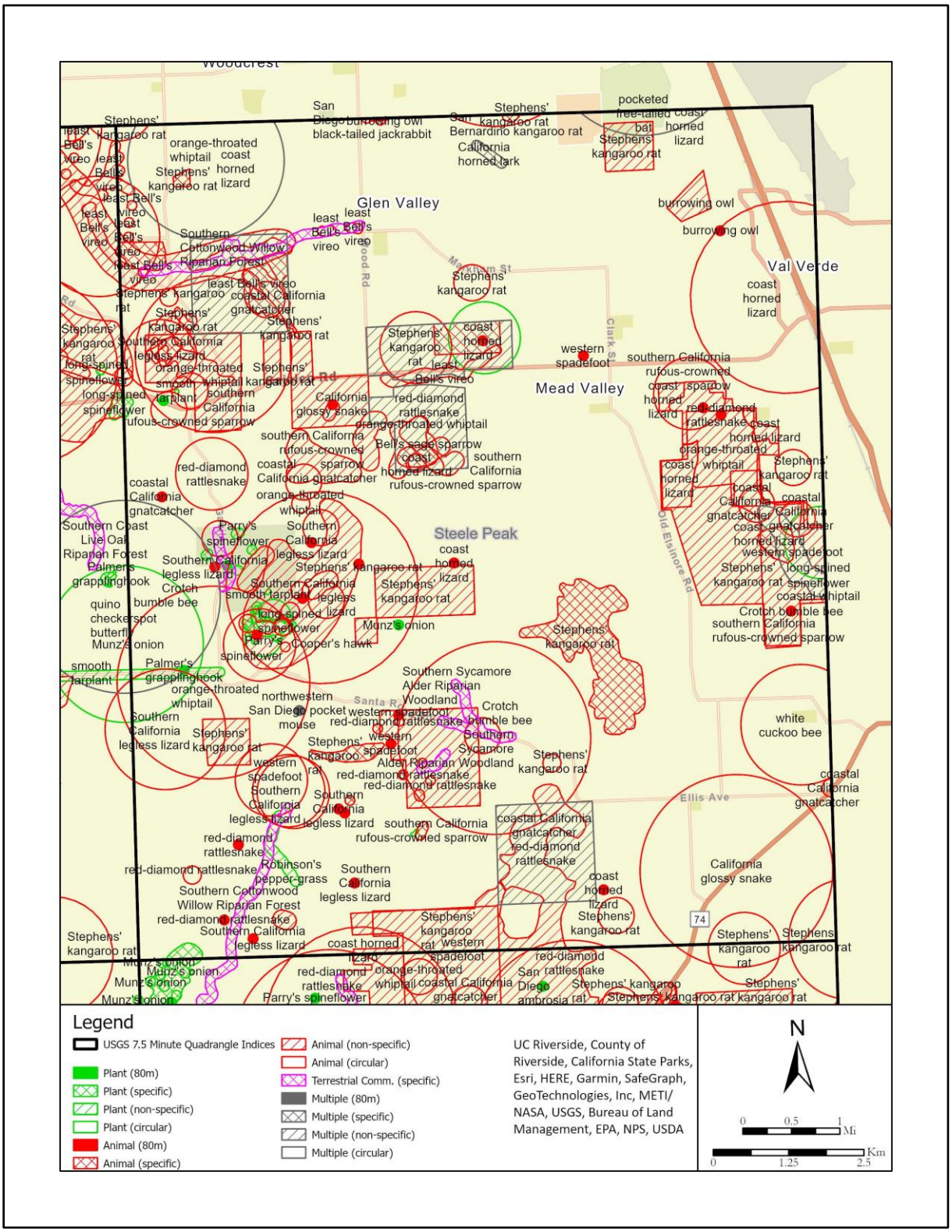


Figure 9d. Special Status Species within the Site's Vicinity (Santiago Peak)

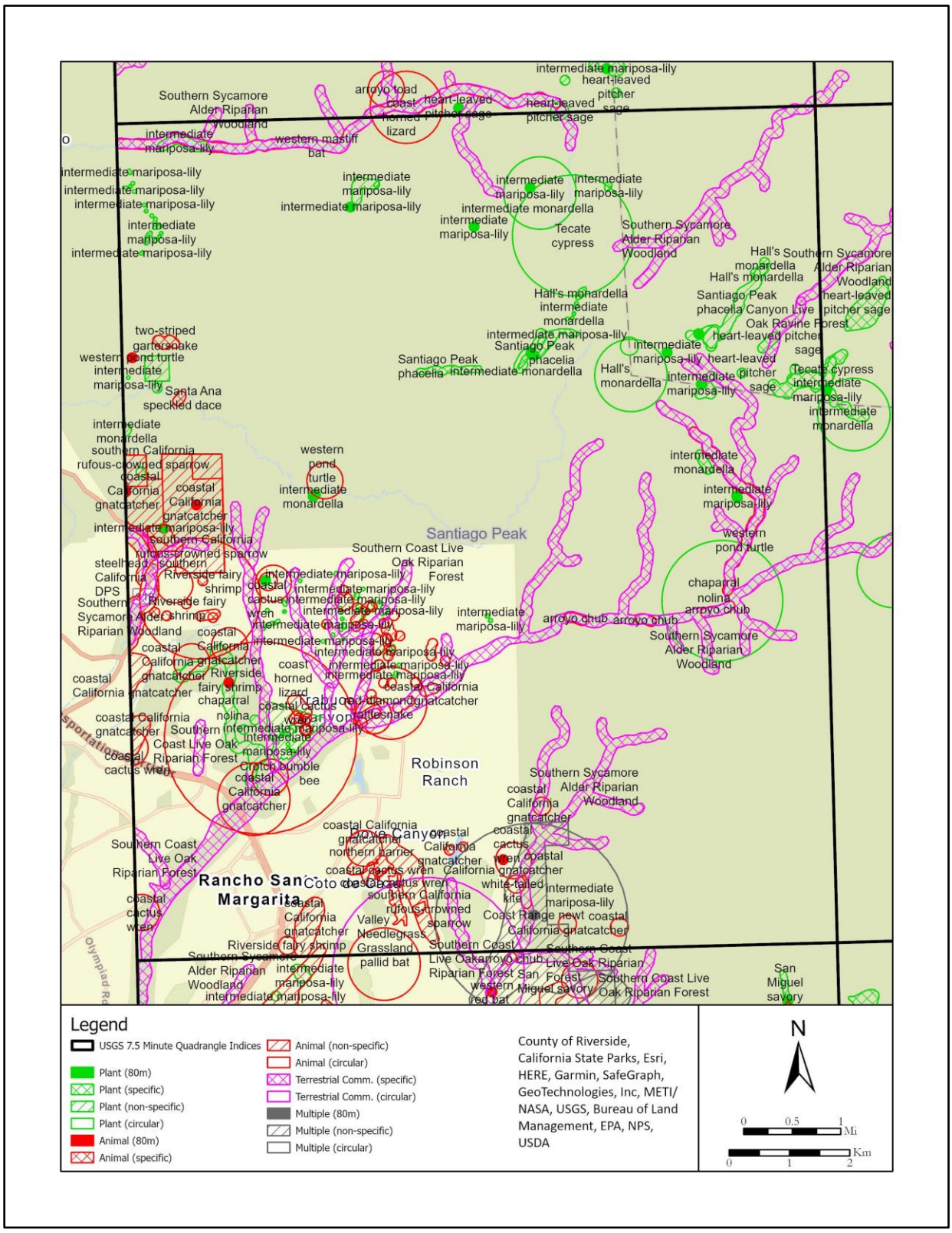


Figure 10e. Special Status Species within the Site's Vicinity (Alberhill)

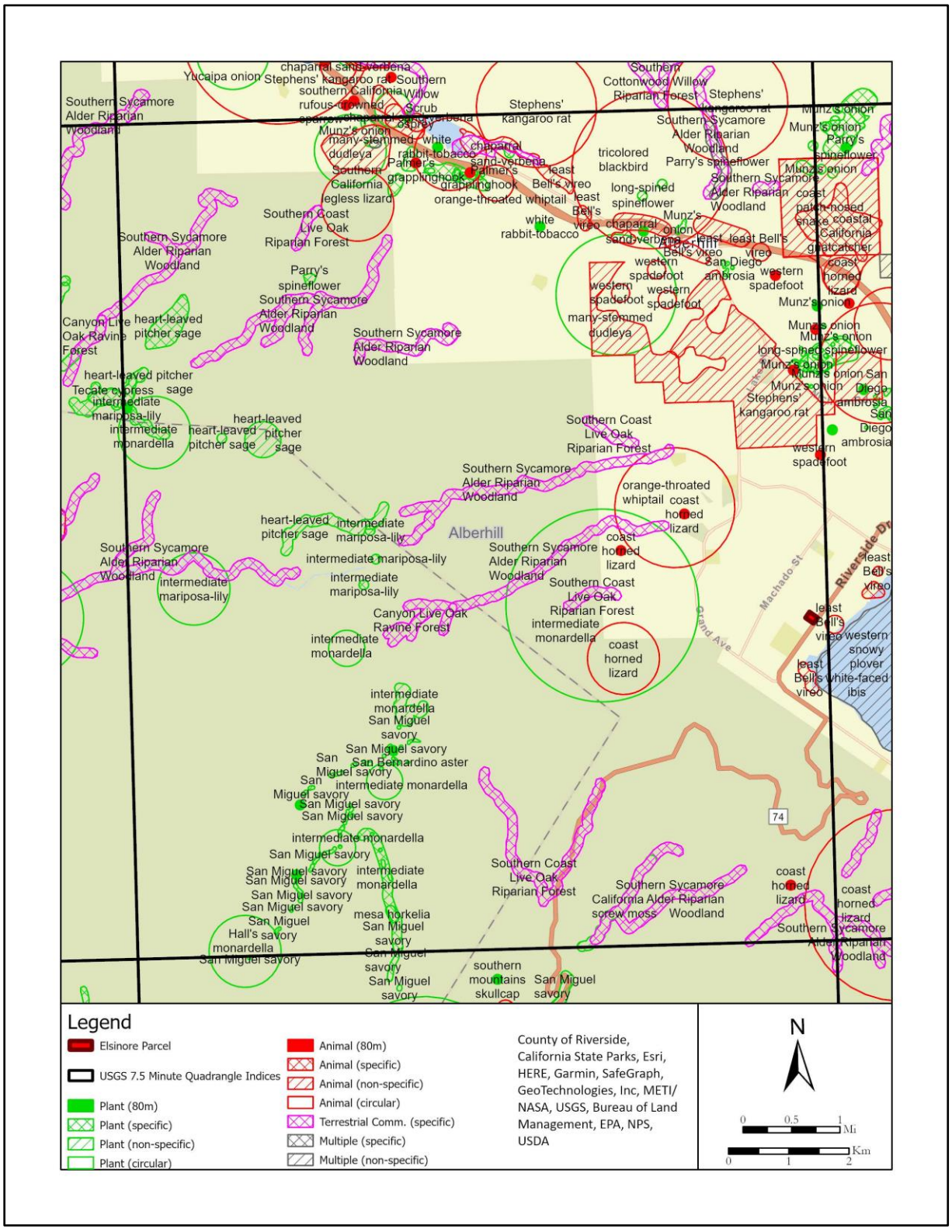


Figure 11f. Special Status Species within the Site's Vicinity (Lake Elsinore)

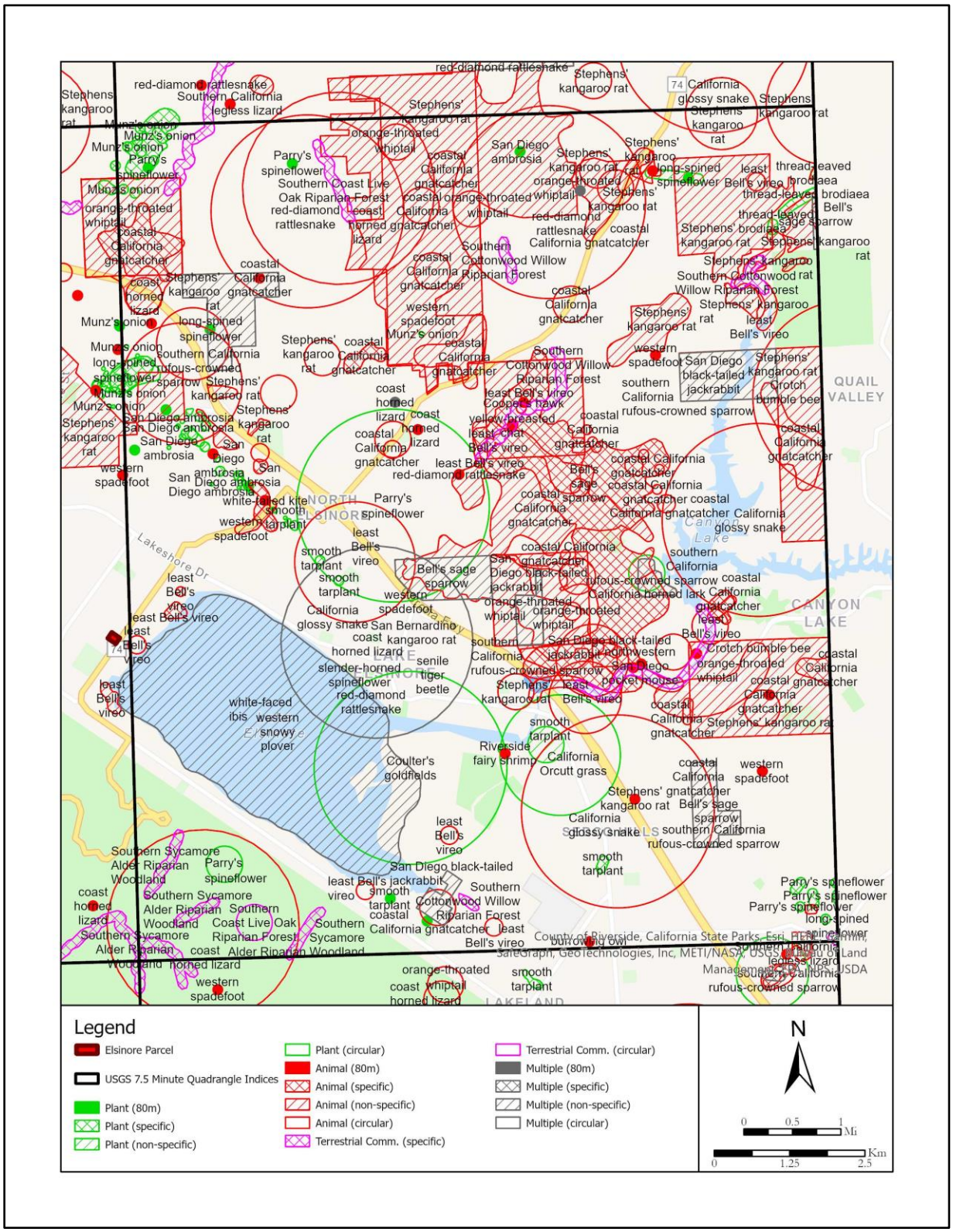


Figure 12g. Special Status Species within the Site's Vicinity (Cañada Gobernadora)

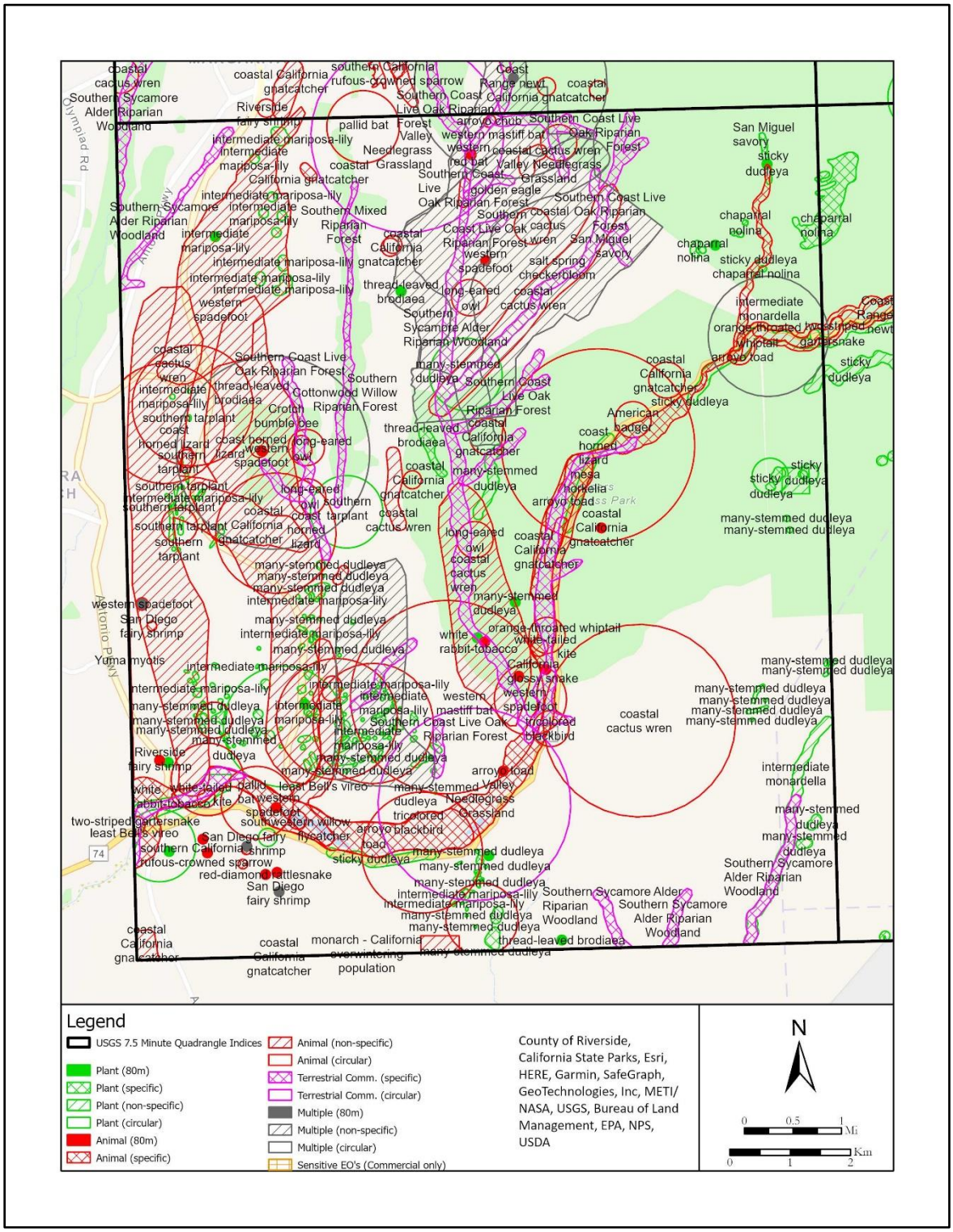


Figure 13h. Special Status Species within the Site's Vicinity (Sitton Peak)

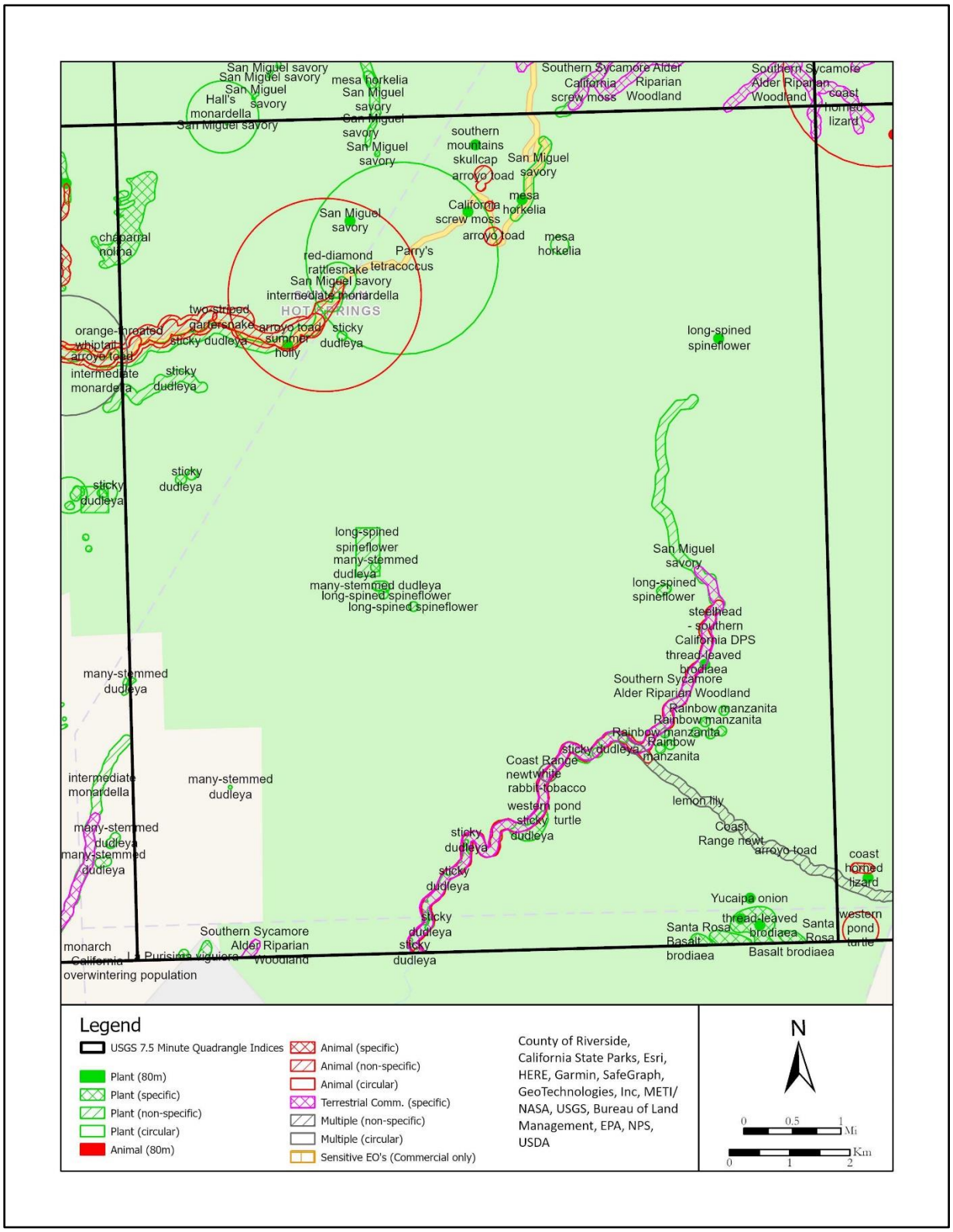
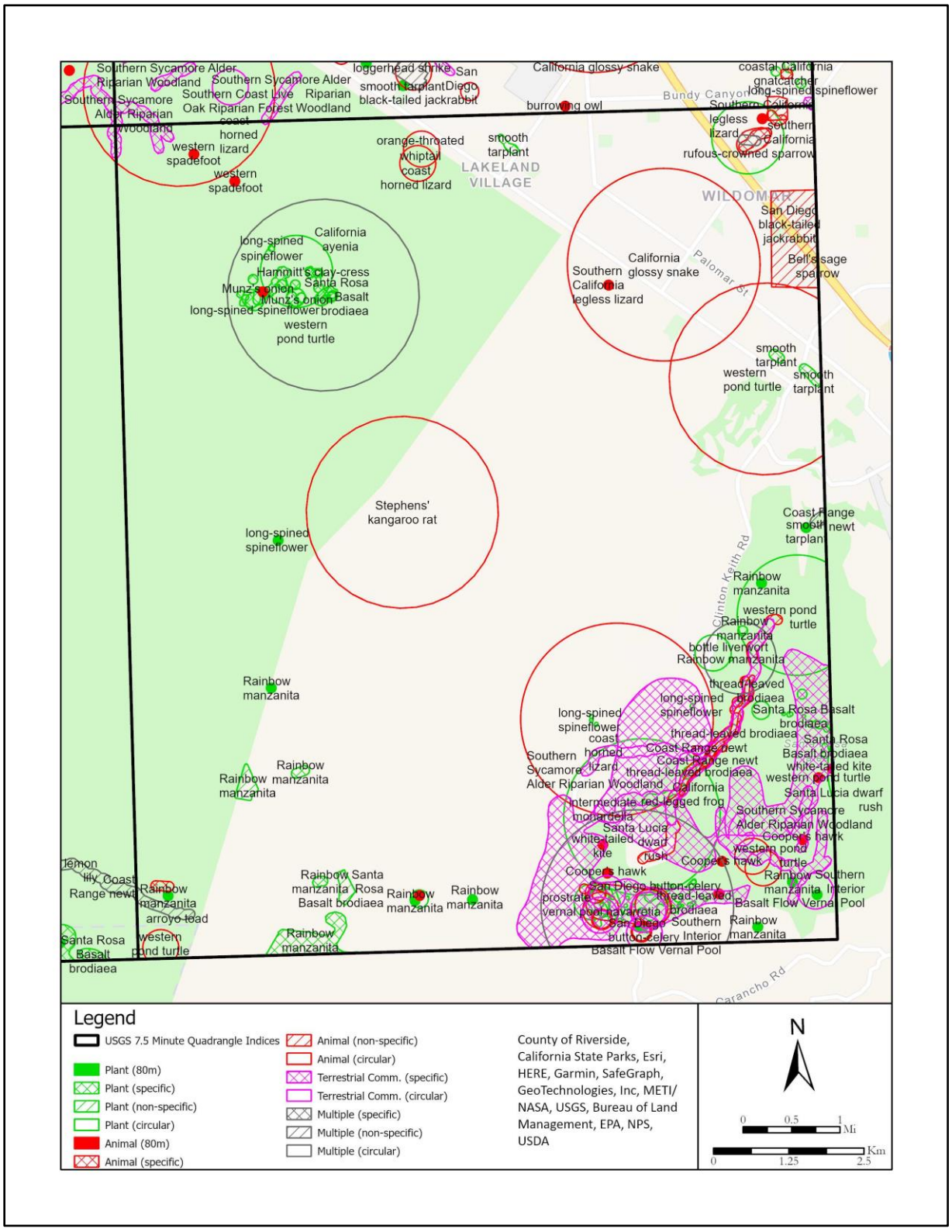


Figure 14i. Special Status Species within the Site's Vicinity (Wildomar)



3.5.3 Rare Species Findings

Of the plants considered for this project, only smooth tarplant was considered as possibly occurring on the site.

3.5.4 Rare Plants

The surveys were conducted in an above-normal rainfall year (see Table 1), although there is some suitable habitat for at least one rare species, smooth tarplant, on the list, it was not detected during the 2023 survey, despite the survey being conducted during the normal growing season for this species. A review of smooth tarplant reference populations near Wildomar and Murrieta showed that the plant was in flower when the surveys were conducted. Based on a review of historic aerial photographs, planted and invasive vegetation and hardscapes have likely modified the natural context of the site to the point where few natives occur as evidenced by the species lists and photographs, Appendices A and B, respectively. Further site visits for rare plants are deemed unnecessary given the site's condition.

3.5.5 Rare Wildlife

There were 13 sensitive and protected wildlife species that were determined to have the potential to occur on the project site. Their potential occurrences are summarized in Table 2,

Table 2. Rare species occurrence possibility based on data review and site survey.

Species	Occurrence
Cooper's Hawk	May occur and suitable nesting and foraging habitat exists.
Southern California Legless Lizard	May occur but is unlikely to have established and healthy populations.
Pallid Bat	May occur
California Glossy Snake	May occur but is unlikely to have established and healthy populations.
Burrowing Owl	May occur burrows and crevices occur on the property.
Red-diamondback Rattlesnake	May occur on the property as resident or transient.
Monarch Butterfly	May occur, most likely a transient through the property.
San Bernardino Ringneck Snake	May occur but is unlikely to have established and healthy populations.
White-tailed Kite	Unlikely to occur as a resident species.
California Horned Lark	Unlikely to occur as a resident species
Western Mastiff Bat	May Occur

Yuma Myotis	May Occur

4 MSHCP Consistency Analysis

Section 6 of the MSHCP requires a compliance review for all projects with plan policies pertaining to Riparian/Riverine resources, Criteria resources, Narrow Endemic Plant Species, urban/wildlands interface, and additional survey needs, as applicable.

4.1 Reserve Assembly Analysis

The project site is not within or adjacent to an MSHCP Criteria Cell. Acquisition of this property is not required for Reserve Assembly Analysis.

4.2 Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools

4.2.1 Riparian/Riverine Areas

Section 6.1.2 of the Western Riverside Multiple Species Habitat Conservation Plan (WR-MSHCP) focuses on Riparian/Riverine Resources Assessment Needs and Considerations. It outlines the importance of assessing riparian and riverine areas for their ecological functions and values, which are crucial for plan-listed species. Key factors to consider include hydrology, flood storage, nutrient retention, sediment trapping, and wildlife habitat.

According to the MSHCP, features are riverine if they are natural in origin even if past natural or have been heavily modified and/or redirected. They can include features indirectly created through human-made manipulation of the landscape, including channelization of a historic riverine feature. If these features connect to nearby downstream resources on either existing or described conservation lands they are considered riverine.

BioCultural staff did not detect aquatic features, including areas that could be or could have been considered riverine on the Project Site, which has been the subject of substantial human modification dating back to the 1930s when agricultural groves existed on the site based on a 1938 aerial photograph and the results of a literature review by BioCultural LLC (2023). Later, and up until the 1980s, the project site hosted a health spa (BioCultural LLC 2023).

4.2.2 Vernal Pools

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 wetlands indicators of hydrology and/or vegetation during the drier portion of the growing season." It goes on to explain that "Evidence concerning the persistence of an area's wetness can be obtained from its history, vegetation, soils, and drainage characteristics, uses to which it has been subjected, and weather and hydrologic records." Vernal pools do, in fact, have a unique flora and fauna that are distinct for seasonally-wetted depressions.

The site soil is Garretson fine sandy loam, a soil type not considered hydric by the Natural Resources Conservation Service (NRCS). This soil, therefore, does not support standing water or the development of pools or ponds. A review of aerial imagery shows no indication of surface water or soil saturation over multiple years and seasons. Further, the area would not be considered a "vernal pool" because indicator plant species such as woolly-marbles (*Psilocarphus brevissimus*), toad rush (*Juncus bufonius*), or watercress (*Crassula aquatica*) are not present. Plant species observed in the immediate area consist of many non-native and ruderal species such as Russian thistle (*Salsola tragus*), short-pod mustard (*Hirschfeldia incana*), wall barley (*Hordeum murinum*), cheesebush (*Malva parviflora*), tumbleweed (*Amaranthus albus*), and puncture vine (*Tribulus terrestris*), which are considered upland or facultative upland species.

4.2.3 Vernal Pool Fairy Shrimp

The Vernal Pool Fairy Shrimp (*Branchinecta lynchi*) is a freshwater crustacean found in California vernal pools associated with grasslands. When it was officially protected (1994) the vernal pool fairy shrimp was known from 32 populations. These populations stretched from Shasta County, California, south through the Central Valley to Tulare County and along the central coast range from northern Solano County to San Benito County with four additional populations in southern California.

Since the vernal pool fairy shrimp's listing, surveys of vernal pools and other temporary waters throughout the western United States have resulted in an increase in the shrimp's known range.

The vernal pool fairy shrimp is currently found in 32 counties across California's Central Valley, central coast, as well as southern California and Jackson County, in southern Oregon. The species lives in a variety of vernal pool habitats and occurs in 13 of the 17 vernal pool regions and 45 of the 85 core recovery areas identified in California and Oregon.

There are no ephemeral pools on the project site and, therefore, no habitat for this species.

4.2.4 Riverside Fairy Shrimp

Riverside fairy shrimp (*Streptocephalus woottoni*) generally live in vernal pools, and other non-vegetated ephemeral pools, that last brief periods of time. Riverside fairy shrimp are found in Ventura, Riverside, Orange and San Diego counties in California. The historical distribution also extended into Los Angeles County and northwestern Baja California, Mexico. The absence of pools and other ephemeral waters makes the Riverside fairy shrimp unlikely to occur on the Project site.

4.2.5 Santa Rosa Plateau Fairy Shrimp

Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*) is endemic to western Riverside County, where its habitat requirements (Dudek & Associates 2003). It is restricted to seasonal southern basalt flow vernal pools with cool, clear-to-milky waters that remain filled for extended periods of time (Thiery and Fugate 1994; Eriksen and Belk 1999). It is only known to occur on the Santa Rosa Plateau (Thiery and Fugate 1994; Eriksen and Belk 1999).

There is no suitable habitat for Santa Rosa Plateau Fairy Shrimp on the Project site.

4.3 Urban/Wildlands Interface Guidelines

Section 6.1.4 of the MSHCP presents guidelines intended to reduce the indirect effects of development on areas described for conservation. These guidelines must be considered when contemplating development within or near the criteria cells or other sensitive habitats, such as public/quasi-public reserves or other areas set aside for conservation purposes. The project site is not located within any MSHCP designated Criteria Cells or conservation areas; however, Leach Canyon Channel is part of Existing Core E as it is associated with Lake Elsinore.

The project proponent has developed a Project Specific Water Quality Management Plan for this project.[3] Measures incorporated in that plan:

- Incorporate measures to control the quantity and quality of runoff from the site entering the MSHCP Conservation Area.
- Are put in place to avoid discharge of untreated surface runoff from developed and paved areas into the MSHCP Conservation Area.

The Project design also includes design elements such as a berm and wall to physically separate the Project site from the Leach Canyon Channel.

4.4 Additional Survey Requirements

The requirements for conducting additional surveys as set forth in MSHCP Section 6.3.2 (i.e., burrowing owl and Criteria Area Plant Species). The project site is not located within a designated survey area for burrowing owl, Criteria Area Plant Species, or any other MSHCP designated taxon. Nevertheless, the proximity to past burrowing owl surveys and observations were considered and a burrowing owl was conducted. The survey details and results are included as an appendix to this report.

4.5 Riparian Birds

There is no riparian habitat in or adjacent to the property. Therefore, no riverine/riparian bird species are present or will use the site, and no impacts to these species or their habitat will occur.

[3] The Project Specific Water Quality Management Plan for the Riverside Drive Apartments, 32281 Riverside Dr. Lake Elsinore, CA, Development Number PWQMP 2024-0003 [Planning Application No. 2023-06 (Riverside Drive Apartments)] was approved on 30 July 2024.

5 Impacts and Recommendations

Direct, indirect, and cumulative impacts to biological resources could occur as a result of implementation of the project. Under the stipulations of CEQA, potential impacts to biological resources could be considered significant if actions are associated with the project:

- 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 CDFW or USFWS.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the CDFW or USFWS.
- Have a substantial adverse effect on federally protected wetlands as defined by
- Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- 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.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan.

The following discussion describes the project's potential to impact biological resources that may occur as a result of construction and operation of the project and includes recommended actions to minimize the impacts to a level that is less than significant.

5.1 Vegetation

Direct impacts as a result of construction activities associated with the project would include the permanent removal of vegetation communities that may function as habitat for both common and rare wildlife. Indirect impacts associated with construction of the project include fugitive dust and increased noise levels due to heavy equipment operations occurring in these areas. Indirect

impacts to habitat could include alteration to existing topographical and hydrological conditions, increased erosion and sediment transport, and the establishment of non-native and invasive weeds. Operational impacts include disturbances associated with increased human presence.

The current project design is anticipating 100 percent permanent impacts to all 4.95 acres of the project site. Common plant and wildlife species would be impacted by the project through the direct, permanent removal of 4.95 acres of non-native grassland.

The plant communities found within the proposed project are highly disturbed and widespread throughout the region. The project site was not found to support special-status plant species at the time of the biological surveys; therefore, the permanent removal of 4.95 acres of disturbed vegetation would be considered less than significant.

No impacts to plant communities and habitats would occur during the operational phase of the project.

5.2 Special-Status Plants

No special-status plants were observed during the biological surveys. While there is potential for at least one species (smooth tarplant) to occur, the survey was conducted during the time of year when that plant is flowering based on reconnaissance of nearby reference populations. Furthermore, as all operation-related activities are proposed to occur on previously disturbed areas, no impacts to special-status plants species are anticipated to occur during operation-related activities.

5.3 Special Status Wildlife

5.3.1 Reptiles and Amphibians

Although no sensitive reptiles and amphibians were found during the surveys, several special status reptiles could occur on the Project site, including Southern California legless lizard, California glossy snake, red-diamond rattlesnake, and San Bernardino ringneck snake. The elusive natural history of these species renders them particularly vulnerable to construction equipment, especially for California legless lizard. BioCultural LLC therefore recommends a pre-construction survey for these species.

5.3.2 Nesting Birds

Activities associated with construction of the project may potentially impact avian species such as nesting raptors, passerines, and other special-status bird species, including Cooper's hawk and burrowing owl. Construction activities could result in the direct loss of active nests of both common and special-status bird species (including raptors) or the abandonment of active nests as a result of noises and/or vibrations generated by temporary construction activities. The MBTA and the California Fish and Game Code (3503 and 3503.5) consider the loss of active nests (nests with eggs or young) of all native bird species as unlawful. Consequently, the loss or abandonment of nests of bird species as a result of construction-related activities has a significant impact and would violate state and federal laws. Impacts to nesting birds are potentially significant but can be prevented via pre-construction surveys and associated avoidance measures.

If construction occurs between February 1 and August 31 a qualified biologist will conduct a breeding bird survey no more than three days prior to the start of construction to determine if nesting is occurring.

If occupied nests are found, they shall not be disturbed unless the qualified biologist verifies through non-invasive methods that either (a) the adult birds have not begun egg-laying and incubation; or (b) the juveniles from the occupied nests are capable of independent survival.

If the biologist is not able to verify one of the above conditions, then no disturbance shall occur within a distance specified by the qualified biologist for each nest or nesting site. The qualified biologist will determine the appropriate distance in consultation with the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service**.**

5.3.3 Bats

Pallid Bat, Western Mastiff Bat and Yuma Myotis may occur onsite. BioCultural LLC recommends a pre-construction clearance survey, if necessary, to ensure no sensitive bats will be impacted due to project implementation.

5.4 Wildlife Corridors

There is no indication that the site is within an established core and linkage since the site is surrounded on all sides by development. Mapped corridors and linkages are greater than 9,000 feet northeast of the project site. The Leach Canyon Canal may serve to funnel wildlife to and from Lake Elsinore, but no project activities will occur there.

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APPENDIX A

Flora Observed

DICOTYLEDONS	
GYMNOSPERMAE	**GYMNOSPERMS**
Cupressaceae	**Cypress Family**
Cupressus sempervirens L. *	Italian Cypress
ANGIOSPERMAE	**ANGIOSPERMS**
Amaranthaceae	**Amaranthus Family**
Amaranthus albus L. *	Tumbleweed
Anacardiaceae	**Cashew Family**
Pistacia atlantica Desf. *	Mt. Atlas Mastic Tree
Pistacia chinensis Bunge *	Chinese Pistache
Schinus molle L. *	Peruvian Pepper
Apocynaceae	**Dogbane Family**
Nerium oleander L. *	Oleander
Asteraceae	**Sunflower Family**
Helianthus gracilentus A. Gray	Slender Sunflower
Lactuca serriola L *	Prickly Lettuce
Senecio vulgaris L. *	Common Groundsel
Sonchus asper (L.) Hill *	Spiny Sowthistle
Boraginaceae	**Borage Family**
Amsinckia intermedia Fisch. & C. A. Mey	Common Fiddleneck
Brassicaceae	**Mustard Family**
Hirschfeldia incana (L.) Lagr.-Fossat *	Short-pod Mustard
Sisymbrium irio L. *	London Rocket
Chenopodiaceae	**Goosefoot Family**

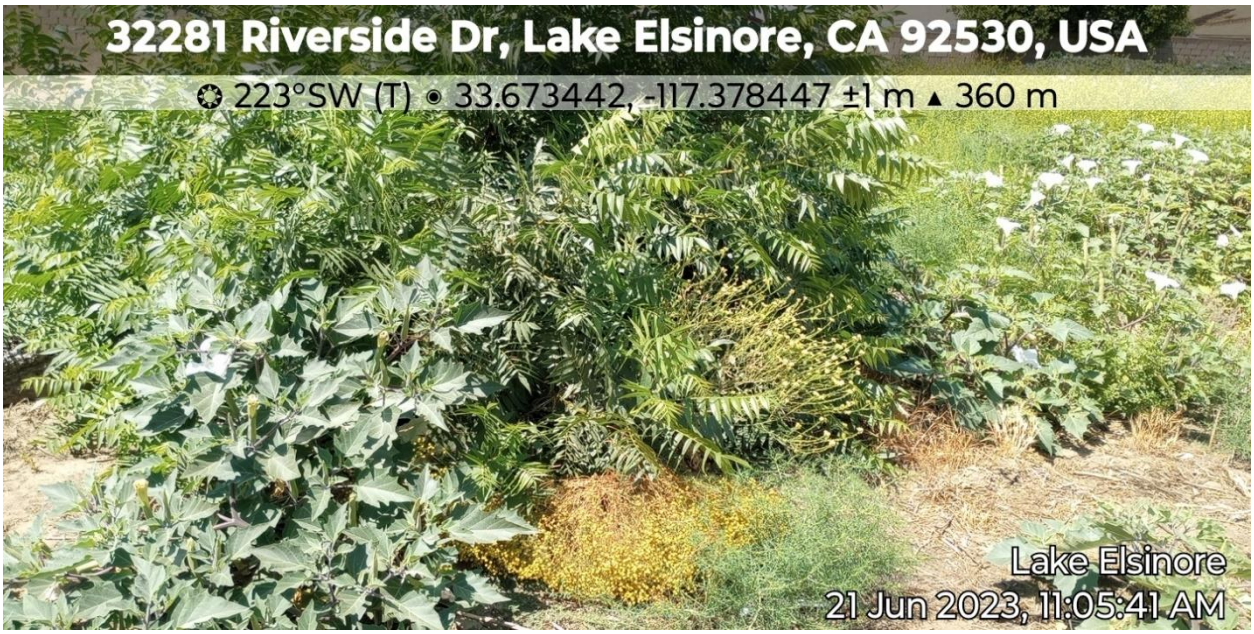
Salsola tragus L. *	Russian Thistle
Cucurbitaceae	**Cucumber Family**
Cucurbita palmata S. Watson	Coyote Melon
Euphorbiaceae	**Euphorb Family**
Euphorbia polycarpa Benth	Smallseed Sandmat
Geraniaceae	**Geranium Family**
Erodium cicutarium (L.) L'Hér. ex Aiton *	Redstemmed Filaree
Juglandaceae	**Walnut Family**
Juglans hindsii Jeps. ex R. E. Sm. (possible hybrid with next species)	Northern California Walnut
Juglans regia L. *	English Walnut
Malvaceae	**Mallow Family**
Malva parviflora L. *	Cheeseweed
Myrtaceae	**Myrtle Family**
Eucalyptus camaldulensis Dehnh. *	Red Gum
Onagraceae	**Evening Primrose Family**
Camissonia strigulosa (Fisch. & C. A. Mey.) P. H. Raven	Contorted Primrose
Phytolaccaceae	**Pokeweed Family**
Phytolacca americana L. *	American Pokeweed
Polygonaceae	**Buckwheat Family**
Polygonum aviculare L. *	Prostate Knotweed
Rutaceae	**Citrus Family**
Citrus limon (L.) Osbeck *	Lemon
Solanaceae	**Nightshade Family**
Datura wrightii Regel.	Jimsonweed
Solanum nigrum L. *	Black Nightshade
Zygophyllaceae	**Caltrop Family**
Tribulus terrestris L. *	Puncture Vine

MONOCOTYLEDONS	
Arecaceae	**Palm Family**
Washingtonia robusta H. Wendl *	Mexican Fan Palm
Poaceae	**Grass Family**
Avena barbata Pott ex Link *	Slender Oats
Bromus diandrus Roth *	Ripgut Brome
Bromus rubens L. *	Red Brome
Hordeum murinum L. *	Wall Barley
Phalaris aquatica L. *	Harding Grass
* Non-native Species	

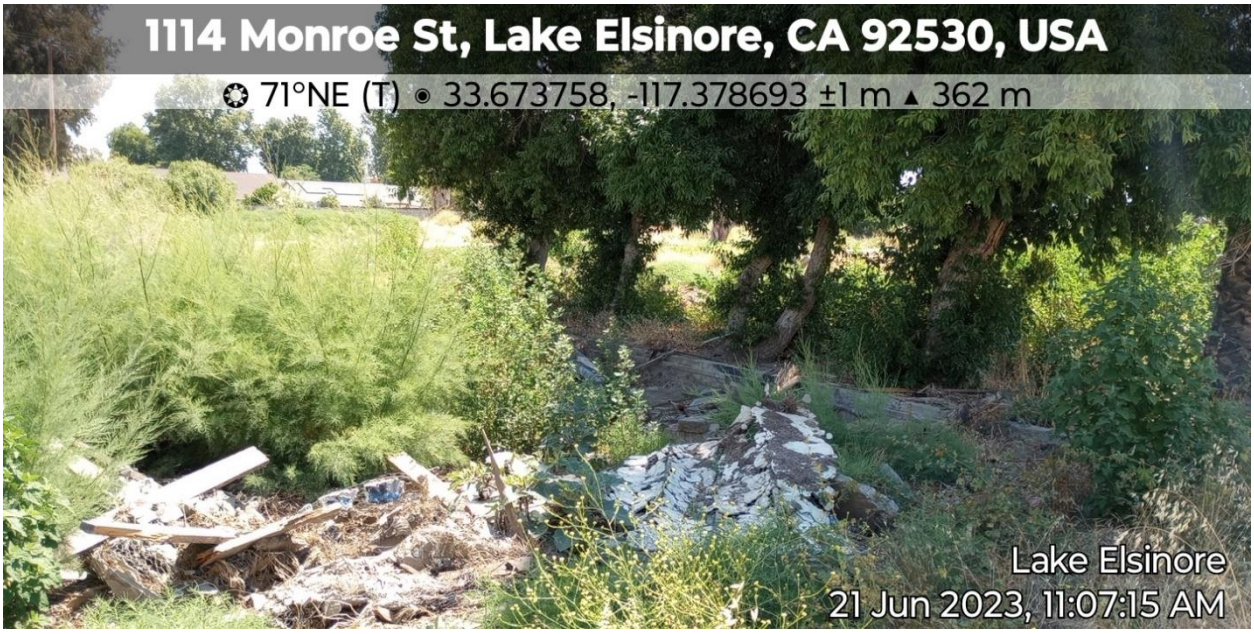
Wildlife	
Aves/Birds	
Columbidae	**Doves and Pigeons**
Columbia livia *	Rock Pigeon
Zenaida macroura	Mourning Dove
Corvidae	**Crows and Jays**
Corvus brachyrhynchos	American Crow
Falconidae	**Falcons**
Falco sparverius	American Kestrel
Fringilidae	**Finches**
Haemorhous mexicanus	House Finch
Spinus psaltria	Lesser Goldfinch
Icteridae	**Blackbirds**
Quiscalus mexicanus	Great-tailed Grackle
Mammalia/Mammals	
Sciuridae	**Squirrels**
Spermophilus beecheyi	California Ground Squirrel
* Non-native Species	

APPENDIX B

Site Photographs



Photograph 1. The above photograph, taken facing roughly southwest, shows the ground cover where vegetation is present and includes the non-native stinknet, Russian thistle, and wall barley, and the native Jimsonweed.



Photograph 2. This photograph faces northeast and shows a patch of tamarisk to the left.



Photograph 3. The above photograph, taken near the property's northern boundary, illustrates disturbed non-native grasslands with weedy species like these non-native bromes, oats, and Russian thistle. It also shows the walnut trees.



Photograph 4. Slender wild oats, Russian thistle, white tumbleweed and slender wild oats are visible in the east-facing photograph along the northern property edge. Note the residences to the left (north) of the property and the residential areas across the drainage channel in the background.



Photograph 5. A view of Leach Canyon Channel facing north from Riverside Drive. Photo source: Google 2023.

APPENDIX C

Regulatory Context

REGULATORY CONTEXTS

Federal

Federal Endangered Species Act

The federal Endangered Species Act (FESA) of 1973 (16 USC 1531 et seq.), as amended, is administered by the USFWS for most plant and animal species and by the National Oceanic and Atmospheric Administration National Marine Fisheries Service for certain marine species. This legislation is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend and provide programs for the conservation of those species, thus preventing the extinction of plants and wildlife. The FESA defines an endangered species as "any species that is in danger of extinction throughout all or a sizable 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 sizeable portion of its range." Under FESA, it is unlawful to "take" any listed species, and "take" is defined as, "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

FESA allows for the issuance of incidental take permits for listed species under Section 7, which is generally available for projects that also require other federal agency permits or other approvals, and under Section 10, which provides for the approval of Habitat Conservation Plans (HCPs) on private property without any other federal agency involvement.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC 703 et seq.), as amended, prohibits the intentional take of any migratory bird or any part, nest, or eggs of any such bird. Under the MBTA, "take" is defined as pursuing, hunting, shooting, capturing, collecting, or killing, or attempting to do so. In December 2017, Department of the Interior Principal Deputy Solicitor Jorjani issued a memorandum (M-37050) that interprets the MBTA's "take" prohibition to apply only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs. Unintentional or accidental take is not prohibited (DOI 2017). Additionally, Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, requires that any project with federal involvement address impacts of federal actions on

migratory birds with the purpose of promoting conservation of migratory bird populations (66 FR 3853–3856). The Executive Order requires federal agencies to work with USFWS to develop a memorandum of understanding. USFWS reviews actions that might affect these species.

Clean Water Act

The Clean Water Act (CWA) provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 401 requires a project operator for a federal license or permit that allows activities resulting in a discharge to waters of the U.S. to obtain state certification, thereby ensuring that the discharge will comply with provisions of the CWA. The RWQCB administers the certification program in California. Section 402 establishes a permitting system for the discharge of any pollutant (except dredged or fill material) into waters of the United States. Section 404 establishes a permit program administered by USACE that regulates the discharge of dredged or fill material into waters of the United States, including wetlands. USACE implementing regulations are found at 33 CFR 320 and 330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines, which were developed by the United States Environmental Protection Agency in conjunction with USACE (40 CFR 230). The guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

Wetlands and Other Waters of the United States

Aquatic resources, including riparian areas, wetlands, and certain aquatic vegetation communities, are considered sensitive biological resources and can fall under the jurisdiction of several regulatory agencies. USACE exerts jurisdiction over waters of the United States, including all waters that are subject to the ebb and flow of the tide; wetlands and other waters such as lakes, rivers, streams (including intermittent or ephemeral streams), mudflats, sandflats, sloughs, prairie potholes, vernal pools, wet meadows, playa lakes, or natural ponds; and tributaries of the above features. The extent of waters of the United States is generally defined as that portion that falls within the limits of the OHWM. Typically, the OHWM corresponds to the two-year flood event.

Wetlands, including swamps, bogs, seasonal wetlands, seeps, marshes, and similar areas, are defined by USACE as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[b]; 40 CFR 230.3[t]). Indicators of three wetland parameters (i.e., hydric soils, hydrophytic vegetation, and wetlands hydrology), as determined by field investigation, must be present for a site to be classified as a wetland by USACE (USACE, 1987).

State

California Endangered Species Act

The California Endangered Species Act (CESA) (California Fish and Game Code, Section 2050 et seq.) provides protection and prohibits the take of plant, fish, and wildlife species listed by the State of California. Unlike FESA, state-listed plants have the same degree of protection as wildlife, but insects and other invertebrates may not be listed. Take is defined similarly to FESA and is prohibited for both listed and candidate species. Take authorization may be obtained by the project applicant from the CDFW under the CESA Section 2081, which allows take of a listed species for educational, scientific, or management purposes. In this case, private developers consult with CDFW to develop a set of measures and standards for managing the listed species, including full mitigation for impacts, funding of implementation, and monitoring of mitigation measures.

California Fully Protected Species

Sections 3511, 4700, 5050, and 5515 of the Fish and Game Code outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. CDFW cannot issue permits or licenses that authorize the "take" of any fully protected species, except under certain circumstances, such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock. Furthermore, it is the responsibility of the CDFW to maintain viable populations of all native species. Toward that end, the CDFW has designated certain vertebrate species as Species of Special Concern, because declining

population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.

California Native Plant Protection Act

The Native Plant Protection Act of 1977 directed the CDFW to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The Native Plant Protection Act gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and protect endangered and rare plants from take. The CESA expanded on the original Native Plant Protection Act and enhanced legal protection for plants, but the Native Plant Protection Act remains part of the Fish and Game Code. To align with federal regulations, the CESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals into the act as threatened species but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered. Because rare plants are not included in the CESA, mitigation measures for impacts to rare plants are specified in a formal agreement between CDFW and the project proponent.

California Environmental Quality Act

California Environmental Quality Act (CEQA) requires identification of a project's potentially significant impacts on biological resources and ways that such impacts can be avoided, minimized, or mitigated. The act also provides guidelines and thresholds for use by lead agencies for evaluating the significance of proposed impacts.

CEQA Guidelines Section 15380(b)(1) defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors." A rare animal or plant is defined in Section 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or … [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act." Additionally, an animal or plant may

be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guidelines Section 15380(c).

CDFW has developed a list of "Special Species" as "a general term that refers to all of the taxa the California Natural Diversity Database (CNDDB) is interested in tracking, regardless of their legal or protection status." This is a broader list than those species that are protected under the FESA, CESA, and other Fish and Game Code provisions, and includes lists developed by other organizations, including for example the Audubon Watch List Species. Guidance documents prepared by other agencies, including the BLM Sensitive Species and USFWS Birds of Special Concern, are also included on this CDFW Special Species list. Additionally, CDFW has concluded that plant species included on the California Native Plant Society's (CNPS's) California Rare Plant Rank (CRPR) List 1 and 2, and potentially some List 3 plants, are covered by CEQA Guidelines Section 15380.

California Fish and Game Code § 1602

Under these sections of the California Fish and Game Code, the project operator is required to notify CDFW prior to any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. Pursuant to the code, a "stream" is defined as a body of water that flows at least periodically, or intermittently, through a bed or channel having banks and supporting fish or other aquatic life. Based on this definition, a watercourse with surface or subsurface flows that support or have supported riparian vegetation are a stream and are subject to CDFW jurisdiction. Altered or artificial watercourses valuable to fish and wildlife are subject to CDFW jurisdiction. CDFW also has jurisdiction over dry washes that carry water during storm events.

Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, CDFW is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement, which becomes part of the plans, specifications, and bid documents for the project.

California Wetland Definition

Unlike the federal government, California has adopted the Cowardin et al. (1979) definition of wetlands. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes (at least 50% of the aerial vegetative cover); (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and saturated with water or covered by shallow water at some time during the growing season of each year.

Under normal circumstances, the federal definition of wetlands requires all three wetland identification parameters to be met, whereas the Cowardin definition requires the presence of at least one of these parameters. For this reason, identification of wetlands by State agencies consists of the union of all areas that are periodically inundated or saturated or in which at least seasonal dominance by hydrophytes may be documented or in which hydric soils are present.

Section 401 Clean Water Act

Under Section 401 of the CWA, the local RWQCB, Santa Ana RWQCB, must certify that actions receiving authorization under Section 404 of the CWA also meet State water quality standards. The RWQCB requires projects to avoid wetland impacts, if feasible and requires that projects do not result in a net loss of wetland acreage or a net loss of wetland function and values. Compensatory mitigation for impacts to wetlands and/or waters of the State is required.

Porter-Cologne Water Quality Control Act

The RWQCB also has jurisdiction over waters deemed ‘isolated’ or not subject to Section 404 jurisdiction under the SWANCC decision. Dredging, filling, or excavation of isolated waters constitutes a discharge of waste to waters of the State and prospective dischargers are required to obtain authorization through an Order of Waste Discharge or waiver thereof from the RWQCB and comply with other requirements of Porter-Cologne Act.

APPENDIX D

Sensitive Species

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Plants			
Abronia villosa var. *aurita* Chaparral sand-verbena	None None None	1B.1	**Unlikely to occur.** This species occurs in sandy places in coastal-sage scrubs and chaparral. No such soil and vegetation occur on the property.
Allium marvinii Yucaipa onion	None None None	1B.2	**Does not occur.** Occurs on dry slopes and ridges, which are not present on the site.
Allium munzii Munz's onion	Endangered Threatened None	1B.1	**Does not occur.** Munz's onion occurs in wet clay soils in grassy openings in coastal-sage scrub. No suitable growing conditions exist on the site for this species.
Ambrosia pumila San Diego ambrosia	Endangered None None	1B.1	**Unlikely to occur**. San Diego Ambrosia is known from disturbed areas
Arctostaphylos rainbowensis Rainbow manzanita	None None None	1B.1	**Does not occur.** This species occurs in granitic outcrops within chaparral. No suitable growing conditions exist on the site.
Atriplex coronata var. *notatior* San Jacinto Valley crownscale	Endangered None None	1B.1	**Does not occur.** San Jacinto Valley crownscale is an annual herbaceous plant associated with alkaline-saline soils. It is limited to floodplains within the vicinity of San Jacinto, Perris, Menifee, and Elsinore Valleys in western Riverside County. No suitable growing conditions exist on the site for this species.
Atriplex coulteri Coulter's saltbush	None None None	1B.2	**Unlikely to occur.** Coulter's saltbush occurs in alkaline or clay soils, open sites, scrub, and coastal bluff scrub. No suitable growing conditions exist on the site for this species due to past land uses.
Ayenia compacta California ayenia	None None None	2B.3	**Does not occur.** A nearby 1929 record was probably misattributed to Lake Elsinore. The label for the record has a handwritten note that reads, "Doubtful; probably Palm Springs region. (Elsinore is not near the Colorado desert and taxon does not occur near Elsinore).
Brodiaea filifolia Thread-leaved brodiaea	Threatened Endangered None	1B.1	**Does not occur.** This species is associated with volcanic soils and occurs in grasslands and vernal pools. No suitable growing conditions exist on the site.
Brodiaea santarosae Santa Rosa Basalt brodiaea	None None None	1B.2	**Does not occur.** This species requires grasslands on soils derived from Santa Rosa basalt. Site conditions are not suitable for this species.

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Plants			
Calochortus plummerae Plummer's mariposa-lily	None None None	4.2	**Does not occur.** This species grows in dry, rocky chaparral in yellow pine forest. These vegetation types do not occur on the property.
Calochortus weedii var. *intermedius* Intermediate mariposa-lily	None None None	1B.2	**Does not occur.** This species occurs on dry, rocky, open slopes. These conditions do not exist on the property.
Centromadia parryi ssp. *australis* Southern tarplant	None None None	1B.1	**Does not occur.** This species is not known from Riverside County. The nearest known records are Orange and San Bernardino Counties.
Centromadia pungens ssp. *laevis* Smooth tarplant	None None None	1B.1	**May occur.** Smooth tarplant grows in open, poorly drained flats, depressions, waterway banks and beds, grassland, and disturbed sites. Reference populations were examined, and this species bloomed elsewhere under ample 2023 rainfall. It was not found on the project site.
Chorizanthe parryi var. *parryi* Parry's spineflower	None None None	1B.1	**Unlikely to occur.** This species grows in coarse and medium sand substrates, but the substrates on the property were fine sandy loams.
Chorizanthe polygonoides var. *longispina* Long spined spineflower	None None None	1B.2	**Unlikely to occur.** This species occurs in sandy and gravelly soil, mixed grassland, chaparral, and pine-oak woodlands
Clinopodium chandleri San Miguel savory	None None None	1B.2	**Does not occur.** Although the species repeatedly turns up on rare species lists throughout Western Riverside, the nearest confirmed population is in the Santa Ana Mountains along creek side trails on stream-facing slopes. Nearby records collected by amateurs include Temescal Canyon, but these have not been verified.
Comarostaphylis diversifolia ssp. *diversifolia* summer holly	None None None	1B.2	**Does not occur.** Summer holly is a perennial shrub that grows in chaparral. This species was not detected during the surveys.
Dodecahema leptoceras slender-horned spineflower	Endangered Endangered None	1B.1	**Does not occur.** Slender-horned spineflower is a small, annual herb that grows in sand or gravel. The closest, extant records of this species are north in Temescal Canyon, but the optimal conditions for this species are not present on the site.
Dudleya multicaulis many-stemmed dudleya	None None None	1B.2	**Does not occur.** This species has been collected in a wide variety of habitats but primarily in coastal scrub, and chaparral. This

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Plants			
			species normally occurs on steep granitic canyon walls, although they have also been found in other habitats including recently burned areas. It was not detected on the project site during the survey.
Dudleya viscida sticky dudleya	None None None	1B.2	**Does not occur.** This species is on bluffs and rocky cliffs. The site conditions are not suitable for this species.
Eryngium aristulatum var. *parishii* San Diego button-celery	Endangered Endangered None	1B.	**Does not occur.** San Diego button celery grows in vernal pools. There are no suitable growing conditions on the property.
Geothallus tuberosus Campbell's liverwort	None None None	1B.1	**Does not occur.** This liverwort grows in moist coastal scrub habitat and vernal pools. There are no suitable growing conditions for this species on the property.
Harpagonella palmeri Palmer's grapplinghook	None None None	4.2	**Does not occur.** This species grows in open sites in chaparral, coastal scrub, grassland, often on clay soils, and such conditions do not exist on the project site.
Hesperocyparis forbesii Tecate cypress	None None None	1B.1	**Does not occur.** The Tecate Cypress is a relict perennial species from a time when southern California's climate was cooler and wetter. It survives in a few, isolated locations in Los Angeles, Orange, Riverside and San Diego Counties, as well as northern Baja. It depends on intermittent fire for reproduction, but frequent fires can kill seedlings and threaten the survival of the species. This species was not detected during the survey.
Horkelia cuneata var. *puberula* Mesa horkelia	None None None	1B.1	**Does not occur.** Mesa horkelia is a perennial herb found in chaparral, cismontane woodland, and coastal scrub. It grows on sandy or gravelly soils.
Imperata brevifolia California satintail	None None None	2B.1	**Does not occur.** California satintail is a perennial rhizomatous herb. Found in meadows and seeps (often alkaline conditions) in chaparral, coastal scrub, Mojavean desert scrub and riparian scrub. The conditions on the site vary from this species' preferred conditions.
Juncus luciensis Santa Lucia dwarf rush	None None None	1B.2	**Does not occur.** Santa Lucia dwarf rush grows in wet, sandy soils of seeps, meadows, vernal pools, streams, and roadsides. The closest observation is to the southwest in the vernal pools of Mesa de Burro. The site

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Plants			
			conditions are not suitable for this species.
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	None None None	1B.1	**Does not occur.** Coulter's goldfields are present in wet and mesic meadows, vernal pools, and saline soils. There are no suitable growing conditions for this species on the property.
Lepechinia cardiophylla heart-leaved pitcher sage	None None None	1B.2	**Does not occur.** The heart-leaved pitcher sage is a shrub that grows in chaparral. This species was not detected during the survey.
Lepidium virginicum var. *robinsonii* Robinson's pepper-grass	None None None	4.3	**Does not occur.** Robinson's peppergrass is an annual herb that blooms January to July and is associated with chaparral and coastal scrub habitats from 55 to 770 meters elevation (Baldwin et al. 2012, CNPS 2020).
Lilium parryi Lemon lily	None None None	1B.2	**Does not occur.** Lemon lily is known from wetlands at elevations greater than those present on the site (greater than 5,500 feet). In California, it is currently known from the San Bernardino and San Gabriel Mountains and a few remaining spots near Palomar Mountain to the south. It is not known from the project vicinity.
Limnanthes alba ssp. *parishii* Parish's meadowfoam	None Endangered None	1B.2	**Does not occur.** Parish's meadowfoam grows in wet meadows and along stream edges. No such conditions exist on the property.
Monardella hypoleuca ssp. *intermedia* Intermediate monardella	None None None	1B.3	**Unlikely to occur.** The fragrant intermediate monardella is a rhizomatous herb that occurs in chaparral or cismontane woodlands on rocky, granitic slopes. It blooms from June to August at elevations from 1,000 to 3,600 feet amsl. There are no suitable growing conditions for this species on the property.
Monardella macrantha ssp. *hallii* Hall's monardella	None None None	1B.3	**Does not occur.** Hall's monardella grows in wet meadows and along stream edges. No such conditions exist on the property.
Myosurus minimus ssp. *apus* Little mousetail	None None None	3.1	**Does not occur.** This annual herb that occurs in Northern Claypan, Northern Hardpan, San Diego Mesa, San Jacinto Valley, and Santa Rosa Plateau vernal pool types. Most of the occupied vernal pools occur within coastal sage scrub, chamise chaparral, or annual and perennial grasslands. It occasionally grows in other types of depressions that hold water seasonally and in

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Plants			
			alkaline marshes. No such conditions occur on the project site.
Nama stenocarpa mud nama	None None None	2B.2	**Does not occur.** Mud nama is an annual herb that occurs in muddy places in the Central and Imperial Valleys, Los Angeles, Orange, Riverside and San Diego counties and into Baja California. The species' range extends from the Colorado Desert to Texas. It grows from near sea level to over 1,600 feet. The project site has no suitable growing conditions for this species.
Navarretia prostrata Prostrate vernal pool navarretia	None None None	1B.2	**Does not occur.** Prostrate navarretia occurs in vernal pools, ditches, and other depressions from 30 to 1300 meters (100 to 4300 feet). This diminutive, white-flowered herb is dependent on the ephemeral inundation cycle found in vernal pools and playas but may also occur in human-caused depressions with similar hydrological conditions. It grows to six (6) inches and normally flowers after the inundation period, typically between May and June. It is absent due to the absence of suitable growing conditions.
Nolina cismontana Chaparral nolina	None None None	1B.2	**Does not occur.** Chaparral nolina is primarily found on gabbro soils in dry chaparral of coastal mountains. It occurs southeast of the project site and at higher elevations.
Orcuttia californica California Orcutt grass	Endangered Endangered None	1B.1	**Does not occur.** This species occurs in vernal pools. It is not present due to the absence of suitable growing conditions.
Phacelia keckii Santiago Peak phacelia	None None None	1B.3	**Does not occur.** This species occurs in open chaparral. It is not present due to the absence of suitable growing conditions.
Pseudognaphalium leucocephalum White rabbit-tobacco	None None None	2B.2	**Does not occur.** White rabbit-tobacco grows in riparian woodland, cismontane woodland, coastal scrub, and chaparral. No suitable growing conditions for this species occur on the site.
Scutellaria bolanderi ssp. *austromontana* Southern mountains skullcap	None None None	1B.2	**Does not occur.** This species occurs in chaparral, cismontane woodland, lower montane, and coniferous forest. No suitable growing conditions for this species occur on the site.

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Plants			
Sibaropsis hammittii Hammitt's clay-cress	None None None	1B.2	**Does not occur.** This species is known from two locations in the Peninsular Ranges. It occurs in the Santa Ana Mountains of Riverside County and Viejas Mountain and nearby peaks east of San Diego. It grows in grassy openings in chaparral alongside purple needlegrass (*Nassella pulchra*), generally in moist areas in heavy clay soils. No suitable growing conditions exist for this species.
Sidalcea neomexicana Salt spring checkerbloom	None None None	2B.2	**Does not occur.** This species is known from wet meadows and streamsides in moist usually strongly alkaline soils. No suitable growing conditions for this species occur on the site.
Sphaerocarpos drewiae Bottle liverwort	None None None	1B.1	**Does not occur.** Bottle liverwort is endemic to California, where it is known from San Diego and Riverside Counties. It grows in shady spots in coastal sage scrub habitat and is associated with another rare endemic liverwort, *Geothallus tuberosus*.
Symphyotrichum defoliatum San Bernardino aster	None None None	1B.2	**Does not occur.** San Bernardino aster is an annual that grows on interior sand dunes and sandy soils near Colton and within Riverside and San Bernardino counties at elevations from 1,000 to 1,400 feet. There are no occurrences of this species near Lake Elsinore.
Tetracoccus dioicus Parry's tetracoccus	None None None	1B.2	**Does not occur.** This shrub grows on dry slopes, in coastal sage scrub and chaparral at elevations of 540 to 3,300 feet. Occurs on gabbro soils. Usually in xeric conditions. Its flowering period is from April to May, but it is identifiable all year by foliage. The site does not support suitable growing conditions for this species.
Texosporium sancti-jacobi Woven-spored lichen	None None None	3	**Unlikely to occur.** Woven-spored lichen occurs in semi-arid to arid habitats on lithosols (skeletal soils) and is strongly associated with silty and rocky soil. It is also found on decaying bunchgrass and in areas of native vegetation (Stone et al. 2020). Site conditions are not optimal for this species.
Tortula californica California screw moss	None None None	1B.2	**Unlikely to occur.** California screw moss is a bryophyte endemic to California. New populations are contributing to understanding its distribution. There are occurrences in less

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Plants			
			than a dozen California locations, but recent collections or observations include a single sighting five miles from the site in the Santa Ana Mountains, Cleveland National Forest. San Juan Canyon along highway 74 about 1 mile east of boundary with the San Diego County line. The disturbed condition on site makes its occurrence there unlikely.
Viguiera purisimae La Purisima viguiera	None None None	2B.3	**Unlikely to occur**. This species grows in coastal sage scrub. The nearest occurrence is in the Sitton Peak Quadrangle near Casper Park in Orange County. There are only a handful of known plants

Status Key	
Fed: Endangered = Federal Endangered Fed: Threatened = Federal Threatened Fed: FRC Federal Species of Concern State: E = California Endangered State CE = Candidate for State Listing as Endangered Fed/State FP = Fully Protected State SC = California Species of Special Concern State WL= California Watchlist Species	1A = Presumed extinct 1B = Rare, Threatened or Endangered in California and elsewhere 2B = Rare, Threatened or Endangered in California, but more common elsewhere .1 = seriously threatened in California .2 = fairly threatened in California .3 = not very threatened in California

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Animals			
Accipiter cooperii Cooper's Hawk	None None Watchlist		**May occur.** Cooper's hawk is frequently found in patchy woodlands, with dense stands of live oak, riparian deciduous or other forest habitats occurring near water. It is a breeding resident throughout most of the wooded portion of the state, with nesting occurring in dense stands containing moderate crown-depth. This common winter migrant and occasional summer resident in Southern California breeds in oak woodland habitats and southern cottonwood-willow riparian woodland. This species likely makes use of the wooded habitats on the property.
Agelaius tricolor Tricolor Blackbird	None Threatened SC		**Unlikely to occur**. Breeds in emergent wetland with tall, dense cattails or tules; willow, blackberry, tall herbs. Feeds in grassland and cropland habitats. Found throughout Central Valley and coastal areas south of Sonoma County. This species nests communally in semi-aquatic areas. No such areas exist on the property. If this species appears on the site, it is only likely to do so incidentally.
Aimophila ruficeps canescens Rufous-crowned Sparrow	None None Watchlist		**Does not occur.** Restricted to shrubby habitat in southern California and northwestern Baja California; habitat in southern California has been much reduced by ongoing development. There is no suitable habitat for this species on the project site.
Anaxyrus californicus Arroyo Toad	Endangered None SC		**Unlikely to occur**. Washes, arroyos, sandy riverbanks, riparian areas with willows, sycamores, oaks cottonwoods. Requires exposed sandy stream sides with stable terraces to burrow with scattered vegetation and calm pools with sandy/gravel bottoms for breeding. Found west of desert in coastal areas from upper Salinas River in San Luis Obispo Co. to northwestern Baja California; 0–900 m amsl. There is no suitable habitat for this species on the project site.
Anniella stebbinsi Southern California Legless Lizard	None None SC		**May occur.** Moist habitats. Loose soils with plant cover, beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, stream terraces with sycamores, cottonwoods, or oaks. Found under surface objects such as rocks, boards, driftwood, logs, leaf litter; 0–

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Animals			
			1,799 m amsl. Marginally suitable habitat occurs on the property.
Antrozous pallidus Pallid Bat	None None SC		**May occur.** Arid shrublands, grasslands, forests, and urban areas; locally common; resident. Marginally suitable roost sites may occur in hollow trees on the property.
Aquila chrysaetos Golden Eagle	None None FP/SC		**Unlikely to occur.** Grasslands, brushlands, deserts, oak savannas, open coniferous forests and montane valleys. Nesting primarily in rugged mountainous country. Uncommon resident in Southern California.
Arizona elegans occidentalis California Glossy Snake	None None SC		**May occur.** California glossy snake is patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular Ranges, and south to Baja California. This subspecies is a habitat generalist that utilizes scrub and grassland habitats, often with loose or sandy soils.
Artemisiospiza belli belli Bell's Sage Sparrow	None None WL		**Does not occur.** Occurs in low dune stands of shrubs, chaparral dominated by chamise, coastal scrub dominated by sage. Coast ranges from Northern California to northwestern Baja California and western slope of Sierra Nevada). The nominate form is designated as special status.
Asio otus Long-eared Owl	None None SC		**Unlikely to occur.** The long-eared owl nests in conifer, oak, riparian, pinyon juniper woodlands, and desert woodlands that are either open or adjacent to grasslands, meadows, or shrublands. Habitat is less than optimal for this species on the site.
Aspidoscelis hyperythra Orange-throated Whiptail	None None WL		**Does not occur.** Coastal sage scrub, chamise– redshank chaparral, mixed chaparral, valley–foothill hardwood especially in areas with summer fog. Found from Santa Ana River (Orange County) and near Colton (San Bernardino County), west of Peninsular Ranges, south throughout Baja California; 0–610 m amsl. Habitat on the site is unsuitable for this species.
Aspidoscelis tigris stejnegeri Coastal Whiptail	None None SC		**Does not occur.** Variety of habitats, primarily hot and dry open areas with sparse foliage – chaparral, woodland, riparian. Occurs in coastal Southern California, west of Peninsular Ranges and south of Transverse

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Animals			
			Ranges, north to Ventura County; 0–2,130 m amsl. Habitat on the site is unsuitable for this species.
Athene cunicularia Burrowing Owl	None None SC/ Protected under Fish and Game Code		**May occur.** Grasslands and rangelands, usually occupying ground squirrel burrows. Resident over most of Southern California. Found in agricultural areas. Since the site has ground squirrel burrows, there is a possibility that burrowing owls will occur here.
Bombus crotchii Crotch Bee	None None SC/CE		**Unlikely to occur.** This bumble bee is known to occur from coastal California east to the Sierra-Cascade Crest and south into Mexico. Its' known food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia*, and *Eriogonum*. None of the host plant genera were found during the survey.
Branchinecta lynchi Vernal Pool Fairy Shrimp	Threatened None None		**Does not occur.** Grasslands and pond areas such as vernal pools, cattle watering holes, basins, etc. In Southern California, this species is found primarily in the interior of western Riverside Co., central Santa Barbara Co., and eastern Orange Co. Also, it was more recently discovered in Los Angeles Co. No suitable habitat exists for this species on the site.
Branchinecta sandiegonensis San Diego Fairy Shrimp	Endangered None None		**Does not occur.** Small, shallow vernal pools, ditches, and road ruts in the coastal mesa system of Southern California and Baja California. No suitable habitat exists for this species on the site.
Campylorhynchus brunneicapillus sandiegensis Coastal Cactus Wren	None None SC		**Does not occur.** Southern cactus scrub, maritime succulent scrub, cactus thickets in coastal sage scrub. In arid parts of westward-draining slopes of Southern California. No suitable habitat exists for this species on the site.
Chaetodipus fallax fallax Northwestern San Diego Pocket Mouse	None None SC		**Unlikely to occur.** Occurs in coastal scrub, chaparral, grasslands, sagebrush, and similar habitats in western San Diego County. Micro habitat includes sandy, herbaceous areas, usually in association with rocks or coarse gravel. Habitat has been heavily altered on the site and around Lake Elsinore. The nearest populations were recorded in Railroad Canyon in 1994.

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Animals			
Charadrius nivosus nivosus Snowy Plover	Threatened None SC		**Does not occur.** This species occurs in **s**andy marine and estuarine shores. Nests on these habitats and salt pond levees. Nesting areas in Salton Sea, Mono Lake, shores of alkali lakes of northeastern California, Central Valley, and southeastern deserts. The extant records from the CNDDB read: two museum egg sets collected in 1948; 1 nest observed in 1939; 1 chick observed in 1940; 3 chicks observed in 1974; habitat [was] not present in 1978 due to flooding.
Cicindela senilis frosti Senile Tiger Beetle	None None None		**Unlikely to occur.** This species occupies coastal salt marshes; fresh/brackish lagoons, open patches of Salicornia, dried salt pans, and muddy alkali areas. The local records state that they are found in Lake Elsinore marshes and muddy banks.
Circus hudsonius Northern Harrier	None None SC		**Unlikely to occur.** Open wetlands (nesting), pasture, old fields, dry uplands, grasslands, rangelands, coastal sage scrub. Resident of northeastern plateau and coastal areas; less common resident in Central Valley. Breeds at marsh edge in shrubby vegetation in Central Valley and Sierra Nevada (0–1,700 m amsl), and northeastern California (up to 800 m amsl). The only CNDDB record includes a nest location about ten miles to the west near Santa Margarita in Orange County.
Coturnicops noveboracensis Yellow Rail	None None SC		**Does not occur.** This species occurs in grassy marshes and meadows. This species favors large wet meadows or shallow marshes dominated by sedges and grasses. Typically, in fresh or brackish marsh with water no more than a foot deep. In winter mostly in coastal salt marsh, especially drier areas with dense stands of spartina; also rice fields, damp meadows near coast. There is no suitable habitat on the property.
Crotalus ruber Red-diamondback Rattlesnake	None None SC		**May occur.** Red-diamondback rattlesnake occurs in arid scrub, coastal chaparral, oak and pine woodlands, rocky grassland, cultivated areas, rocky areas, and dense vegetation. Occurs along coastal San Diego County to the eastern slopes of the mountains and north through western Riverside County into southernmost San

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Animals			
			Bernardino County; 0–900 m amsl. May occur because site conditions on the property match the species' requirements.
Danaus plexippus pop. 1 Monarch Butterfly	Candidate None None		**May occur.** This species overwinters in eucalyptus groves from San Francisco south to northern Baja California. This species may occur incidentally over the site, although the preferred food plants and the type of groves necessary to support overwintering populations do not occur on the site. The closest CNDDB record is in San Clemente, Orange County.
Diadophis punctatus modestus San Bernardino Ringneck Snake	None None None		**May occur.** The San Bernardino ringneck snake occurs in meadows, rocky hillsides, gardens, farmland, grassland, chaparral, mixed coniferous forests, and woodlands. Prefers moist habitats. There is a slight chance that this species occurs on the site.
Dipodomys merriami parvus San Bernardino Kangaroo Rat	Endangered CE SC		**Does not occur.** This species occurs in primary and secondary alluvial fan scrub habitats, with sandy soils deposited by fluvial (water) rather than aeolian (wind) processes. The preferred substrate appears to be sandy and sandy loam soils and with very little herbaceous ground cover. There are isolated populations along the Santa Ana and San Jacinto drainage systems. The record in the CNDDB dates to 1903 and the accompanying note says that it is at the "far south end of historical range. area has been extensively developed since the time of detection."
Dipodomys stephensi Stephens' Kangaroo Rat	Endangered Threatened None		**Unlikely to occur.** This species occurs in open areas with sparse perennial cover with areas of loose soil where the soil depth is at least 0.5 meters. Also inhabit disturbed areas such as fallow fields by using the burrows of other rodents, including pocket gophers and California ground squirrel. Most of the sightings were made in the Lake Elsinore Quadrangle and date to the 1990s. Conditions have changed substantially and while this species may occur in the vicinity, it is unlikely to occur on the highly impacted property or its surroundings.
Elanus leucurus	None		**May occur.** The White-tailed Kite occurs in

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Animals			
White-tailed Kite	None FP		open country in South America and southern North America. The original record from the CNDDB states that the kite was observed in 2007 approximately 0.25-mile southwest of the intersection of Collier Avenue and riverside drive, in warm springs valley, north of Lake Elsinore. This site is approximately 2.5-miles from the project site.
Empidonax traillii extimus Southwestern Willow Flycatcher	Endangered Endangered None		**Does not occur.** This species is a riparian obligate occurring in riparian woodlands along streams and rivers with mature, dense tree or shrub cover where surface water or soil moisture are present. It may nest in habitats with different dominant plant species (both native and exotic). In California, breeding range includes southern California; from near sea level in California to more than 2,600 m amsl in Arizona/Southwest Colorado. There are no riparian woodlands or scrub on the site or adjacent to it.
Emys marmorata Southwestern Pond Turtle	None None SC		**Does not occur.** The western pond turtle is an aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches usually with aquatic vegetation. It requires basking sites and sandy banks or grassy open fields up to 0.5 kilometer from water for egg-laying. Records of western pond are from other areas not Lake Elsinore.
Eremophila alpestris actia California Horned Lark	None None WL		**May occur.** Open habitats, grassland, rangeland, shortgrass prairie, montane meadows, coastal plains, fallow grain fields south of Humboldt County in Coast Ranges, in San Joaquin Valley except extreme southern end.
Eumops perotis californicus Western Mastiff Bat	None None SC		**May occur.** Historically from north-central California south to northern Baja California, eastward across the southwestern United States, and northwestern Mexico. Suitable habitat for this species consists of extensive open areas with potential roost locations having vertical faces to drop off from and take flight, such as crevices in rock outcropings and cliff faces, tunnels and tall buildings. This species inhabits distinct types of open, semi-arid to arid habitats. These include coastal and desert scrublands, annual

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Animals			
			and perennial grasslands, conifer and deciduous woodlands, as well as palm oases (Ahlborn, 2000; Cockrum, 1960; Allen, 1987).
Euphydryas editha quino Quino Checkerspot Butterfly	Endangered None None		**Unlikely to occur.** Sparsely vegetated hilltops, ridgelines, occasionally rocky outcrops; host plant *Plantago erecta* and nectar plants must be present, San Diego and Riverside Counties. The existing records are from east of Lake Elsinore, around Lake Matthews, and Steele Peak.
Gila orcuttii Arroyo Chub	None None SC		**Unlikely to occur.** This species is in the coastal streams of southern California. Inhabits sandy and muddy bottoms of flowing pools and runs of headwaters creeks and small to medium rivers. Often found in intermittent streams.
Haliaeetus leucocephalus Bald Eagle	Delisted Endangered Federally and State FP		**Unlikely to occur.** This species winters locally at deep lakes and reservoirs feeding on fish and waterfowl. Locally rare throughout North America. All local records are from Lake Matthews. There is no suitable habitat on the project site.
Icteria virens Yellow-breasted Chat	None None SC		**Does not occur.** Riparian thickets of willow, brushy tangles near watercourses. Nests in riparian woodland throughout much of western North America. Winters in Central America. There is no suitable habitat for this species on the site.
Lanius ludovicianus Loggerhead Shrike	None None SC		**Unlikely to occur.** Open fields with scattered trees, open woodland, scrub. Fairly common resident throughout southern California. There is no suitable habitat on the project site.
Lasiurus blossevillii Western Red Bat	None None SC		**Unlikely to occur.** Western red bats occur in the foliage of trees and shrubs, predominantly in edge habitats adjacent to streams and open fields. Researchers found the species roosting in fruit trees in California's Central Valley (Bolster et al 1998). This species choses roosts away from human habitation (Bolster et al. 1998).
Lasiurus xanthinus Western Yellow Bat	None None SC		**Unlikely to occur.** The western yellow bat is uncommon in California, known only in Los Angeles and San Bernardino Counties south to the Mexican border. This species has been recorded below 2,000 feet in valley foothill

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Animals			
			riparian, desert riparian, desert wash, and palm oasis habitats. This species occurs year-round in California. Barbour and Davis (1969) suggested that this species may be increasing in range and abundance in the U.S.
Lepus californicus bennettii San Diego Black-tailed Jackrabbit	None None SC		**Unlikely to occur.** This species is known to inhabit grasslands, Riversidean sage scrub, Riversidean alluvial fan sage scrub, Great Basin sagebrush, desert scrub, and juniper and oak woodlands. Although widespread in the region, the jackrabbit can be characterized as ranging from relatively uncommon to locally common. The site lacks suitable habitat for the species.
Linderiella occidentalis California Linderiella	None None None		**Does not occur.** Although California fairy shrimp typically occur in large, clear vernal pools and lakes, they can survive in clear to turbid water with pH of 6.1–8.5, and they have been found in very small pools. They are tolerant of water temperatures from 5–29 °C (41–84 °F), making them the most heat tolerant fairy shrimp in California.
Linderiella santarosae Santa Rosa Plateau Fairy Shrimp	None None None		**Does not occur.** The Santa Rosa Plateau fairy shrimp is restricted to seasonal southern basalt flow vernal pools with cool waters that range from clear to milky and that remain filled for extended periods of time (Thiery and Fugate 1994, Eriksen). There are no basalt pools on the property.
Myotis yumanensis Yuma Myotis	None None None		**May occur.** The Yuma myotis is found throughout much of western North America. It is found in a variety of western lowland habitats, from arid thorn scrub to coniferous forest, but always close to standing water such as lakes and ponds. Although the records for this species are from Lake Matthews and San Juan Capistrano, this species could occur over the property given its proximity to Lake Elsinore.
Neolarra alba White Cuckoo Bee	None None None		**Unlikely to occur.** The range of the species is given as Southern California west of the mountains and biologists found it west of Perris in 1938. Given its preferences, it is unlikely to occur on the property.
Neotoma lepida intermedia San Diego Desert Woodrat	None None		**Unlikely to occur.** This species occurs in moderate to dense vegetation canopies,

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Animals			
	SC		particularly in rocky areas within coastal sage scrub and chaparral mostly in coastal southern California. There was no sign of woodrats on the property during the survey and conditions do not favor their presence.
Nyctinomops femorosaccus Pocketed Free-tailed Bat	None None SC		**Unlikely to occur.** Pocketed free-tailed bats are found from northern South America and the Caribbean Islands northward to the western United States (Williams, 1986). In the southwestern U.S., populations appear to be scattered. Known breeding localities are in parts of Arizona, New Mexico, and Texas. Prefers rocky, rugged terrain. Roosts in crevices in high cliffs or rocky outcrops. Ranges up to 8,000-foot elevation. The site is only marginally suitable as foraging habitat and not suitable for roosting.
Oncorhynchus mykiss irideus pop. 10 Steelhead Southern California DPS	Endangered None None		**Does not occur.** This species' population is known from the Margarita Peak and San Juan Capistrano Quadrangles, and it occurs in the Santa Ana, Santa Clara, San Gabriel and Los Angeles rivers of Southern California.
Pandion haliaetus Osprey	None None WL		**Unlikely to occur.** The osprey prefers large waters (lakes, reservoirs, rivers) that support fish; usually near forest habitats but widely observed along the coast. Breeds from Cascade Ranges south to Lake Tahoe and along northwest coast. Uncommon breeder along southern Colorado River. Uncommon along coast of Southern California. The closest record is from Corona Lake, California (CNDDB 2023).
Phrynosoma blainvillii San Diego Horned Lizard	None None SC		**Unlikely to occur.** The San Diego horned lizard occupies a wide variety of habitats including coastal sage scrub, grassland, riparian woodland; typically, on or near loose sandy soils; coastal and inland areas from Ventura County to Baja California. Past site uses have damaged potential habitat for this species.
Plegadis chihi White-faced Ibis	None None WL		**Does not occur.** The white-faced ibis is a year-around resident in the region and an irregular, local breeder. It is uncommon in winter. Primarily transient throughout the rest of southern California, as well as a local visitor along the coast. According to the

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Animals			
			CNDDB, it was last recorded at Lake Elsinore in 1917 although photographs from the lake show white faced ibises on 10 June 2017. There is no suitable habitat for this species on the property.
Polioptila californica californica California Gnatcatcher	Threatened None SC		**Does not occur.** California gnatcatchers prefer coastal sage scrub, but they occasionally occur and nest in other scrub habitats. There were no California gnatcatchers on the property and there is no suitable habitat there.
Rana draytonii California Red-legged Frog	Threatened None SC		**Does not occur.** This species occurs in streams with slow-moving water and deep pools; dense, shrubby riparian vegetation at pool edges. Locally it is known from only four small populations including Santa Rosa Plateau, Riverside County.
Rhinichthys osculus ssp. 3 Santa Ana Speckled Dace	None None SC		**Does not occur.** This aquatic species occurs in south coast flowing waters; freshwater creeks with shallow gravel and cobble riffles. There is no suitable habitat on the site.
Salvadora hexalepis virgultea Coast Patch-nosed Snake	None None SC		**Unlikely to occur.** Coast patch-nosed snake occurs in semi-arid brushy areas and chaparral in canyons, rocky hillsides, plains from northern Carrizo Plains south through coastal zone, south and west of the deserts into coastal northern Baja California; below sea level to approximately 7,000 feet. There is no suitable habitat for this species on the property.
Spea hammondii Western Spadefoot Toad	None None SC		**May occur.** Western spadefoot toads occur on sandy/gravelly soils within mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Breeds in ephemeral pools. Found throughout Great Valley and foothills south of Redding, throughout South Coast Ranges in Southern California south of Transverse Mountains and west of Peninsular Mountains; 0–4,475 feet amsl. This species' tadpoles have been observed on roadside puddles off of Riverside Drive within Lake Elsinore's city limits.
Streptocephalus woottoni Riverside Fairy Shrimp	Endangered None		**Does not occur.** Riverside fairy shrimp generally live in vernal pools, and other non-

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Animals			
	None		vegetated ephemeral pools, that last for short periods of time. It occurs in coastal lagoons, herbaceous wetlands, and brackish salt marshes and is distributed among semi-continuous estuarine habitats along coast. It was observed in Lake Elsinore in 1998 at a created pool near the Sedco Hills. There is no suitable habitat for this species on the site.
Taricha torosa Coast Range Newt	None None SC		**Does not occur.** Coast Range newt occurs in valley-foothill hardwood, valley-foothill conifer, coastal scrub, mixed chaparral; breeding occurs in ponds, reservoirs, and streams; eggs are attached to sticks, stones, or vegetation in flowing or non-flowing water; fast-moving streams and rivers are used more often in southern California mountains than elsewhere in the range; benthic, burrowing in or using soil, fallen log/debris; creek, medium river, pool, riffle. No suitable habitat for this species exists on the site.
Taxidea taxus American Badger	None None SC		**Does not occur.** Badgers occur in open woodlands, desert scrub, grassland, and open habitat generally. They require undisturbed areas for denning but may use agricultural fields if small mammal prey is present. There is no suitable badger habitat on the site.
Thamnophis hammondii Two-striped Garter Snake	None None SC		**Does not occur.** This species usually occurs in or near permanent fresh water, often along streams with rocky beds bordered by willows and other riparian vegetation, including mountain slopes and desert oases; requires dense riparian vegetation; burrowing in or using soil. No such habitat occurs on the project site.
Vireo bellii pusillus Least Bell's Vireo	Endangered Endangered None		**Does not occur.** Least Bell's vireo is a summer resident in riparian forest, riparian scrub, riparian woodland, scrub with thick understory, esp. with some standing water; normal occurrence in the area only during the breeding season or migration; may forage outside of riparian habitats; dense riparian understory shrubbery required for nesting; nests usually three (3) feet above ground. There is no habitat for this species on the property and neither its call nor song were heard during the survey.

Species	Federal State Other	CNPS	Occurrence Likelihood/Growing Preferences or Preferred Habitat
Animals			
Status Key			
Fed: Endangered = Federal Endangered Fed: Threatened = Federal Threatened Fed: FRC Federal Species of Concern State: E = California Endangered State CE = Candidate for State Listing as Endangered Fed/State FP = Fully Protected State SC = California Species of Special Concern State WL= California Watchlist Species		1A = Presumed extinct 1B = Rare, Threatened or Endangered in California and elsewhere 2B = Rare, Threatened or Endangered in California, but more common elsewhere .1 = seriously threatened in California .2 = fairly threatened in California .3 = not very threatened in California	

Appendix B2 – Burrowing Owl Survey

BioCultural LLC
ENVIRONMENTAL CONSULTANTS

Burrowing Owl Survey

for

Riverside County Assessor's Parcel Number 379315003



Prepared for
Elevated Entitlements

Prepared by
Biocultural LLC
Ricardo Montijo

September 2023

Revised October 2024

1 INTRODUCTION

The following report summarizes the results of burrowing owl (*Athene cunicularia*) surveys on a project site at Lake Elsinore for Riverside County Parcel 379-315-033. The Multiple Species Habitat Conservation Plan (MSHCP), surveys for the burrowing owl were conducted as part of the environmental review process. The MSHCP Additional Surveys Needs and Procedures identify a specific burrowing owl survey area within the MSHCP Plan Area. The MSHCP also identifies species-specific objectives for the burrowing owl, namely species-specific objectives 5 and 6, both of which require burrowing owl surveys if suitable habitat occurs on a proposed project site.

Per the RCA MSHCP Information Map, the project site is not located within a burrowing owl survey area. However, as documented in the Biological Survey report, suitable ground squirrel burrows and other structures and spaces were observed onsite, triggering the need to conduct a burrowing owl focused survey in accordance with the MSHCP guidelines.

1.1 Property Description

1.1.1 Geographic Setting

The project site consists of a single parcel, designated APN 379-315-003, located on Riverside Road in Lake Elsinore, Riverside County, California (Figure 2). The project site is relatively flat and level.

1.1.2 Adjacent Areas

The property is situated in Lake Elsinore in a rural residential/commercial area. Adjacent properties include open space to the northwest and southwest and rural residential areas north, west, and east across the Leach Canyon Canal, which is located beyond (and parallel to) the eastern property boundary (Photograph 1).

Figure 1. Location and Vicinity Map

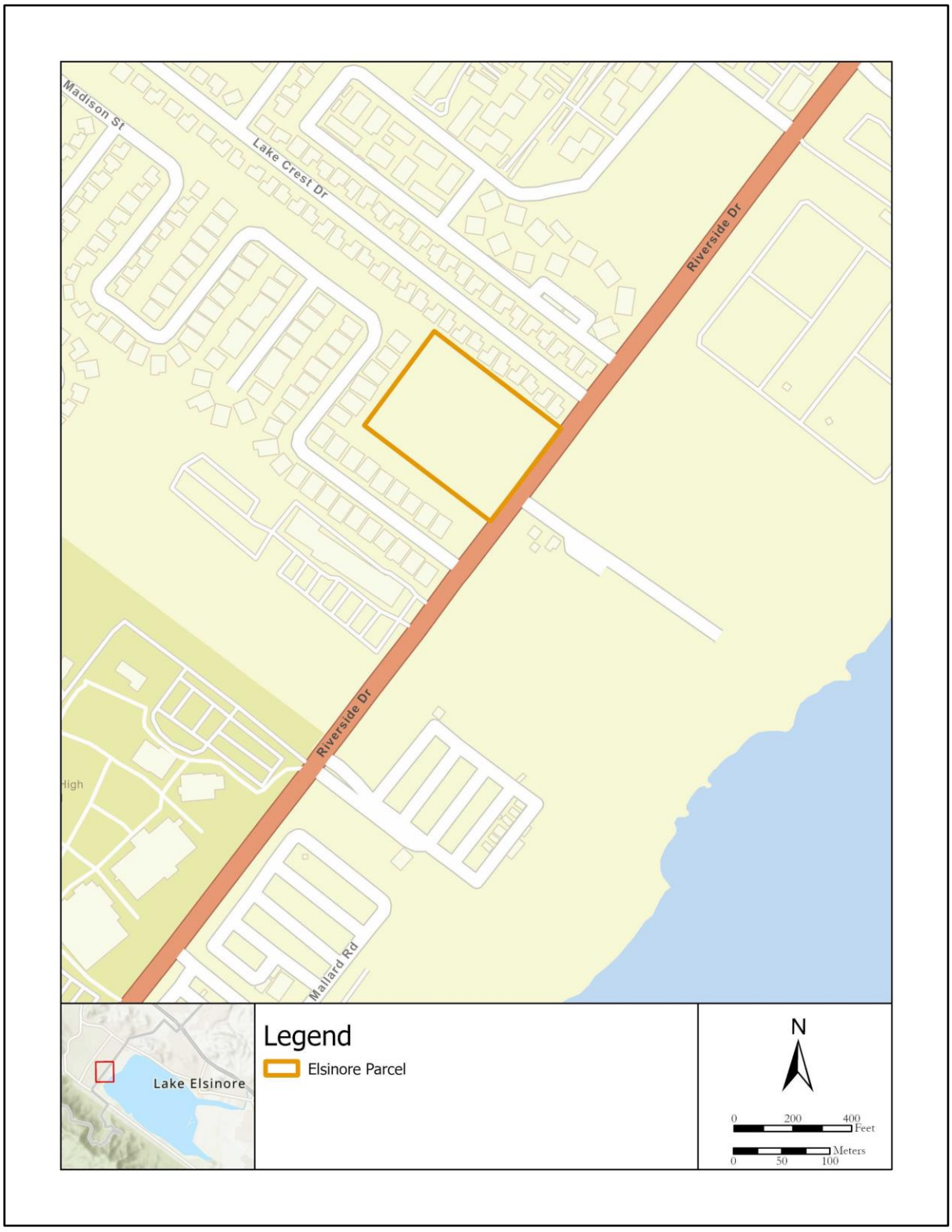


Figure 2. Parcels and Project Site



2 Methods

Habitat assessments and burrowing owl surveys were conducted by Ricardo Montijo, a biologist knowledgeable in burrowing owl habitat, ecology, and field identification of the species and burrowing owl sign. Four focused burrowing owl survey visits were undertaken from June to August 2023. The team walked parallel transects and the adjacent channel was scanned with binoculars as shown in Figure 3. The surveys followed the guidelines in *Burrowing Owl Survey Instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area* (Riverside County 2006).

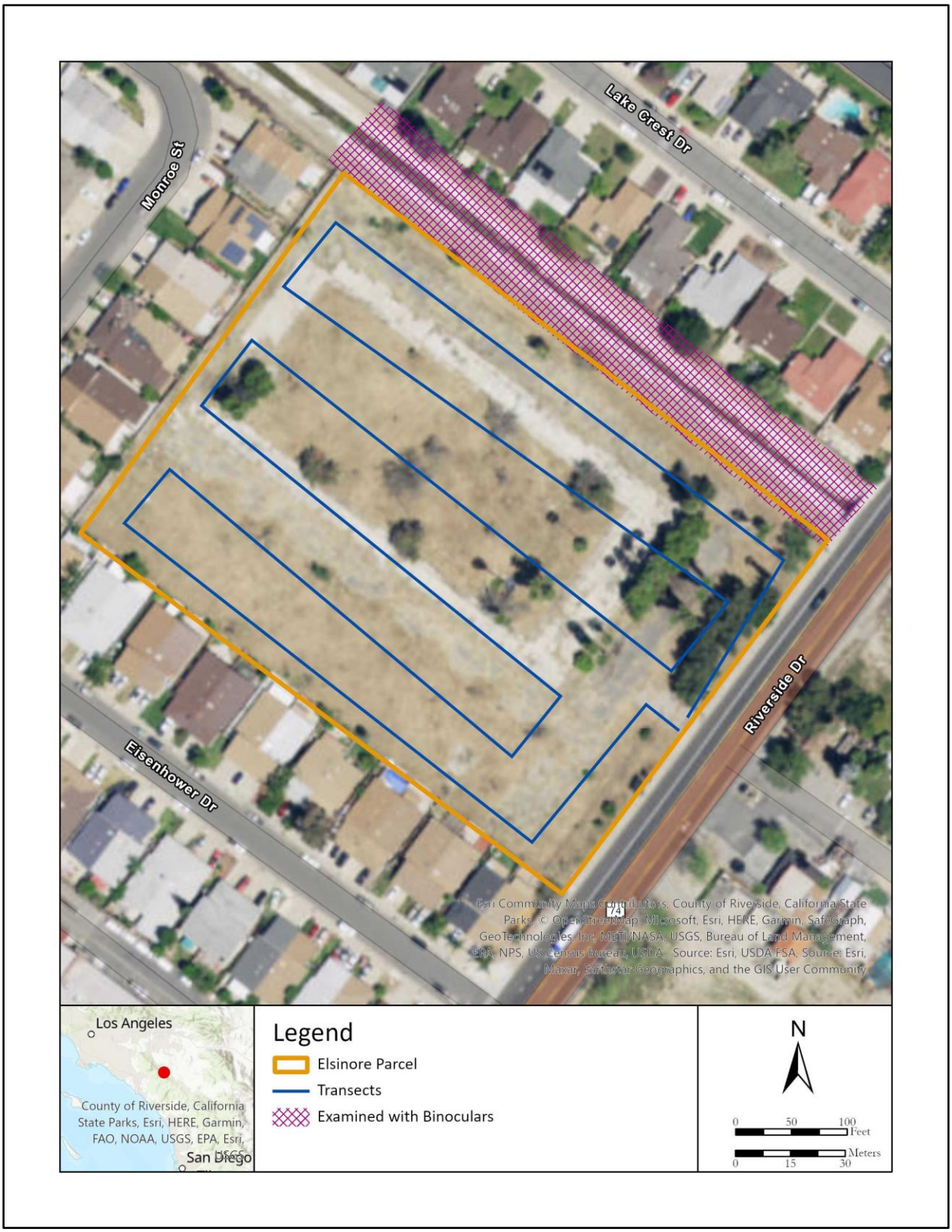
Surveys commenced around sunrise or shortly thereafter and given the site's small size, were completed within one to two hours. Prior to initiating the walking surveys, biologists scanned the entire site looking for burrowing owls in all suitable habitats including perch locations to ascertain owl presence. Housing and roads prevented visual observation to 500 feet on all adjacent areas. Potential burrows were mapped next.

Survey dates, times, and weather conditions are listed in Table 1.

Table 1. Survey Dates, Times, and Weather

Date	Sunrise	Survey Start	Weather
21 June 2023	5:38 AM	0630	58 °F Overcast; No rain; No wind.
17 August 2023	5:46 AM	0700	71 °F Sunny; No rain; No wind.
27 August 2023	5:52 AM	0715	66 °F Sunny; No rain; No wind.
30 August 2023	5:56 AM	0720	73°F Sunny; No rain; No wind.

Figure 3. Parcels and Project Site



3 Results

Based on discussions with the archaeologist for the project, the site was historically used as a spa. Through 2004, a spa building stood on the property. Prior to that, the property may have served other purposes but had been in continuous use since the 1940s. Although it was demolished the building remains included portions of walls, pipes, and standpipes that can serve as habitat for burrowing owls (See photos in Appendix B). Mammal dens and burrows under old foundations can also serve as burrows. California ground squirrels (*Spermophilus beecheyi*), which were observed along the northeastern property boundary, excavate burrows that are of sufficient diameter to support nesting or roosting burrowing owls.

Mapped potential burrowing owl burrows are shown in Figure 4.

Although birds were detected on the property and its vicinity, no burrowing owls were found. Among the bird species detected were the native great-tailed grackle (*Quiscalus mexicanus*), mourning dove (*Zenaida macroura*), American kestrel (*Falco sparverius*), lesser goldfinch (*Spinus psaltria*), and American crow (*Corvus brachyrhynchos*). Non-native species observed include Eurasian collared dove (*Streptopelia decaocto*), rock pigeon (*Columba livia*), and European starling (*Sturnus vulgaris*). A complete list of bird species observed is included in Appendix A.

4 Discussion

The site had no burrowing owls. Additionally, no indicative feathers, castings, prey remains, or owl whitewash were observed. A Cooper's hawk (*Accipiter cooperii*) was observed during the final visit. Domestic cat (*Felis catus*) and dog (*Canis familiaris = Canis lupus familiaris*) sign were evident on the site. Human signs were evident everywhere and a homeless person was observed on the penultimate survey. The presence of these potential predators/disruptors further suggests that burrowing owls are not present on the site. These results have a one-year validity period. If the site has not been disturbed in the interim, another burrowing owl survey may be required.

Regardless of survey results and conclusions are given herein, burrowing owls are protected by applicable State of California and federal laws. Unless the Fish and Game Code or its implementing regulations provide o otherwise, under California law it is unlawful to:

- Take a bird, mammal, fish, reptile, or amphibian (Fish and Game Code § 2000);

- Take, possess, or needlessly destroy the nest or eggs of any bird (Fish and Game Code § 3503);
- Take, possess, or destroy any bird of prey in the orders Strigiformes (owls) and Falconiformes (such as falcons, hawks and eagles) or the nests or eggs of such bird (Fish and Game Code § 3503.5);
- Take or possess any of the thirteen fully protected bird species listed in Fish and Game Code section 3511;
- Take any non-game bird (i.e., bird that is naturally occurring in California that is not a gamebird, migratory game bird, or fully protected bird) (Fish and Game Code § 3800);
- Take or possess any migratory non-game bird as designated in the MBTA[1] or any part of such bird, except as provided by rules or regulations adopted by the Secretary of the Interior under the MBTA (Fish and Game Code § 3513); and,
- Take, import, export, possess, purchase, or sell any bird (or products of a bird), listed as an endangered or threatened species under the California Endangered Species Act unless the person or entity possesses an Incidental Take Permit or equivalent authorization from CDFW (Fish and Game Code § 2050 et seq.).

If a burrowing owl is found on-site at the time of construction, all activities likely to affect the animal(s) must cease immediately and regulatory agencies contacted to determine appropriate management actions.

[1] "Migratory bird" is defined in federal regulations implementing the MBTA at 50 C.F.R. § 10.12. The list of species protected under the MBTA is set forth at 50 C.F.R. § 10.13.

Figure 4. Potential Burrowing Owl Areas



Appendix A

Bird Species Observed

Common Name Family Common Name Species	**Taxonomic Name Family** *Scientific Name Species*	**Notes**
Hawks	**Accipitridae**	
Cooper's Hawk	*Accipiter cooperii*	
Red-tailed Hawk	*Buteo jamaicensis*	
Ducks	**Anatidae**	
Mallard	*Anas platyrhynchos*	
Herons	**Ardeidae**	
Great Blue Heron	*Ardea herodias*	Heard Only
Snowy Egret	*Egretta thula*	
New World Vultures	**Cathartidae**	
Turkey Vulture	*Cathartes aura*	Fly Over
Plovers	**Charadriidae**	
Killdeer	*Charadrius vociferus*	
Doves	**Columbidae**	
Eurasian Collared-dove	*Streptopelia decaocto**	
Mourning Dove	*Zenaida macroura*	
Rock Pigeon	*Columba livia**	
Crows, Ravens, and Jays	**Corvidae**	
Common Raven	*Corvus corax*	
American Crow	*Corvus brachyrhynchos*	
Falcons	**Falconidae**	
American Kestrel	*Falco sparverius*	
Finches	**Fringillidae**	
House Finch	*Haemorhous mexicanus*	
Lesser Goldfinch	*Spinus psaltria*	
Hirundinidae	**Swallows**	
Tree Swallow	*Tachycineta bicolor*	
Blackbirds	**Icteridae**	
Great-tailed Grackle	*Quiscalus mexicanus*	

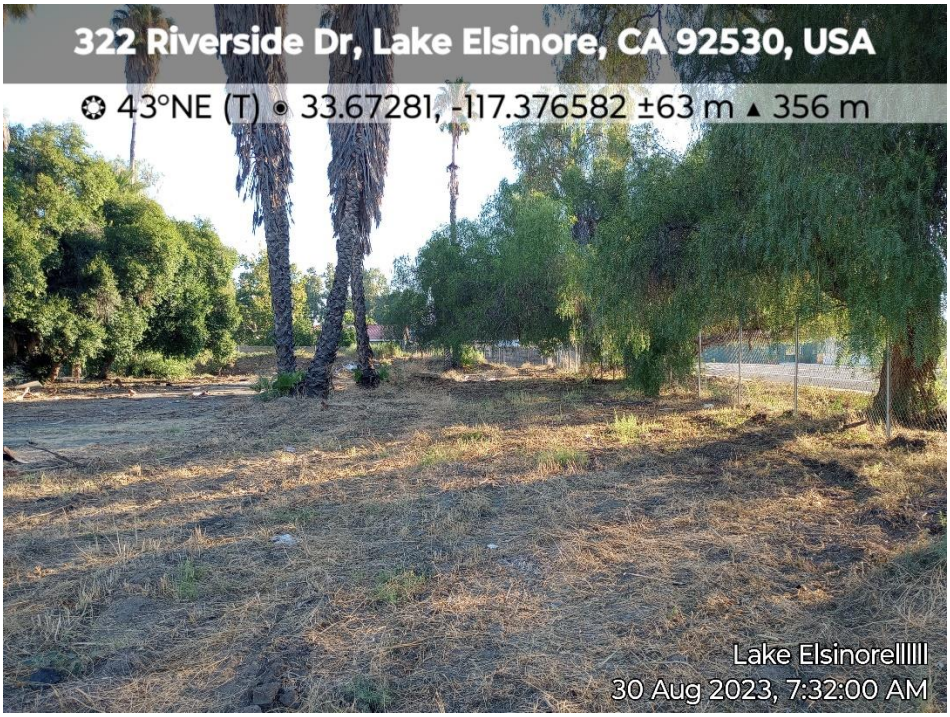
Common Name Family Common Name Species	**Taxonomic Name Family** *Scientific Name Species*	**Notes**
Mimidae	**Mimic Thrushes**	
Northern Mockingbird	*Mimus polyglottos*	
Passeridae	**Old World Sparrows**	
House Sparrow	*Passer domesticus**	
New World Sparrows	**Passerellidae**	
California Towhee	*Melozone crissalis*	
Woodpeckers	**Picidae**	
Nuttall's Woodpecker	*Picoides nuttallii*	
Hummingbirds	**Trochilidae**	
Anna's Hummingbird	*Calypte anna*	
Flycatchers	**Tyrannidae**	
Black Phoebe	*Sayornis nigricans*	
*Non-native Species		

Appendix B

Photographs



Photograph 1. Eastern property limits are shown above. Note trash and other human disturbance.



Photograph 2. Southern project limits show the general species composition.



Photograph 3. Collapsed historic wall on the north central portion of the site.



Photograph 4. The northern property boundary abuts against homes. This photograph faces east.



Photograph 5. The above photograph shows building debris near the northern limits of the property and corresponds with the leftmost potential burrows in Figure 4.



Photograph 4. The northern property boundary abuts against homes. This photograph faces east.

Appendix C1 – Cultural Resources Assessment

Cultural Resources Assessment in Support of a Commercial Residential Development Project, Lake Elsinore, Riverside County, California.

Prepared for

Elevated Entitlements
280 Thousand Oaks Blvd. #H
Thousand Oaks, CA 91360
Attn: Lindsay Leon

November 2023

Report Completed: November 29, 2023 **Fieldwork Performed:** August 17, 2023
Revised: October 25, 2024

Cultural Resources Assessment in Support of a Commercial Residential Development Project, Lake Elsinore, Riverside County, California.

Project Site Location: 7.5-Minute USGS topographic quadrangle, Alberthill, California.

Township 6 South, Range 5 West; Sections Not Defined.

Assessor's Parcel Number: 379-315-0330.

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Keywords: Project Area, APN 379-315-0330; Cultural Resources Assessment;
Positive Results; CEQA; AB52; Lake Elsinore, Riverside County;
Township 6 South; Range 5 West; Sections Not Defined;
7.5-Minute USGS topographic quadrangle, Alberthill, California

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MANAGEMENT SUMMARY

Purpose of Investigation: Elevated Entitlements retained BioCultural LLC to conduct a Cultural Resources Assessment for the proposed commercial residential development project located on one parcel with Assessor's Parcel Number (APN) of 379-315-0330 and defined as 4.95-acre Project Area in the City of Lake Elsinore, Riverside County, California. BioCultural LLC understands the City of Lake Elsinore will function as the lead agency and review this report.

Summary Project Description: The project proposes the development and building of multifamily and single-family dwellings Project with green rooftops designed and landscaped to reduce energy consumption. The development Project will also include parking, telecommunicating center and business incubator center, as well as a child care facilities on a 4.95-acre Project Area. The project site is located at 32281 Riverside Drive, Lake Elsinore, CA 92530, with Monroe Street to the northwest, Riverside Drive to the southeast, Eisenhower Drive to the southwest and Lake Crest Drive to the northeast. The City of Lake Elsinore required a Cultural Resources Assessment Study for purposes of project compliance with the California Environmental Quality Act (CEQA), and specifically Assembly Bill 52 (AB 52). The following report includes the methods and results of an intensive pedestrian survey, Sacred Lands File (SLF) search through the Native American Heritage Commission (NAHC), a records search of the California Historical Resources Information System (CHRIS), background research to identify the presence or absence of cultural resources within the project area, and an evaluation of those resources, as warranted.

The study was conducted in compliance with CEQA, Public Resources Code (PRC) Section 5024.1, Section 15064.5 of the Guidelines, and Sections 21083.2 and 21084.1 of the Statutes of CEQA (Governor's Office of Planning and Research 1998). PRC Section 5024.1 requires the identification and evaluation of historical resources to determine their eligibility for the California Register of Historical Resources (CRHR). The CRHR is a listing of the state's historical resources, and indicates which properties are to be protected from substantial adverse change, as defined in CEQA, to the extent that is prudent and feasible.

Major Findings: On May 24, 2023, BioCultural LLC requested a records search of the CHRIS records located at the Easter Information Center (EIC). The results from the EIC were received on August 8, 2023. The search included any previously recorded cultural resources and investigations within the project area and surrounding 0.25-mile (0.402-km) area. The record search results collected were reviewed, as well as other property-specific historical and ethnographic context research, to identify information relevant to the project area before conducting an intensive pedestrian survey of the project area. All 4.95-acres of the square shaped parcel was surveyed on August 17, 2023 using northwest to southeast transects of 15-meter intervals. The Native American Heritage Commission (NAHC) was contacted on May 21, 2023 to request a review of their Sacred Land File (SLF). A response from the NAHC was received on June 15, 2023.

No previously recorded cultural resources were identified during the CHRIS records search within the Project Area and two previously recorded cultural resources were identified within the 0.25-mile radius of the Project Area. The NAHC's SLF search identified the Project Area as Positive for Tribal Resources and/or of importance for the Native American tribes listed on the list provided by the NAHC.

An intensive pedestrian survey was conducted on August 17, 2023, by BioCultural LLC archeologist Gregorio Pacheco. The survey was conducted using 15-meter-wide parallel transects. No vehicles were used on the Project Area. The intensive pedestrian survey resulted in the identification of one historical structural foundation site (Structure 01) within the project area. The newly identified cultural resource site

was recorded on a Department of Parks and Recreation (DPR) 523 forms. No artifacts were collected during the intensive pedestrian survey.

Recommendations: Positive results were concluded of the current cultural resources assessment. The newly found cultural resource site was evaluated using CRHR eligibility criteria to determine whether or not they constitute historical resources under CEQA. The newly recorded historical site was found not eligible for the CRHR under any criteria for listing on the CRHR and archaeological monitoring is recommended for the initial construction-related ground disturbances activities.

If additional archaeological resources are discovered during the initial mechanical and hand ground disturbances, work should halt in the immediate vicinity of the finds and a Secretary of the Interior's (SOI) professional archaeologist (as identified through 36 Code of Federal Regulations, Part 61) should be contacted to evaluate the finds.

If human remains are discovered within the project area, the Riverside County Coroner must be notified immediately, pursuant to State of California Health and Safety Code Section 7050.5. This code section states that the project lead/foreman shall designate an Environmentally Sensitive Area (ESA) physical demarcation/barrier 100 feet around the resource and no further excavation or disturbance of the site shall occur until the Riverside County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. If the human remains are determined to be Pre-Contact (prehistoric), the Coroner will notify the Native American Heritage Commission (NAHC) within 24 hours. In accordance with Public Resources Code Section 5097.98, the NAHC must immediately notify those persons it believes to be the most likely descendant (MLD) from the deceased Native American. The MLD shall complete their inspection within 48 hours of being granted access to the site. The designated Native American representative will then determine, in consultation with the property owner, the disposition of the human remains.

INTRODUCTION AND SETTING

Elevated Entitlements retained BioCultural LLC to conduct a Cultural Resources Assessment in support of a proposed commercial residential development project located on one parcel and defined as a 4.95-acre Project Area (Project), in accordance with CEQA and the City of Lake Elsinore (**Figure 1**). BioCultural LLC understands the City of Lake Elsinore will function as the lead agency and review this report.

PROJECT LOCATION

The proposed project is located in the City of Lake Elsinore, Riverside County, California, as depicted on the 7.5 minute USGS topographic quadrangle of Alberthill, within Township 6 South, Range 5 West and Sections Not Defined (**Figure 2**). Specifically, the Project Area is located at 32281 Riverside Drive, Lake Elsinore, CA 92530, with Monroe Street to the northwest, Riverside Drive to the southeast, Eisenhower Drive to the southwest and Lake Crest Drive to the northeast (**Figure 3**). The Project Area measures a total of 4.95-acres, with identified Assessor Parcel Number (APN) of 379-315-0330.

PROJECT DESCRIPTION

The project proponent proposes the development of multifamily and single-family dwellings with green rooftops designed and landscaped to reduce energy consumption. The development Project will also include parking, telecommunicating center and business incubator center, as well as a child care facilities. The project site is located in the City of Lake Elsinore, Riverside County, California and proposes to develop a footprint area of 215,622 square feet of one heavily disturbed and semi-developed square shaped lot.

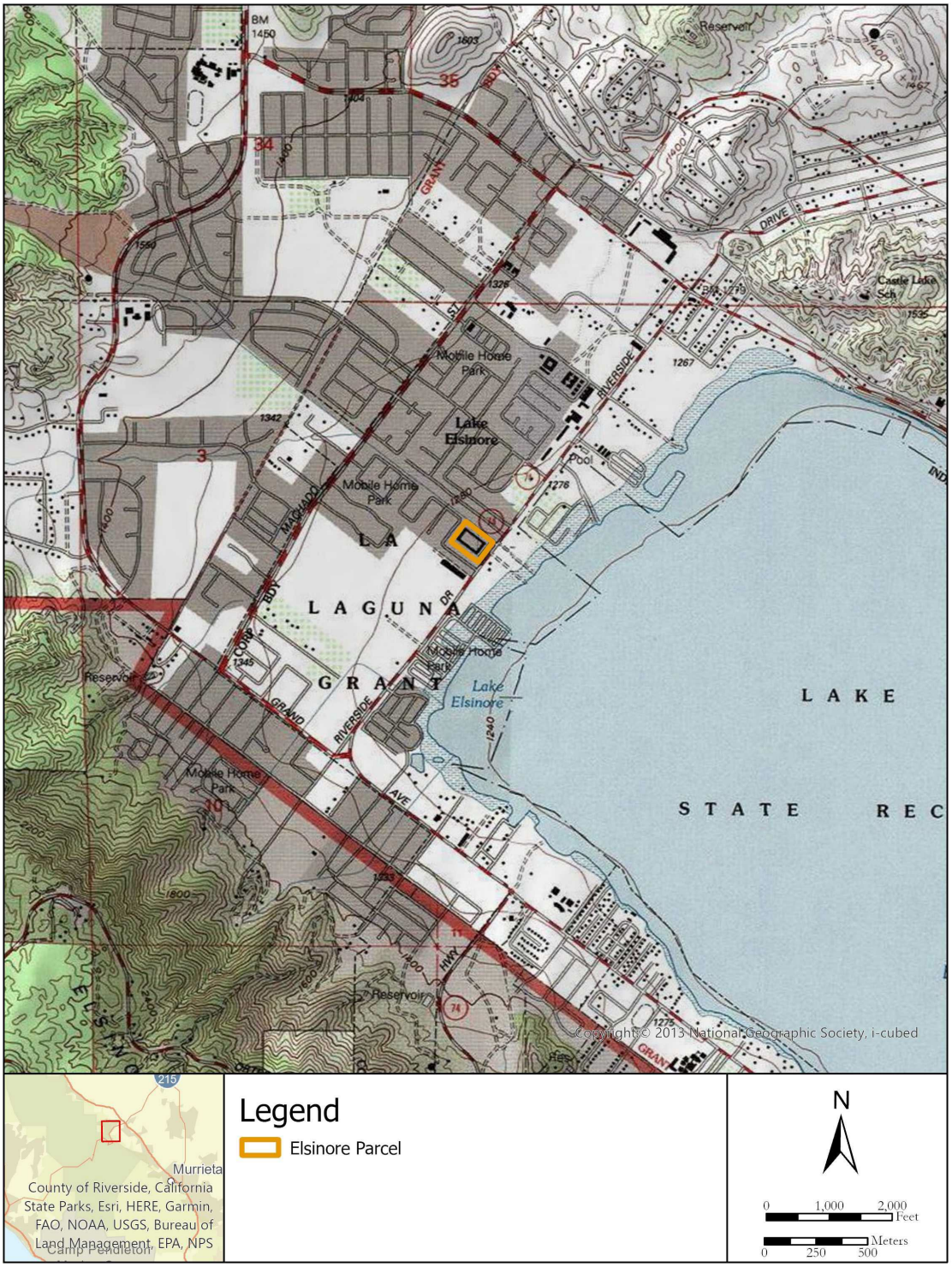


Figure 1. Project Overview Map.

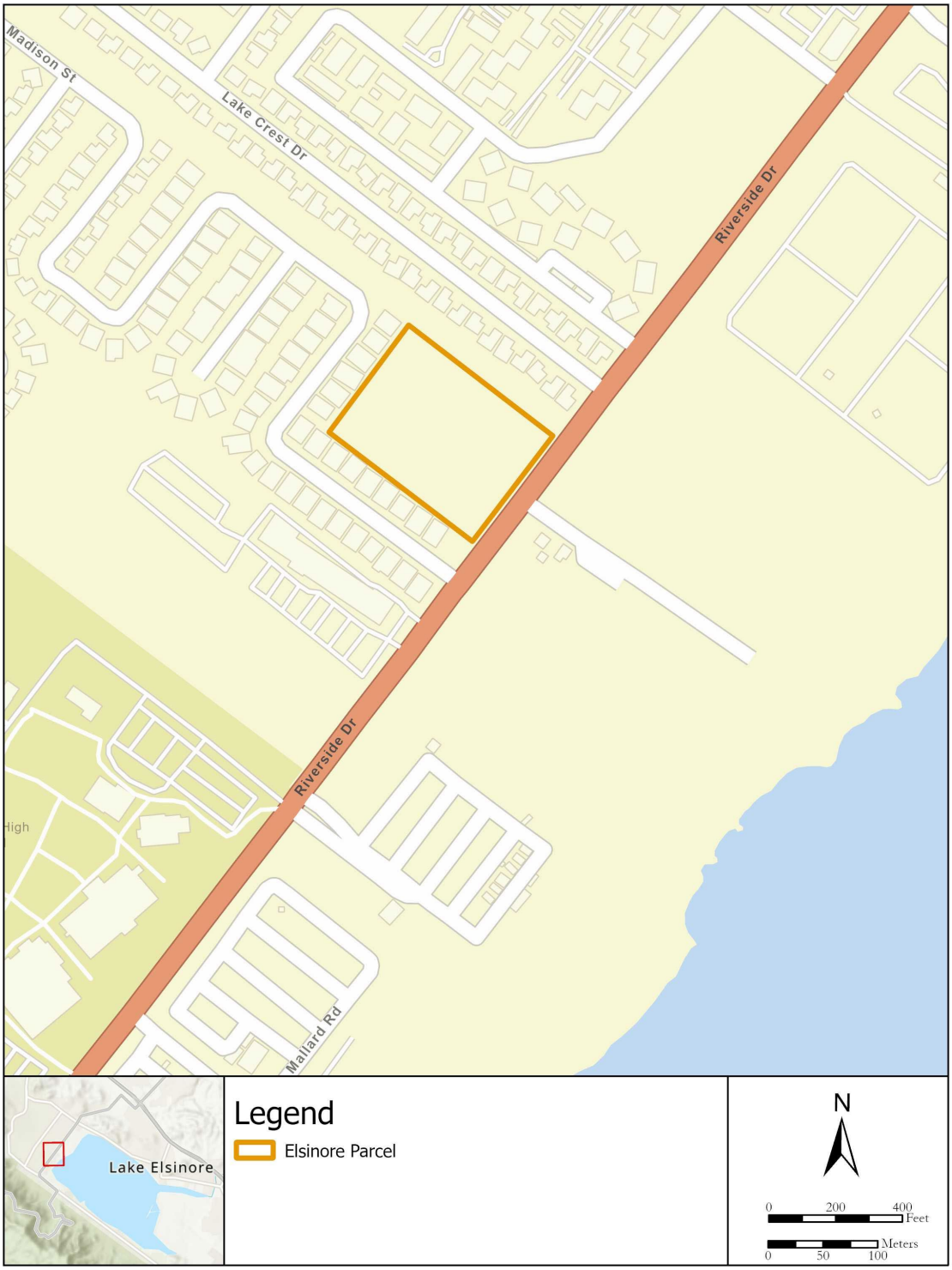


Figure 2. Project Vicinity Map.



Figure 3. Project Location Map.

LIST OF PERSONNEL AND RESPONSABILITIES

Cultural Resources Project Manager Gregorio Pacheco, B.A., managed the project, coordinated the Records Search, conducted and completed the pedestrian field survey, and co-authored the report. Geographic Information Systems (GIS) Specialist Ricardo Montijo prepared all figures. This report was reviewed for quality assurance/quality control by Cultural Resources Project Manager, David Sosa, M.A., RPA.

ENVIRONMENTAL SETTING

The Project area is composed of one (APN 379-315-0330) vacant, heavily disturbed and semi-developed lot parcel located in the City of Lake Elsinore. The Project Area is fenced and can be accessed via Riverside Drive, as shown on the U.S. Geological Survey (USGS) 7.5-minute Alberthill topographic quadrangle, 6 South, Range 5 West and Sections Not Defined within the San Bernardino Base Meridian.

Geology

Riverside County lies in the Peninsular Ranges Geologic Province of southern California. The range, which lies in a northwest to southeast trend through the county, extends some 1,000 miles from the Raymond-Malibu Fault Zone in western Los Angeles County to the southern tip of Baja California (Smith and Goraligia 2017). The geology of the parcel consists of unconsolidated and semi-consolidated young alluvial-valley, lake, playa, and terrace deposits (Holocene and late Pleistocene). The surface geology was poorly classified to only alluvial clays and silts as the Project Area is heavily disturbed with construction debris, construction, and landscaped and concrete floor areas. The visibility of the ground was minimal at 30-40%.

Flora and Fauna

The vegetation community is composed of non-native invasive plants, non-native ornamental plants, and hardscape, with minimum to none native vegetation. The vegetation plant species observed included, Russian thistle (Salsola tragus), short-pod mustard (Hirschfeldia incana), wall barley (Hordeum murinum), cheesebush (Malva parviflora), tumbleweed (Amaranthus albus), puncture vine (Tribulus terrestris), and salt cedar (Tamarix ramosissima), ripgut brome (Bromus diandrus), slender wild oats (Avena barbata), stinknet (Oncosiphon pilulifer), prickly lettuce (Lactuca serriola), common groundsel (Senecio vulgaris), pokeweed (Phytolacca americana), and the native common fiddleneck (Amsinckia intermedia), rigid fiddleneck (Amsinckia retrorsa), and Jimsonweed (Datura wrightii), oleander (Nerium oleander), Mexican fan palm (Washingtonia robusta), lemon tree (Citrus limon), Chinese pistach (Pistacia chinensis), and walnut (Juglans cf hindsii, possibly regia x hindsii). Wildlife observed consisted primary of avian species typically found in urban areas of Riverside County. Common birds observed included native lesser goldfinch (Spinus psaltria), American crow (Corvus brachyrhynchos), house finch (Haemorhous mexicanus), mourning dove (Zenaida macroura), great tailed grackle (Quiscalus mexicanus), American kestrel (Falco spaerverius), American crow (Corvus brachyrhynchos), mourning dove (Zenaida maroura), northern mockingbird (Mimus polyglottos), Anna's hummingbird (Calypte anna), and house finch (Haemorhous mexicanus), European starling (Sturnus vulgaris), Eurasian collared dove (Streptopelia decaocto), and house sparrow (Passer domesticus). Other wildlife observed included, California ground squirrel (Spermophilus beecheyi) and side-blotched lizard (Uta stansburiana).

CULTURAL SETTING

The following section presents an overview of the Pre-Contact, ethnographic, and historic background of the region. Sections of a previously completed Cultural Resources Inventory Report have been extrapolated from Brian F. Smith and Associates, Inc. (Smith and Goralogia 2017), ASM Affiliates (Harvey 2020) and Applied EarthWorks, Inc. (DeLeon and Wood 2021) to provide a basic understanding of the natural, cultural, ethnographic, and historic context of the proposed project area.

Prehistoric Overview

Four horizons have been proposed for the project area. The four horizons were utilized in Wallace's (1955) prehistoric sequence to understand the cultural changes in Southern California: Early Man, Milling Stone, Intermediate, and Late Prehistoric. Although Wallace's (1955) synthesis initially lacked chronological precision due to a paucity of absolute dates (Moratto 1984:159), this situation has been alleviated by the availability of thousands of radiocarbon dates that have been obtained by Southern California researchers in the last three decades (Byrd and Raab 2007:217). Several revisions have been made to Wallace's (1955) synthesis using radiocarbon dates and projectile point assemblages (e.g., Koerper and Drover 1983; Koerper et al. 2002; Mason and Peterson 1994). The summary of prehistoric chronological sequences for Southern California coastal and near-coastal areas presented below is a composite of information in Wallace (1955) and Warren (1968), as well as more recent studies.

The definition of the Early Man Period by Wallace in the mid-1950s, contains little evidence of human presence on the Southern California coast prior to 6000 B.C. Archaeological work in the intervening years has identified numerous older sites dating prior to 10,000 years ago, including ones on the coast and Channel Islands (e.g., Erlandson 1991; Rick et al. 2001:609; Johnson et al. 2002; Moratto 1984). The earliest accepted dates for occupation are from two of the northern Channel Islands, located off the coast of Santa Barbara. On San Miguel Island, Daisy Cave clearly establishes the presence of people in this area about 10,000 years ago (Erlandson 1991:105). On Santa Rosa Island, human remains have been dated from the Arlington Springs site to approximately 13,000 years ago (Johnson et al. 2002).

The area now known as Orange County contains sites dating from 9000 to10,000 years ago (Mason and Peterson 1994:55-57; Macko 1998:41). Sites dating to the Early Man Period are scarce and rare in the western Riverside County, with an exception found in the Lake Elsinore area where deposits dating as early as 6630 cal. B.C. (CA-RIV-2798-B) (Grenda 1997:260).

Data from coastal and inland archaeological sites during the Early Period indicate that the economy was a diverse mixture of hunting and gathering, with a major emphasis on aquatic resources in many coastal areas (e.g., Jones et al. 2002) and on Pleistocene lakeshores in eastern San Diego County (see Moratto 1984:90-92). A Paleo-Coastal Tradition was proposed and recently referenced to highlight the distinctive marine and littoral focus identified within the Southern California coastal archaeological record prior to the emergence of the Encinitas Tradition during the succeeding Milling Stone Period (Moratto 1984:104; Mason and Peterson 1994:57-58). At coastal sites, there is abundant evidence that marine resources such as fish, sea mammals, and shellfish were exploited during the Paleo-Coastal Tradition.

At near-coastal and inland sites, it is generally considered that an emphasis on hunting may have been greater during the Early Man Period than in later periods, although few Clovis-like or Folsom-like fluted points have been found in Southern California (e.g., Erlandson et al. 1987; Dillon 2002). In Riverside County, only one isolated fluted point has been identified on the surface of a site in the Pinto Basin in the central part of the county (Campbell and Campbell 1935; Dillon 2002:113). Common elements in many sites include leaf-shaped bifacial projectile points and knives, stemmed or shouldered projectile points,

scrapers, engraving tools, and crescents (Warren 1967:174-177; Warren and True 1961:251-254). Use of the atlatl (e.g., spear-throwing stick) during this period facilitated launching spears with greater power and distance. Subsistence patterns shifted around 6000 B.C. coincident with the gradual desiccation associated with the onset of the Altithermal, a warm and dry period that lasted for about 3000 years. After 6000 B.C., a greater emphasis was placed on plant foods and small animals.

The Milling Stone Period of Wallace (1955, 1978) and Encinitas Tradition of Warren (1968) are characterized by an ecological adaptation to collecting, and by the dominance of the principal ground stone implements generally associated with the horizontal motion of grinding small seeds; namely, milling stones (metates, slabs) and handstones (manos, mullers), which are typically shaped. Milling stones occur in large numbers for the first time, and are even more numerous near the end of this period. As testified by their toolkits and shell middens in coastal sites, people during this period practiced a mixed food procurement strategy. Subsistence patterns varied somewhat as groups became better adapted to their regional or local environments.

Milling Stone Period sites are common in the Southern California coastal region between Santa Barbara and San Diego, and at many inland locations including the Prado Basin in western Riverside County and the Pauma Valley in northeastern San Diego County (e.g., True 1958; Herring 1968; Langenwalter and Brock 1985; Sutton 1993). Wallace (1955, 1978) and Warren (1968) relied on several key coastal sites to characterize the Milling Stone Period and Encinitas Tradition, respectively. These include the Oak Grove Complex in the Santa Barbara region, Little Sycamore in southwestern Ventura County, Topanga Canyon in the Santa Monica Mountains, and at La Jolla in San Diego County. The Encinitas Tradition was proposed to extend southward into San Diego County where it apparently continued alongside the following Campbell Tradition, which occurred primarily in the Santa Barbara, Ventura County region beginning around 3000 B.C.

During the Milling Stone Period and Encinitas Tradition, stone chopping, scraping, and cutting tools are abundant, and generally made from locally available raw material. Projectile points, rather large and generally leaf-shaped, and bone tools, including awls, are generally rare. The large points are associated with the spear, and probably with an atlatl. Items made from shell, including beads, pendants, and abalone dishes, are generally rare. Evidence of weaving or basketry is present at a few sites. Cogged stones and discoidals are often purposefully buried or "cached," and are found mainly in sites along the coastal drainages from southern Ventura County southward, with a few specimens inland at Cajon Pass, and in abundance at some Orange County sites (Dixon 1968:63; Moratto 1984:149). Kowta (1969) attributes the presence of numerous scraper-planes in Milling Stone Period sites to the preparation of agave or yucca for food or fiber. The mortar and pestle, associated with the vertical motion of pounding foods, such as acorns, were introduced during the Milling Stone Period, but are not common.

Two types of artifacts that are considered diagnostic of the Milling Stone Period are the cogged stone and discoidal, most of which have been found within sites dating between 4000–1000 B.C. (Moratto 1984:149). The cogged stone is best described as a ground stone object that has variant forms of gear-like teeth on the perimeter, which is produced from a variety of materials. The function of cogged stones is unknown, but has been interpreted as ritualistic or ceremonial in nature (Eberhart 1961:367; Dixon 1968:64-65). Similar to cogged stones, discoidals are found in the archaeological record subsequent to the introduction of the cogged stone.

Koerper and Drover (1983) suggest that Milling Stone Period sites represent migratory settlement patterns of hunters and gatherers who used marine resources during the winter and inland resources the remainder of the year. More recent research indicates that residential bases or camps were moved to resources in a seasonal round (Mason et al. 1997; Koerper et al. 2002), or that some sites were occupied year-round with

portions of the village population leaving at certain times of the year to exploit available resources (Cottrell and Del Chario 1981). Regardless of settlement system, it is clear that subsistence strategies during the Milling Stone Period included hunting of small and large terrestrial mammals, sea mammals, and birds; collecting shellfish and other shore species; extensive use of seed and plant products; the processing of yucca and agave; and near shore fishing with barbs or gorges (Reinman 1964; Kowta 1969). As evidenced by the abundant milling equipment found at these sites throughout the region, the processing of small seeds was an important component of their subsistence practices.

Characteristic mortuary practices during the Milling Stone Period or Encinitas Tradition include extended and loosely flexed burials, some with red ochre and few grave goods, such as shell beads and milling stones, interred beneath cobble or milling stone cairns. "Killed" milling stones, exhibiting holes, may occur in the cairns. Reburials are common in the Los Angeles County area, with flexed burials oriented to the north common in Orange and San Diego Counties. Evidence of wattle-and-daub structures and walls have been identified at some sites in the San Joaquin Hills and Newport Coast area spanning all cultural periods (Koerper 1995; Strudwick 2004).

Following the Milling Stone, Wallace's Intermediate Period and Warren's Campbell Tradition in Santa Barbara, Ventura, and parts of Los Angeles Counties, date from approximately 3000 B.C.–A.D. 500 and are characterized by a shift toward a hunting and maritime subsistence strategy, along with a wider use of plant foods. The Campbell Tradition (Warren 1968) incorporates David B. Rogers' (1929) Hunting Culture and related expressions along the Santa Barbara coast. In the San Diego region, the Encinitas Tradition (Warren 1968) and the La Jolla Culture (Moriarty 1966; Rogers 1939, 1945) persist with little change during this time. The Intermediate Period in western Riverside County is still not as well understood as it is in coastal areas (e.g., Van Bueren et al. 1986:11). The following discussion is thus mainly based on information gathered from coastal and near-coastal sites in southern California.

During the Intermediate Period, there is a pronounced trend toward greater adaptation to regional or local resources. The remains of fish, land mammals, and sea mammals are increasingly abundant and diverse in sites along the California coast in the referenced region. Related chipped stone tools suitable for hunting are more abundant and diversified, and shell fishhooks become part of the toolkit during this period. Larger knives, a variety of flake scrapers, and drill-like implements are common during this period. Projectile points include large side-notched, stemmed, and lanceolate or leaf-shaped forms. Koerper and Drover (1983) consider Gypsum Cave and Elko series points, which have a wide distribution in the Great Basin and Mojave deserts between circa 2000 B.C.–A.D. 500, to be diagnostic of this period. Bone tools, including awls, are more numerous than in the preceding period, and the use of asphaltum adhesive is now common.

Mortars and pestles become more common during this period, gradually replacing manos and metates as milling stone implements. In addition, hopper mortars and stone bowls, including steatite vessels, appear to enter the toolkit at this time. This shift appears to be a correlate of a diversification in subsistence resources. Many archaeologists believe this change in milling stones signals a shift away from the processing and consuming of hard seed resources to the increasing importance of the acorn (e.g., Glassow et al. 1988; True 1993). It has been argued that mortars and pestles may have been used initially to process roots (e.g., tubers, bulbs, and corns associated with marshland plants), with acorn processing beginning at a later point in prehistory (Glassow 1997:86) and continuing to European contact.

Characteristic mortuary practices during the Intermediate Period include fully flexed burials, placed face down or face up, and oriented toward the north or west (Warren 1968:2–3). Red ochre is common, and abalone shell dishes infrequent. Interments sometimes occurred beneath cairns or broken artifacts. Shell,

bone, and stone ornaments, including charmstones, are more common than in the preceding Encinitas Tradition. Some later sites include Olivella shell and steatite beads, mortars with flat bases and flaring sides, and a few small points. The broad distribution of steatite from the Channel Islands and obsidian from distant inland regions, among other items, attest to the growth of trade, particularly during the later part of this period.

Wallace (1955, 1978) places the beginning of the Late Prehistoric around A.D. 500. In all chronological schemes for Southern California, the Late Prehistoric Period lasts until European contact occurred in A.D. 1769.

During the Late Prehistoric Period, there is an increase in the use of plant food resources in addition to an increase in land and sea mammal hunting. There is a concomitant increase in the diversity and complexity of material culture during this period, demonstrated by more classes of artifacts. The recovery of a greater number of small, finely chipped projectile points, usually stemless with convex or concave bases, suggests an increased utilization of the bow and arrow rather than the atlatl and dart for hunting. Other items include steatite cooking vessels and containers, the increased presence of smaller bone and shell circular fishhooks, perforated stones, arrow shaft straighteners made of steatite, a variety of bone tools, and personal ornaments made from shell, bone, and stone. There also is an increased use of asphaltum for waterproofing and as an adhesive.

During the Late Prehistoric, sites contain beautiful and complex objects of utility, art, and decoration. Ornaments include drilled whole Chione (venus clam) and drilled abalone. Steatite effigies become more common, with Pecten shell rattles common in middens. Mortuary customs are elaborate, including cremation and interment, with abundant grave goods.

By A.D. 1000, fired clay smoking pipes and ceramic vessels begin to appear at some sites (Meighan 1954; Warren 1984). The scarcity of pottery in coastal and near-coastal sites implies ceramic technology was not well developed in that area, or that ceramics were obtained by trade with neighboring groups to the south and east. The lack of widespread pottery manufacture is usually attributed to the high quality of tightly woven and watertight basketry that functioned in the same capacity as ceramic vessels.

Another feature typical of Late Prehistoric Period occupation is an increase in the frequency of obsidian imported from the Obsidian Butte source in Imperial County, California. Obsidian Butte was exploited after circa A.D. 1000 after its exposure by the receding waters of Holocene Lake Cahuilla (Wilke 1978). A Late Prehistoric Period component of the Elsinore site (CA-RIV-2798-A) produced two flakes that originated from Obsidian Butte (Grenda 1997:255; Towner et al. 1997:224-225). Although about 16 percent of the debitage at the Peppertree site (CA-RIV-463) at Perris Reservoir is obsidian, no sourcing study has been performed to date (Wilke 1974:61).

During this period, there is an increase in population size accompanied by the advent of larger, more permanent villages (Wallace 1955:223). Large populations and, in places, high population densities are characteristic, with some coastal and near-coastal settlements containing as many as 1,500 people. Many of the larger settlements were permanent villages, where people resided year-round. The populations of these villages may have also increased seasonally.

Ethnographic Overview

The project area is within an area historically occupied by the Luiseño, a Takic-speaking southern California native social group (Kroeber 1925; Bean and Shipek 1978). Luiseño is a term that was derived for Native Americans who were administered by the Mission San Luis Rey, and later applied specifically

to the Payomkawichum ethnic nation who were present in the region where the mission was founded. Meaning "western people," the name Payomkawichum can also be applied to the closely related coastal Luiseño who lived north of the mission. The Luiseño language is derived from the Cupan segment of the Takic language branch, a part of the Uto-Aztecan linguistic family (Mithun 2001:539-540).

Luiseño territory was situated in the north half of San Diego County and the western edge of Riverside County. Their lands encompassed the southern Santa Margarita Mountains and the Palomar Mountains, and their foothills to the Pacific Ocean. It extended eastward into the San Jacinto Valley and the western foothills of the San Jacinto Mountains. Their neighbors to the north were the Juaneño (Acjachemen) who spoke a Luiseño dialect; the Cahuilla and Cupeño to the east who spoke other Takic Cupan languages; and the Ipai to the south who spoke a California-Delta Yuman language. Today, many contemporary Juaneño and coastal Luiseño identify themselves as descendants of the indigenous people living in the local area, termed the Acjachemen Nation. The Luiseño resided in permanent villages and associated seasonal camps. Village population ranged from 50–400 with a social structure based on lineages and clans. A single lineage was generally represented in smaller villages, while multiple lineages and a dominant clan presided in larger villages. Each clan/village owned a resource territory and was politically independent, yet maintained ties to others through economic, religious, and social networks in the immediate region. The Luiseño village of Avaxat, meaning "cottonwood tree," was located on the banks of Murrieta Creek near the present-day intersection of Ivy and Hayes Streets in the City of Murrieta (Hudson 2001:148).

Luiseño nuclear families resided in dome-shaped dwellings (kish) made of willow poles covered with interlaced tule reeds. The chief's residence was generally larger in order to accommodate his large family, ceremonial regalia, and ceremonial food processing. Other village structures included a ceremonial enclosure (vamkech), semi-subterranean sweat lodge, and menstrual huts. Simple lean-tos were constructed in the upper foothills during acorn harvest season.

There were three hierarchical social classes—an elite class consisting of chiefly families, lineage heads, and other ceremonial specialists; a "middle class" of established and successful families; and, finally, people of disconnected or wandering families and war captives (Bean 1976:109–111). Native leadership focused on the Nota, or clan chief, who conducted community rites and regulated ceremonial life in conjunction with a council of elders (puuplem) composed of lineage heads and ceremonial specialists. The council discussed and decided matters of community significance; these decisions were then implemented by the Nota and his staff.

The hereditary village chief held an administrative position that combined and controlled religious, economic, and warfare powers. His assistant had important religious duties and was also a messenger. Ritual specialists and shamans specialized in ritual magic or some aspect of the environment, and had hereditary membership on the council. Each was responsible for training a successor from his lineage or family.

The center of the Luiseño religion was Chinigchinich, the last of a series of heroic mythological figures. The heroes were originally from the stars, and their sagas were the foundation of Luiseño religious beliefs. The most obvious expression of the religion at the time of arrival of the Spanish was the Wamkech, a brush-enclosed area where religious observations were performed. The Wamkech apparently contains an inner enclosure housing a representation of Chinigchinich, a coyote skin stuffed with feathers, horns, claws, beaks, and arrows.

Young men and women went through puberty initiation rites. Endurance trials and a hallucinogenic extract from Datura wrightii enabled the young men's search for a spirit helper. Young women stayed

several days in a stone-heated, branch-lined pit and fasted, and were then tattooed after competing in a race at the end of the initiation period. The Luiseño practiced both cremation and burial of the dead.

Like other indigenous California groups, the primary food staple was the acorn (Bean and Shipek 1978:552), supplemented by other plant resources, fish, shellfish, waterfowl, and marine and terrestrial mammals. Villages were situated near reliable sources of water, needed for the daily leaching of milled acorn flour. Acorn mush (weewish) was prepared in various ways and served as gruel, cakes, or fried; it might be sweetened with honey or sugar-laden berries; and could be made into a stew with added greens and meat. Other plant foods included pine nuts and the seeds from grass, manzanita, sunflower, sage, chip, lemonade berry, wild rose, holly-leaf cherry, prickly pear, lamb's-quarter. Seeds were parched, ground, and prepared similar to weewish variations. Greens included thistle, miner's lettuce, white sage, and clover, among others; thimbleberries, elderberries, and wild grape were eaten raw or dried. Cooked yucca buds, blossoms, pods, and stalks provided a sizable addition to the community's food resources. The diet also included underground bulbs, roots, and tubers, as well as mushrooms and tree fungus. Various teas or medicinal cures were made from flowers, fruits, stems, or roots. Large and small prey included deer, antelope, rabbit, jackrabbit, wood rat, mice, and ground squirrel, as well as quail, ducks, and other birds. Fish, such as trout and salmon, were caught in rivers and creeks. The Luiseño living in coastal areas relied heavily on marine resources. Sea mammals, fish, and crustaceans were obtained from the shoreline and from the open sea using reed and dugout canoes. Shellfish included abalone, turbans, mussel, and other species from the rocky shores; clams, scallops, and univalves from the sandy beaches; and Chione and bubble shells, among other species, from the estuaries.

The first direct European contact with the Luiseño occurred in July 1769 with the Spanish expedition led by Gaspar de Portolá. During the next six years, eight missions and forts were founded north and south of Luiseño territory. In 1776, Mission San Juan Capistrano was founded less than 10 miles north, and the populations of five northern Luiseño villages had been halved within 15 years. In 1798, Mission San Luis Rey was established within Luiseño territory and the proselytizing among the Payomkawichum began in earnest (Engelhardt 1921:8). The Luiseño were not moved to the mission and consequently, the disruption of traditional lifeways and deaths from introduced diseases were not as devastating as experienced by many other indigenous Californian groups.

Several Luiseño leaders signed the statewide 1852 treaty, locally known as the Treaty of Temecula (an interior Luiseño village), but the United States Congress never ratified it. By 1875, however, reservations for the Luiseño were established in the Palomar Mountains and nearby valleys, including Pala, Pauma, Rincon, Pechanga, La Jolla, and San Pasqual. No reservations were established for the remaining coastal people, whose lands had already been usurped by the Mexican ranchos. Today, the San Luis Rey group is actively petitioning the Bureau of Indian Affair's Office of Federal Acknowledgement to review their request for federal recognition (**Figure 4**).

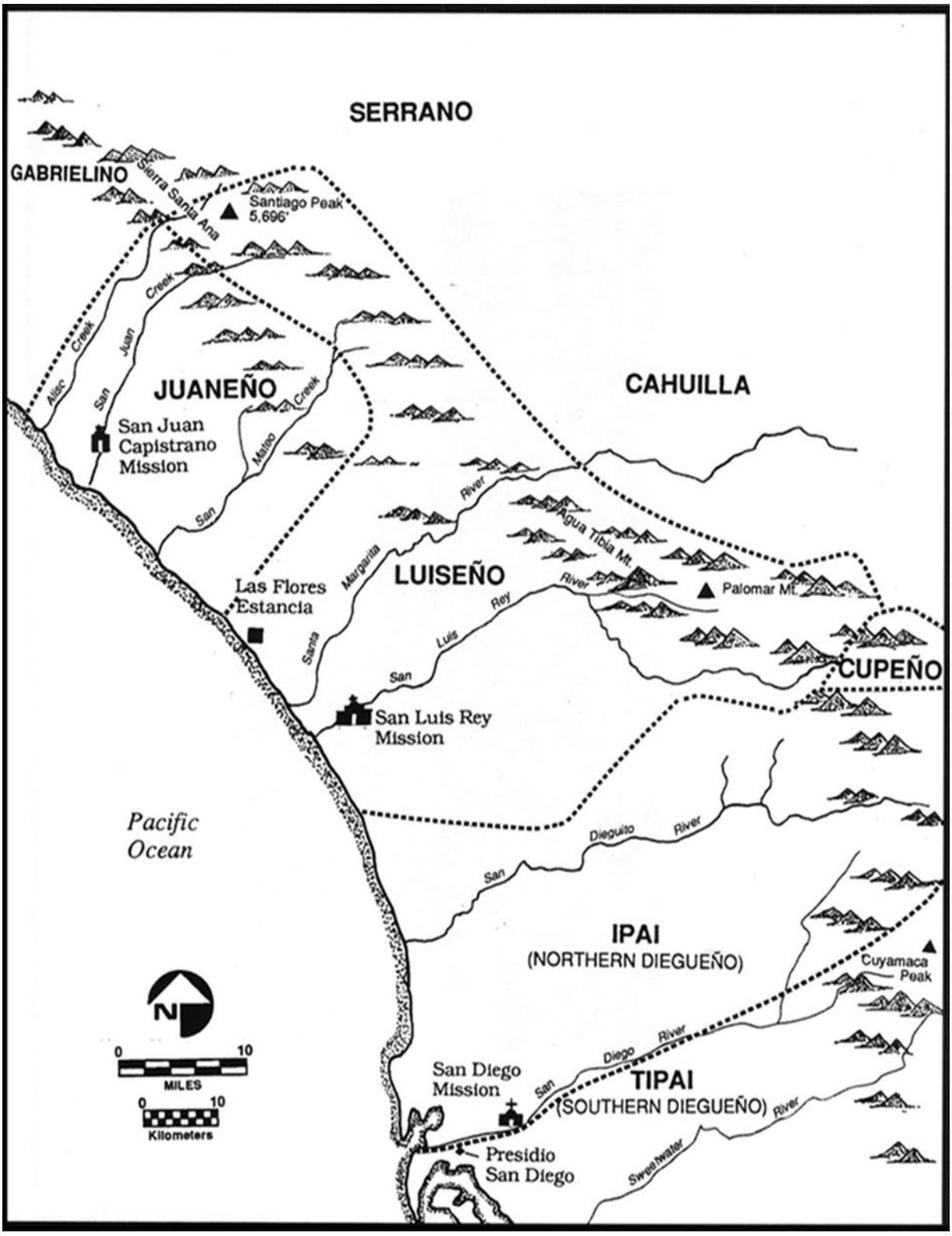


Figure 4. Native Tribal Languages and Spanish Colonial Settlements, ca. AD 1800.

Historic Overview

The historic background of the project area began with the Spanish colonialization of Alta California. The first Spanish colonizing expedition reached southern California in 1769 with the intention of converting and civilizing the indigenous populations, as well as expanding the knowledge of and access to new resources in the region (Brigandi 1998). In the late eighteenth century, the San Gabriel (Los Angeles County), San Juan Capistrano (Orange County), and San Luis Rey (San Diego County) missions began colonizing southern California, and gradually expanded their use of the interior valley (presently western Riverside County) for raising grain and cattle to support the missions. The San Gabriel Mission claimed lands in what is presently Jurupa, Riverside, San Jacinto, and the San Gorgonio Pass, while the San Luis Rey Mission claimed land in what is presently Lake Elsinore, Temecula, and Murrieta (American Local History Network: Riverside County, California 2001). The indigenous groups who occupied these lands were recruited by missionaries, converted, and put to work in the missions (Pourade 1964). Throughout this period, the Native American populations were decimated by introduced diseases, a drastic shift in diet resulting in poor nutrition, and social conflicts due to the introduction of an entirely new social order (Cook 1976).

In the mid- to late 1770s, Juan Bautista de Anza passed through much of Riverside County while searching for an overland route from Sonora, Mexico to San Gabriel and Los Angeles, where he described fertile valleys, lakes, and sub-desert areas (American Local History Network: Riverside County, California 2001;.). In 1797, Father Presidente Lausen, Father Norberto de Santiago, and Corporal Pedro Lisalde led an expedition from Mission San Juan Capistrano through southwestern Riverside County in search of a new mission site, before constructing Mission San Luis Rey in northern San Diego County (Brigandi 1998).

While no missions were ever built in what would become Riverside County (American Local History Network: Riverside County, California 2001), many mission outposts, or asistencias, were established in the early years of the nineteenth century to extend the missions' influence to the backcountry (Brigandi 1998). Two outposts located in Riverside County include San Jacinto and Temecula.

Mexico gained independence in 1822 and desecularized the missions in 1832, signifying the end of the Mission Period (Brigandi 1998). By this time, the missions owned some of the best and most fertile land in southern California. In order for California to develop, the land would have to be made productive enough to turn a profit (Brigandi 1998). The new government began distributing the vast mission holdings to wealthy and politically connected Mexican citizens. The "grants" were called "ranchos," of which Jurupa, El Rincon, La Sierra, El Sobrante de San Jacinto, La Laguna (Lake Elsinore), Santa Rosa, Temecula, Pauba, San Jacinto Nuevo y Potrero, and San Jacinto Viejo were located in present-day Riverside County. Many of these ranchos have lent their names to modern-day locales (American Local History Network: Riverside County, California 1998). The first grant in present-day Riverside County was Rancho Jurupa, given to Juan Bandini in 1838. These ranchos were all located in the valley environments typical of western Riverside County.

The treatment of Native Americans grew worse during the Rancho Period. Most of the Native Americans were forced off their land or put to work on the now privately owned ranchos, most often as slave labor. In light of the brutal ranchos, the degree to which Native Americans had become dependent upon the mission system became evident when, in 1838, a group of Native Americans from the San Luis Rey Mission petitioned government officials in San Diego to relieve suffering at the hands of the rancheros, stating:

> We have suffered incalculable losses, for some of which we are in part to be blamed for because many of us have abandoned the Mission … We plead and beseech you … to grant us a Rev.

> Father for this place. We have been accustomed to the Rev. Fathers and to their manner of managing the duties. We labored under their intelligent directions, and we were obedient to the Fathers according to the regulations, because we considered it as good for us. (Brigandi 1998:21)

Native American culture had been disrupted to the point where they could no longer rely upon prehistoric subsistence and social patterns. Not only does this illustrate how dependent the Native Americans had become upon the missionaries, but it also indicates a marked contrast in the way the Spanish treated the Native Americans as compared to the Mexican and United States ranchers. Spanish colonialism (missions) is based upon utilizing human resources while integrating them into their society. The ranchers, both Mexican and American, did not accept Native Americans into their social order and used them specifically for the extraction of labor, resources, and profit. Rather than being incorporated, they were either subjugated or exterminated (Cook 1976).

In 1846, war erupted between Mexico and the United States. In 1848, with the signing of the Treaty of Guadalupe Hidalgo, the region was annexed as a territory of the United States, and in 1850, California became a state. These events generated a steady flow of settlers into the area, including gold miners, entrepreneurs, health-seekers, speculators, politicians, adventurers, seekers of religious freedom, and individuals desiring to create utopian colonies. With the completion of the transcontinental railroad in 1869, land speculators, developers, and colonists began to invest in southern California. The first colony in what was to become Riverside County was Riverside itself. Judge John Wesley North, an abolitionist from Tennessee, brought a group of associates and co-investors out to southern California and founded Riverside on part of the Jurupa Rancho. A few years after, the navel orange was planted and found to be such a success that it quickly became the agricultural staple of the region (American Local History Network: Riverside County, California 1998).

By the late 1880s and early 1890s, there was growing discontent between Riverside and San Bernardino, its neighbor 10 miles to the north, due to differences in opinion concerning religion, morality, the Civil War, politics, and fierce competition to attract settlers. After a series of instances in which charges were claimed about unfair use of tax monies to the benefit of only the city of San Bernardino, several people from Riverside decided to investigate the possibility of a new county. In May of 1893, voters living within portions of San Bernardino County (to the north) and San Diego County (to the south) approved the formation of Riverside County. Early business opportunities were linked to the agriculture industry but commerce, construction, manufacturing, transportation, and tourism also provided a healthy local economy. By the time of Riverside County's formation, Riverside had grown to become the wealthiest city per capita in the country due to the successful cultivation of the navel orange (American Local History Network: Riverside County, California 1998). Farming activities in what became the western portion of Riverside County consisted of the cultivation of crops ranging from wheat and barley to the navel orange. In addition to agricultural farming, the area is also home to numerous dairy operations and chicken farms.

Local History

The region of Lake Elsinore started to develop in 1883 with the emergence of the railroad. The railroad brought a steady stream of settlers, miners, and prospectors into the area, thereby creating the community of Lake Elsinore. Lake Elsinore was called "Paiakhche by the Luiseño Indians (Kroeber 1927 p. 147) and Laguna Grande, meaning 'Big Lagoon,' by the Spaniards and Mexicans" (Gunther 1984). When Franklin H. Heald, Donald Graham, and William Collier bought the then 12,832-acre La Laguna Rancho in 1883, it was renamed Elsinore and subdivided into lots to be sold (Gunther 1984). That same year, Heald renamed the lake "Lake Elsinore." Beginning in the early 1800s, the lake began an almost constant cycle of going completely dry and then overflowing (Gunther 1984).

By 1884, the developing town had a school and post office established, and in 1893, the town officially became recognized as the city of Lake Elsinore. In the late nineteenth century, the town experienced a boom due to the mining of gold between the towns of Elsinore and nearby Perris. The most prosperous mine was Good Hope Mine, which produced over $2 million worth of gold (Hudson 1978). In addition to the mining of gold, Lake Elsinore is also known for the mining of tin ore, coal, clay, and asbestos. Following the mining boom, Lake Elsinore began to bring in many tourists due to boat and auto racing and the lakefront resorts. The earliest attraction of Lake Elsinore was the legendary Crescent Bathhouse, which was built in 1923. Historically, the Crescent Bathhouse has attracted many Hollywood stars, such as Will Rodgers. The bathhouse was declared a National Historic Place on July 30, 1975 (Hudson 1978). In 1932, the Ortega Highway and the airport were opened, continuing to bring people into the city. The Great Depression limited expansion, except for the completion of a new post office in 1932 (Hudson 1978).

Regulatory Setting
State

California Environmental Quality Act

CEQA requires a lead agency to analyze whether historic and/or archaeological resources may be adversely impacted by a proposed project. Under CEQA, a "project that may cause a substantial adverse change in the significance of a historic resource is a project that may have a significant effect on the environment" (PRC Section 21084.1). First, the determination must be made as to whether the proposed project involves cultural resources. Second, if cultural resources are present, the proposed project must be analyzed for a potential "substantial adverse change in the significance" of the resource.

Archeological Resources: In terms of archaeological resources, PRC Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest of its type or the best available example of its type;
- Is directly associated with a scientifically recognized important Pre-Contact or historic event or person.

If it can be demonstrated that a proposed project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (PRC Sections 21083.2[a], [b], and [c]). CEQA notes that, if an archaeological resource is neither a unique archaeological resource nor a historical resource, the effects of the project on those resources shall not be considered to be a significant effect on the environment (CEQA Guidelines, Section 15064.5(c)(4).

Human Remains: CEQA Guidelines also describe the procedures to be followed in the event of the unforeseen discovery of human remains. If human remains are discovered during the construction of the Proposed Project, no further disturbance to the site shall occur and the Riverside County Coroner must be notified (PRC Sections 15064.5 and 5097.98). If the Coroner determines the remains to be Native American, the coroner shall notify the NAHC within 24 hours. The NAHC shall identify the person or persons it believes to be the Most Likely Descendant (MLD) of the deceased and the MLD may then make recommendations as to the disposition of the remains within 48 hours. Native American burials in California are also addressed in PRC Sections 5097.9 through 5097.991 and in Section 7050.5 of the California Health and Safety Code.

California State Assembly Bill 52: Assembly Bill 52 of 2014 (AB 52) amended PRC Section 5097.94 and added PRC Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3.

Consultation with Native Americans: AB 52 formalizes the lead agency – tribal consultation process, requiring the lead agency to initiate consultation with California Native American groups that are traditionally and culturally affiliated with the project location, including tribes that may not be federally

recognized. Lead agencies are required to begin consultation prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report.

Tribal Cultural Resources: Section 4 of AB 52 adds Sections 21074 (a) and (b) to the PRC, which address tribal cultural resources and cultural landscapes. Section 21074 (a) defines tribal cultural resources as one of the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

    - Included or determined to be eligible for inclusion in the California Register of Historical Resources and included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

    - A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

Section 1 (a)(9) of AB 52 establishes that "a substantial adverse change to a tribal cultural resource has a significant effect on the environment." Effects on tribal cultural resources should be considered under CEQA. Section 6 of AB 52 adds Section 21080.3.2 to the PRC, which states that parties may propose mitigation measures "capable of avoiding or substantially lessening potential significant impacts to a tribal cultural resource or alternatives that would avoid significant impacts to a tribal cultural resource." Further, if a California Native American tribe requests consultation regarding project alternatives, mitigation measures, or significant effects to tribal cultural resources, the consultation shall include those topics (PRC Section 21080.3.2[a]). The environmental document and the mitigation monitoring and reporting program (where applicable) shall include any mitigation measures that are adopted (PRC Section 21082.3[a]).

RESEARCH METHODS

The following section presents an overview of the methodology used to identify the potential for cultural resources within the project area.

CHRIS Records Search Method

A California Historical Resources Information System (CHRIS) records search was requested on May 24, 2023 and the search results were received on August 8, 2023. The search was conducted in order to identify previously conducted studies and recorded cultural resources within a 0.25-mile (0.40-km) radius of the project area. The Eastern Information Center (EIC) located at the University of California Riverside which houses and maintains records of previously documented cultural resources (including those that meet the definition of a tribal cultural resource) and technical studies located within the Inyo, Mono, and Riverside Counties. The National Register of Historic Places (NRHP) (Office of Archaeology and Historic Preservation 1997), Archaeological Determinations of Eligibility, the Office of Historic Preservation (OHP), and the Directory of Properties in the Historic Property Data File also were reviewed for historic properties within the project area.

Sacred Lands File Search Method

Additionally to requesting a CHRIS records search, a Sacred Lands File (SLF) search of the general vicinity of the project area was as well requested with the Native American Heritage Commission (NAHC) on May 21, 2023. The SLF search identifies and verifies if any known Tribal Cultural Resources, Native American gravesites and/or spiritual sites are present within the vicinity of the project area. The SLF also identifies and provides a list of Native American tribal groups and/or tribal individuals (listed by the NAHC) with traditional lands or cultural places located within the boundaries of the project area. A response from the NAHC was received on June 15, 2023.

Historical Map Review Method

A review of historical maps depicting features such as towns, roads, buildings, and creeks to provide additional information regarding the potential for the presence of historic-era cultural resources within the Project Area. The review was completed using Historical Aerials and the results can be viewed on the Results Section under Figures 5, 6, 7, 8, 9, 10, 11 and 12.

Other Archival Research Method

BioCultural LLC contacted the Lake Elsinore Historical Society on August 18, 2023 to request any additional historical information regarding the Project Area. An answer with historical maps and aerials was received on August 23, 2023. See Figures 13, 14 and 15.

RESULTS

CHRIS Records Search Results

Previously Completed Cultural Studies and Recorded Cultural Resources

A Cultural Resources Records Search Request was sent to the EIC by Project Manager Gregorio Pacheco on May 24, 2023. The Search Results were received on August 8, 2023 and encountered three previously conducted cultural resource technical study reports within the 0.25-mile (0.40-km) buffer area and no previously conducted cultural resource technical study reports within the Project Area (**Table 1**). As well, the records search results revealed two previously recorded cultural resource sites previously found within the 0.25-mile (1.60.40-km) radius of the Project Area and no previously recorded cultural resources within the Project Area (**Table 2**).

Table 1: Previously Completed Cultural Resources Technical Studies.

Report #	Title	Date / Author(s)	Within Project Area
RI-03333	Cultural Resources Survey and Test Excavation, Lake Elsinore, California.	1991 / Hampson, R. Paul	No
RI-04455	Archaeological Assessment of the Proposed Lake Elsinore High School Number Four, Riverside County, California.	2000 / Ferraro, David	No
RI-08257	Letter Report: Proposed Cellular Tower Project(s) in Riverside County, California, Site Number(s)/Name(s): LA-3410B/ The Outhouse TCNS #53090	2009 / Allred, Carla	No

Table 2: Previously Recorded Cultural Resources.

Primary	Trinomial	Other ID	Type	Age	Date / Recorded by	Within Project Area
P-33-010817	-	EUSDI-2	Other	Prehistoric	2000 (Ferraro, D)	No
P-33-011009	-	Resource Name - Etengvo Wumoma; Other - Laguna Grande; Other - Lake Elsinore; Other - Ser. No. 33-2330-95; National Register - 5S2	Site	Prehistoric/ Historic	1982 (Meredith, Pat)	No

Previously Recorded Cultural Resources Findings

Two previously recorded resources were found to be located within the 0.25-mile (1.60.40-km) radius of the Project Area during the records search. One isolated prehistoric artifact previously recorded as EUSDI-2 and with primary number of P-33-10817 and described as a complete rhyolite tri-facial mano found on the surface. The isolated artifact was encountered northwest of the Project Area within the

Lakeside High School at the 0.25-mile boundary mark. Currently, the area around the isolated artifact has been developed and disturbed. Site P-33-011009 known in modern times as Lake Elsinore, is an important and sacred Prehistoric/Historic previously recorded as Etengvo Wumoma or Laguna Grande. This resource has been added to the National Registered. The current Lake Elsinore shore is located south from the Project Area at the 0.25-mile boundary mark. Prehistorically and Historically Lake Elsinore's shore has fluctuated. The earliest historic aerial found is from 1938, which shows the shore at 0.10-mile (0.16-km). Currently, the area south of the Project Area has also historically been developed and disturbed.

SACRED LANDS FILE SEARCH RESULTS

The Sacred Lands File Search results conducted by the Native American Heritage Commission were received on June 15, 2023. The Sacred Lands File Search results included a list of Native American tribal groups or individuals listed and who may have knowledge of tribal resources and/or scared places within the project area and its surroundings. The search results were Positive for Tribal Resources and/or of importance for the Native American tribes listed on the list provided (Appendix C). No further Native American coordination was completed as it is assumed CEQA AB 52 tribal consultation will be conducted (as needed) by the lead agency (City of Lake Elsinore). The NAHC Native American contacts list is provided in Appendix D.

HISTORICAL MAP REVIEW RESULTS

The historical and recent aerials utilized for the review of this project were – 1938, 1967, 1978, 1980, 1994, 2005, 2014 and 2020 to provide additional information regarding the potential for the presence of historic-era cultural resources, changes and /or disturbances within the Project Area. The historical aerials review resulted in the confirmation of the newly identified historical structural foundation site (Structure 01) within the project area on the 1967 historical map. A detail description of the new site is provided on the Field Methods and Results section. See Figures 5, 6, 7, 8, 9, 10, 11 and 12 to see the historical aerial's results.

OTHER ARCHIVAL RESEARCH RESULTS

The Lake Elsinore Historical Society provided additional information regarding the newly identified historical structural foundation site (Structure 01) found within the Project Area. The Society provided the following description:

"The property you asked about was adjacent to primarily farmland. Much of Lake Elsinore lands in the Northwesterly end of the lake tended to be farms. The property you specified did appear to have structures on it which may have been a packing facility for the crops once harvested. We were unable to find any further information at this time However you may want to check with the Lake Elsinore Planning Commission about the history of the land use in that area (McElroy, 2023)."

The Lake Elsinore Planning Commission was contacted regarding information and no answer has been received. See Figures 13, 14 and 15 for the aerials and map provided.

Other information found regarding the history of the land use for the Project Area, was located on a local Orange County magazine named Orange Coast. In 1985 the Project Area was used as a Reducing and Conditioning Spa called The Grove. In 1987 the Project Area continued being used as a health related business but as the Lakeside Health Resort. In 1989 the Project Area continued as the Lakeside Health Resort. See Figures 16, 17 and 18 for ads regarding the business within the Project Area.

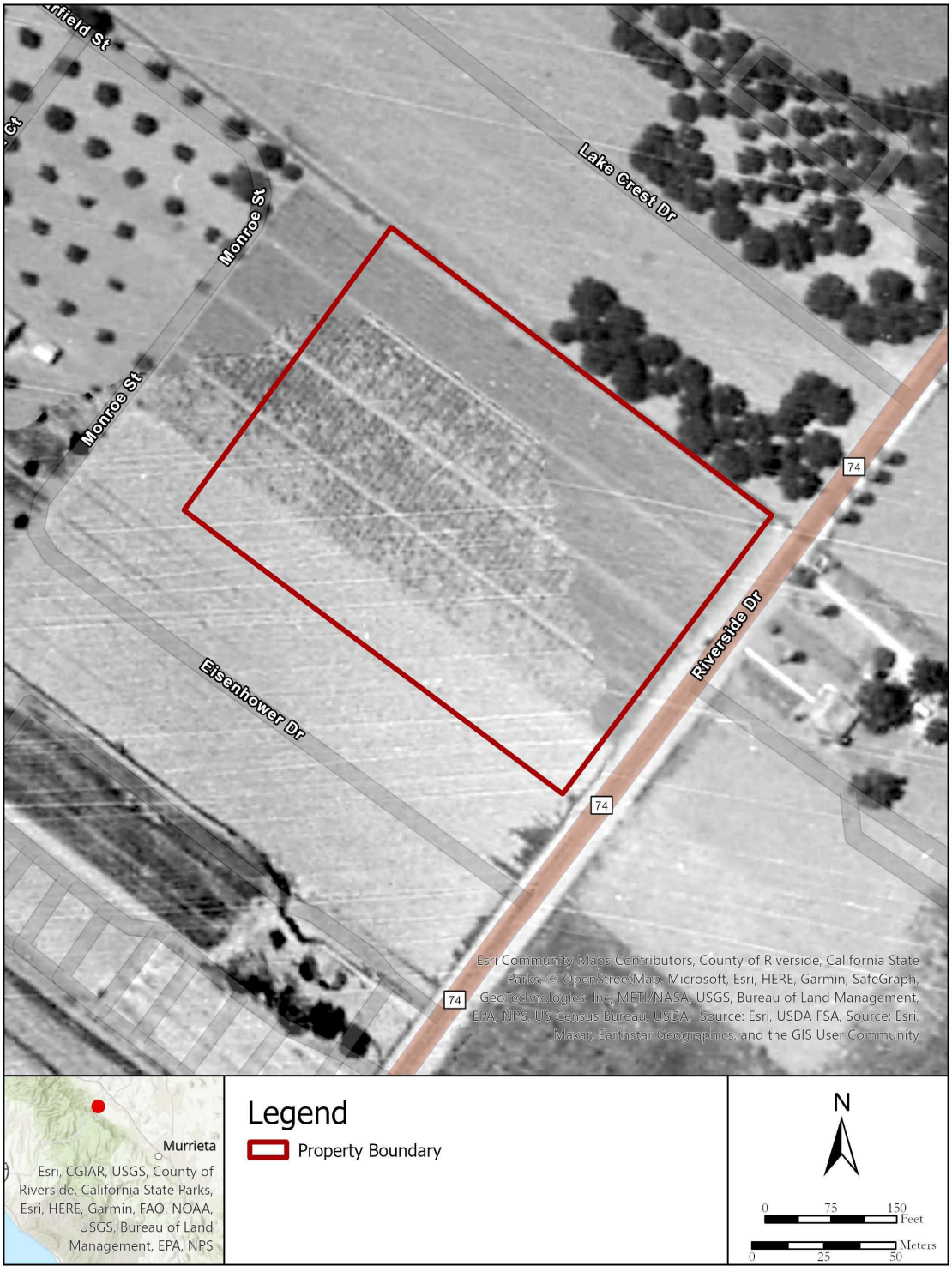


Figure 5. Project Location Aerial Map of 1938.



Figure 6. Project Location Aerial Map of 1967.



Figure 7. Project Location Aerial Map of 1978.



Figure 8. Project Location Aerial Map of 1980.



Figure 9. Project Location Aerial Map of 1994.

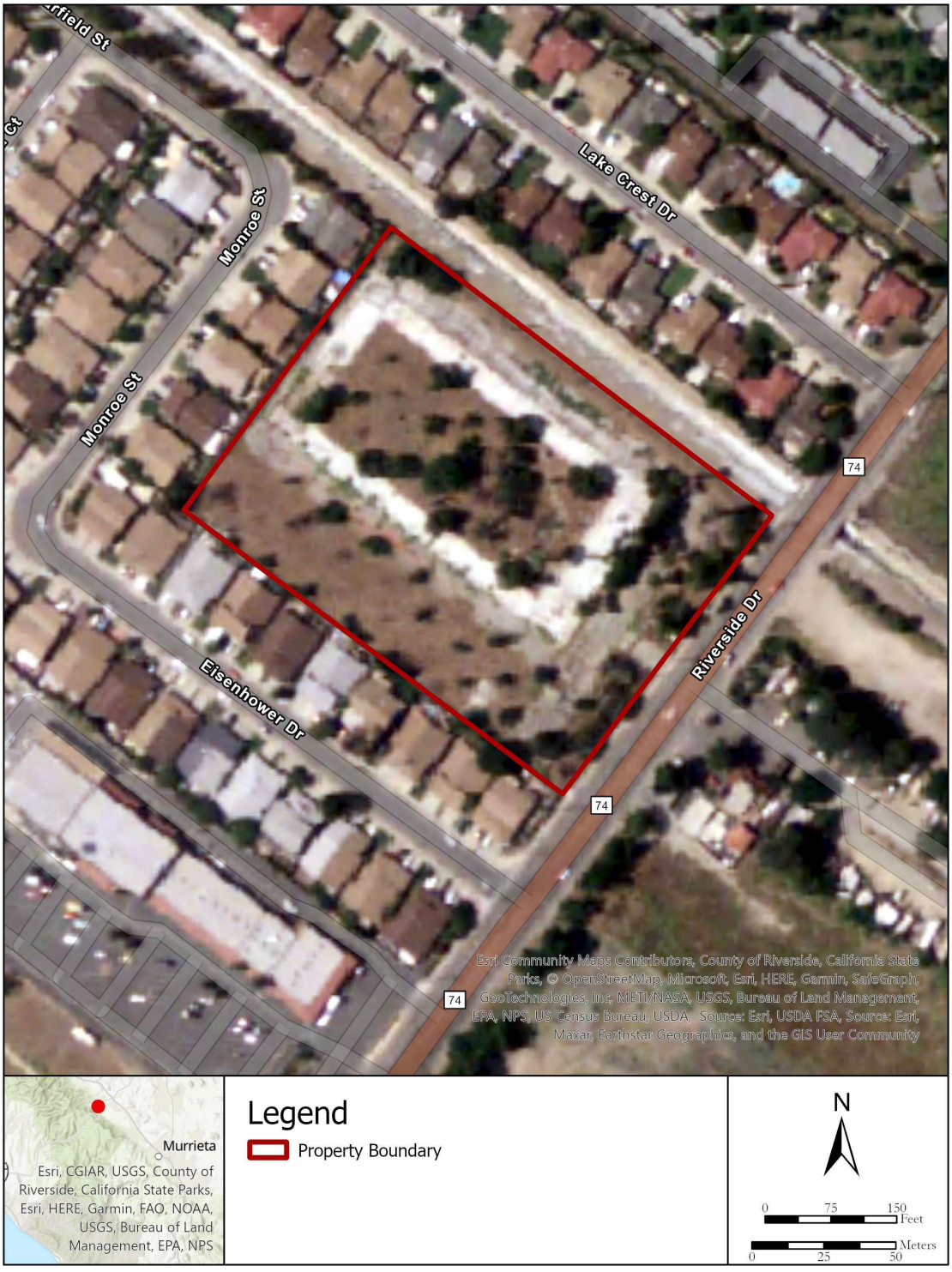


Figure 10. Project Location Aerial Map of 2005.



Figure 11. Project Location Aerial Map of 2014.

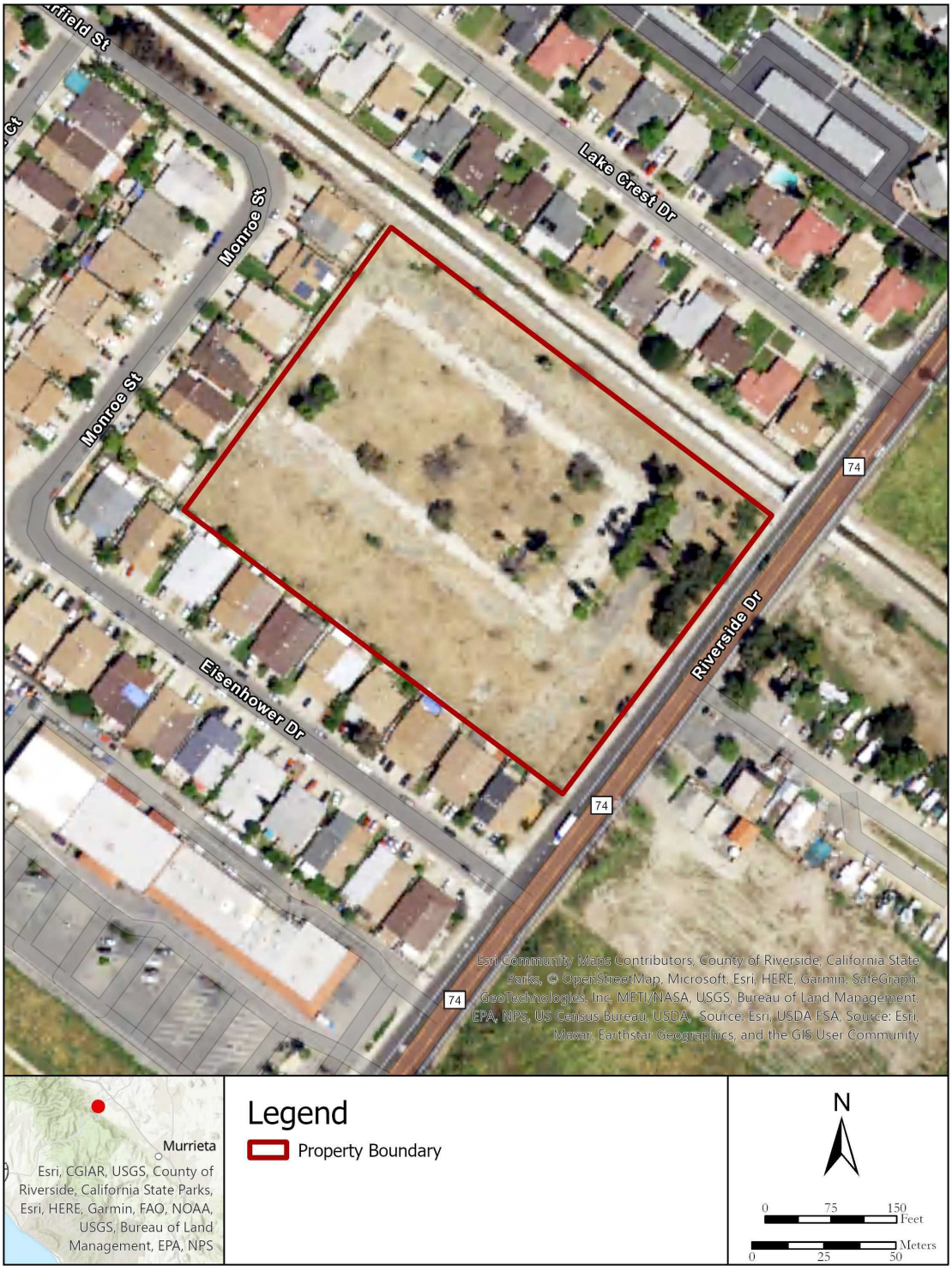


Figure 12. Project Location Aerial Map of 2020.



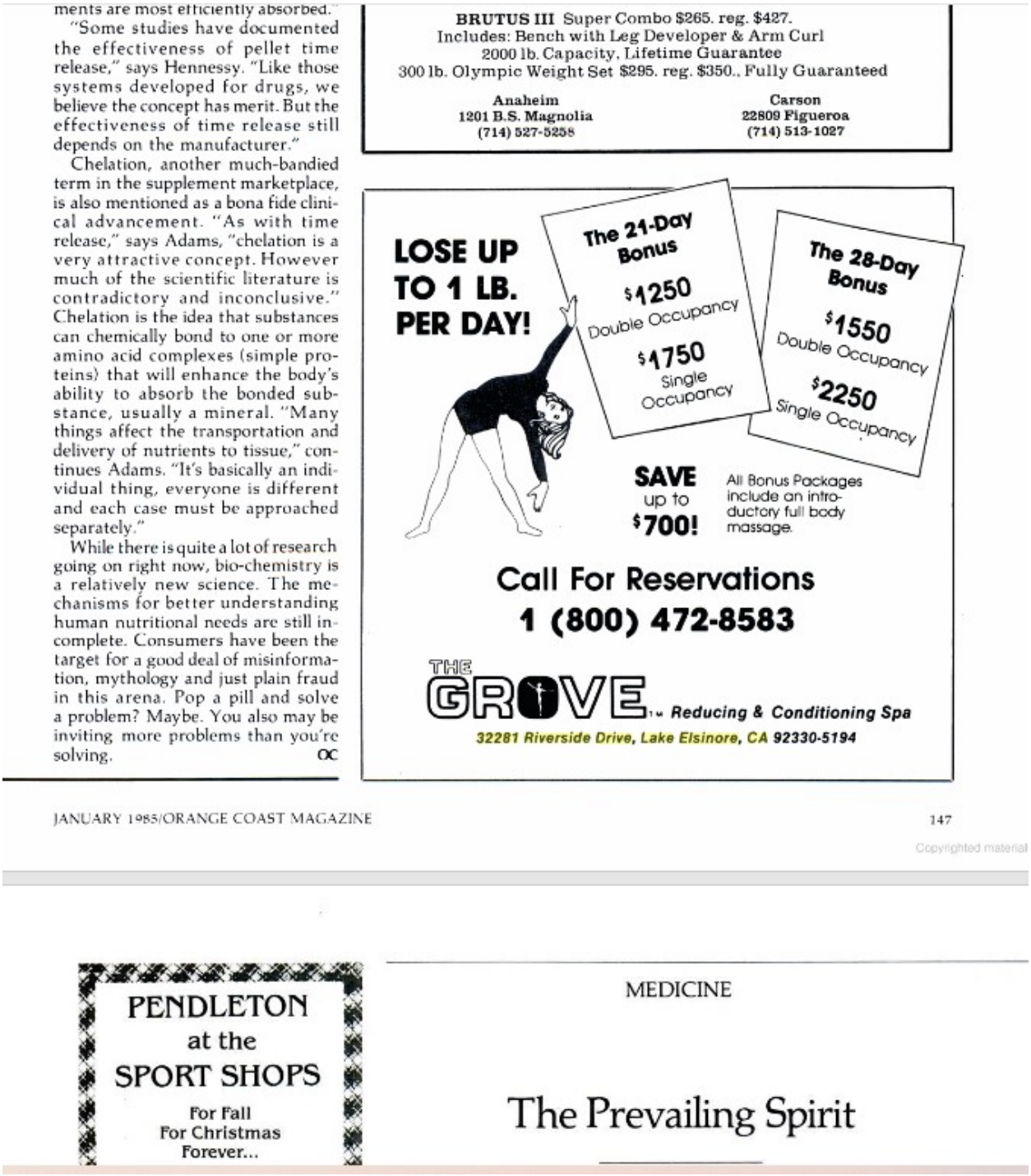
Figure 13. Project located to the left portion of Aerial.



Figure 14. Project Location Aerial.



Figure 15. Project Located on the middle section of the map.



ments are most efficiently absorbed."

"Some studies have documented the effectiveness of pellet time release," says Hennessy. "Like those systems developed for drugs, we believe the concept has merit. But the effectiveness of time release still depends on the manufacturer."

Chelation, another much-bandied term in the supplement marketplace, is also mentioned as a bona fide clinical advancement. "As with time release," says Adams, "chelation is a very attractive concept. However much of the scientific literature is contradictory and inconclusive." Chelation is the idea that substances can chemically bond to one or more amino acid complexes (simple proteins) that will enhance the body's ability to absorb the bonded substance, usually a mineral. "Many things affect the transportation and delivery of nutrients to tissue," continues Adams. "It's basically an individual thing, everyone is different and each case must be approached separately."

While there is quite a lot of research going on right now, bio-chemistry is a relatively new science. The mechanisms for better understanding human nutritional needs are still incomplete. Consumers have been the target for a good deal of misinformation, mythology and just plain fraud in this arena. Pop a pill and solve a problem? Maybe. You also may be inviting more problems than you're solving. OC

BRUTUS III Super Combo $265. reg. $427.
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PENDLETON
at the
SPORT SHOPS
For Fall
For Christmas
Forever...

MEDICINE

The Prevailing Spirit

Figure 16. 1985 The Grove business in the Project Area.

Lakeside features a "wellness" program designed to meet the needs of each guest.

case of Two Bunch Palms cosmetics is placed in each room. Tennis, swimming and a restaurant are also featured. Room rates are $80 to $225. 67-425 Two Bunch Palms Trail, Desert Hot Springs. 619-329-8791.

La Costa

This world-famous health spa offers three programs: the original spa program (health, nutrition and beauty classes plus facials and massage); the new fitness beauty regimen (the orignal program plus fitness analysis to achieve goals); and the new life style longevity center (a 14-day program that covers weight control, behavior modification, longevity and the quality of life). Tennis, golf, swimming, spa, weight room and thermal wrap are also available. A double room is $160 per person, per day, for a four-day, three-night sampler. 2100 Costa del Mar Road, Carlsbad. 619-438-9111 or 800-542-6200.

Lakeside Health Resort

Located in the Lake Elsinore Valley, Lakeside features a "wellness" program that is designed to meet the needs of each individual guest. Some of the amenities include heated indoor and outdoor pools, hot tub, sauna, herbal baths, dance exercise room, weight room and bicycles. Lakeside also has special evening programs for guests, with information on topics related to health, fitness and image. Double room rates are $99.

Las Vegas Hilton

How do you describe the Las Vegas Hilton?

I mean, referring to it as a hotel would be like calling the Empire State Building an office high-rise, or Raquel Welch just one of the girls.

Actually, the Hilton reminds me of the ultimate cruise ship, with one port of call.

Like most majestic sea-going vessels, the Hilton is an all-inclusive resort complex—only bigger. With 3,174 rooms located within its 375-foot high stone-and-glass tower, it is the largest resort complex in the world. This is the Queen Elizabeth II of hotels.

There are other similarities, too. Take dining, for instance.

Cruise ships are known for their sumptuous gourmet cuisine. The Hilton also features gourmet fare, but unlike cruise ships, which usually have one seating area, it boasts 13 elegant dining facilities.

The most impressive is Le Montrachet. This fine French restaurant's wine cellar is a connoisseur's dream, featuring a selection of more than 400 wines from all over the world. If Le Montrachet doesn't carry the wine you want, it probably isn't worth drinking.

Andiamo is the hotel's Italian eatery. It offers an array of pastas and pizzas, seafood and salads. The Barronshire Prime Rib Room is somewhat self-explanatory. Three different cuts on the menu are enough to satisfy any appetite. What the name doesn't tell you about is its unusual setting. The walls of the room are lined with books, thousands of them. It's enough to keep even the hungriest bibliophile occupied while waiting for his meal.

Enter the Hilton Steak House and you might think you were in Texas instead of Nevada. The colorful surroundings, however, take a back seat to the restaurant's famous mahogany-broiled steaks.

For atmosphere, Benihana Village is the most unusual—it's like an Oriental fantasyland. The complex includes three restaurants and four intimate cocktail areas, and seats over 400. It's all part of a life-size Japanese village, complete with a three-story Imperial Palace, lush gardens, running streams and large, exotic statuary. For entertainment, "Jambirdee" and "Benihana Musical Waters" are charming production numbers. The village setting has the feel of being outdoors, enhanced by realistic lightning and thunderstorms that bring pouring rains.

Entertainment is a big part of any cruise, and it plays a major role at the Hilton, too. The main difference is in the quality of the entertainers. What ship can boast the likes of Bill Cosby, Dionne Warwick and Engelbert Humperdinck? These performers and others of their caliber are regulars at the 1,500-seat Hilton Showroom. For late-night entertainment, the Casino Lounge features music and dancing till 3 a.m.

Gambling is a popular cruise diversion, but no ship can compare to the Las Vegas resort's spacious casino, or its new Race and Sports SuperBook. Monte Carlo would have a hard time competing.

The 30,500-square foot SuperBook is the largest facility of its kind anywhere. It contains the largest wall of solid video equipment in the world—46 video screens—and is equipped with the latest in sports and race betting technology.

For kids, the Hilton has what it calls its "Youth Hotel," a separate facility designed especially to accommodate and entertain children. The professional staff leads classes in arts and crafts, drama, creative dancing, music, tumbling and other activities for youngsters from 3 to 18. Outside activities include basketball and

Figure 17. 1987 Lakeside Health Resort business in the Project Area.

and good health is the historic Sonoma Mission Inn and Spa. Located in the heart of Northern California's wine country, just 40 miles north of San Francisco, the inn was founded in the 1900s by an Englishman who recognized the commercial value of the hot water spa on his property and erected a bathhouse on the site.

exercise class costs $10; with another $60, you can give those tired muscles an aromatherapy massage. Rooms at the inn range from $95 to $475. Or the inn offers packages such as the two-day spa package for $680 (single) and $530 (double). The package includes a two-night stay; one full body massage, herbal wrap or hydro massage; one facial peel or hydro-

package includes room, unlimited use of the three mineral pools, plus the full mud bath treatment for $146 double occupancy. 1507 Lincoln Avenue, Calistoga 94515. 707-942-4102.

Two Bunch Palms

Two Bunch Palms was once a fortress for one of American history's most infa-

JANUARY 1989/ORANGE COAST MAGAZINE 45

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SPA GUIDE

For more than 20 years, La Costa has been heralded as one of the most complete spa resorts in the nation.

mous gangsters—Al Capone. Capone even dug tunnels as escape routes out of his desert oasis.

Today, Two Bunch Palms in Desert Hot Springs is one of the finest spa getaways in the state. Gravel paths wind through groves of palm and tamarisk trees. The spa still follows privacy standards set by Capone; a guarded gate is the only access and each arrival is screened, though the guards no longer carry Tommy guns.

Once inside, guests can indulge in a large, lavishly shaded soaking pool filled with natural artesian mineral waters that are kept a constant, toasty 148-degree temperature. For exercise, lighted tennis courts, an exercise pool and acres of landscaped paths transport visitors into the quiet heart of the desert.

For the ultimate in relaxation, guests can enjoy a massage in the spa given by an expert trained in Swedish or Shiatsu treatments. Dining at the spa is an experience in fine California cuisine. And the accommodations range from bungalows to modern condominiums. Rates run from $95 to $295. 67-425 Two Bunch

cific muscle groups. The afternoon is filled with body conditioning, weight training, dance exercise and yoga.

The meals and the exercise program are designed for weight loss and body strengthening. The day always ends with a sunset stroll along the lake. The resort also has a full-service beauty salon and a masseuse.

Rates for the health resort run $129 (single) and $99 (double) nightly. Weekly rates are $903 (single) and $693 (double). All rates include room, meals, full exercise program, lecture series, evening programs and full use of the facilities. 32281 Riverside Drive, Lake Elsinore 92330. 674-1501.

Glen Ivy Hot Springs

Glen Ivy is the self-proclaimed "Club Mud" of Corona. The spa is located on a hot spring with a continuous flow of hot water (104 degrees) that fills 13 pools, baths and spas.

The climate is usually sunnier, warmer and drier than the beach and balmier than the desert. Not only is Glen Ivy known for good weather, but also for its

quired in advance for personal services. 25000 Glen Ivy Road, Corona 91719. 737-4723.

La Costa

For more than 20 years, La Costa has been heralded as one of the most complete spa resorts in the nation. To live up to that reputation, the resort initiated a $100 million renovation to upgrade existing facilities and build new ones in Carlsbad.

The new facilities include a bi-level clubhouse overlooking two PGA championship golf courses and an aquatic center complete with a cascading waterfall.

The spa at La Costa has all the traditional facilities and services, such as herbal wraps, salt glow, massage and saunas. It also offers the La Costa Life Fitness Program, a medically supervised program designed for those who want to make total fitness an on-going part of everyday life. The fitness center at the resort includes state-of-the-art machines for every phase of physical fitness.

The La Costa salon has an interna-

Figure 18. 1989 Lakeside Health Resort business in the Project Area.

FIELD METHODS AND RESULTS

On August 17, 2023, BioCultural LLC Archaeologist, Gregorio Pacheco B.A., completed an intensive pedestrian survey of the 4.95-acres (APN 379-315-0330) Project Area. The survey was completed using 15-meter spaced transects, oriented northwest to southeast. Transects started on the southeast end of the project area near Riverside Drive and ended on the northwest end by the houses bordering the Project Area. Close inspection was given to all exposed soils and cut banks for the presence of archaeological materials. The Project Area was photographed using a high-resolution digital camera (see Appendix A, Field Figures) and field observations were captured in written notes. Locational data was collected with Environmental Systems Research Institute Arc Collector application on Android. The Project Area is a flat and heavily disturbed semi-developed square shaped lot with a 30-40% ground visibility and dense vegetation. The Project Area was surveyed entirely and inspected for Pre-Contact and historical cultural resource features. The Project was accessible by foot only from the south and by vehicle only from the south as well. The soils observed consisted of younger alluvial clays and silts. Vegetation consisted of Russian thistle (Salsola tragus), short-pod mustard (Hirschfeldia incana), wall barley (Hordeum murinum), cheesebush (Malva parviflora), tumbleweed (Amaranthus albus), puncture vine (Tribulus terrestris), and salt cedar (Tamarix ramosissima), ripgut brome (Bromus diandrus), slender wild oats (Avena barbata), stinknet (Oncosiphon pilulifer), prickly lettuce (Lactuca serriola), common groundsel (Senecio vulgaris), pokeweed (Phytolacca americana), and the native common fiddleneck (Amsinckia intermedia), rigid fiddleneck (Amsinckia retrorsa), and Jimsonweed (Datura wrightii), oleander (Nerium oleander), Mexican fan palm (Washingtonia robusta), lemon tree (Citrus limon), Chinese pistach (Pistacia chinensis), and walnut (Juglans cf hindsii, possibly regia x hindsii). Heavy disturbances were observed throughout the site. The disturbances consisted of developed concrete floors and landscaped areas, and construction and household debris.

Observed Resources and Evaluations

BioCultural LLC identified and recorded one large historical structural pad foundation site with assigned temporary number of Structure 01 and composed of a rectangular concrete floor pads with a northwest to a southeast orientation. The floor pads do not have any standing structures. The floor pads are continuous in a rectangular shape with no additional features in the middle portion, only vegetation, trees and graded soil was observed. The floor pads have a southeast to northwest inclination with two segments of elongated stairs and ramps on both sides of the rectangular structure (north and south). The northwest and the southeast sides of the floor pads are wider (northwest at 30ft wide and southeast at 50ft wide) than the north and south (25ft wide) sides. The southeast side appears to have a wall division running across (northeast to southwest) and 9” x 9” square vinyl floor tile imprints. There is an asphalt paved driveway and road that goes around the floor structure. The road measures 38ft wide on the sides (north and south) and 18ft on the northwest, and 55ft on the southeast location. The southeast also has an additional paved segment probably used for parking.

The Lake Elsinore Historical Society indicated the structure may have been a packing facility for the crops, as the property was adjacent to primarily farmland, as shown in the 1938 aerial (**Figure 5**). The earliest structure image found was from 1967 (Figure 6), where a rectangular building can be seen, with what it seems to be a pool in the middle portion of the structure. By the 1980’s the aerial included as **Figure 8**, shows the rectangular building with a clear road and parking spaces around the building. Additional research revealed the building served as a health and spa business resort in 1980’s, as seen in **Figures 16, 17** and **18**.

The structural concrete floor pads and asphalt road and driveway, are not in prestige conditions as they have been affected by weather events, ground disturbance activities, demolition activities, usage activities and modern refuse deposits.

The site is not associated with events that have made a significant contribution to the broad patterns of the history and cultural heritage of the United States (Criterion 1); the site is not directly associated with the lives of persons significant to the nation's past (Criterion 2); this site does not embody distinctive characteristics of a type, period, region, or method of construction, or that represents the work of a master, or that possess high artistic values, or that represents a significant and distinguishable entity whose components may lack individual distinction (Criterion 3); nor is there the potential for subsurface or additional data that could yield information important to the prehistory or history of the nation (Criterion 4). The site consists of the remnant floor pads of a building and asphalt road associated with it. The earliest photo or record dates back to 1967, with no evidence of subsurface potential, dating back to the Post 1945 era. As a result, this site is recommended not eligible under any criteria for listing on the CRHR.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The cultural resource assessment of the 4.95-acres (APN 379-315-0330) Project Area included research and review of relevant, historic maps, records search results from the EIC, SLF results from the NAHC, and an intense pedestrian survey of the Project Area. The result of this assessment concluded with positive results for a new resource. BioCultural LLC archaeologists recorded, evaluated, and provided recommendations for one large historical structural pad foundation site with assigned temporary number of Structure 01. No resources were collected. The historic structural pad foundation site Structure 01 was evaluated using CRHR eligibility criteria to determine whether it constitutes eligible historical resources under CRHR as required under CEQA. BioCultural LLC concluded the large historical structural pad foundation site Structure 01 is recommended not eligible under any criteria for listing on the CRHR. Based on the surficial review of archaeological materials present this site is recommended not eligible for CRHR under any criteria. Should additional information be identified during subsurface excavation for the Project, such findings would require additional review and consideration for CRHR eligibility. Mitigation Measurement recommendations have been provided below to reduce any potential disruption to cultural resources.

Recommendations

The cultural resources assessment resulted in the identification of one large historical structural pad foundation site (Structure 01) within the Project Area during the pedestrian survey activities. The newly found historic site was evaluated using CRHR eligibility criteria to determine whether or not the site constitutes as an historical site under CEQA. The archeological site lacks potential for significant subsurface deposits or structural components and was determined to retain no further research potential beyond recording its location and attributes, which has been completed. However, the potential to encounter prehistoric buried cultural materials during the grading of the Project Area is feasible. These materials may exist in the Project Area, but remain undetected. The proximity to Lake Elsinore indicates the Project Area is sensitive for archaeological materials as the buried archaeological sites are likely possible within the shoreline of Lake Elsinore.

BioCultural LLC recommends having an archaeological and a Tribal monitor onsite for activities related to the initial construction-related ground disturbances activities associated with the development of the Project, as there is the potential to find resources that cannot be avoided during construction.

BioCultural LLC recommends the following mitigation measures to be adopted and implemented by the Project proponent and the lead agency to reduce any potential disruption to cultural resources:

• Prior to construction of the proposed project, a qualified archaeological monitor with relevant Riverside County experience and who will work directly under the direction of a Secretary of the Interior's (SOI) professional archaeologist, should be retained by the Project proponent to monitor the initial construction-related ground disturbances activities as there is potential to encounter buried cultural materials, as well as in the case cultural resources are found and cannot be avoided. If the lead agency requires, an Archaeological Management Plan will be prepared to establish procedures for monitoring.

• If archaeological monitoring is needed, the Project archaeologist, may, at their discretion, terminate monitoring if (and only if) no subsurface cultural resources have been detected. If buried cultural resource artifacts are uncovered during ground disturbance activities the archaeological monitor will have the authority to re-direct grading activities to other location within the Project to examine the resources and possibly conduct subsurface testing (Phase II), as indicated in the Archaeological Management Plan. A research design associated with such work must be written before any subsurface fieldwork begins. The Plan shall include a description of how and where artifacts will be curated. If the site is determined to be significant through the testing process, continued impacts to the site would be considered significant and possibly unavoidable impacts. Impacts to the significance resource must take place either through avoidance or a Phase 3 excavation. Should any prehistoric or tribal cultural resources be identified within the Project Area, Native American consulting parties shall be contacted regarding the disposition and treatment of the resource(s).

• In the event of the unanticipated discovery of human remains, work in the immediate vicinity of the find shall stop and no further disturbance shall occur until the Riverside County Coroner has made a determination of origin and disposition pursuant to CEQA, Section 15064.5(e), State of California Health and Safety Code Section 7050.5 and PRC Section 5097.98. The County Coroner shall be notified of the find immediately. If the Coroner determines that the human remains are of Native American in origin, then the Corner shall notify the NAHC, who is responsible for identifying and notifying the Native American most likely descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and make recommendations regarding the treatment and disposition of human remains and items associated with Native American burials. If an agreement regarding disposition of human remains between the MLD and the Landowner or a MLD cannot be identified the landowner shall comply with the disposition and documentation required as defined by PCR 5097.98 Section (e).

CERTIFICATION

CERTIFICATION: I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this archaeological report, and the facts, statements, and information presented are true and correct to the best of my knowledge and belief.



DATE: 09/29/2023 SIGNED:

PRINTED NAME: David Sosa, M.A., R.P.A.

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Appendix A.
Field Figures & Results Map (Confidential)



Figure 19. Project Area Overview of Resource Structure 01. Northwest view.



Figure 20. Project Area Overview of Resource Structure 01 and asphalt road. North view.



Figure 21. Project Area Overview. North view.



Figure 22. Project Area Overview of Resource Structure 01. Southeast view.



Figure 23. Project Area Overview of Driveway. Northwest view.



Figure 24. Project Area Overview, Site Disturbance. West view.



Figure 25. Project Area Overview, Site Disturbance. East view.



Figure 26. Project Area 9” x 9” square vinyl floor tile imprints. Southeast view.

Figure 19. Project Results Map.

Appendix B.
Records Search Results

BioCultural LLC
ENVIRONMENTAL CONSULTANTS

Gregorio Pacheco <gregorio.pacheco@biocultural.net>

Option results for the Commercial Residential Development

2 mensajes

eickw . <eickw@ucr.edu> 3 de agosto de 2023, 14:59
Para: Gregorio Pacheco <gregorio.pacheco@biocultural.net>

Hello,

Please note the files are being shared through Google Drive since it is a large size. Attached is the link to the requested files. Please note they are encrypted and password protected. You will need either 7-Zip (free software recommended to us by OHP) or WinZip. I will be sending the password in a separate email. You will have to download the file first, then right-click on the file, then choose what to open it with. This Link will only work for those emails who received this email. Trying to share or open the files with a different email will NOT work.

As the Information Center for Riverside, Inyo, and Mono Counties, it is necessary that we receive a copy of all cultural resources reports and site information pertaining to this county in order to maintain our map and manuscript files. Confidential information provided with this records search regarding the location of cultural resources outside the boundaries of your project area should not be included in reports addressing the project area.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the California Historical Resources Information System (CHRIS) Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

The California Office of Historic Preservation (OHP) contracts with the California Historical Resources Information System's (CHRIS) regional Information Centers (ICs) to maintain information in the CHRIS inventory and make it available to local, state, and federal agencies, cultural resource professionals, Native American tribes, researchers, and the public. Recommendations made by the IC coordinators or their staff regarding the interpretation and application of this information are advisory only. Such recommendations do not necessarily represent the evaluation or opinion of the State Historic Preservation Officer in carrying out the OHP's regulatory authority under federal and state law.

Just a friendly reminder, anyone NOT listed as an authorized individual under their company's CHRIS Access and Use Agreement who is handling CHRIS data obtained from any Information Centers is in violation of the agreement since sharing data within the company or outside the company with those who are NOT listed as authorized users is prohibited per the CHRIS Access and Use Agreement.

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Client ST-6997.7z

Best,

Eastern Information Center
Watkins Hall Room 1313
c/o Department of Anthropology
University of California
900 University Avenue
Riverside, CA 92521-0418

Gregorio Pacheco <gregorio.pacheco@biocultural.net> 4 de agosto de 2023, 17:01
Para: "eickw ." <eickw@ucr.edu>

Thank you so much Eulices!!!!!!

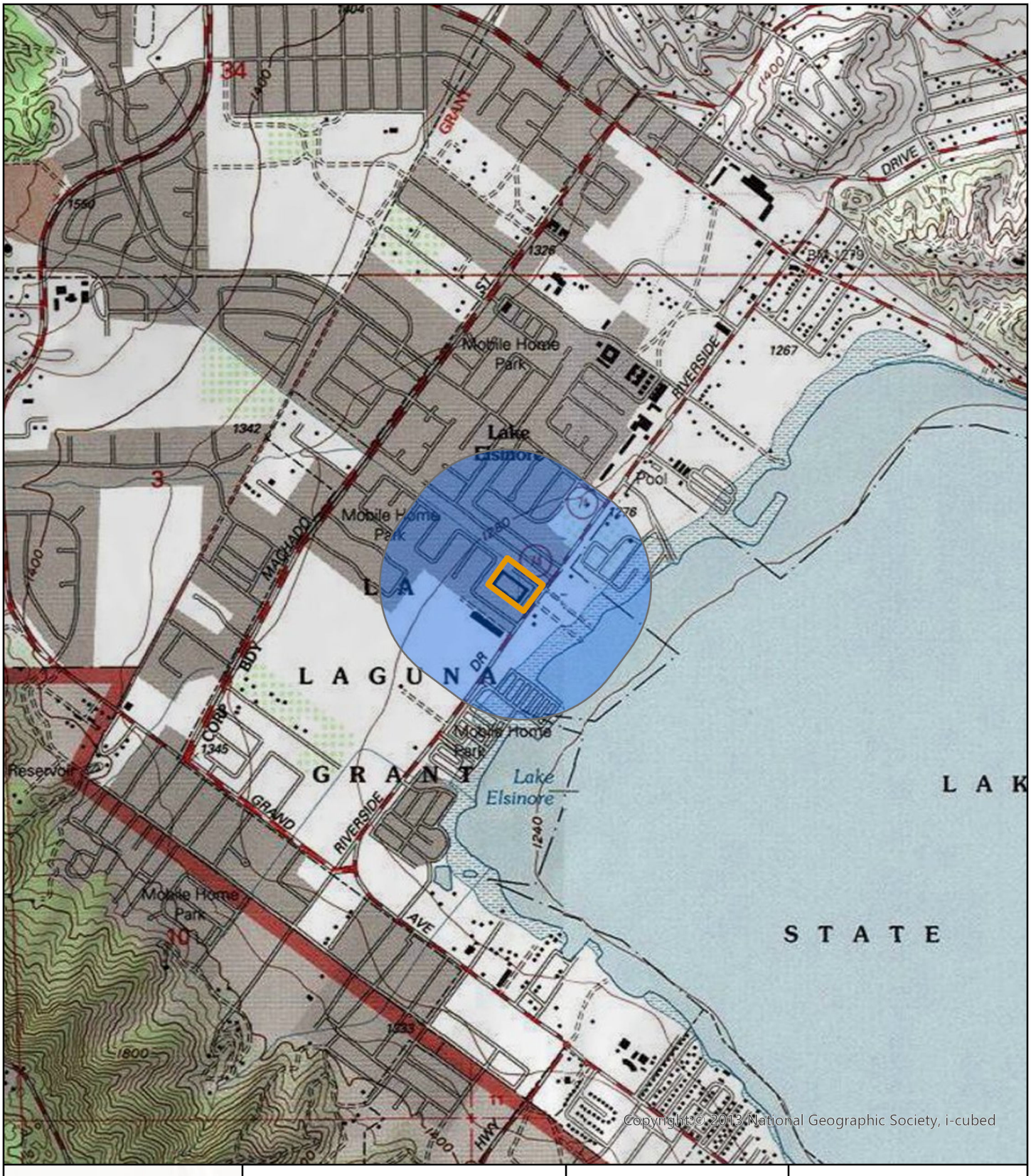
Have a great weekend!!!!

Sincerely,

Gregorio

Sent from my iPhone

> On Aug 3, 2023, at 2:59 PM, eickw . <eickw@ucr.edu> wrote:
>
> [El texto citado está oculto]



Esri, NASA, NGA, USGS

Legend

- Elsinore Parcel
- 0.25-mile Buffer

Alberhill 7.5-minute Quadrangle
Township 6 South
Range 5 West
Section Not Defined
San Bernardino Base Meridian

N

0 1,000 2,000 Feet

0 375 750 Meters

Appendix C.
Sacred Lands File Search Results

NATIVE AMERICAN HERITAGE COMMISSION

ACTING CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Sara Dutschke
Miwok

COMMISSIONER
Isaac Bojorquez
Ohlone-Costanoan

COMMISSIONER
Buffy McQuillen
Yokayo Pomo, Yuki, Nomlaki

COMMISSIONER
Wayne Nelson
Luiseño

COMMISSIONER
Stanley Rodriguez
Kumeyaay

COMMISSIONER
Vacant

COMMISSIONER
Vacant

COMMISSIONER
Vacant

EXECUTIVE SECRETARY
Raymond C. Hitchcock
Miwok, Nisenan

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

June 15, 2023

Gregorio Pacheco
BioCultural LLC

Via Email to: Gregorio.pacheco@biocultural.net

Re: Environmental Services in Support of a Commercial Residential Development Project, Riverside County

Dear Mr. Pacheco:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were positive. Please contact the tribes on the attached list for more information. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Riverside County
6/15/2023

Agua Caliente Band of Cahuilla Indians
Reid Milanovich, Chairperson
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6800
Fax: (760) 699-6919
laviles@aguacaliente.net

Agua Caliente Band of Cahuilla Indians
Patricia Garcia-Plotkin, Director
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6907
Fax: (760) 699-6924
ACBCI-THPO@aguacaliente.net

Juaneno Band of Mission Indians
Sonia Johnston, Chairperson
P.O. Box 25628 — Juaneno
Santa Ana, CA, 92799
sonia.johnston@sbcglobal.net

Juaneno Band of Mission Indians Acjachemen Nation - Belardes
Joyce Perry, Cultural Resource Director
4955 Paseo Segovia — Juaneno
Irvine, CA, 92603
Phone: (949) 293 - 8522
kaamalam@gmail.com

Juaneno Band of Mission Indians Acjachemen Nation 84A
Heidi Lucero, Chairperson, THPO
31411-A La Matanza Street — Juaneno
San Juan Capistrano, CA, 92675
Phone: (562) 879 - 2884
jbmian.chairwoman@gmail.com

La Jolla Band of Luiseno Indians
Norma Contreras, Chairperson
22000 Highway 76 — Luiseno
Pauma Valley, CA, 92061
Phone: (760) 742 - 3771

Pala Band of Mission Indians
Alexis Wallick, Assistant THPO
PMB 50, 35008 Pala Temecula Road — Cupeno, Luiseno
Pala, CA, 92059
Phone: (760) 891 - 3537
awallick@palatribe.com

Pala Band of Mission Indians
Shasta Gaughen, Tribal Historic Preservation Officer
PMB 50, 35008 Pala Temecula Road — Cupeno, Luiseno
Pala, CA, 92059
Phone: (760) 891 - 3515
Fax: (760) 742-3189
sgaughen@palatribe.com

Pauma Band of Luiseno Indians
Temet Aguilar, Chairperson
P.O. Box 369 — Luiseno
Pauma Valley, CA, 92061
Phone: (760) 742 - 1289
Fax: (760) 742-3422
bennaecalac@aol.com

Pechanga Band of Indians
Paul Macarro, Cultural Resources Coordinator
P.O. Box 1477 — Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6306
Fax: (951) 506-9491
pmacarro@pechanga-nsn.gov

Pechanga Band of Indians
Mark Macarro, Chairperson
P.O. Box 1477 — Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6000
Fax: (951) 695-1778
epreston@pechanga-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Environmental Services in Support of a Commercial Residential Development Project, Riverside County.

Native American Heritage Commission
Native American Contact List
Riverside County
6/15/2023

Quechan Tribe of the Fort Yuma Reservation
Jordan Joaquin, President,
Quechan Tribal Council
P.O.Box 1899 Quechan
Yuma, AZ, 85366
Phone: (760) 919 - 3600
executivesecretary@quechantribe.com

Quechan Tribe of the Fort Yuma Reservation
Manfred Scott, Acting Chairman - Kw'ts'an Cultural Committee
P.O. Box 1899 Quechan
Yuma, AZ, 85366
Phone: (928) 210 - 8739
culturalcommittee@quechantribe.com

Quechan Tribe of the Fort Yuma Reservation
Jill McCormick, Historic Preservation Officer
P.O. Box 1899 Quechan
Yuma, AZ, 85366
Phone: (928) 261 - 0254
historicpreservation@quechantribe.com

Rincon Band of Luiseno Indians
Cheryl Madrigal, Cultural Resources Manager/Tribal Historic Preservation Officer
One Government Center Lane Luiseno
Valley Center, CA, 92082
Phone: (760) 648 - 3000
cmadrigal@rincon-nsn.gov

Rincon Band of Luiseno Indians
Laurie Gonzalez, Tribal Council/Culture Committee Member
One Government Center Lane Luiseno
Valley Center, CA, 92082
Phone: (760) 484 - 4835
lgonzalez@rincon-nsn.gov

Rincon Band of Luiseno Indians
Joseph Linton, Tribal Council/Culture Committee Member
One Government Center Lane Luiseno
Valley Center, CA, 92082
Phone: (760) 803 - 3548
jlinton@rincon-nsn.gov

Santa Rosa Band of Cahuilla Indians
Lovina Redner, Tribal Chair
P.O. Box 391820 Cahuilla
Anza, CA, 92539
Phone: (951) 659 - 2700
Fax: (951) 659-2228
lsaul@santarosa-nsn.gov

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 Cahuilla
San Jacinto, CA, 92581 Luiseno
Phone: (951) 663 - 5279
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

Soboba Band of Luiseno Indians
Isaiah Vivanco, Chairperson
P. O. Box 487 Cahuilla
San Jacinto, CA, 92581 Luiseno
Phone: (951) 654 - 5544
Fax: (951) 654-4198
ivivanco@soboba-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Environmental Services in Support of a Commercial Residential Development Project, Riverside County.

Appendix D.
Department of Parks and Recreation 523 Forms (Confidential)

Appendix C2 – Paleontological Resources Assessment

PALEOWEST

T: 909.254.4035
F: 602.254.6280
info@paleowest.com

REDLANDS, CALIFORNIA
301 9th St., Suite 114
Redlands, California 92374

July 10, 2023

Grant Keene
WJK Development Co.
28392 Airoso Street
Rancho Mission Viejo, California 92694
Transmitted electronically

RE: Paleontological Resource Assessment for the 32281 Riverside Drive Development Project, City of Lake Elsinore, Riverside County, California

Dear Grant Keene,

At the request of WJK Development Co., PaleoWest, LLC (PaleoWest) conducted a paleontological resource assessment for the 32281 Riverside Drive Development Project (Project) in the city of Lake Elsinore, Riverside County, California. The goal of the assessment was to identify the geologic units that may be affected by the development of the Project, determine the paleontological sensitivity of geologic units within the Project area, assess the potential for impacts to paleontological resources from the development of the Project, and recommend mitigation measures to avoid or mitigate impacts to scientifically significant paleontological resources, as necessary.

This paleontological resource assessment included a fossil locality records search conducted by the Western Science Center (WSC) in Hemet, California. The records search was supplemented by a review of existing geologic maps and primary literature regarding fossiliferous geologic units within the proposed Project vicinity and region. This technical memorandum, which was written in accordance with the guidelines set forth by the Society of Vertebrate Paleontology (SVP, 2010), has been prepared to support environmental review under the California Environmental Quality Act (CEQA). The City of Lake Elsinore (City) is the Lead Agency for CEQA compliance.

PROJECT LOCATION AND DESCRIPTION

The Project is located on vacant commercial land at 32281 Riverside Drive, Lake Elsinore, California. Specifically, the Project area is within the La Laguna (Stearns) land grant within the San Bernardino Base Meridian, UTM Zone 10, NAD 83 (Figure 1). The Project area consists of a proposed 4.95-acre lot on accessor parcel number 379-315-033-0 that will be used for building six one-bedroom residential homes, six two-bedroom residential homes, a leasing office, a parking lot, and a community pool north of Riverside Drive (Figure 2).



Figure 1. Vicinity map

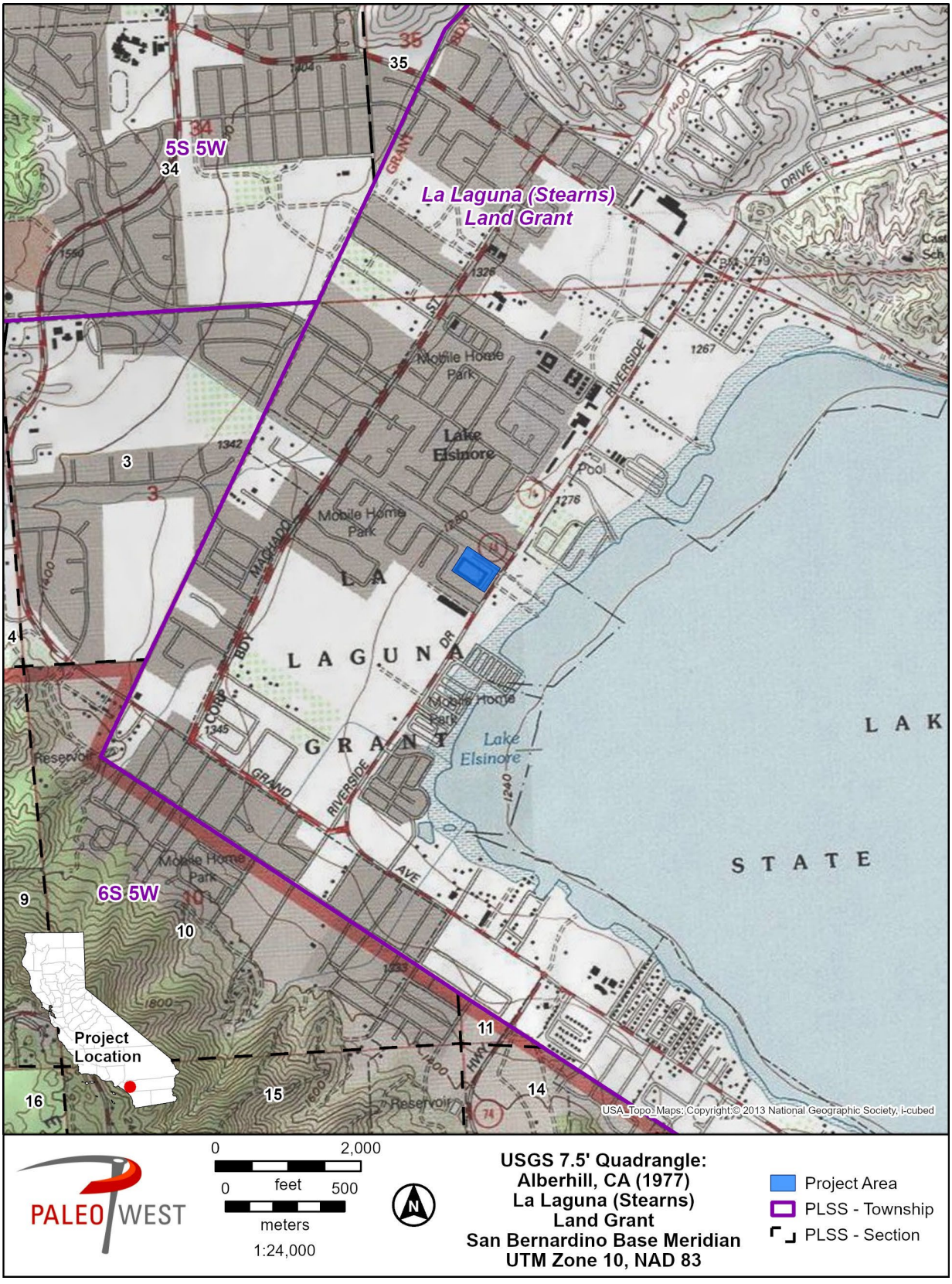


Figure 2. Project area.

REGULATORY CONTEXT

Paleontological resources (i.e., fossils) are considered nonrenewable scientific resources because once destroyed they cannot be replaced. As such, paleontological resources are afforded protection under various federal, state, and local laws and regulations. Laws pertinent to this Project are discussed below.

STATE LAWS AND REGULATIONS

California Environmental Quality Act

CEQA requires that public agencies and private interests identify the potential environmental consequences of their projects on any object or site of significance to the scientific annals of California (Division I, California Public Resources Code [PRC] Section 5020.1 [b]). Appendix G in Section 15023 provides an environmental checklist of questions (PRC 15023, Appendix G, Section VII, Part f) that includes the following: "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature?"

CEQA does not define "a unique paleontological resource or site." However, the Society of Vertebrate Paleontology (SVP) has provided guidance specifically designed to support state and federal environmental review. The SVP broadly defines significant paleontological resources as follows:

> Fossils and fossiliferous deposits consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years). (SVP, 2010, p. 11)

Significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, diagnostically important, or are common but have the potential to provide valuable scientific information for evaluating evolutionary patterns and processes, or which could improve our understanding of paleochronology, paleoecology, paleophylogeography, or depositional histories. New or unique specimens can provide new insights into evolutionary history; however, additional specimens of even well-represented lineages can be equally important for studying evolutionary pattern and process, evolutionary rates, and paleophylogeography. Even unidentifiable material can provide useful data for dating geologic units if radiometric dating is possible. As such, common fossils, especially vertebrates, may be scientifically important and therefore considered significant.

California Public Resources Code

Section 5097.5 of the PRC states:

> No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical

> feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor. (PRC, subsection a)

As used in this PRC section, "public lands" means lands owned by or under the jurisdiction of the state or any city, county, district, authority, public corporation, or any agency thereof. Consequently, public agencies are required to comply with PRC 5097.5 for their own activities including construction and maintenance as well as for permit actions (e.g., encroachment permits) undertaken by others.

LOCAL

The County of Riverside (2015) provides specific protections for paleontological resources identified within its boundaries. These protections include the Safeguard Artifacts Being Excavated in Riverside County (SABER) policy. The SABER policy, enacted in October 2011 by the Riverside County Board of Supervisors, requires that any paleontological resources found or unearthed in the county of Riverside be curated at the Western Science Center (WSC).

The City is the Lead Agency for the Project. Protections of paleontological resources fall under the Lake Elsinore General Plan:

> The City of Lake Elsinore has identified geologic units that are known to contain important paleontological resources in the Alberhill Ranch area in the northeast portion of the SOI. In this area, the Silverado Formation of Paleocene age (approximately 66–55 million years old) is locally highly sensitive for invertebrate and plant material. The fossil plants from this unit have been studied for more than half a century and are therefore considered to be particularly significant. (Lake Elsinore, 2011, p 4-58)

The Lake Elsinore General Plan 4.6.8, Cultural and Paleontological Resources Goals, Policies and Implementation Programs, Goal 8: Preserve paleontological resources occurring within the City, goes on to state the following:

> Policy 8.1– For development in areas delineated as "High" or "Undetermined" potential sensitivity for paleontological resources, require the project applicant to hire a certified paleontologist, who must perform a literature search and/or survey and apply the relevant treatment for the site as recommended by the Society for Vertebrate Paleontology.
>
> Implementation program: The City shall use the development and environmental review processes to ensure that appropriate archaeological and paleontological surveying and documentation of findings is provided prior to project approval, and require monitoring of new developments and reporting to the City on completion of mitigation and resource protection measures.

PALEONTOLOGICAL RESOURCE POTENTIAL

Absent specific agency guidelines, most professional paleontologists in California adhere to the guidelines set forth by the SVP (2010) to determine the course of paleontological mitigation for a given project. These guidelines establish protocols for the assessment of the paleontological

resource potential of underlying geologic units and outline measures to mitigate adverse impacts that could result from project development. Using baseline information gathered during a paleontological resource assessment, the paleontological resource potential of the geologic units (or members thereof) underlying a project area can be assigned to one of four categories defined by SVP (2010). Although these standards were written specifically to protect vertebrate paleontological resources, all fields of paleontology have adopted the following guidelines.

HIGH POTENTIAL (SENSITIVITY)

Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered have a high potential for containing significant nonrenewable fossiliferous resources. These units include sedimentary formations and some volcanic formations that contain significant nonrenewable.

LOW POTENTIAL (SENSITIVITY)

Sedimentary rock units that are potentially fossiliferous but have not yielded fossils in the past or contain common or widespread invertebrate fossils of well-documented and understood taphonomic, phylogenetic species and habitat ecology. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potential for yielding significant fossils prior to the start of construction. Generally, these units will be poorly represented by specimens in institutional collections and will not require protection or salvage operations. However, as excavation for construction begins, it is possible that significant and unanticipated paleontological resources might be encountered and require a change of classification from Low to High Potential and, thus, require monitoring and mitigation if the resources are found to be significant.

UNDETERMINED POTENTIAL (SENSITIVITY)

Specific areas underlain by sedimentary rock units for which little information is available have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potentials of the rock units are required before impact mitigation programs for such areas may be developed.

NO POTENTIAL

Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

METHODS

To assess whether a particular area has the potential to contain significant fossil resources at the subsurface, it is necessary to review published geologic mapping to determine the geology and stratigraphy of the area. Geologic units are considered "sensitive" for paleontological resources if they are known to contain significant fossils anywhere in their extent. Therefore, a search of pertinent local and regional museum repositories for paleontological localities within and nearby the Project area is necessary to determine if fossil localities have been previously

discovered within a particular rock unit. For this Project, a formal museum records search was conducted at the WSC (Stoneburg, 2023). An informal records search of the Paleobiology Database (PBDB, 2023) was also conducted.

RESOURCE CONTEXT

GEOLOGIC SETTING

The Project area is in the north–central portion of the Peninsular Ranges geomorphic province, specifically in the Elsinore Trough (Morton and Miller, 2006). A geomorphic province is a region of unique topography and geology distinguished from other regions based on its landforms and diastrophic history (Norris and Webb, 1976). The Peninsular Ranges are a northwest–southeast oriented complex of blocks that extend 125 miles (mi) from the Transverse Ranges and Los Angeles Basin to the tip of Baja California. The Peninsular Ranges are characterized by alluvial filled valleys and are bound to the east by the Colorado Desert and range in width from 30 to 100 mi (Norris and Webb, 1976). The Project area is situated within the Perris Block, which is a relatively stable rectangular structural unit positioned between the Elsinore and San Jacinto fault zones (Dudley, 1935). Specifically, the Project area is on the western boundary of the Perris Block within the northwest-trending Elsinore fault zone, which extends from the San Andreas fault zone in the north to the Imperial Valley in the south (Dudley, 1935). Locally, Lake Elsinore is underlain by alluvial sediments from the Pleistocene epoch (2.6 million years ago to 11,700 years ago) and the Holocene epoch (11,700 years ago to today), reaching at least 1,000 feet (ft) in depth (Woodford et al., 1971). The alluvial sediments are sourced from the surrounding uplifted Cretaceous plutonic basement rock (from the Peninsular Ranges Batholith and unroofed Mesozoic metasedimentary rocks), composed of igneous and metamorphic rocks predominantly from the Lakeview Mountains Pluton to the north and east, and are capped by widespread late Cenozoic fluvial, alluvial fan, and valley deposits (Morton, 1969; Morton and Miller, 2006).

SITE SPECIFIC GEOLOGY AND PALEONTOLOGY

The geology of the Project area is mapped at a scale of 1:15,000 by Morton and Miller (2006), and is immediately underlain by Quaternary young alluvium deposits (Qyv_a) of Holocene age (11,700 years to the present) (Figure 3). The geologic unit is composed of fluvial (river) channel sand and gravel deposits with interbedded silt and clay (Morton and Miller, 2006).

According to the WSC records search, there are no previously recorded significant vertebrate fossil localities within the Project area or in the immediate vicinity (Stoneburg, 2023). Although the alluvial deposits within the area have a high preservation potential, any sediments likely to be encountered would be far too young (Stoneburg, 2023). Further review of online PBDB (2023) locality record databases did not produce any additional fossil records within or near the Project area.

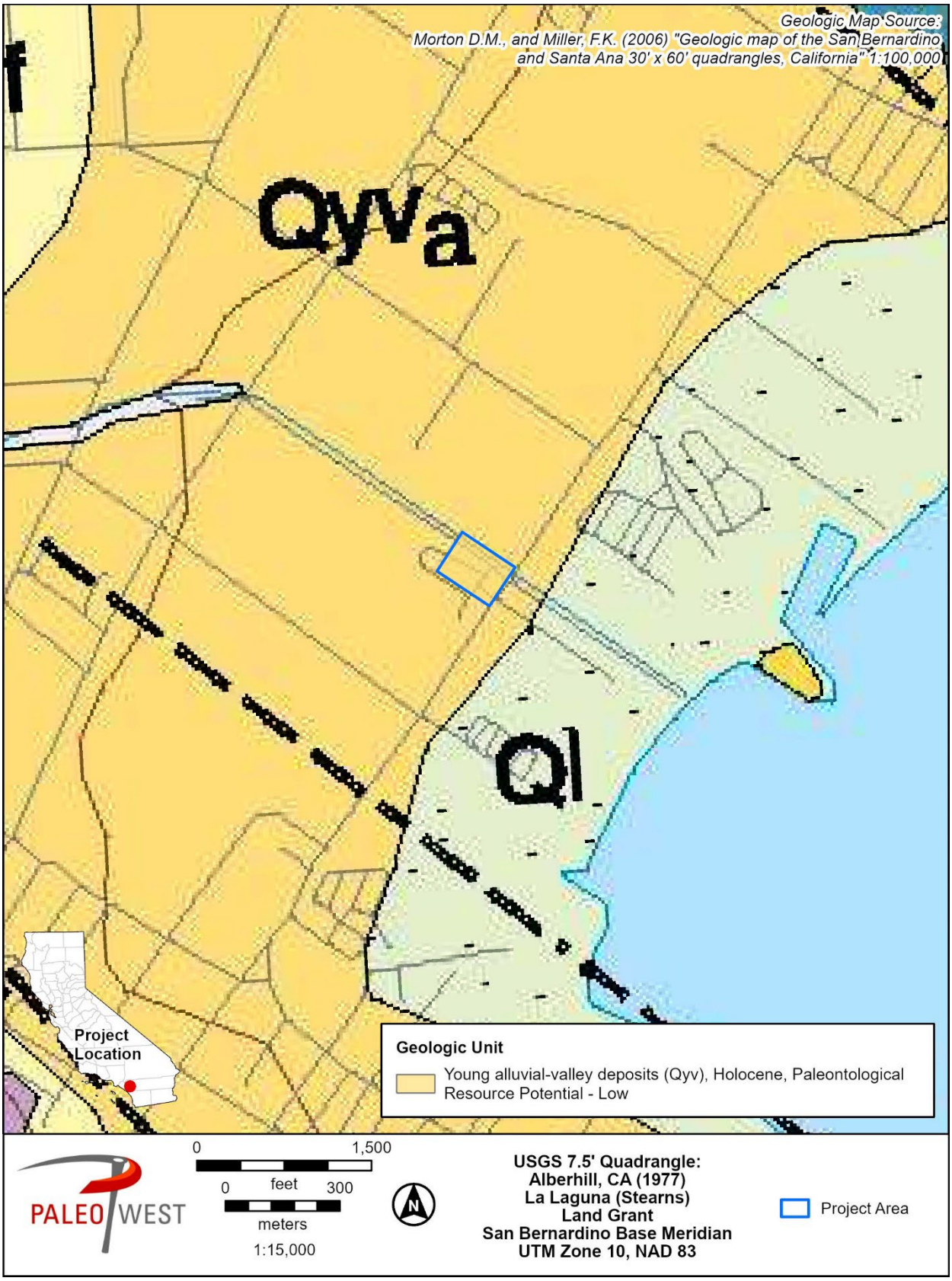


Figure 1. Geologic map of the Project area.

FINDINGS

Based on the literature review and museum records search results, the paleontological sensitivity of the Project area was determined in accordance with the SVP (2010) sensitivity scale. Surficial Quaternary deposits in the Project area consist of sand and gravel deposits with interbedded silt and clay, deposited as fluvial channel deposits (Qyv_a), which have a low potential to bear fossils and a low paleontological resource sensitivity. The Project will most likely involve relatively shallow construction-related, ground-disturbing activities in Holocene sediments, and no vertebrate fossils from Holocene sediments have been documented in the vicinity (Stoneburg, 2023). In addition, the County of Riverside (2015) Paleontological Sensitivity Map indicates a low paleontological sensitivity for the Project area (Lake Elsinore, 2011, p 4-61). As a result, the potential for encountering significant fossil resources during Project development is low; therefore, impacts to paleontological resources are not anticipated, and no further paleontological mitigation is recommended at this time.

RECOMMENDATIONS

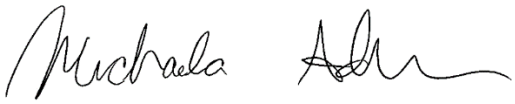
In general, the potential for a given project to result in negative impacts to paleontological resources is directly proportional to the amount of ground disturbance associated with the project; thus, the higher the amount of ground disturbances within geological deposits with a known paleontological sensitivity, the greater the potential for negative impacts to paleontological resources. Since this Project entails the excavation of a building, new ground disturbances are anticipated. The underlying sediment is Holocene near the surface and at shallow depth, and Project-related ground disturbances are not anticipated to impact any paleontological resources at depth.

Currently, PaleoWest does not recommend paleontological monitoring for this Project. If a fossil discovery is made during the course of Project development, then, in accordance with SVP (2010) guidelines, a qualified professional paleontologist should be retained to examine the find and to determine if further paleontological resources mitigation is warranted.

Thank you for contacting PaleoWest for this Project. If you have any questions, please do not hesitate to contact us.

Sincerely,

PALEOWEST



Michaela Adler | Associate Paleontologist

REFERENCES

Lake Elsinore, 2011, General Plan Update Final Recirculated Program Environmental Impact Report, Lake Elsinore, California. SCH# 200512019.

County of Riverside, 2015, Environmental Impact Report No. 521. Public Review Draft: http://planning.rctlma.org/Portals/0/genplan/general_plan_2015/DEIR521/04-09_Cultural AndPaleoResrcs.pdf.

Dudley, P. H., 1935. Geologic Map, Portion of Perris Block, Southern California: State of California, Department of Natural Resources, Division of Mines, https://digital.library.ucla.edu/catalog/ark:/21198/zz002b1qb0.

Morton, D.M, 1969, The Lakeview Mountains Pluton, Southern California Batholith Part I: Petrology and Structure: GSA Bulletin, v. 80, p.1539–1552.

Morton, D.M., and Miller, F.K., 2006, Geologic Map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California: U.S. Geological Survey, 1:100,000, 4 sheets.

Norris, R.M., and Webb, R.W., 1976, Geology of California: New York, John Wiley and Sons, p. 169-190

Paleobiology Database (PBDB), 2023, Paleobiology Database Specimen Search: ucmpdb.berkeley.edu (accessed May 2023).

Society of Vertebrate Paleontology (SVP), 2010, Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee, https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines.pdf

Stoneburg, B., 2023, 32281 Riverside Drive Paleontology Project Record Search Letter

Woodford, A.O., Shelton, J.S., Doehring, D.O., Morton, R.K., 1971, Pliocene-Pleistocene History of the Perris Block, Southern California: GSA Bulletin, v, 82, p. 3421–3448.

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Appendix D – Energy Assessment

MD ACOUSTICS
Sound Solutions for Planning and Design
www.mdacoustics.com

4960 S. Gilbert Road, Ste 1-461
Chandler, AZ 85249
p. (602) 774-1950

AZ Office CA Office
1197 Los Angeles Avenue, Ste C-256
Simi Valley, CA 93065
p. (805) 426-4477

December 2, 2024

Mr. Grant Keene
WJK Development Co.
28392 Airoso Street
Rancho Mission Viejo, CA 92694

Subject: 32281 Riverside Drive Multi-Family Residential – CEQA Energy Review, City of Lake Elsinore, CA

Dear Mr. Keene:

MD Acoustics, LLC (MD) has completed a CEQA energy review for the proposed Apartment Homes located at 32281 Riverside Drive in the City of Lake Elsinore, CA. The project consists of approximately 96 apartment units, a recreation clubhouse, a pool area, and approximately 200 parking stalls on 4.95 acres.

1.0 Existing Energy Conditions

Overview

California's estimated annual energy use as of 2021 included:

- Approximately 277,764 gigawatt hours of electricity; [1]
- Approximately 2,092,612 million cubic feet of natural gas per year[2];and
- Approximately 15.2 billion gallons of transportation fuel (for the year 2018)[3].

As of 2021, the year of most recent data currently available by the United States Energy Information Administration (EIA), energy use in California by demand sector was:

- Approximately 37.8 percent transportation;
- Approximately 23.2 percent industrial;
- Approximately 20.0 percent residential; and
- Approximately 19.0 percent commercial.[4]

California's electricity in-state generation system generates approximately 194,127 gigawatt-hours each year. In 2021, California produced approximately 72 percent of the electricity it uses; the rest was imported from the Pacific Northwest (approximately 12 percent) and the U.S. Southwest (approximately 18 percent).

[1]California Energy Commission. Energy Almanac. Total Electric Generation. [Online] 2020. https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2019-total-system-electric-generation.

[2]Natural Gas Consumption by End Use. U.S. Energy Information Administration. [Online] August 31, 2020. https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_SCA_a.htm.

[3]California Energy Commission. Revised Transportation Energy Demand Forecast 2018-2030. [Online] April 19, 2018. https://www.energy.ca.gov/assessments/

[4]U.S. Energy Information Administration. California Energy Consumption by by End-Use Sector. California State Profile and Energy Estimates. [Online] January 16, 2020 https://www.eia.gov/state/?sid=CA#tabs-2

Natural gas is the main source for electricity generation at approximately 50.2 percent of the total in-state electric generation system power as shown in Table 1 below.

Table 1: Total Electricity System Power (California 2021)

Fuel Type	California In-State Generation (GWh)	Percent of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	Total Imports (GWh)	Percent of Imports	California Power Mix (GWh)	Percent California Power Mix
Coal	303	0.2%	181	7,788	7,969	9.5%	8,272	3.0%
Large Hydro	12,036	6.2%	12,042	1,578	13,620	16.3%	25,656	9.2%
Natural Gas	97,431	50.2%	45	7,880	7,925	9.5%	105,365	37.9%
Nuclear	16,477	8.5%	524	8,756	9,280	11.1%	25,758	9.3%
Oil	37	0.0%	-	-	-	0.0%	37	0.0%
Other (Petroleum Coke/Waste Heat)	382	0.2%	68	15	83	0.1%	465	0.2%
Unspecified Sources of Power	-	0.0%	8,156	10,731	18,887	22.6%	18,887	6.80%
Renewables	67,461	34.8%	11,555	14,317	25,872	30.9%	93,333	33.6%
Biomass	5,381	2.8%	684	26	710	1.1%	6,271	2.3%
Geothermal	11,116	5.7%	192	1906	2,098	2.5%	13,214	4.8%
Somall Hydro	2,531	1.3%	304	1	305	0.4%	2,835	1.0%
Solar	33,260	17.1%	220	5,979	6,199	7.4%	39,458	14.2%
Wind	15,173	7.8%	9,976	6,405	16,381	19.6%	31,555	11.4%
Total	194,127	100.00%	32,572	51,064	83,636	100.0%	277,764	100.00%

Notes:
[1] Source: California Energy Commission. 2021 Total System electric Generation. https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2021-total-system-electric-generation

A summary of and context for energy consumption and energy demands within the State is presented in "U.S. Energy Information Administration, California State Profile and Energy Estimates, Quick Facts" excerpted below:

- California was the seventh-largest producer of crude oil among the 50 states in 2018, and, as of January 2019, it ranked third in oil refining capacity.
- California is the largest consumer of jet fuel among the 50 states and accounted for one-fifth of the nation's jet fuel consumption in 2018.
- California's total energy consumption is the second-highest in the nation, but, in 2018, the State's per capita energy consumption ranked the fourth-lowest, due in part to its mild climate and its energy efficiency programs.
- In 2018, California ranked first in the nation as a producer of electricity from solar, geothermal, and biomass resources and fourth in the nation in conventional hydroelectric power generation.
- In 2018, large- and small-scale solar PV and solar thermal installations provided 19% of California's net electricity generation[5].

As indicated above, California is one of the nation's leading energy-producing states, and California per capita energy use is among the nation's most efficient. Given the nature of the proposed project, the

[5] State Profile and Energy Estimates. Independent Statistics and Analysis. [Online] [Cited: January 16, 2020.] http://www.eia.gov/state/?sid=CA#tabs2.

remainder of this discussion will focus on the three sources of energy that are most relevant to the project—namely, electricity and natural gas for building uses, and transportation fuel for vehicle trips associated with the proposed project.

Electricity

Electricity would be provided to the project by Southern California Edison (SCE). SCE provides electric power to more than 15 million persons, within a service area encompassing approximately 50,000 square miles.[6] SCE derives electricity from varied energy resources including: fossil fuels, hydroelectric generators, nuclear power plants, geothermal power plants, solar power generation, and wind farms. SCE also purchases from independent power producers and utilities, including out-of-state suppliers.[7] Table 2 identifies SCE's specific proportional shares of electricity sources in 2021.

Table 2: SCE 2021 Power Content Mix

Energy Resources	2021 SCE Power Mix
Eligible Renewable	31.4%
Biomass & Waste	0.1%
Geothermal	5.7%
Eligible Hydroelectric	0.5%
Solar	14.9%
Wind	10.2%
Coal	0.0%
Large Hydroelectric	2.3%
Natural Gas	22.3%
Nuclear	9.2%
Other	0.2%
Unspecified Sources of power*	34.6%
Total	100.0%

Notes:
[1] https://www.sce.com/sites/default/files/custom-files/Web%20files/2021%20Power%20Content%20Label.pdf
*Unspecified sources of power means electricity from transactions that are not traceable to specific generation sources.

Natural Gas

Natural gas would be provided to the project by Southern California Gas (SoCalGas). The following summary of natural gas resources and service providers, delivery systems, and associated regulation is excerpted from information provided by the California Public Utilities Commission (CPUC).

The CPUC regulates natural gas utility service for approximately 11 million customers that receive natural gas from Pacific Gas and Electric (PG&E), Southern California Gas (SoCalGas), San Diego Gas & Electric (SDG&E), Southwest Gas, and several smaller investor-owned natural gas utilities. The CPUC also regulates independent storage operators Lodi Gas Storage, Wild Goose Storage, Central Valley Storage and Gill Ranch Storage.

[6] https://www.sce.com/about-us/who-we-are/leadership/our-service-territory
[7] California Energy Commission. Utility Energy Supply plans from 2015. https://www.energy.ca.gov/almanac/electricity_data/supply_forms.html

The vast majority of California's natural gas customers are residential and small commercial customers, referred to as "core" customers. Larger volume gas customers, like electric generators and industrial customers, are called "noncore" customers. Although very small in number relative to core customers, noncore customers consume about 65% of the natural gas delivered by the state's natural gas utilities, while core customers consume about 35%.

The PUC regulates the California utilities' natural gas rates and natural gas services, including in-state transportation over the utilities' transmission and distribution pipeline systems, storage, procurement, metering and billing.

Most of the natural gas used in California comes from out-of-state natural gas basins. In 2017, for example, California utility customers received 38% of their natural gas supply from basins located in the U.S. Southwest, 27% from Canada, 27% from the U.S. Rocky Mountain area, and 8% from production located in California."[8]

Transportation Energy Resources

The project would attract additional vehicle trips with resulting consumption of energy resources, predominantly gasoline and diesel fuel. Gasoline (and other vehicle fuels) are commercially-provided commodities and would be available to the project patrons and employees via commercial outlets.

The most recent data available shows the transportation sector emits 38 percent of the total greenhouse gases in the state and about 84 percent of smog-forming oxides of nitrogen (NOx).[9,10] About 28 percent of total United States energy consumption in 2021 was for transporting people and goods from one place to another. In 2021, petroleum comprised about 90 percent of all transportation energy use, excluding fuel consumed for aviation and most marine vessels.[11] In 2022, about 134.55 billion gallons (or about 3.20 billion barrels) of finished motor gasoline were consumed in the United States, an average of about 369 million gallons (or about 8.78 million barrels) per day.[12]

2.0 Regulatory Background

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the United States Department of Transportation, the United States Department of Energy, and the United States Environmental Protection Agency are three federal agencies with substantial influence over energy policies and programs. On the state level, the PUC and the California Energy Commissions (CEC) are two agencies with authority over different aspects of energy. Relevant federal and state energy-related laws and plans are summarized below.

[8]California Public Utilities Commission. Natural Gas and California. http://www.cpuc.ca.gov/natural_gas/
[9]CARB. California Greenhouse Gas Emissions Inventory 2000-2020 – 2022 Edition. https://ww2.arb.ca.gov/ghg-inventory-data
[10]CARB. 2016 SIP Emission Projection Data. https://www.arb.ca.gov/app/emsinv/2017/emseic1_query.php?F_DIV=-4&F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_AREA=CA
[11] US Energy Information Administration. Use of Energy in the United States Explained: Energy Use for Transportation. https://www.eia.gov/energyexplained/?page=us_energy_transportation
[12] https://www.eia.gov/tools/faqs/faq.php?id=23&t=10

Federal Regulations

Corporate Average Fuel Economy (CAFE) Standards

First established by the U.S. Congress in 1975, the Corporate Average Fuel Economy (CAFE) standards reduce energy consumption by increasing the fuel economy of cars and light trucks. The National Highway Traffic Safety Administration (NHTSA) and U.S. Environmental Protection Agency (USEPA) jointly administer the CAFE standards. The U.S. Congress has specified that CAFE standards must be set at the "maximum feasible level" with consideration given for: (1) technological feasibility; (2) economic practicality; (3) effect of other standards on fuel economy; and (4) need for the nation to conserve energy.[13]

Issued by NHTSA and EPA in March 2020 (published on April 30, 2020 and effective after June 29, 2020), the Safer Affordable Fuel-Efficient Vehicles Rule would maintain the CAFE and CO2 standards applicable in model year 2020 for model years 2021 through 2026. The estimated CAFE and CO2 standards for model year 2020 are 43.7 mpg and 204 grams of CO2 per mile for passenger cars and 31.3 mpg and 284 grams of CO2 per mile for light trucks, projecting an overall industry average of 37 mpg, as compared to 46.7 mpg under the standards issued in 2012.[14]

Intermodal Surface transportation Efficiency Act of 1991 (ISTEA)

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) promoted the development of inter-modal transportation systems to maximize mobility as well as address national and local interests in air quality and energy. ISTEA contained factors that Metropolitan Planning Organizations (MPOs) were to address in developing transportation plans and programs, including some energy-related factors. To meet the new ISTEA requirements, MPOs adopted explicit policies defining the social, economic, energy, and environmental values guiding transportation decisions.

The Transportation Equity Act of the 21st Century (TEA-21)

The Transportation Equity Act for the 21st Century (TEA-21) was signed into law in 1998 and builds upon the initiatives established in the ISTEA legislation, discussed above. TEA-21 authorizes highway, highway safety, transit, and other efficient surface transportation programs. TEA-21 continues the program structure established for highways and transit under ISTEA, such as flexibility in the use of funds, emphasis on measures to improve the environment, and focus on a strong planning process as the foundation of good transportation decisions. TEA-21 also provides for investment in research and its application to maximize the performance of the transportation system through, for example, deployment of Intelligent Transportation Systems, to help improve operations and management of transportation systems and vehicle safety.

[13] https://www.nhtsa.gov/lawsregulations/corporate-average-fuel-economy.

[14] National Highway Traffic Safety Administration (NHTSA) and U.S. Environmental Protection Agency (USEPA), 2018. Federal Register / Vol. 83, No. 165 / Friday, August 24, 2018 / Proposed Rules, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks 2018. Available at: https://www.epa.gov/regulations-emissions-vehicles-and-engines/safer-affordable-fuel-efficient-safe-vehicles-final-rule.

State Regulations

Integrated Energy Policy Report (IEPR)

Senate Bill 1389 requires the California Energy Commission (CEC) to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the State's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety. The Energy Commission prepares these assessments and associated policy recommendations every two years, with updates in alternate years, as part of the Integrated Energy Policy Report.

The draft 2024 Integrated Energy Policy Report (2024 IEPR) was released in October 2024 and is anticipated to be adopted in February 2025, and continues to work towards improving electricity, natural gas, and transportation fuel energy use in California. The 2024 IEPR focuses on a variety of topics such as decarbonizing buildings, integrating renewables, energy efficiency, energy equity, integrating renewable energy, updates on Southern California electricity reliability, climate adaptation activities for the energy sector, natural gas assessment, transportation energy demand forecast, and the California Energy Demand Forecast.[15]

State of California Energy Plan

The CEC is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The Plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators and encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

California Building Standards Code (Title 24)

California Building Energy Efficiency Standards (Title 24, Part 6)

The California Building Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) were adopted to ensure that building construction and system design and installation achieve energy efficiency and preserve outdoor and indoor environmental quality. The current California Building Energy Efficiency Standards (Title 24 standards) are the 2022 Title 24 standards, which became effective on January 1, 2023.

The CEC estimates that over 30 years the 2022 Energy Code will provide $1.5 billion in consumer benefits and reduce 10 million metric tons of GHG. Changes compared to the 2019 Energy Code include increases to on-site renewable energy generation from solar, increases to electric load flexibility to support grid

[15] California Energy Commission. 2024 Integrated Energy Policy Report Update. October 2024. https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2024-integrated-energy-policy-report-update

reliability, reduction of emissions from newly constructed buildings, reduction of air pollution for improved public health, and increased adoption of environmentally beneficial efficient electric technologies.

California Building Energy Efficiency Standards (Title 24, Part 11)

The 2022 California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, went into effect on January 1, 2023. The 2022 CALGreen Code includes mandatory measures for non-residential development related to site development; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality.

The Department of Housing and Community Development (HCD) updated CALGreen through the 2022 Triennial Code Adoption Cycle. HCD modified the best management practices for stormwater pollution prevention adding Section 5.106.2; added sections 5.106.4.1.3 and 5.106.4.1.5 in regard to bicycle parking; amended section 5.106.5.3.5 allowing future charging spaces to qualify as designated parking for clean air vehicles; updated section 5.303.3.3 in regard to showerhead flow rates; amended section 5.304.1 for outdoor potable water use in landscape areas and repealed sections 5.304.2 and 5.304.3; and updated Section 5.504.5.3 in regard to the use of MERV filters in mechanically ventilated buildings.

Senate Bill 100

Senate Bill 100 (SB 100) requires 100 percent of total retail sales of electricity in California to come from eligible renewable energy resources and zero-carbon resources by December 31, 2045. SB 100 was adopted September 2018.

The interim thresholds from prior Senate Bills and Executive Orders would also remain in effect. These include Senate Bill 1078 (SB 1078), which requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. Senate Bill 107 (SB 107) which changed the target date to 2010. Executive Order S-14-08, which was signed on November 2008 and expanded the State's Renewable Energy Standard to 33 percent renewable energy by 2020. Executive Order S-21-09 directed the CARB to adopt regulations by July 31, 2010 to enforce S-14-08. Senate Bill X1-2 codifies the 33 percent renewable energy requirement by 2020.

Senate Bill 350

Senate Bill 350 (SB 350) was signed into law October 7, 2015, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard (RPS) eligible resources, including solar, wind, biomass, geothermal, and others. In addition, SB 350 requires the state to double statewide energy efficiency savings in electricity and natural gas end uses by 2030. To help ensure these goals are met and the greenhouse gas emission reductions are realized, large utilities will be required to develop and submit Integrated Resource Plans (IRPs). These IRPs will detail how each entity will meet their customers resource needs, reduce greenhouse gas emissions and ramp up the deployment of clean energy resources.

Assembly Bill 32

In 2006 the California State Legislature adopted Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006. AB 32 requires CARB, to adopt rules and regulations that would achieve GHG emissions equivalent to statewide levels in 1990 by 2020 through an enforceable statewide emission cap which will be phased in starting in 2012. Emission reductions shall include carbon sequestration projects that would remove carbon from the atmosphere and best management practices that are technologically feasible and cost effective.

Senate Bill 32

The California Global Warming Solutions Act of 2006 designated the State Air Resources Board as the state agency charged with monitoring and regulating sources of emissions of greenhouse gases. The state board is required to approve a statewide greenhouse gas emissions limit equivalent to the statewide greenhouse gas emissions level in 1990 to be achieved by 2020 and to adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, and cost-effective greenhouse gas emissions reductions.

This bill required the state board to ensure that statewide greenhouse gas emissions are reduced to 40% below the 1990 level by 2030.

Assembly Bill 1279

The California Climate Crisis Act declared the policy of the state both to achieve net zero greenhouse gas emissions as soon as possible, but no later than 2045, and achieve and maintain net negative greenhouse gas emissions thereafter, and to ensure that by 2045, statewide anthropogenic greenhouse gas emissions are reduced to at least 85% below the 1990 levels. The bill requires the state board to work with relevant state agencies to ensure that updates to the scoping plan identify and recommend measures to achieve these policy goals and to identify and implement a variety of policies and strategies that enable carbon dioxide removal solutions and carbon capture, utilization, and storage technologies in California, as specified. The bill requires the state board to submit an annual report, as specified.

Assembly Bill 1493/Pavley Regulations

California Assembly Bill 1493 enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. In 2005, the CARB submitted a "waiver" request to the EPA from a portion of the federal Clean Air Act in order to allow the State to set more stringent tailpipe emission standards for CO_2 and other GHG emissions from passenger vehicles and light duty trucks. On December 19, 2007 the EPA announced that it denied the "waiver" request. On January 21, 2009, CARB submitted a letter to the EPA administrator regarding the State's request to reconsider the waiver denial. The EPA approved the waiver on June 30, 2009.

Executive Order S-1-07/Low Carbon Fuel Standard

Executive Order S-1-07 was issued in 2007 and proclaims that the transportation sector is the main source of GHG emissions in the State, since it generates more than 40 percent of the State's GHG emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in the State by at least ten percent by 2020. This Order also directs CARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

On April 23, 2009 CARB approved the proposed regulation to implement the low carbon fuel standard and began implementation on January 1, 2011. The low carbon fuel standard is anticipated to reduce GHG emissions by about 16 MMT per year by 2020. CARB approved some amendments to the LCFS in December 2011, which were implemented on January 1, 2013. In September 2015, the Board approved the re-adoption of the LCFS, which became effective on January 1, 2016, to address procedural deficiencies in the way the original regulation was adopted. In 2018, the Board approved amendments to the regulation, which included strengthening and smoothing the carbon intensity benchmarks through 2030 in-line with California's 2030 GHG emission reduction target enacted through SB 32, adding new crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector.

The LCFS is designed to encourage the use of cleaner low-carbon transportation fuels in California, encourage the production of those fuels, and therefore, reduce GHG emissions and decrease petroleum dependence in the transportation sector. Separate standards are established for gasoline and diesel fuels and the alternative fuels that can replace each. The standards are "back-loaded", with more reductions required in the last five years, than during the first five years. This schedule allows for the development of advanced fuels that are lower in carbon than today's fuels and the market penetration of plug-in hybrid electric vehicles, battery electric vehicles, fuel cell vehicles, and flexible fuel vehicles. It is anticipated that compliance with the low carbon fuel standard will be based on a combination of both lower carbon fuels and more efficient vehicles.

Reformulated gasoline mixed with corn-derived ethanol at ten percent by volume and low sulfur diesel fuel represent the baseline fuels. Lower carbon fuels may be ethanol, biodiesel, renewable diesel, or blends of these fuels with gasoline or diesel as appropriate. Compressed natural gas and liquefied natural gas also may be low carbon fuels. Hydrogen and electricity, when used in fuel cells or electric vehicles are also considered as low carbon fuels for the low carbon fuel standard.

Executive Order N-79-20.

Executive Order N-79-20 was signed into law on September 23, 2020 and mandates 100 percent of in-state sales of new passenger cars and trucks be zero-emission by 2035; 100 percent of medium- and heavy-duty vehicles in the state be zero-emission vehicles by 2045 for all operations where feasible and by 2035 for drayage trucks; and to transition to 100 percent zero-emission off-road vehicles and equipment by 2035 where feasible.

California Air Resources Board

CARB's Advanced Clean Cars Program

Closely associated with the Pavley regulations, the Advanced Clean Cars emissions control program was approved by CARB in 2012. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero-emission vehicles for model years 2015–2025. The components of the Advanced Clean Cars program include the Low-Emission Vehicle (LEV) regulations that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the Zero-Emission Vehicle (ZEV) regulation, which requires manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with provisions to also produce plug-in hybrid electric vehicles (PHEV) in the 2018 through 2025 model years.[16]

Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling

The Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling (Title 13, California Code of Regulations, Division 3, Chapter 10, Section 2435) was adopted to reduce public exposure to diesel particulate matter and other air contaminants by limiting the idling of diesel-fueled commercial motor vehicles. This section applies to diesel-fueled commercial motor vehicles with gross vehicular weight ratings of greater than 10,000 pounds that are or must be licensed for operation on highways. Reducing idling of diesel-fueled commercial motor vehicles reduces the amount of petroleum-based fuel used by the vehicle.

Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen, and other Criteria Pollutants, form In-Use Heavy-Duty Diesel-Fueled Vehicles

The Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles (Title 13, California Code of Regulations, Division 3, Chapter 1, Section 2025) was adopted to reduce emissions of diesel particulate matter, oxides of nitrogen (NO_X) and other criteria pollutants from in-use diesel-fueled vehicles. This regulation is phased, with full implementation by 2023. The regulation aims to reduce emissions by requiring the installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models. The newer emission controlled models would use petroleum-based fuel in a more efficient manner.

Sustainable Communities Strategy

The Sustainable Communities and Climate Protection Act of 2008, or Senate Bill 375 (SB 375), coordinates land use planning, regional transportation plans, and funding priorities to help California meet the GHG reduction mandates established in AB 32.

Senate Bill 375 (SB 375) was adopted September 2008 and aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires Metropolitan

[16] California Air Resources Board, California's Advanced Clean Cars Program, January 18, 2017. www.arb.ca.gov/msprog/acc/acc.htm.

Planning Organizations (MPO) to adopt a sustainable communities strategy (SCS) or alternate planning strategy (APS) that will prescribe land use allocation in that MPOs Regional Transportation Plan (RTP). CARB, in consultation with each MPO, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's sustainable communities strategy or alternate planning strategy for consistency with its assigned targets.

3.0 Evaluation Criteria and Methodology

Evaluation Criteria

CEQA Energy Questions

In compliance with Appendix G of the State CEQA Guidelines, this report analyzes the project's anticipated energy use to determine if the project would:

a) Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

In addition, Appendix F of the State CEQA Guidelines states that the means of achieving the goal of energy conservation includes the following:

- Decreasing overall per capita energy consumption;
- Decreasing reliance on fossil fuels such as coal, natural gas and oil; and
- Increasing reliance on renewable energy sources.

Appendix F of the State CEQA guidelines also states that the environmental impacts from a project can include:

- The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, operation, maintenance and/or removal. If appropriate, the energy intensiveness of materials may be discussed.
- The effects of the project on local and regional energy supplies and on requirements for additional capacity.
- The effects of the project on peak and base period demands for electricity and other forms of energy.
- The degree to which the project complies with existing energy standards.
- The effects of the project on energy resources.
- The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

Methodology

Information from the CalEEMod 2022.1.1.29 output in the project's Air Quality and Greenhouse Gas Assessment from Urban Crossroads was utilized for this analysis.[17] The CalEEMod outputs detail project related construction equipment, transportation energy demands, and facility energy demands.

4.0 Energy Review

Construction Energy Demand

The construction schedule is anticipated to begin May 2025 and will take approximately 12 months. Construction will be completed in one phase. Staging of construction vehicles and equipment will occur on-site.

Construction Equipment Electricity Usage Estimates

As stated previously, electrical service will be provided by Southern California Edison (SCE). The focus within this section is the energy implications of the construction process, specifically the power cost from on-site electricity consumption during construction of the proposed project. Based on the 2017 National Construction Estimator, Richard Pray (2017)[18], the typical power cost per 1,000 square feet of building construction per month is estimated to be $2.32. The project plans to develop the site with a 96-unit multi-family residential development with approximately 200 parking spaces on approximately 4.95 acres over the course of approximately 12 months. Based on Table 3, the total power cost of the on-site electricity usage during the construction of the proposed project is estimated to be approximately $2,567.52. Furthermore, as of February 1, 2021, SCE's general service rate schedule (GS-1) is approximately $0.11 per kWh of electricity.[19] As shown in Table 3, the total electricity usage from Project construction related activities is estimated to be approximately 28,528 kWh.

Table 3: Project Construction Power Cost and Electricity Usage

Power Cost (per 1,000 square foot of building per month of construction)[1]	Total Building Size (1,000 Square Foot)	Construction Duration (months)	Total Project Construction Power Cost
$2.32	92.224	12	$2,567.52

Cost per kWh	Total Project Construction Electricity Usage (kWh)
$0.11	28,528

*Assumes the project will be under the GS-1 General Service rate under SCE.

[1] Source: Pray, Richard. 2017 National Construction Estimator. Carlsbad: Craftsman Book Company, 2017.

[17] Urban Crossroads, Inc. Riverside Drive Air Quality and Greenhouse Gas Assessment. November 27, 2024.

[18] Pray, Richard. 2017 National Construction Estimator. Carlsbad : Craftsman Book Company, 2017.

[19] Southern California Edison (SCE). Rates & Pricing Choices: General Service/Industrial Rates. https://library.sce.com/content/dam/sce-doclib/public/regulatory/tariff/electric/schedules/general-service-&-industrial-rates/ELECTRIC_SCHEDULES_GS-1.pdf

Construction Equipment Fuel Estimates

Fuel consumed by construction equipment would be the primary energy resource expended over the course of project construction. Fuel consumed by construction equipment was evaluated with the following assumptions:

- Construction schedule of approximately 12 months
- All construction equipment was assumed to run on diesel fuel
- Typical daily use of 8 hours
- Aggregate fuel consumption rate for all equipment was estimated at 18.5 hp-hr/day (from CARB's 2017 Emissions Factors Tables and fuel consumption rate factors as shown in Table D-21 of the Moyer Guidelines: (https://ww2.arb.ca.gov/sites/default/files/classic/msprog/moyer/guidelines/2017/2017_cmpgl.pdf).
- Diesel fuel would be the responsibility of the equipment operators/contractors and would be sources within the region.
- Project construction represents a "single-event" for diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources during long term operation.

Using the CalEEMod data input from the project's Air Quality and Greenhouse Gas Assessment from Urban Crossroads[17], the project's construction phase would consume electricity and fossil fuels as a single energy demand, that is, once construction is completed their use would cease. CARB's 2013 Emissions Factors Tables show that on average aggregate fuel consumption (gasoline and diesel fuel) would be approximately 18.5 hp-hr-gal. Table 4 shows the results of the analysis of construction equipment.

<Table 4, next page>

Table 4: Construction Equipment Fuel Consumption Estimates

Phase	Number of Days	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	HP hrs/day	Total Fuel Consumption (gal diesel fuel)[1]
Demolition	8	Concrete/Industrial Saws	3	8	33	0.73	578	250
	8	Excavators	1	8	36	0.38	109	47
	8	Rubber Tired Dozers	3	8	367	0.41	3,611	1,562
Site Preparation	5	Rubber Tired Dozers	3	8	367	0.41	3,611	976
	5	Crawler Tractors	4	8	87	0.43	1,197	324
Grading	20	Excavators	1	8	36	0.38	109	118
	20	Graders	1	8	148	0.41	485	525
	20	Rubber Tired Dozers	1	8	367	0.4	1,174	1,270
	20	Crawler Tractors	3	8	87	0.43	898	971
Building Construction	230	Forklifts	3	8	82	0.2	394	4,893
	230	Generator Sets	1	8	14	0.74	83	1,030
	230	Tractors/Loaders/Backhoes	3	8	46	0.37	408	5,078
	230	Welders	1	8	84	0.45	302	3,760
Paving	18	Cement and Mortar Mixers	2	8	10	0.56	90	87
	18	Pavers	1	8	81	0.42	272	265
	18	Paving Equipment	2	8	89	0.36	513	499
	18	Rollers	2	8	36	0.38	219	213
	18	Tractors/Loaders/Backhoes	1	8	84	0.37	249	242
Architectural Coating	18	Air Compressors	1	8	37	0.48	142	138
CONSTRUCTION FUEL DEMAND (gallons of diesel fuel)								**19,089**

Notes:
[1]Using Carl Moyer Guidelines Table D-21 Fuel consumption rate factors (bhp-hr/gal) for engines less than 750 hp.
(Source: https://ww2.arb.ca.gov/sites/default/files/classic/msprog/moyer/guidelines/2017/2017_cmpgl.pdf)

As presented in Table 4, project construction activities would consume an estimated 19,089 gallons of diesel fuel. As stated previously, project construction would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

Construction Worker Fuel Estimates

It is assumed that all construction worker trips are from light duty autos (LDA) along area roadways. With respect to estimated VMT, the construction worker trips would generate an estimated 321,235 VMT over the 12-month construction schedule, with a maximum of 69.6 trips per day estimated during the building phase. Data regarding project related construction worker trips were based on CalEEMod 2022.1.1.29 model from the project's Air Quality and Greenhouse Gas Assessment from Urban Crossroads[17].

Vehicle fuel efficiencies for construction workers were estimated using information generated using CARB's 2021 EMFAC model (see Appendix A for details). An aggregate fuel efficiency of 29.69 miles per gallon (mpg) was used to calculate vehicle miles traveled for construction worker trips. Table 5 shows that an estimated 10,671 gallons of fuel would be consumed for construction worker trips.

Table 5: Construction Worker Fuel Consumption Estimates

Phase	Number of Days	Worker Trips/Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Demolition	8	15	18.5	2,220	29.69	75
Site Preparation	5	17.5	18.5	1,619	29.69	55
Grading	20	15	18.5	5,550	29.69	187
Building Construction	230	69.6	18.5	296,148	29.69	9,975
Paving	18	20	18.5	6,660	29.69	224
Architectural Coating	18	13.9	18.5	4,629	29.69	156
Total Construction Worker Fuel Consumption						**10,671**

Notes:
[1]Assumptions for the worker trip length and vehicle miles traveled are consistent with CalEEMod 2022.1.1.29 defaults.

Construction Vendor/Hauling Fuel Estimates

Tables 6 and 7 show the estimated fuel consumption for vendor and hauling during building construction and architectural coating. With respect to estimated VMT, the vendor and hauling trips would generate an estimated 31,895 VMT. Data regarding project related construction worker trips were based on CalEEMod 2022.1.1.29 model defaults.

For the architectural coatings it is assumed that the contractors would be responsible for bringing coatings and equipment with them in their light duty vehicles. Therefore, vendors delivering construction material or hauling debris from the site during grading would use medium to heavy duty vehicles with an average fuel consumption of 8.52 mpg for medium heavy duty trucks and 5.98 for heavy heavy duty trucks (see Appendix A for details). Tables 6 and 7 show that an estimated 4,626 gallons of fuel would be consumed for vendor and hauling trips.

Table 6: Construction Vendor Fuel Consumption Estimates (MHD Trucks)[1]

Phase	Number of Days	Vendor Trips/Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Demolition	8	0	10.5	0	8.52	0
Site Preparation	5	0	10.5	0	8.52	0
Grading	20	1	10.5	210	8.52	25
Building Construction	230	9	10.5	21,735	8.52	2,552
Paving	18	5	10.5	945	8.52	111
Architectural Coating	18	0	10.5	0	8.52	0
Total Construction Vendor Fuel Consumption						**2,688**

Notes:
[1] Assumptions for the vendor trip length and vehicle miles traveled are consistent with CalEEMod 2022.1.1.29 defaults.

Table 7: Construction Hauling Fuel Consumption Estimates (HHD Trucks)[1]

Phase	Number of Days	Hauling Trips/Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Demolition	8	8.88	20	1,421	5.98	238
Site Preparation	5	0	20	0	5.98	0
Grading	20	25.4	20	10,160	5.98	1,700
Building Construction	230	0	20	0	5.98	0
Paving	18	0	20	0	5.98	0
Architectural Coating	18	0	20	0	5.98	0
Total Construction Hauling Fuel Consumption						**1,938**

Notes:
[1]Assumptions for the hauling trip length and vehicle miles traveled are consistent with CalEEMod 2022.1.1.29 defaults.

Construction Energy Efficiency/Conservation Measures

Construction equipment used over the approximately 12-month construction phase would have engines that conform to CARB regulations and California emissions standards and is evidence of related fuel efficiencies. Construction of the proposed residential development would require the typical use of energy resources. There are no unusual project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Additionally, as required by California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby minimizing or eliminating unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. Enforcement of idling limitations is realized through periodic site inspections conducted by City building officials, and/or in response to citizen complaints. Compliance with these measures would result in a more efficient use of construction-related energy and would minimize or eliminate wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Operation Energy Demand

Energy consumption in support of or related to project operations would include transportation energy demands (energy consumed by employee and patron vehicles accessing the project site) and facilities energy demands (energy consumed by building operations and site maintenance activities).

Transportation Fuel Consumption

The largest source of operational energy use would be vehicle operation of residents. The site is located in an urbanized area at 32281 Riverside Drive in the City of Lake Elsinore. Furthermore, there are existing

transit services, provided by RTA, approximately 90 feet from the proposed Project site. The nearest transit service is Riverside Opp. Eisenhower and Riverside FS Eisenhower.

Using the CalEEMod output for the project from Urban Crossroads[17], an average trip for all vehicles was assumed to be 9.209 miles. As the project includes the development of the site a residential use, and in order to present a worst-case scenario, it was assumed that vehicles would operate 365 days per year. Table 8 shows the estimated annual fuel consumption for all classes of vehicles from autos to heavy-heavy trucks.[20]

The proposed project would generate approximately 577.6 trips per day. The vehicle fleet mix was used from the CalEEMod output. Table 8 shows that an estimated 86,154 gallons of fuel would be consumed per year for the operation of the proposed project.

Table 8: Estimated Vehicle Operations Fuel Consumption

Vehicle Type	Vehicle Mix	Number of Vehicles	Average Trip (miles)[1]	Daily VMT	Average Fuel Economy (mpg)	Total Gallons per Day	Total Annual Fuel Consumption (gallons)
Light Auto	Automobile	294.1	9.209	2,709	29.69	91.23	33,298
Light Truck	Automobile	31.7	9.209	292	24.55	11.89	4,339
Light Truck	Automobile	103.9	9.209	957	24.31	39.38	14,373
Medium Truck	Automobile	98.6	9.209	908	19.54	46.44	16,950
Light Heavy Truck	2-Axle Truck	20.9	9.209	193	16.82	11.47	4,186
Light Heavy Truck 10,000 lbs +	2-Axle Truck	5.2	9.209	48	15.83	3.05	1,114
Medium Heavy Truck	3-Axle Truck	6.5	9.209	59	8.52	6.97	2,546
Heavy Heavy Truck	4-Axle Truck	16.6	9.209	153	5.98	25.61	9,348
Total		577.6	--	5,319	--	236.04	--
Total Annual Fuel Consumption							**86,154**

Notes:
[1]Based on the size of the site and relative location, trips were assumed to be local rather than regional.

Trip generation and VMT generated by the proposed project are consistent with other similar residential uses of similar scale and configuration. That is, the proposed project does not propose uses or operations that would inherently result in excessive and wasteful vehicle trips and VMT, nor associated excess and wasteful vehicle energy consumption. Furthermore, the state of California consumed approximately 3.7 billion gallons of diesel in 2020 and 13.6 billion gallons of gasoline in 2022.[21,22] In addition, per EMFAC2021, the South Coast portion of the County of Riverside is estimated to have an annual fuel consumption of approximately 674,072 thousand gallons in the year 2024.[23] Therefore, the increase in fuel consumption from the proposed project is insignificant in comparison to the County's demand. Therefore, project transportation energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

[20] Average fuel economy based on aggregate mileage calculated in EMFAC 2021 for opening year (2024). See Appendix A for EMFAC output.
[21] https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-gasoline-data-facts-and-statistics
[22] https://afdc.energy.gov/states/ca
[23] https://arb.ca.gov/emfac/emissions-inventory/92bccfb9b61dec8923cc5a7c26aadaf58ed0ef68

Facility Energy Demands (Electricity and Natural Gas)

Building operation and site maintenance (including landscape maintenance) would result in the consumption of electricity (provided by SCE) and natural gas (provided by Southern California Gas Company). Operation of the proposed project would involve the use of energy for heating, cooling and equipment operation. These facilities would comply with all applicable California Energy Efficiency Standards and 2022 CALGreen Standards.

The annual natural gas and electricity demands were provided per the CalEEMod output from the project's Air Quality and Greenhouse Gas Assessment from Urban Crossroads[17] and are provided in Table 9.

Table 9: Project Mitigated Annual Operational Energy Demand Summary[1]

Natural Gas Demand	kBTU/year
Apartments Mid Rise	1,237,710
Health Club	5,025
Total	1,242,735

Electricity Demand	kWh/year
Apartments Mid Rise	543,279
Health Club	1,120
Parking Lot	69,067
Total	613,466.0

Notes:
[1]Taken from the unmitigated CalEEMod 2022.1.1.29 from the project's Air Quality and Greenhouse Gas Assessment from Urban Crossroads.

As shown in Table 9, the estimated electricity demand for the proposed project is approximately 613,466 kWh per year. In 2021, the residential sector of the County of Riverside consumed approximately 8,511 million kWh of electricity.[24] In addition, the estimated natural gas consumption for the proposed project is approximately 1,242,735 kBTU per year. In 2021, the residential sector of the County of Riverside consumed approximately 286.6 billion kBTU of gas.[25] Therefore, the increase in both electricity and natural gas demand from the proposed project is insignificant compared to the County's 2021 residential sector demand.

Renewable Energy and Energy Efficiency Plan Consistency

Regarding federal transportation regulations, the project site is located in an already developed area with access to/from the project site from existing roads. As these roads are already in place, the project would not interfere with, nor otherwise obstruct, intermodal transportation plans or projects that may be proposed pursuant to the Intermodal Surface Transportation Efficiency Act (ISTEA) because the Southern California Association of Governments (SCAG) is not planning for intermodal facilities in the project area.

[24] California Energy Commission, Electricity Consumption by County. https://ecdms.energy.ca.gov/elecbycounty.aspx
[25] California Energy Commission, Gas Consumption by County. http://ecdms.energy.ca.gov/gasbycounty.aspx

Regarding the State's Energy Plan and compliance with Title 24 CCR energy efficiency standards, the applicant is required to comply with the California Green Building Standard Code requirements for energy efficient buildings and appliances as well as utility energy efficiency programs implemented by the SCE and Southern California Gas Company.

The project would be required to meet or exceed the energy standards established in the California Green Building Standards Code, Title 24, Part 11 (CALGreen) by The Department of Housing and Community Development. CalGreen Standards require that new buildings reduce water consumption, employ building commissioning to increase building system efficiencies, divert construction waste from landfills, install low pollutant-emitting finish materials, as well as the use of water conserving plumbing, installation of bicycle racks, the use of LED lighting, and water-efficient irrigation systems. Therefore, the project would be consistent with the State's Renewable Energy Portfolio Standards.

Site Conditions for Renewable Energy Usage

On-site renewable energy sources have been considered. Geothermal energy, the use of heat naturally present in shallow soil or in groundwater or rock to provide building heating/cooling and to heat water, requires the installation of a heat exchanger consisting of a network of below-ground pipes to convey heated or cooled air to a building. The presence of natural-occurring methane and hydrogen sulfide gases, in the soil beneath the project site and in the project area, associated with underlying and nearby oil and gas fields, requires the implementation of a Gas Mitigation and Monitoring System to ensure subsurface gases do not pose a significant health or safety risk, and makes the construction and operation of a heat exchanger for project buildings infeasible. Installation of a heat exchanger would also require additional excavation compared to the project, which could increase impacts on paleontological resources.

Although methane is a renewable derived biogas, it is not available on the project site in commercially viable quantities or form (i.e., a form that could be used without further treatment), and its extraction and treatment for energy purposes would result in secondary impacts.

Wind power represents variable-energy, or intermittent, resources that are generally used to augment, but not replace, natural gas-fired energy power generation, since reliability of energy availability and transmission is necessary to meet demand, which is constant.

With respect to other on-site renewable energy sources, because of the Project's location, there are no local sources of energy from the following sources: biodiesel, biomass hydroelectric and small hydro, digester gas, fuel cells, landfill gas, municipal solid waste, ocean thermal, ocean wave, and tidal current technologies, or multi-fuel facilities using renewable fuels.

The project has the possibility of including solar panels in the future. Factors evaluated will include the cost of the solar system, tax incentives, rebates, or incentives from the electricity provider, how much power the system will produce, and the utility cost of electricity.

Additionally, as shown in Table 2, 31.4% of the power provided by SCE was from renewable sources in 2021, which would further renewable energy usage for the project.

5.0 Conclusions

As supported by the preceding analyses, neither construction nor operation of the Project would result in wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources. The proposed project does not include any unusual project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities and is a residential project that is not proposing any additional features that would require a larger energy demand than other residential projects of similar scale and configuration. As the proposed project is consistent with the existing General Plan land use designation, the energy demands of the project are anticipated to be accommodated within the context of available resources and energy delivery systems. The project would therefore not cause or result in the need for additional energy producing or transmission facilities. The Project would not engage in wasteful or inefficient uses of energy and aims to achieve energy conservations goals within the State of California. There would be no requirement for additional or upsized facilities to meet project demands.

The Project has been designed in compliance with California's Energy Efficiency Standards and 2022 CALGreen Standards. These measures include, but are not limited to, the use of water conserving plumbing, the use of LED lighting, and water-efficient irrigation systems. The Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency; therefore, impacts would be less than significant.

MD is pleased to provide this CEQA Energy review. If you have any questions regarding this analysis, please don't hesitate to call us at (805) 426-4477.

Sincerely,
MD Acoustics, LLC



Tyler Klassen, EIT
Air Quality Specialist

Appendix A
CARB EMFAC 2021

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: Sub-Area
Region: Riverside (SC)
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: miles/year for CVMT and EVMT, trips/year for Trips, kWh/year for Energy Consumption, tons/year for Emissions, 1000 gallons/year for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	Energy Consumption	Fuel Consumption	MPG	Average MPG	
Riverside (SC)	2024	LDA	Aggregate	Aggregate	Gasoline	469145.3818	7085090946	7085090946	0	758284900.2	0	238903.8299	29.6566654	**29.69174**	**LDA**
Riverside (SC)	2024	LDA	Aggregate	Aggregate	Diesel	1473.049219	18851626.2	18851626.2	0	2233070.999	0	439.7144995	42.87242341		
Riverside (SC)	2024	LDT1	Aggregate	Aggregate	Gasoline	40643.24621	528502252.2	528502252.2	0	61122180.19	0	21530.04768	24.54719377	**24.5472**	**LDT1**
Riverside (SC)	2024	LDT1	Aggregate	Aggregate	Diesel	18.16927182	117875.1936	117875.1936	0	18132.02209	0	4.799392489	24.56044049		
Riverside (SC)	2024	LDT2	Aggregate	Aggregate	Gasoline	196761.1569	3030302696	3030302696	0	320297170.5	0	124807.115	24.27988737	**24.30858**	**LDT2**
Riverside (SC)	2024	LDT2	Aggregate	Aggregate	Diesel	611.2140627	10065688.28	10065688.28	0	1023286.648	0	305.506804	32.94750936		
Riverside (SC)	2024	LHD1	Aggregate	Aggregate	Gasoline	17828.73734	214762485.9	214762485.9	0	86858270.22	0	15814.52949	13.58007432	**16.81574**	**LHD1**
Riverside (SC)	2024	LHD1	Aggregate	Aggregate	Diesel	15247.60565	183240310	183240310	0	62717193.1	0	8891.695883	20.60802713		
Riverside (SC)	2024	LHD2	Aggregate	Aggregate	Gasoline	2494.679179	29349825.66	29349825.66	0	12153609.88	0	2415.690169	12.14966474	**15.82732**	**LHD2**
Riverside (SC)	2024	LHD2	Aggregate	Aggregate	Diesel	6844.928194	83091798.01	83091798.01	0	28154891.54	0	4851.692227	17.12635388		
Riverside (SC)	2024	MDV	Aggregate	Aggregate	Gasoline	158529.7591	2244541310	2244541310	0	251914103.6	0	115229.5708	19.47886548	**19.54432**	**MDV**
Riverside (SC)	2024	MDV	Aggregate	Aggregate	Diesel	2456.219583	35407756.28	35407756.28	0	3947082.429	0	1494.401662	23.69360071		
Riverside (SC)	2024	T6 CAIRP Class 4	Aggregate	Aggregate	Diesel	4.423357245	93181.17879	93181.17879	0	31714.40984	0	10.14983357	9.180562234	**8.516156**	**MHDT**
Riverside (SC)	2024	T6 CAIRP Class 5	Aggregate	Aggregate	Diesel	5.896493924	127926.3653	127926.3653	0	42276.44628	0	13.93171058	9.182387519		
Riverside (SC)	2024	T6 CAIRP Class 6	Aggregate	Aggregate	Diesel	19.36365373	333194.8153	333194.8153	0	138832.75	0	35.73651953	9.323650417		
Riverside (SC)	2024	T6 CAIRP Class 7	Aggregate	Aggregate	Diesel	32.59854398	2098102.308	2098102.308	0	233723.7367	0	210.4626513	9.96900065		
Riverside (SC)	2024	T6 Instate Delivery Class 4	Aggregate	Aggregate	Diesel	452.5856946	4801442.704	4801442.704	0	2015020.133	0	539.6661593	8.897060935		
Riverside (SC)	2024	T6 Instate Delivery Class 5	Aggregate	Aggregate	Diesel	427.8364262	4599716.238	4599716.238	0	1904830.45	0	522.775227	8.798649975		
Riverside (SC)	2024	T6 Instate Delivery Class 6	Aggregate	Aggregate	Diesel	1246.252295	13289632.74	13289632.74	0	5548614.32	0	1480.112543	8.978798806		
Riverside (SC)	2024	T6 Instate Delivery Class 7	Aggregate	Aggregate	Diesel	176.5038105	3024179.019	3024179.019	0	785837.3253	0	323.9490887	9.335352758		
Riverside (SC)	2024	T6 Instate Other Class 4	Aggregate	Aggregate	Diesel	1532.194224	20311742.1	20311742.1	0	5526195.551	0	2290.823813	8.866566685		
Riverside (SC)	2024	T6 Instate Other Class 5	Aggregate	Aggregate	Diesel	3725.93812	51375869.98	51375869.98	0	13438415.54	0	5835.177624	8.804508327		
Riverside (SC)	2024	T6 Instate Other Class 6	Aggregate	Aggregate	Diesel	2662.06397	35893800.67	35893800.67	0	9601319.363	0	4024.075598	8.919763011		
Riverside (SC)	2024	T6 Instate Other Class 7	Aggregate	Aggregate	Diesel	1263.898872	18685174.38	18685174.38	0	4558529.341	0	2052.454515	9.103818988		
Riverside (SC)	2024	T6 Instate Tractor Class 6	Aggregate	Aggregate	Diesel	17.19335297	269884.9784	269884.9784	0	62011.61003	0	29.47581897	9.156148594		
Riverside (SC)	2024	T6 Instate Tractor Class 7	Aggregate	Aggregate	Diesel	433.6608358	8161734.738	8161734.738	0	1564093.21	0	842.8947591	9.68298195		
Riverside (SC)	2024	T6 OOS Class 4	Aggregate	Aggregate	Diesel	2.589604632	54083.14526	54083.14526	0	18566.84371	0	5.862470415	9.225316537		
Riverside (SC)	2024	T6 OOS Class 5	Aggregate	Aggregate	Diesel	3.435876429	74192.34986	74192.34986	0	24634.40939	0	8.045938579	9.221093243		
Riverside (SC)	2024	T6 OOS Class 6	Aggregate	Aggregate	Diesel	11.33947494	193866.7329	193866.7329	0	81301.31387	0	20.65372377	9.386526858		
Riverside (SC)	2024	T6 OOS Class 7	Aggregate	Aggregate	Diesel	17.75049478	1409652.219	1409652.219	0	127266.7875	0	140.3703789	10.04237668		
Riverside (SC)	2024	T6 Public Class 4	Aggregate	Aggregate	Diesel	78.0665016	824960.5948	824960.5948	0	124950.1198	0	95.52309209	8.636242574		
Riverside (SC)	2024	T6 Public Class 5	Aggregate	Aggregate	Diesel	120.5324359	1354502.252	1354502.252	0	192919.3956	0	159.0140486	8.51812946		
Riverside (SC)	2024	T6 Public Class 6	Aggregate	Aggregate	Diesel	177.5015364	1897826.296	1897826.296	0	284101.8591	0	219.9348097	8.629040115		
Riverside (SC)	2024	T6 Public Class 7	Aggregate	Aggregate	Diesel	289.3414835	4009067.675	4009067.675	0	463108.4049	0	458.4096505	8.745600514		
Riverside (SC)	2024	T6 Utility Class 5	Aggregate	Aggregate	Diesel	180.6130965	2292136.82	2292136.82	0	721296.462	0	246.4739588	9.299711947		
Riverside (SC)	2024	T6 Utility Class 6	Aggregate	Aggregate	Diesel	34.12352268	431132.1879	431132.1879	0	136275.7002	0	46.15812869	9.340330731		
Riverside (SC)	2024	T6 Utility Class 7	Aggregate	Aggregate	Diesel	38.66381752	598577.7488	598577.7488	0	154407.8217	0	63.8812396	9.370164896		
Riverside (SC)	2024	T6TS	Aggregate	Aggregate	Gasoline	1238.0029	16338867.45	16338867.45	0	8099777.582	0	3135.493991	5.210938849		
Riverside (SC)	2024	T7 CAIRP Class 8	Aggregate	Aggregate	Diesel	1831.565737	118823847	118823847	0	13131886.76	0	19157.43994	6.202490902	**5.975937**	**HHDT**
Riverside (SC)	2024	T7 NNOOS Class 8	Aggregate	Aggregate	Diesel	1653.353316	142098628	142098628	0	11854146.47	0	22519.78256	6.309946717		
Riverside (SC)	2024	T7 NOOS Class 8	Aggregate	Aggregate	Diesel	695.5089614	51596157.84	51596157.84	0	4986632.331	0	8306.728441	6.211369278		
Riverside (SC)	2024	T7 POLA Class 8	Aggregate	Aggregate	Diesel	2301.013861	91105572.64	91105572.64	0	11745111.07	0	15240.88991	5.977706891		
Riverside (SC)	2024	T7 Public Class 8	Aggregate	Aggregate	Diesel	632.5630896	7936472.285	7936472.285	0	1012455.179	0	1364.332247	5.81711112		
Riverside (SC)	2024	T7 Single Concrete/Transit Mix Class 8	Aggregate	Aggregate	Diesel	1262.190227	27442115.61	27442115.61	0	3709627.566	0	4530.943771	6.056600346		
Riverside (SC)	2024	T7 Single Dump Class 8	Aggregate	Aggregate	Diesel	1147.329325	21436519.7	21436519.7	0	3372046.779	0	3615.697845	5.928736476		
Riverside (SC)	2024	T7 Single Other Class 8	Aggregate	Aggregate	Diesel	1205.660648	22123736.84	22123736.84	0	3543484.87	0	3677.473198	6.016015793		
Riverside (SC)	2024	T7 SWCV Class 8	Aggregate	Aggregate	Diesel	53.10144773	1075584.483	1075584.483	0	76211.19779	0	399.1884387	2.694427941		
Riverside (SC)	2024	T7 Tractor Class 8	Aggregate	Aggregate	Diesel	3880.650986	95685829.42	95685829.42	0	17592387.95	0	15495.58147	6.175039615		
Riverside (SC)	2024	T7 Utility Class 8	Aggregate	Aggregate	Diesel	129.0857806	1829933.365	1829933.365	0	515516.9733	0	296.5890969	6.169927973		
Riverside (SC)	2024	T7IS	Aggregate	Aggregate	Gasoline	7.589475903	113786.0091	113786.0091	0	49655.02648	0	30.14312909	3.77485724		

Appendix E – Geotechnical Engineering Investigation

GEOLOGIC AND GEOTECHNICAL ENGINEERING INVESTIGATION,
PROPOSED DEVELOPMENT OF 12, TWO-STORY APARTMENT BUILDINGS,
A Single-Story Office Building, and Swimming Pool,
APN 379315033,
32281 Riverside Drive,
Lake Elsinore, California

for

Grant Keene

July 12, 2023 W.O. 7853

MDN 23642

GeoSoils Consultants Inc.
GEOTECHNICAL ENGINEERING / ENGINEERING GEOLOGY

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Subject: **Geotechnical Engineering Investigation, Proposed Development of 12, Two-Story Apartment Buildings, A Single-Story Office Building, and Swimming Pool, APN 379315033, 32281 Riverside Drive, Lake Elsinore, California**

As requested, GeoSoils Consultants, Inc. (GSC) has performed a geotechnical engineering investigation for the subject site. The purpose of this investigation is to provide geotechnical engineering recommendations for site development. The report presents the results of our research, subsurface exploration, laboratory testing, site reconnaissance, and provides geotechnical engineering recommendations for site grading. Grading of the site is considered feasible from a geologic and geotechnical engineering prospective, provided the recommendations presented herein are incorporated into the design and implemented during grading.

We appreciate this opportunity to be of service to you. If you have any questions regarding this report, or if we may be of further assistance to you, please do not hesitate to contact us.

Very truly yours,

GEOSOILS CONSULTANTS, INC.

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cc: (1) Addressee

MDN 23642

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cc: (1) Addressee

1.0 INTRODUCTION

The purpose of this investigation is to determine the geotechnical conditions on the site and their impact on proposed development, and to provide geologic and geotechnical engineering data and recommendations to aid in development of the subject site. The following sections provide a summary of the geotechnical engineering conditions on the site, and recommendations for site grading and stabilization, fill placement, and foundations.

This report has been prepared in accordance with generally accepted geotechnical engineering practices in the County of Riverside at the time it was prepared. The report presents a brief description of the site, the geotechnical engineering characteristics of the area, the seismicity of the area, an engineering analysis of the site characteristics, conclusions, and recommendations to develop the site.

Opinions presented in this report are based on an inspection of the site, subsurface exploration, a review of the regional geologic maps and seismic hazard reports, and our general knowledge of the geologic and soils engineering conditions in the site area. The opinions presented have been arrived at through the exercise of the generally understood standard of care for our profession and standard of engineering practice for the County of Riverside, as we understand it.

1.1 Site Description

The subject site is located within the City of Lake Elsinore, 32281 Riverside Drive, California (Figure 1). The site is predominantly vacant, with concrete slabs towards the center of the lot. Existing site conditions are shown on Plate 1. The site is on the northwest side of Riverside Drive, approximately 300 feet northeast of the intersection of Eisenhower Drive and Riverside Drive.



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SITE LOCATION MAP
32281 RIVERSIDE DRIVE
LAKE ELSINORE, CALIFORNIA
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FIGURE 1

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1.2 Proposed Development

Proposed development of the site will consist of the removal of the existing concrete slab(s) and the construction of 12 two-story multi-family structures, a single-story office building, and a swimming pool.

1.3 Scope of Services

Our scope of services included the following:

- Site reconnaissance.
- Review of regional geologic maps, and seismic hazard reports.
- Excavated, sampled, and logged three (3) hollow stem auger borings at the locations shown on Plate 1, Geologic Map.
- Laboratory testing.
- Review of the grading plans.
- Engineering analyses.
- Preparation of this report.

1.4 Limitations

The findings and recommendations of this report were prepared in accordance with generally accepted professional geotechnical engineering principles and practice for the County of Riverside at this time. We make no other warranty, either express or implied. The conclusions and recommendations contained in this report are based on-site conditions disclosed in our site inspection and the subsurface investigation. However, soil/rock conditions can vary significantly between borings; therefore, further refinements of our recommendations contained herein may be necessary due to changes in the building plans or what is encountered during site grading.

The recommendations provided in this report are applicable for preliminary development planning for the referenced site provided that surface water will be kept from infiltrating into the subgrade adjacent to the house foundation systems. This may include, but not be limited to rainwater, roof water, landscape water and/or leaky plumbing. The lots are to be fine graded at the completion of construction to include positive drainage away from the structure and roof water will be collected via gutters, downspouts, and transported to the street in buried drainpipes. Buyers should be cautioned against constructing open draining planters adjacent to the structures or obstructing the yard drainage in any way.

Since our investigation was based on the site conditions observed and engineering analyses, the conclusions and recommendations contained herein are professional opinions. Further, these opinions have been derived in accordance with standard engineering practices, and no warranty is expressed or implied.

2.0 FIELD EXPLORATION

Three hollow stem auger borings to the maximum depth of 50 feet were excavated on the site at the locations shown on Plate 1. Soil samples were obtained with a California ring sampler. The hollow stem auger borings used the standard 140 lb. hammer with a 30-inch drop.

A representative from our firm continuously observed the borings, logged the subsurface conditions, and collected representative soil samples. All samples were stored in watertight containers and later transported to our laboratory for further visual examination and testing, as deemed necessary. After the borings were completed, the borings were backfilled with soil cuttings.

The enclosed Boring Logs (Plates B-1 to B-3) describe the vertical sequence of soils and materials encountered in the borings, based primarily on our field classifications and supported by our subsequent laboratory examination and testing.

3.0 LABORATORY TESTING

3.1 In Situ Moisture Content and Dry Unit Weight

In-place moisture content and dry unit weight of selected, relatively undisturbed ring soil samples were determined in accordance with the current version of the Test Method ASTM D 2435 and Test Method ASTM D2216, respectively. Once the dry unit weights had been determined, in-place densities of underlying soil profile were estimated. In those cases where ring samples were obtained, the moisture content and dry unit weights are presented on Boring Logs, Appendix A.

3.2 Direct Shear Tests

One shear test was performed in a strain-control type Direct Shear Machine. The sample was sheared under carrying confining loads in order to determine the Coulomb shear strength parameters: cohesion (c), and angle of internal friction (φ) for peak and residual strength conditions. The sample was tested in an artificially-saturated condition. The results are plotted and a linear approximation is drawn of the failure curve. Results are shown on the Shear Test Diagram included with this appendix as Plate DS-1.

3.3 Expansive Soil

Expansion index testing was performed on selected bulk samples of the on-site soils in accordance with the current version of Test Method ASTM D4829-07. The test results are presented in Plate EI-1. Additional testing will be performed at the completion of grading. The test results indicate an expansion index of 23 (low range).

3.4 Compaction Tests

One compaction tests were performed to determine to moisture density relationships of the typical surficial soils encountered on the site. The laboratory standard used was in accordance with ASTM Test Designation D-1557-12.

TABLE 1 COMPACTION TEST RESULTS			
Sample	**Description**	**Maximum Dry Density (pcf)**	**Optimum Moisture Content (%)**
B-1 @ 0-5'	Dark brown, slightly clayey sandy SILT	112.5	15.0

3.5 Chemical Tests

Samples of the near surface soil were sent to an independent outside laboratory for chemical analyses to determine the chemical content of soil. The results are included in Appendix B and discussed in "*corrosion section"*.

3.6 Consolidation Tests

Five consolidation tests were performed on selected ring samples. The samples were inundated at an approximate load of one ton per square foot to monitor the hydro consolidation. Loads were applied to the samples in several increments in geometric progression and resulting deformations were recorded at selected time intervals. Results of the consolidation tests are presented on Plates C-1 to C-5.

4.0 FINDINGS

4.1 Earth Materials

Residual Soil (rs)

Residual soil was observed throughout the site and consists of a greyish brown, sandy SAND. Where encountered, the residual soil has a maximum depth of 3 feet.

Alluvium (Qyv_a)

Alluvium was observed underneath the residual soil. The alluvium consists of a brown to reddish brown, silty fine grained SAND. The alluvium is dense to very dense 5 feet below existing grade.

4.1.1 Groundwater

Groundwater was encountered at a depth of approximately 45 feet below existing ground surface during our subsurface evaluation.

4.2 Faulting And Seismicity

The project site is not located within an Alquist-Priolo Earthquake Fault Zone and there are no active faults on or adjacent to the property (Figure 3). The closest such fault to the site is the Glen Ivy North fault, located approximately 1.96 miles to the northwest of the site. A Regional Setting Map is presented in Figure 2[1].

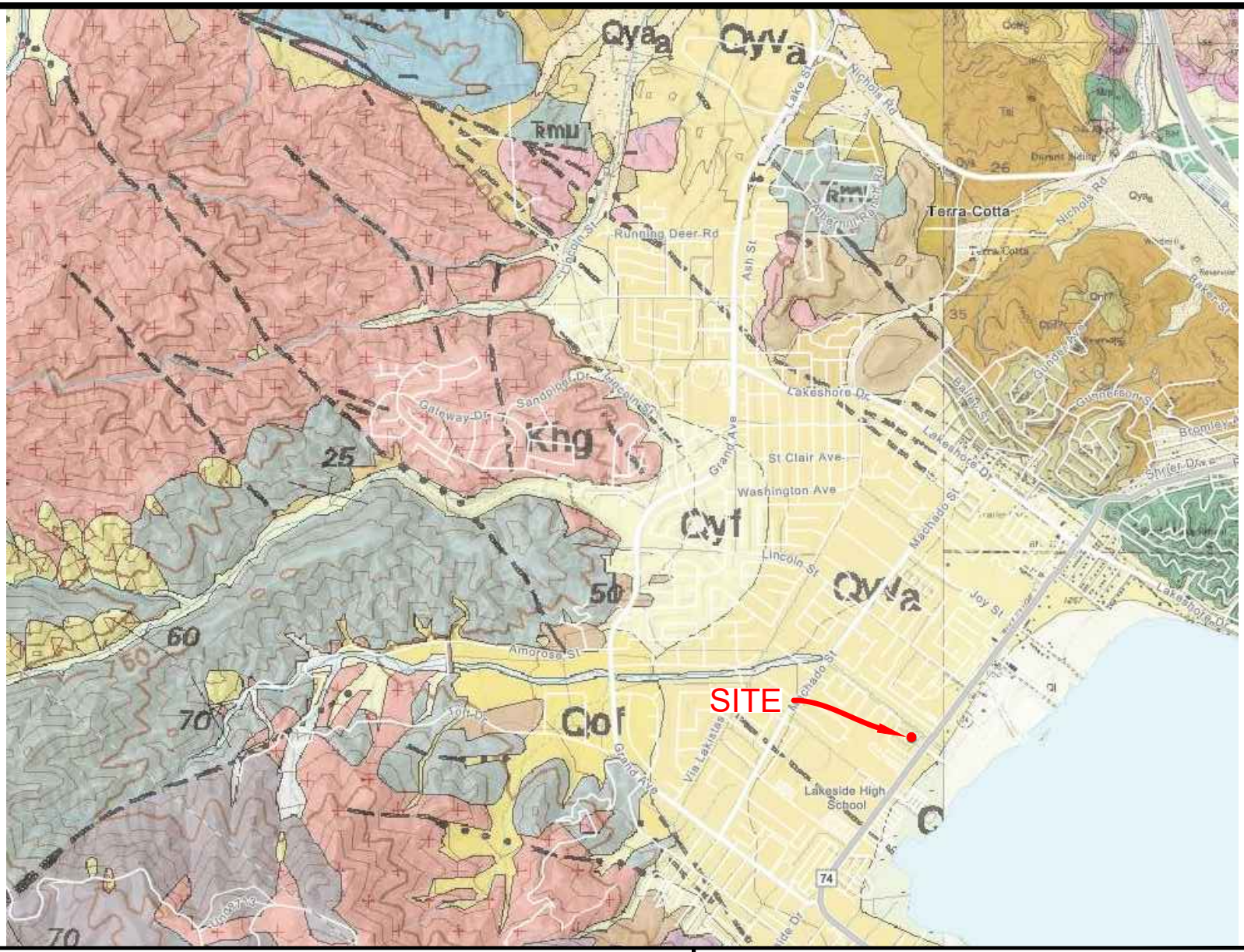
Although there are no faults on or adjacent to the property, there are faults near the site that can cause moderate to intense ground shaking during the lifetime of the proposed development. Therefore, earthquake resistant design is recommended.

4.2.1 Earthquake Characterization:

Earthquakes are characterized by magnitude, which is a quantitative measure of the earthquake strength, based on strain energy released during a seismic event. The magnitude of an earthquake is constant for any given site and is independent of the site in question.

4.2.2 Earthquake Intensity:

The intensity of an earthquake at a random site is not constant and is subject to variations. The intensity is an indirect measurement of ground motion at a particular site and is affected by the earthquake magnitude, the distance between the site and the hypocenter (the location on the fault at depth where the energy is released), and the geologic conditions between the site and the hypocenter. Intensity, which is often measured by the Mercalli scale, generally increases with increasing magnitude and decreases with increasing distance from the hypocenter. Topography may also affect the intensity of an



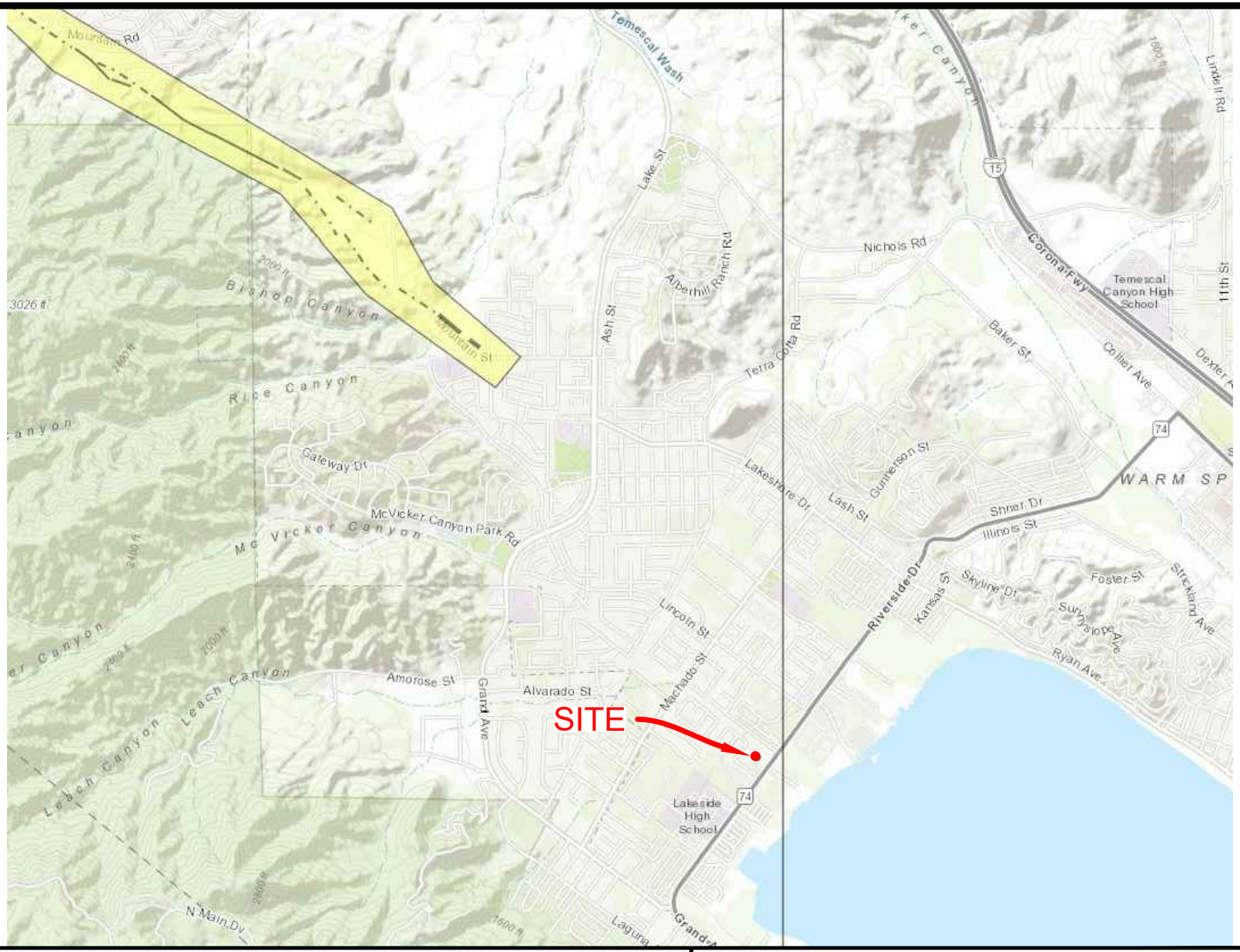
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REGIONAL GEOLOGIC MAP
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FIGURE 2

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SEISMIC HAZARD ZONE MAP
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FIGURE 3

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earthquake from one site to another. Topographic effects such as steep sided ridges or slopes may result in a higher intensity than sites located in relatively flat-lying areas.

4.2.3 2022 California Building Code (CBC) Seismic Design Criteria

The 2022 CBC (California Building Code) seismic coefficient criteria are provided in Table 2 for structural design consideration. Under the Earthquake Design Regulations of Chapter 16, Section 1613 of the CBC 2022, the following coefficients apply for the proposed structures at the site[2]. Site Class D should be used for the site. The following seismic data is presented for preliminary design purposes. Ground motion parameters based on the Mapped Risk-Targeted Maximum Considered Earthquake (MCE_r) were determined and adhere to requirements discussed in ASCE 7-16 referenced by the 2022 California Building Code. The parameters include 5% critical damping for 0.2- and 1.0-second time periods. A summary of parameters is provided in the table below for a Site Class D designation. These values may only be used when the value of the seismic response coefficient C_s satisfies equations 12.8-2, 12.8-3, or 12.8-4 of the ASCE 7-16 Standard.

TABLE 2
SEISMIC PARAMETERS

Description	Value
Mapped Response (0.2 second), S_s	2.231
Mapped Spectral Response (1.0 second), S_1	0.795
Short Period Site Coefficient, F_a	1.2
1-second Period Site Coefficient, F_v	1.7
Adjusted Maximum Considered Earthquake Spectral Response (0.2 second), S_{MS}	2.677
Adjusted Maximum Considered Earthquake Spectral Response (1.0 second), S_{M1}	1.352
5-percent Damped Design Spectral Response (0.2 second), S_{DS}	1.785
5-percent Damped Design Spectral Response (1.0 second), S_{D1}	0.901
Maximum Considered Earthquake Geometric Mean Peak Ground Acceleration, PGA_M	1.145
Site Coordinates: Latitude: 33.673412°, Longitude: -117.377926°	

Conformance to the above criteria for seismic excitation does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a maximum level earthquake occurs. The primary goal of seismic design is to protect life and not to avoid all damage, since such

design may be economically prohibitive. Following a major earthquake, a building may be damaged beyond repair, yet not collapse.

4.3 Secondary Earthquake Effects

Ground shaking produced during an earthquake can result in a number of potentially damaging phenomena classified as secondary earthquake effects. These secondary effects include ground rupture, landslides, seiches and tsunamis, seismically induced settlement, and liquefaction. Descriptions of each of these phenomena and how it could potentially affect the proposed site are described as follows:

4.3.1 Ground Rupture

Ground rupture occurs when movement on a fault breaks the ground surface and usually occurs along pre-existing fault traces where zones of weakness already exist. The State has established Earthquake Fault Zones for the purpose of mitigating the hazard of fault rupture by prohibiting the location of most human occupancy structures across the traces of active faults.

Earthquake fault zones are regulatory zones that encompass surface traces of active faults with a potential for future surface fault rupture. The site is not located within a State established Earthquake Fault Zone and there are no know active faults within the limits of the property (Figure 3); therefore, the ground rupture hazard potential for the site is considered remote.

4.3.2 Landsliding

Landslides are slope failures that occur where the horizontal seismic forces act to induce soil and/or bedrock failures. The most common affect is reactivation or movement on a pre-existing landslide. Typically, existing slides that are stable under static conditions (i.e., factor-of-safety above one) become unstable and move during strong ground shaking. The site is flat and not subject to landslides.

4.3.3 Seiches and Tsunamis

A seiche is the resonant oscillation of a body of water, typically a lake or swimming pool caused by earthquake shaking (waves). The hazard exists where water can be splashed out of the body of water and impact nearby structures. While Lake Elsinore is close to the site, given the distance from the site and elevation difference between the lake and the site, it is our opinion that the hazards associated with seiches are considered low.

Tsunamis are seismic sea waves generated by undersea earthquakes or landslides. When the ocean floor is offset or tilted during an earthquake, a set of waves are generated similar to the concentric waves caused by an object dropped in water.

Tsunamis can have wavelengths of up to 120 miles and travel as fast as 500 miles per hour across hundreds of miles of deep Ocean. Upon reaching shallow coastal waters, the once two-foot high wave can become up to 50 feet in height causing great devastation to structures within reach. Tsunamis can generate seiches as well. Due to the distance of the site relative to the ocean, seiches and tsunamis are not considered a hazard to the site.

4.3.4 Liquefaction and Dry Sand Settlement Analysis

Dry sand settlement can occur during moderate and large earthquakes when loose, natural or fill sandy soils are densified and settle, often unevenly across a site. In order for dry sand settlement to occur, the following four factors are required: 1) Relatively dry soil or soil situated above the groundwater table; 2) undrained loading (strong ground shaking), such as by earthquake; 3) contractive soil response during shear loading, which is often the case for a soil which is initially in a loose or uncompacted state; and 4) susceptible soil type; such as clean, uniformly graded sands.

Liquefaction is a soil softening dynamic response, by which an increase in the excess pore water pressure results in partial to full loss of soil shear strength and post-liquefaction dissipation of this pore water pressure results in ground settlement shortly after the earthquake. In order for liquefaction to occur, the following four factors are required: 1) saturated soil or soil situated below the groundwater table; 2) undrained loading (strong ground shaking), such as by earthquake; 3) contractive soil response during shear loading, which is often the case for a soil which is initially in a loose or uncompacted state; and 4) susceptible soil type; such as clean, uniformly graded sands, non-plastic silts, or gravels.

The site has not been evaluated for liquefaction potential as per the State of California Seismic Hazard Zone map. Groundwater was encountered at a depth of 45 feet. However, during our field exploration, soils were observed to be dense to very dense. Therefore, it is our opinion that liquefaction is not considered a potential hazard on this site.

4.4 Hydrocollapse

Hydro-collapse is a condition where dry or moist soils undergo settlement upon being wetted. In many cases no additional surcharge load is necessary to trigger the Hydro-collapse. The potential for Hydro-collapse has been evaluated based upon observations, the results of Swell/Collapse or Consolidation tests, and moisture-density determinations for samples taken from the field. Department of Public Works, Materials Engineering Division consider potentially collapsible soils as generally having (a) low moisture contents (<8%), (b) low in-situ density(<108pcf), and (c) subject to 2 or greater collapse potential.

A total of five consolidation tests were performed on samples from upper 10 feet and are presented on the enclosed plates C-1 through C-5 in Appendix B. All the samples have volume changes from -0.7 to 0.1%. Therefore, we concluded that the on-site soils to remain in-place to pose a low potential for Hydro-collapse.

5.0 CONCLUSIONS

The development of the subject site is considered feasible from a geologic and geotechnical engineering viewpoint, provided that the recommendations presented in this report are followed during grading.

6.0 RECOMMENDATIONS

6.1 Removals

Removals shall extend a minimum of 5 (five) feet below existing ground surface or proposed grades, whichever is lower in elevation, and shall include all existing residual and some on-site soil. Removals shall extend a minimum of 5 feet beyond the building footprint or equal to the depth of removal, whichever is greater. In the areas of streets and other miscellaneous structures, removals shall extend a minimum of 3 (three) feet below existing ground surface and shall include all residual soil. Deeper removals may be required if soft or dry soil conditions are observed during grading or if hardpan conditions are observed. Recommendations for removals may be modified if the current site development plan changes (see Plate 1). Preparation of areas to receive fill and fill placement shall be performed as discussed under "*Grading section"*.

6.2 Foundation Recommendations

The following recommendations are provided for preliminary design purposes and the final expansion index should be determined following grading. In our opinion, for at grade buildings area, conventional footings should be used to support the proposed structures.

Foundations should be designed for low-expansive soil conditions. The proposed improvements should be founded into compacted fill. Under no circumstances should foundations be cast atop loose, soft, or slough, debris, existing artificial fill, topsoil, or surfaces covered by standing water. Prior to placing concrete in a foundation excavation, an inspection should be made by our representative to ensure that the foundation's subgrade is free of loose and disturbed soils and is embedded in the

recommended material. We offer the following site-specific recommendations and comments for purposes of foundation design and construction.

6.2.1 Footings

The proposed at-grade structures may be supported on continuous footings. The building's exterior isolated pad footings may need to be connected to adjacent footings via tie beams at the discretion of the project structural engineer.

Subgrade Preparation

All conventional footings should be constructed on firm, unyielding certified compacted fill. All compacted fill should be compacted to at least 90 percent of the Modified Proctor maximum laboratory density, as determined by ASTM D-1557-02 compaction method. Pre-moistening of all areas to receive concrete is recommended. The moisture content of the subgrade soils should be equal to or slightly greater than optimum moisture and verified by the Geotechnical Engineer to a depth of 24 inches below adjacent grade within 24 hours of concrete placement. Footing's subgrades shall be prepared in accordance with the *Grading* section of this report.

Bearing Capacity

Continuous and isolated buildings footings should have a width of at least 12 and 18 inches. New footings should extend at least 18 inches below adjacent elevation. Exterior isolated pad footings intended for support of roof overhangs such as decks, patio covers and similar construction should be a minimum of 24 inches square and founded at a minimum depth of 18 inches below the lowest adjacent final grade. Footings with at least above minimum dimensions may be designed for a preliminary allowable bearing pressure of 2,000 pounds per square foot (psf) for dead plus live loads, with a one-third increase allowed when considering additional short-term wind or seismic loading. The allowable

bearing value may be increased by 200 pounds per square foot per foot increase in depth or width to a maximum of 4,000 psf. The weight of the footings may be neglected for design purposes. All footings located adjacent to utility lines should be embedded below a 1:1 plane extending up from the bottom edge of the utility trench.

Settlement

The footings should be designed based on a medium-expansive soils condition. Thirty-year post-construction differential settlement due to static loads is not expected to exceed about 0.5-inch over 30 feet span for the proposed improvements supported on footings, provided that the foundations are designed and constructed as recommended.

Lateral Capacity

Lateral loads may be resisted by friction between the bottom of the footings and the supporting subgrade, and by passive soil pressure acting against the footings cast neat in foundation excavations or backfilled with properly compacted structural fill. A coefficient of friction of 0.4 may be assumed for design for footings supported on compacted fill. We recommend an equivalent fluid pressure of 300 pounds per cubic foot for passive soil resistance and not to exceed 3,000 pounds per cubic foot, where appropriate. The upper foot of passive soil resistance should be neglected where soil adjacent to the footing is not covered and protected by a concrete slab or pavement. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

General Structural Design

We recommend that foundations be reinforced with a minimum two, No. 4 rebar both top and bottom, to provide structural continuity and to permit spanning of local irregularities.

6.2.2 Foundation General Recommendations

The above parameters are applicable provided structures have gutters and downspouts and positive drainage is maintained away from structures. Therefore, it is important that information regarding drainage and site maintenance be passed on to future owners.

The above recommendations assume, and GeoSoils Consultants, Inc. strongly recommends, that surface water will be kept from infiltrating into the subgrade adjacent to the building foundation system. This may include, but not be limited to rainwater, roof water, landscape water and/or leaky plumbing. The lots are to be fine graded at the completion of construction to include positive drainage away from the structure and roof water will be collected via gutters, downspouts, and transported to the street in buried drainpipes. Homebuyers should be cautioned against constructing open draining planters adjacent to the houses or obstructing the yard drainage in any way.

- Utility trenches beneath the slabs should be backfilled with compacted native soil materials, free of rocks.

- Standard County of Riverside structural setback guidelines are applicable, except where superseded by specific recommendations by the Project Geologist and Geotechnical Engineer.

- Building or structure footings shall be set back a horizontal distance, x, from the face of adjacent descending slope. The horizontal distance is calculated as $x=H/3$, where H is the height of slope. The distance x should not be less than 5 feet nor more than 40 feet. The distance x may be provided by deepening the footings.

6.3 Swimming Pool Recommendations

1. The surface and near-surface materials in the area of the proposed pool have a low expansion potential. Design the pool for low expansive soil conditions (i.e. minimum EFP=45 pcf). The pool should also satisfy current code setback requirements.

2. If pool decking is proposed, it should be cast free of the pool and water stops should be provided between the bond beam and the deck.

3. The entire pool bottom should be supported on a 3 feet compacted fill cap.

4. The pool should be designed for any possible surcharge loadings from nearby structures should the pool fall within a 45-degree (1:1) plane from the surcharging structure.

5. In many cases, we have found pool contractors who commonly use standard pool detail sheets instead of having a Structural Engineer design a pool for the specific criteria recommended. These detail sheets usually incorporate details for several site conditions and can be confusing as to exactly which detail is appropriate.

   Typical “standard detail” may not conform to the criteria recommended. As such, we strongly discourage the use of standard detail sheets. Instead, the Structural Engineer should prepare a specific design and details to conform to the criteria presented in this report, as well as other structural criteria. The detail should also consider provisions for deck construction. We further recommend that the Structural Engineer review steel once in-place and leave a memo at the job site indicating for the benefit of the concerned parties (e.g., owner and City) that it is appropriate to proceed further. Deputy inspection of gunite placement is advised.

6. Prior to placement of steel, the pool plans should be reviewed by this office, and the pool excavation must be observed by a Geologist or Geotechnical Engineer.

7. Surface drainage around the pool should be provided to keep water from ponding and seeping into the ground. Surface water shall be collected and conducted through non-erosive devices to the street, storm drain, or other approved watercourse or disposal area.

8. Leakage from the pool or any of the appurtenant plumbing could create an artificial groundwater condition which could have a deleterious effect on the underlying soil. Therefore, it is imperative that all plumbing and pool features be absolutely leak-free.

9. Should any subdrain pipes, (i.e., such as a yard drain system) be broken or impacted during construction of the pool system, or any structure, these pipes should be repaired and/or rerouted where necessary to restore their intended function (i.e., to provide proper drainage).

6.4 Exterior Slabs

Subgrade Preparation

To reduce the potential for distress to exterior concrete flatwork, the subgrade soils below concrete flatwork areas to a minimum depth of 12 inches (or deeper, as either prescribed elsewhere in this report or determined in the field) should be moisture conditioned to at least equal to, or slightly greater than, the optimum moisture content and then compacted to a minimum relative compaction of 90 percent. Where concrete public roads, concrete segments of roads and/or concrete access driveways are proposed, the upper 12 inches of subgrade soil should be compacted to a minimum 95 percent relative compaction.

As a further measure to reduce the potential for concrete flatwork cracking, subgrade soils should be thoroughly moistened prior to placing concrete. The moisture content

of the soils should be at least the optimum moisture content to a minimum depth of 12 inches into the subgrade. Flooding or ponding of the subgrade is not considered feasible to achieve the above moisture conditions since this method would likely require construction of numerous earth berms to contain the water. Therefore, moisture conditioning should be achieved with sprinklers or a light spray applied to the subgrade over a period of few to several days just prior to pouring concrete. Pre-watering of the soils is intended to promote uniform curing of the concrete, reduce the development of shrinkage cracks and reduce the potential for differential expansion pressure on freshly poured flatwork. A representative of the project geotechnical consultant should observe and verify the density and moisture content of the soils, and the depth of moisture penetration prior to pouring concrete.

Drainage

Drainage from patios and other flatwork areas should be directed to local area drains and/or graded earth swales designed to carry runoff water to the adjacent streets or other approved drainage structures. The concrete flatwork should be sloped at a minimum gradient of one percent, or as prescribed by project civil engineer or local codes, away from building foundations, retaining walls, masonry garden walls and slope areas.

Thickened Edge

To improve performance, exterior slabs-on-grade may be constructed with a thickened edge to improve edge stiffness and to reduce the potential for water seepage under the edge of the slabs and into the underlying base and subgrade. In our opinion, the thickened edges should be at least 8 inches wide and ideally should extend at least 8 inches below the bottom of the slab.

6.5 Pavement Design

Preliminary pavement design has been provided below. An assumed Traffic Index (TI) range of 4 to 5 and assumed “R”-value of 25 have been used. Additional testing at the time of grading should be completed to determine a site-specific “R”-value.

Pavement sections are based on two different traffic indices and are presented in Table 3:

TABLE 3
PAVEMENT RECOMMENDATIONS

Traffic Index	Subgrade "R"-value	AC Thickness (inches)	Class 2 Aggregate[1] Base Thickness (inches)
4[2]	25	3.0	4.0
5[2]		4.0	4.0

[1] CalTrans Class 2 Aggregate Base, R≥78, SE ≥ 22 (or approved equivalent).
[2] Traffic Index to be confirmed by Civil Engineer

Once site grading is complete, samples will be taken to perform "R" value tests and finalized pavement recommendations will be provided.

6.6 Corrosion Characteristics of Soil

As a screening level study, limited chemical and electrical tests were performed on samples considered representative of the onsite soils to identify potential corrosive characteristics of these soils. The common indicators that are generally associated with soil corrosivity, among other indicators, include water-soluble sulfate (a measure of soil corrosivity on concrete), water-soluble chloride (a measure of soil corrosivity on metals embedded in concrete), pH (a measure of soil acidity), and minimum electrical resistivity (a measure of corrosivity on metals embedded in soils). Test methodology and results are presented in Appendix B.

It should be noted that GeoSoils does not practice corrosion engineering; therefore, the test results, opinion and engineering judgment provided herein should be considered as general guidelines only. Additional analyses, and/or determination of other indicators, would be warranted, especially, for cases where buried metallic building materials (such as copper and cast or ductile iron pipes) in contact with site soils are planned for the project. In many cases, the project geotechnical engineer may not be informed of these choices. Therefore, for conditions where such elements are considered, we recommend that other, relevant project design professionals (e.g.,

the architect, landscape architect, civil and/or structural engineer, etc.) to be involved. We also recommend considering a qualified corrosion engineer to conduct additional sampling and testing of near-surface soils during the final stages of site grading to provide a complete assessment of soil corrosivity. Recommendations to mitigate the detrimental effects of corrosive soils on buried metallic and other building materials that may be exposed to corrosive soils should be provided by the corrosion engineer as deemed appropriate.

In general, a soil's water-soluble sulfate levels and pH relate to the potential for concrete degradation; water-soluble chlorides in soils impact ferrous metals embedded or encased in concrete, e.g., reinforcing steel; and electrical resistivity is a measure of a soil's corrosion potential to a variety of buried metals used in the building industry, such as copper tubing and cast or ductile iron pipes. Table 4 presents test results with an interpretation of current code approach and guidelines that are commonly used in building construction industry. The table includes the code-related classifications of the soils as they relate to the various tests, as well as a general recommendation for possible mitigation measures in view of the potential adverse impact of corrosive soils on various components of the proposed structures in direct contact with site soils. The guidelines provided herein should be evaluated and confirmed, or modified, in their entirety by the project structural engineer, corrosion engineer and/or the contractor responsible for concrete placement for structural concrete used in the project.

TABLE 4
SOIL CORROSIVITY SCREENING RESULTS

Test (Test Method Designation)	Test Location	Test Results	Classification	General Recommendations
Soluble Sulfate (Cal 417)	B-1 @ 0-5	16,300 ppm	**S_2**[1]	Type V cement; minimum f_c' = 4,500 psi [2]; water/cement ratio = 0.45.
Resistivity (Cal 643)	B-1 @ 0-5	760 ohm-cm	**Severely Corrosive** [3]	Consult a corrosion engineer for buried metal pipes

Notes:
1. ACI 318-14, Section 19.3
2. f_c', 28-day unconfined compressive strength of concrete
3. Pierre R. Roberge, "Handbook of Corrosion Engineering"

6.7 Grading

Grading of the site will consist of a cut/fill operation to create a level pad. The grading will involve the removing and recompacting of existing near surface material. We offer the following recommendations and construction considerations concerning earthwork grading at the site.

6.7.1 General

Monitoring: We recommend that all earthwork (i.e., clearing, site preparation, fill placement, etc.) should be conducted with engineering control under observation and testing by the Geotechnical Engineer and in accordance with the requirements within the *Grading* section of this report.

Job Site Safety: At all times, safety should have precedence over production work. If an unsafe job condition is observed, it should be brought to the attention of the grading contractor or the developer's representative. Once this condition is noted, it should be corrected as soon as possible, or work related to the unsafe condition should be terminated.

The contractor for the project should realize that services provided by GSC do not include supervision or direction of the actual work performed by the contractor, his employees, or agents. GSC will use accepted geotechnical engineering and testing procedures; however, our testing and observations will not relieve the contractor of his primary responsibility to produce a completed project conforming to the project plans and specifications. Furthermore, our firm will not be responsible for job or site safety on this project, as this is the responsibility of the contractor.

6.7.2 Site Preparation

Existing Structure Location: The General Contractor should locate all surface and subsurface structures on the site or on the approved grading plan prior to preparing the ground.

Existing Structure Removal: Any underground structures (e.g., septic tanks, wells, pipelines, foundations, utilities, etc.) that have not been located prior to grading should be removed or treated in a manner recommended by the Geotechnical Engineer.

Clearing and Stripping: The construction areas should be cleared and stripped of all vegetation, trees, bushes, sod, topsoil, artificial fill, debris, asphalt, concrete, and other deleterious material prior to fill placement.

Removals: Please refer to the *Removals* section of this report for specific recommendations for removals.

Subgrade Preparation: We recommend that the subgrade for those areas receiving any fill be prepared by scarifying the upper 12 inches and moisture conditioning, as required to obtain at least optimum moisture, but not greater than 120 percent of optimum. The scarified areas shall be compacted to at least 90 percent of the maximum laboratory density, as determined by ASTM D-1557-12 compaction method. All areas to receive fill should be observed by the Geotechnical Engineer prior to fill placement.

Subgrade Verification and Compaction Testing: Regardless of material or location, all fill material should be placed over properly compacted subgrades in accordance with this section. The condition of all subgrades shall be verified by the Geotechnical Engineer before fill placement or earthwork grading begins. Earthwork monitoring and field density testing shall be performed during grading to provide a basis for opinions concerning the degree of soil compaction attained. The Contractor should be responsible for notifying the Geotechnical Engineer when such areas are ready for inspection. Inspection of the subgrade may also be required by the controlling governmental agency within the respective jurisdictions. Density tests should also be made on the prepared subgrade to receive fill, unless the areas are underlain by dense alluvium, as required by the Geotechnical Engineer.

6.7.3 Fill Placement

Laboratory Testing: Representative samples of materials to be utilized as compacted fill should be analyzed in a laboratory to determine their physical properties. If any material other than that previously tested is encountered during grading, the appropriate analysis of this material should be conducted.

On-Site Fill Material: The on-site soils, in our opinion, are adequate for re-use in controlled fills provided the soils do not contain any organic matter, debris, and that over-sized rocks are buried in accordance with the recommendations under *Rock Fragments*.

Rock Fragments: The alluvium on the site should be free of oversized rocks. Any rock fragments over 6 inches should be kept below a depth of 5 feet below proposed grade. Rocks greater than 6 inches in diameter should be taken off site or placed in accordance with the recommendations of the Geotechnical Engineer. Rocks greater than 6 inches in diameter shall be kept out of all street areas to a depth below the deepest proposed utility line. Rocks shall not be placed in concentrated pockets, shall be surrounded with fine grained material, and the distribution of the rocks shall be supervised by the Geotechnical Engineer. A sufficient amount of fine-grained material shall be placed around the rocks to prevent nesting and to fill all void space. An adequate amount of water will be required to force fines into any open voids.

Fill Placement: Approved on-site material shall be evenly placed, watered, processed, and compacted in controlled horizontal layers not exceeding eight inches in loose thickness, and each layer should be thoroughly compacted with approved equipment. The fill should be placed and compacted in horizontal layers, unless otherwise recommended by the Geotechnical Engineer.

Compaction Criteria - Shallow Fills: For fills less than 40 feet in vertical thickness, each layer shall be compacted to at least 90 percent of the maximum

laboratory density for material used as determined by ASTM D-1557-12. The field density shall be determined by the ASTM D-1556-07 method or equivalent. Where moisture content of the fill or density testing yields compaction results less than 90 percent, additional compaction effort and/or moisture conditioning, as necessary, shall be performed, until the fill material is in accordance with the requirements of the Geotechnical Engineer.

Fill Material - Moisture Content: All fill material placed must be moisture conditioned, as required to obtain at least optimum moisture, but not greater than 120 percent. If excessive moisture in the fill results in failing results or an unacceptable “pumping” condition, then the fill should be allowed to dry until the moisture content is within the necessary range to meet the required compaction requirements or reworked until acceptable conditions are obtained.

Keying and Benching: All fills should be keyed and benched through all topsoil, slopewash, alluvium or colluvium or creep material into firm material where the slope receiving fill is steeper than 5:1 (Horizontal: Vertical) or as determined by Geotechnical Engineer. The standard acceptable bench height is four feet into suitable material. The key for side hill fills should be a minimum of 15 feet within compacted fill or firm materials, with a minimum toe embankment of 2 feet into compacted fill, unless otherwise specified by the Geotechnical Engineer.

Density Testing Intervals: In general, density tests should be conducted at minimum intervals of 2 feet of fill height or every 500 to 1,000 cubic yards. Due to the variability that can occur in fill placement and different fill material characteristics, a higher number of density tests may be warranted to verify that the required compaction is being achieved.

Grading Control: Earthwork monitoring and field density testing shall be performed by the Geotechnical Engineer during grading to provide a basis for opinions concerning the degree of soil compaction attained. The Contractor

should receive a copy of the Geotechnical Engineer's *Daily Field Engineering Report* which will indicate the results of field density tests for that day. Where failing tests occur or other field problems arise, the Contractor shall be notified of such conditions by written communication from the Geotechnical Engineer in the form of a conference memorandum, to avoid any misunderstanding arising from oral communication.

Drainage Devices: Drainage terraces should be constructed in compliance with the ordinances of controlling governmental agencies, or with the recommendations of the Geotechnical Engineer or Engineering Geologist.

6.7.4 Construction Considerations

Erosion Control: Erosion control measures, when necessary, should be provided by the Contractor during grading and prior to the completion and construction of permanent drainage controls.

Compaction Equipment: It is also the Contractor's responsibility to have suitable and sufficient compaction equipment on the project site to handle the amount of fill being placed and the type of fill material to be compacted. If necessary, excavation equipment should be shut down to permit completion of compaction in accordance with the recommendations contained herein. Sufficient watering devices/equipment should also be provided by the Contractor to achieve optimum moisture content in the fill material.

Final Grading Considerations: Care should be taken by the Contractor during final grading to preserve any berms, drainage terraces, interceptor swales, or other devices of a permanent nature on or adjacent to the property.

6.7.5 Temporary Excavation

Where the necessary space is available, temporary unsurcharged embankments may be sloped back without shoring. The slope should not be cut steeper than the following gradient:

TABLE 5 TEMPORARY EXCAVATION SLOPE	
Height	**Temporary Gradient (Horizontal:Vertical)**
0 - 5'	Near Vertical
above 5'	1:1

In areas where soils with little or no binder are encountered, shoring or flatter excavation slopes shall be made. These recommended temporary excavation slopes do not preclude local ravelling or sloughing.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act, and the Construction Safety Act should be met.

Where sloped embankments are used, the top of the slope should be barricaded to prevent equipment and heavy storage loads within five feet of the top of the slope. If the temporary construction embankments are to be maintained for long periods, berms should be constructed along the top of the slope to prevent runoff water from eroding the slope faces. The soils exposed in the temporary backcut slopes during excavation should be observed by our personnel so that modifications of the slopes can be made if variations in the soil conditions occur. The temporary excavation slopes should be supported within three weeks.

6.7.6 Excavation Observation

All footing and other excavations should be observed by an Engineering Geologist or Geotechnical Engineering prior to placement of any steel to verify that the proper foundation material has been encountered. The City Inspector should also observe the excavation.

6.7.7 Utility Trenching and Backfill

Utility Trenching: Open excavations and excavations that are shored shall conform to all applicable Federal, State, and local regulations.

Backfill Placement: Approved on-site or imported fill material shall be evenly placed, watered, processed, and compacted in controlled horizontal layers not exceeding eight inches in loose thickness, and each layer should be thoroughly compacted with approved equipment. All fill material should be moisture conditioned, as required to obtain at least optimum moisture, but not greater than 120 percent of optimum moisture content. The fill should be placed and compacted on a horizontal plane, unless otherwise recommended by the Geotechnical Engineer.

As an alternative to on-site or imported fill material, for shallow trenches where pipe or utility lines may be damaged by mechanical compaction equipment, such as under building floor slabs, imported clean sand having a sand equivalent (SE) value of 30 or greater may be utilized. The sand backfill materials should be watered to achieve near optimum moisture conditions and then tamped into place. No specific relative compaction will be required; however, observation, probing, and if deemed necessary, testing should be performed by a representative of the project geotechnical consultant to verify an adequate degree of compaction.

Backfill Compaction Criteria: Each layer of utility trench backfill shall be compacted to at least 90 percent of the maximum laboratory density determined by ASTM D-1557-12. The field density shall be determined by the ASTM D-1556-07 method or equivalent. Where moisture content of the fill or density testing yields compaction results less than 90 percent, additional compaction effort and/or moisture conditioning, as necessary, shall be performed, until the compaction criteria is reached.

Exterior Trenches Adjacent to Footings: Exterior trenches, paralleling a footing and extending below a 1H:1V plane projected from the outside bottom edge of the footing, should be compacted to 90 percent of the laboratory standard. Sand backfill, unless it is similar to the in-place fill, should not be allowed in the trench backfill areas. Density testing, along with probing, should be accomplished to verify the desired results.

Pipe Bedding: We recommend that a minimum of 6 inches of bedding material should be placed in the bottom of the utility trench. All bedding materials shall extend at least 4 inches above the top of utilities which require protection during subsequent trench backfilling. All trenches shall be wide enough to allow for compaction around the haunches of the pipe.

Groundwater Migration: Backfilled utility trenches may act as French drains to some extent, and considerable groundwater flow along utility bedding and backfill should be expected. Wherever buried utilities, or structures which they may intersect, could be adversely affected by such drainage, provisions shall be made to collect groundwater migrating along the trench lines. These situations include where buried utilities enter buildings, particularly where they enter below grade mechanical rooms, and where buried utilities enter junction boxes or switching stations that are intended to remain dry. Mitigation measures include, but are not limited to, placement of perforated drain pipes below and continuous with bedding materials, and placement of seepage barriers such as lean mix concrete or controlled density fill (CDF).

7.0 CLOSURE

We appreciate this opportunity to be of continued service to you. If you have any questions regarding the content of this report or any other aspects of the project, please do not hesitate to contact us.

REFERENCES

[1] Morton, D.M. and Miller, F.K., 2006, Geologic Map of the San Bernardino and Santa Ana 30'x60' Quadrangles, California

[2] California Building Code (CBC), 2022, California Code of Regulations, Title 24, Part 2, Volume I and II.

July 12, 2023
W.O. 7853

APPENDIX A

FIELD EXPLORATION RESULTS

GEOTECHNICAL BORING LOG

PROJECT NAME	**Keene**			**W.O.**	**7853**
DRILLING COMPANY	Choice	DATE STARTED	5/30/2023	BORING NO.	B-1
TYPE OF DRILL RIG	Truck Mounted	LOGGED BY	RM	SHEET	
DRILLING METHOD	Hollow Stem	HAMMER WT (lbs)		GROUND ELEV.	
DIAMETER OF HOLE (IN)		DROP (IN)		GW ELEV.	
Boring Location:					

Depth (ft)	Sample Type	Blows / 6"	GEOTECHNICAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Other Tests
0			**0-50', ALLUVIUM (Qyva)**			
		4/7/13	2.5', Medium brown, silty, fine grained sand, slightly moist, slightly dense with caliche veins	14.3	97.2	
5		6/9/15	5', Medium brown, sandy silt to silty sand, fine to medium grained sand, slightly moist, moderately dense with caliche veins	17.9	99.3	
		6/14/21	7.5', Medium brown to brown, sandy silt, fine to coarse grained sand, slightly to moderately moist, dense/firm with some caliche	14.9	111.8	
10		10/15/16	10', Mottled, gray brown and reddish brown, silty, fine to coarse grained sand, moderately moist, dense, minor caliche 12', Hit large rock	15.1	106.8	
15		21/25/29	15', Medium brown, silty, fine grained sand, slightly moist, dense to very dense	18.5	106.6	
20		35/43/50 for 5"	20', Very light brown, silty, fine to coarse sand, dry, very dense, transitions to mottled, gray brown and reddish brown, silty, fine grained sand, slightly moist, very dense	14.9	112.2	
25		15/25/30	25', Mottled, gray brown and medium brown, sandy silt, fine grained sand, moderately moist to moist, very firm	20.0	106.5	
30		20/29/34	30', Mottled, gray brown and medium brown, sandy silt, fine grained sand, moderately moist to moist, very firm	23.5	102.6	

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample

SIEVE: Grain Size Analysis
MAX: Maximum Dry Density
DS: Direct Shear
CONS: Consolidation
HYDR: Hydrometer Analysis
EXPAN: Expansion Index
CHEM: Chemical Tests

PLATE **A-1**

GSC GeoSoils Consultants Inc.
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GEOTECHNICAL BORING LOG

PROJECT NAME	**Keene**			**W.O.**	**7853**
DRILLING COMPANY	Choice	DATE STARTED	5/30/2023	BORING NO.	B-1
TYPE OF DRILL RIG	Truck Mounted	LOGGED BY	RM	SHEET	
DRILLING METHOD	Hollow Stem	HAMMER WT (lbs)		GROUND ELEV.	
DIAMETER OF HOLE (IN)		DROP (IN)		GW ELEV.	

Boring Location:

Depth (ft)	Sample Type	Blows / 6"	GEOTECHNICAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Other Tests
35		11/13/18	35', Mottled, gray and reddish brown, sandy silt, fine grained sand, moderately moist, firm			
40		13/16/24	40', Mottled, gray and reddish brown, sandy silt to silty, fine grained sand, moderately moist to moist, firm/dense			
45		9/14/18	45', Black, sandy, silty clay to sandy, clayey silt, fine to coarse grained sand, moderately moist, firm to very firm			
50		12/50	50', Light to medium brown, coarse grained sand, wet, very dense			
55			TD=50' No caving Groundwater @ 45'			
60						
65						

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample

SIEVE: Grain Size Analysis
MAX: Maximum Dry Density
DS: Direct Shear
CONS: Consolidation
HYDR: Hydrometer Analysis
EXPAN: Expansion Index
CHEM: Chemical Tests

PLATE **A-2**

GSC GeoSoils Consultants Inc.
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GEOTECHNICAL BORING LOG

PROJECT NAME	**Keene**			**W.O.**	**7853**
DRILLING COMPANY	Choice	DATE STARTED	5/30/2023	BORING NO.	B-2
TYPE OF DRILL RIG	Truck Mounted	LOGGED BY	RM	SHEET	
DRILLING METHOD	Hollow Stem	HAMMER WT (lbs)		GROUND ELEV.	
DIAMETER OF HOLE (IN)		DROP (IN)		GW ELEV.	
Boring Location:					

Depth (ft)	Sample Type	Blows / 6"	GEOTECHNICAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Other Tests
0			**0-3', RESIDUAL SOIL (rs)**			
		8/9/11	2.5', Grayish brown to medium brown, sandy silt, fine to medium grained sand, moderately moist, soft to slightly firm	17.2	93.9	
			3-25', ALLUVIUM (Qyva)			
5		7/8/11	5', Medium brown, sandy silt to silty, fine grained sand, slightly moist, slightly dense, significant caliche, sample disturbed	17.0	108.6	
		21/50 for 4"	7.5', Light to medium, silty, fine grained sand, dry to slightly moist, very dense, significant caliche	9.9	109.1	
10		15/26/31	10', Light to medium brown, silty, fine to coarse grained sand, dry to slightly moist, dense	13.1	104.3	
		14/18/24	Medium brown, sandy silt, fine grained sand, slightly to moderately moist, firm	15.6	101.1	
15		12/26/32	15', Gray brown to medium brown, sandy silt to silty, fine grained sand, slightly to moderately moist, dense/firm	20.9	107.8	
20		16/27/38	20', Mottled, gray brown and reddish brown, sandy silt to silty, fine grained sand, slightly to moderately moist, dense/firm to very dense/firm	16.7	111.5	
25		13/30/40	25', Mottled, gray and brown, sandy, clayey silt to sandy, silty clay, fine grained sand, moderately moist, dense to very dense	18.9	108.4	
			TD=25' No caving No groundwater			
30						

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample

SIEVE: Grain Size Analysis
MAX: Maximum Dry Density
DS: Direct Shear
CONS: Consolidation
HYDR: Hydrometer Analysis
EXPAN: Expansion Index
CHEM: Chemical Tests

PLATE **A-3**

GSC GeoSoils Consultants Inc.
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GEOTECHNICAL BORING LOG

PROJECT NAME	**Keene**			**W.O.**	**7853**
DRILLING COMPANY	Choice	DATE STARTED	5/30/2023	BORING NO.	B-2
TYPE OF DRILL RIG	Truck Mounted	LOGGED BY	RM	SHEET	
DRILLING METHOD	Hollow Stem	HAMMER WT (lbs)		GROUND ELEV.	
DIAMETER OF HOLE (IN)		DROP (IN)		GW ELEV.	
Boring Location:					

Depth (ft)	Sample Type	Blows / 6"	GEOTECHNICAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Other Tests
0			**0-30', ALLUVIUM (Qyva)**			
		8/14/18	2.5', Medium brown to brown, silty, fine grained sand, slightly moist, slightly dense with caliche veins	14.2	99.4	
5		11/15/19	5', Brown to reddish brown, silty, fine to coarse sand, slightly moist,	15.3	98.6	
		19/26/35	7.5', Brown to reddish brown, silty, fine to coarse sand, slightly moist,	14.9	110.9	
10		8/14/19	10', Mottled, medium brown and reddish brown, silty, fine to coarse grained sand, moderately moist, slighlty dense	16.1	110.8	
		19/26/29	12.5', Medium to gray brown, fine to coarse grained sand with some silt, slighlty to moderately moist, dense	5.8	115.3	
15		12/23/35	15', Mottled, gray brown and reddish brown, silty, fine to coarse grained sand, slightly to moderately moist, dense to very dense	13.1	97.7	
20		17/28/90	20', Mottled, gray brown and reddish brown, silty, fine to coarse grained sand, slightly to moderately moist, dense to very dense	16.3	110.2	
25		19/28/31	25', Mottled, gray brown and reddish brown, silty, fine to coarse grained sand, slightly to moderately moist, dense to very dense	18.9	105.6	
30		12/22/34	30', Mottled, gray brown, reddish brown, and dark red, sandy silt, fine to coarse grained sand, moderately moist, firm	21.2	101.3	
			TD=30' No caving No groundwater			

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample

SIEVE: Grain Size Analysis
MAX: Maximum Dry Density
DS: Direct Shear
CONS: Consolidation
HYDR: Hydrometer Analysis
EXPAN: Expansion Index
CHEM: Chemical Tests

PLATE **A-4**

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July 12, 2023
W.O. 7853

APPENDIX B

LABORATORY TEST RESULTS

EXPANSION INDEX TEST

ASTM D-4829

Keene

7853

Project Information	
Project Name:	Keene
Work Order No.:	7853
Date of Test:	29-Jun-23
Tract Number:	

		Constants	
		Vol. wet soil (cf):	0.0073
Calculations		Specific Gravity:	2.70
Boring/Lot #:	**B-1**		
Depth of Test (ft):	**0-5.0'**		
Soil Classification:	Dark brown slightly clayey sandy SILT.		
Wet Weight + Ring (lbs):	1.2555		
Ring Weight (lbs):	0.4285		
Wet Weight (lbs):	0.8270		
Wet Density (pcf):	113.3		
Moisture (%):	12		
Dry Density (pcf):	101.1		
Saturation (%):	48.7		
Initial Reading:	0.3500		
Final Reading:	0.3740		
Expansion, H, (inches):	0.0240		
Expansion Index:	23		
Expansion Potential:	**Low**		
After Test			
Wet Weight (g):	412.7		
Dry Weight (g):	334.9		
Water Loss (g):	77.8		
Moisture (%):	23.2		

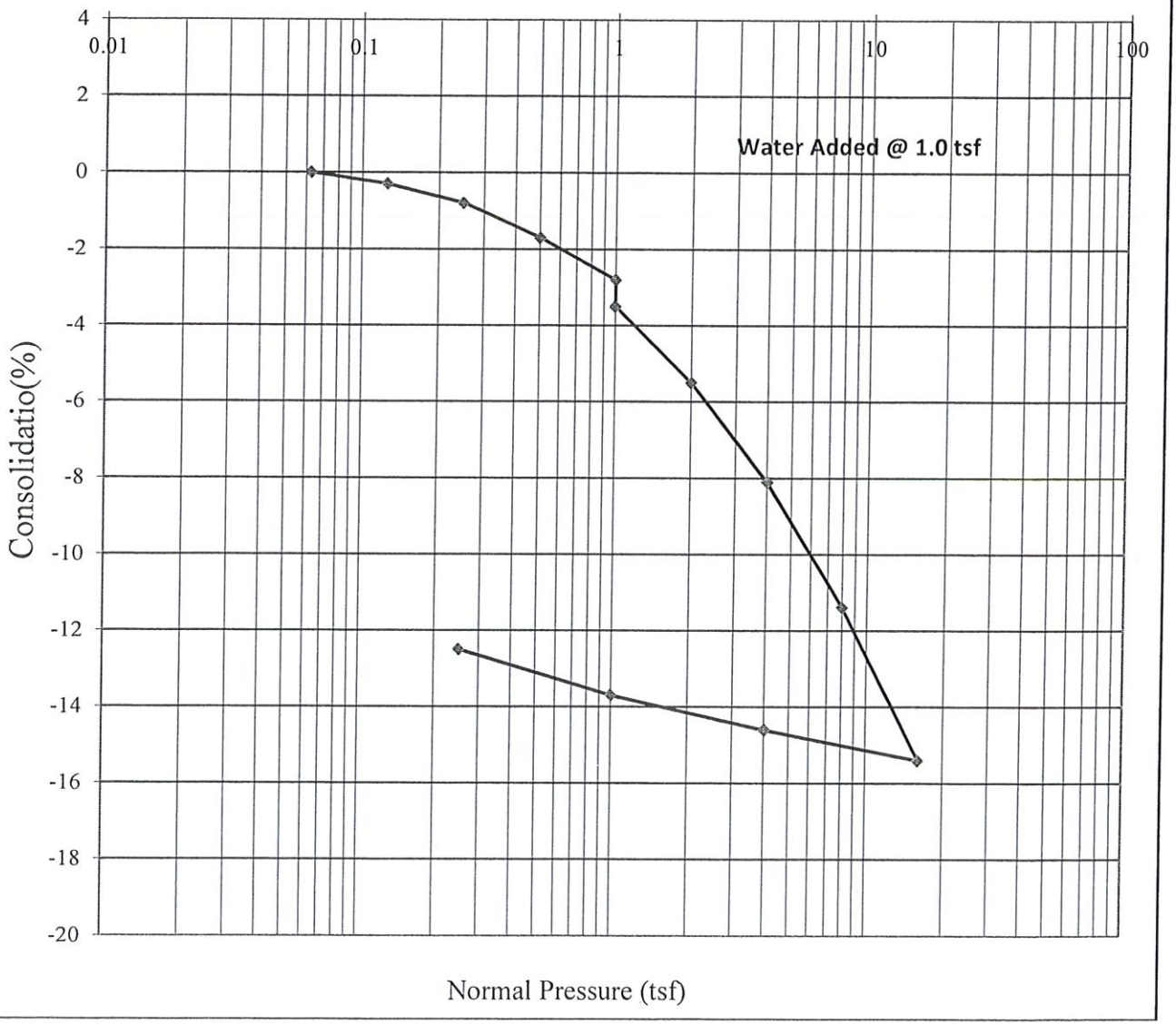
Expansion Index Table: **0 - 20 = Very Low**
21 - 50 = Low
51 - 90 = Medium
91 - 130 = High
130 & Up = Very High

Plate EI-1

GeoSoils Consultants Inc.

CLEINT:	Keene
WORK ORDER:	7853
TEST DATE:	6/28/2023
SAMPLE:	B-1 @ 5.0'
SOIL CLASSIFICATION:	Dark brown clayey SILT.

Consolidation-Normal Pressure Curve



Init. Moisture Content (%)	24.16
Init. Dry Density (PCF)	92.2
Init. Void Ratio	0.79

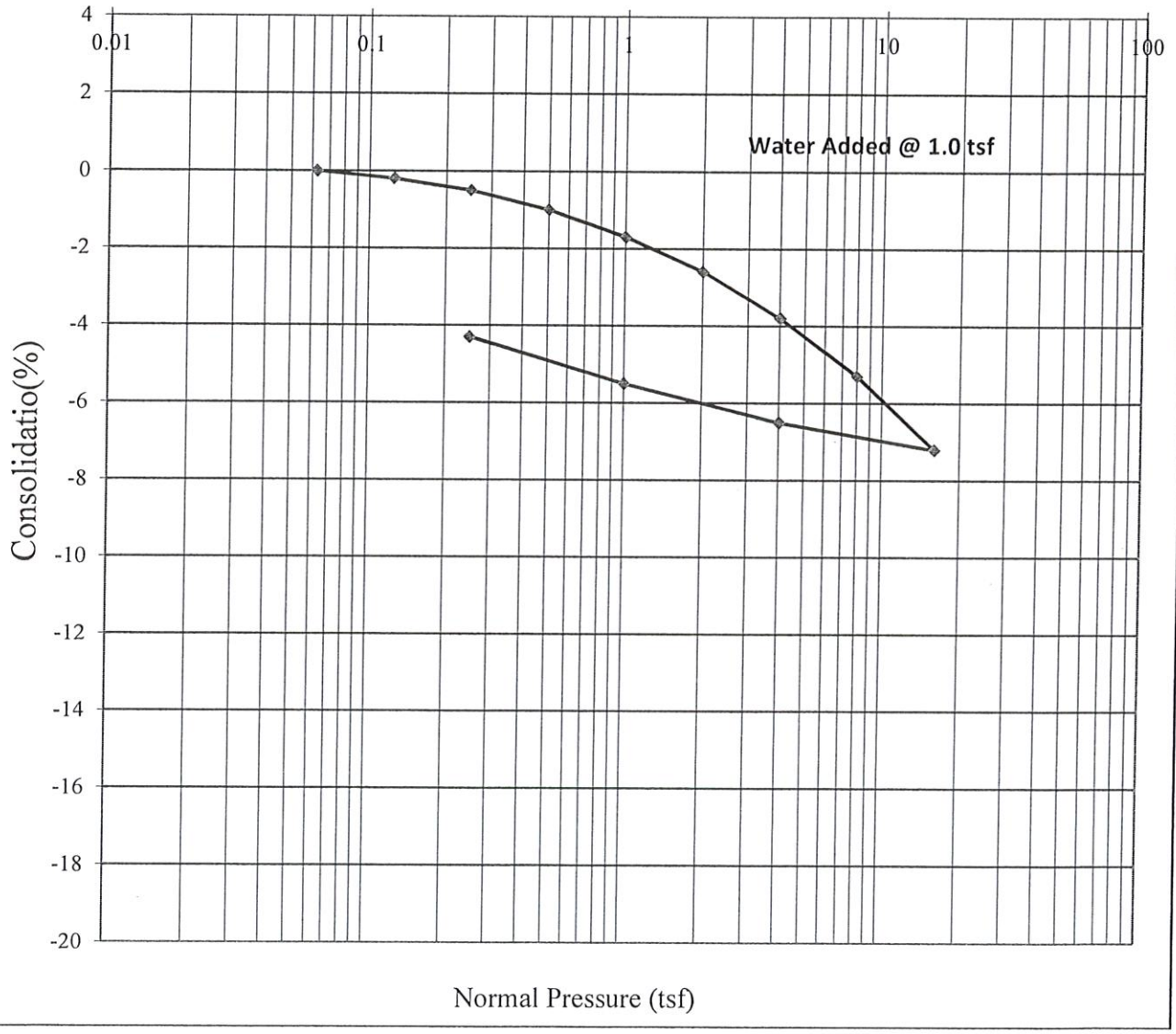
% Hydroconsolidation:	**-0.7**
Total Consolidation @ 16 tsf	**-15.4**

CONSOLIDATION TEST DIAGRAM | **Plate: C-1**

GeoSoils Consultants Inc.

CLEINT:	Keene
WORK ORDER:	7853
TEST DATE:	6/28/2023
SAMPLE:	B-1 @ 7.5'
SOIL CLASSIFICATION:	Dark brown slightly sandy clayey SILT.

Consolidation-Normal Pressure Curve



Init. Moisture Content (%)	19.40
Init. Dry Density (PCF)	109.9
Init. Void Ratio	0.53

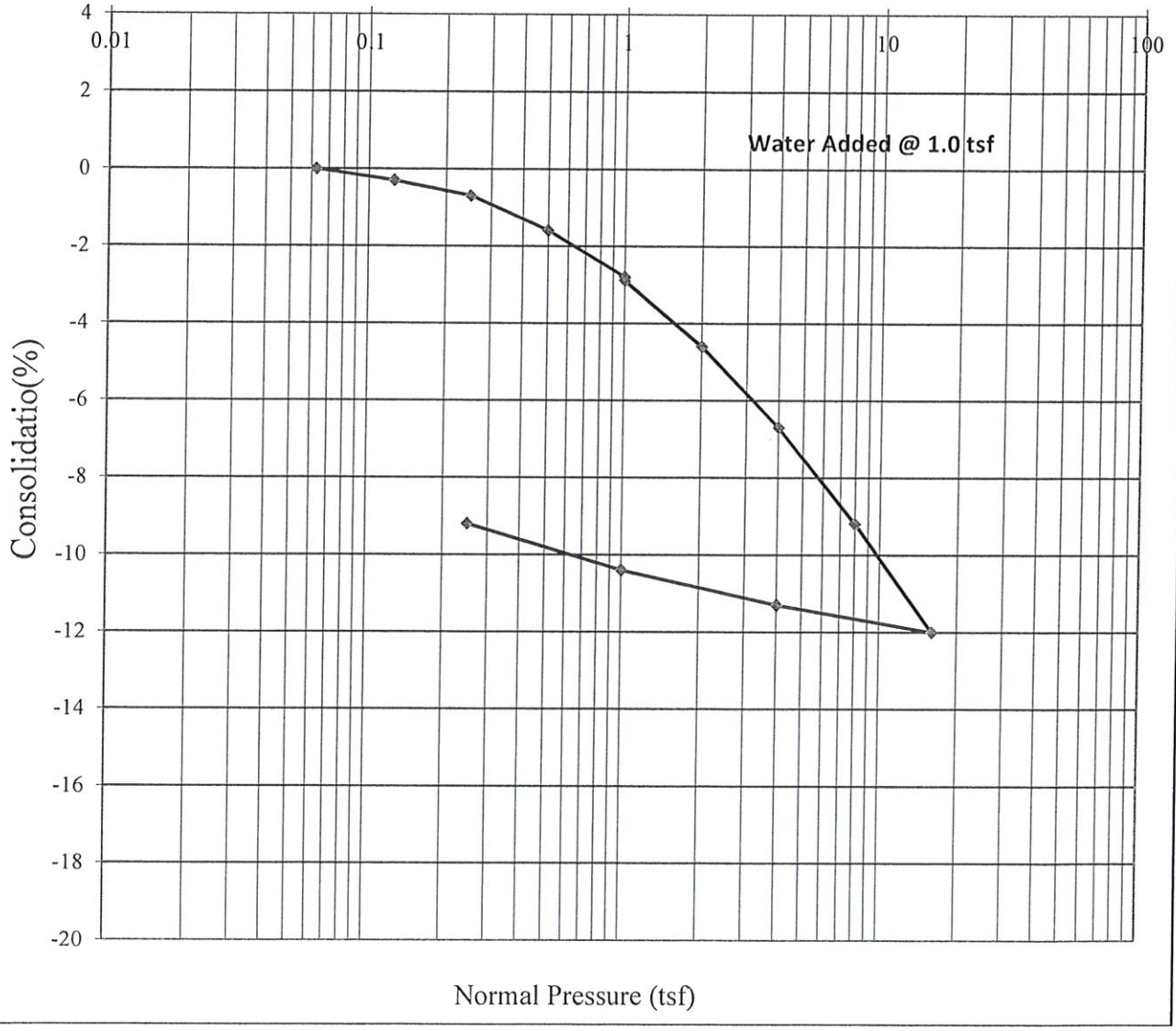
% Hydroconsolidation:	**0.0**
Total Consolidation @ 16 tsf	**-7.2**

CONSOLIDATION TEST DIAGRAM | **Plate: C-2**

GeoSoils Consultants Inc.

CLEINT:	Keene
WORK ORDER:	7853
TEST DATE:	6/28/2023
SAMPLE:	B-1 @ 10.0'
SOIL CLASSIFICATION:	Dark brown slightly sandy clayey SILT.

Consolidation-Normal Pressure Curve



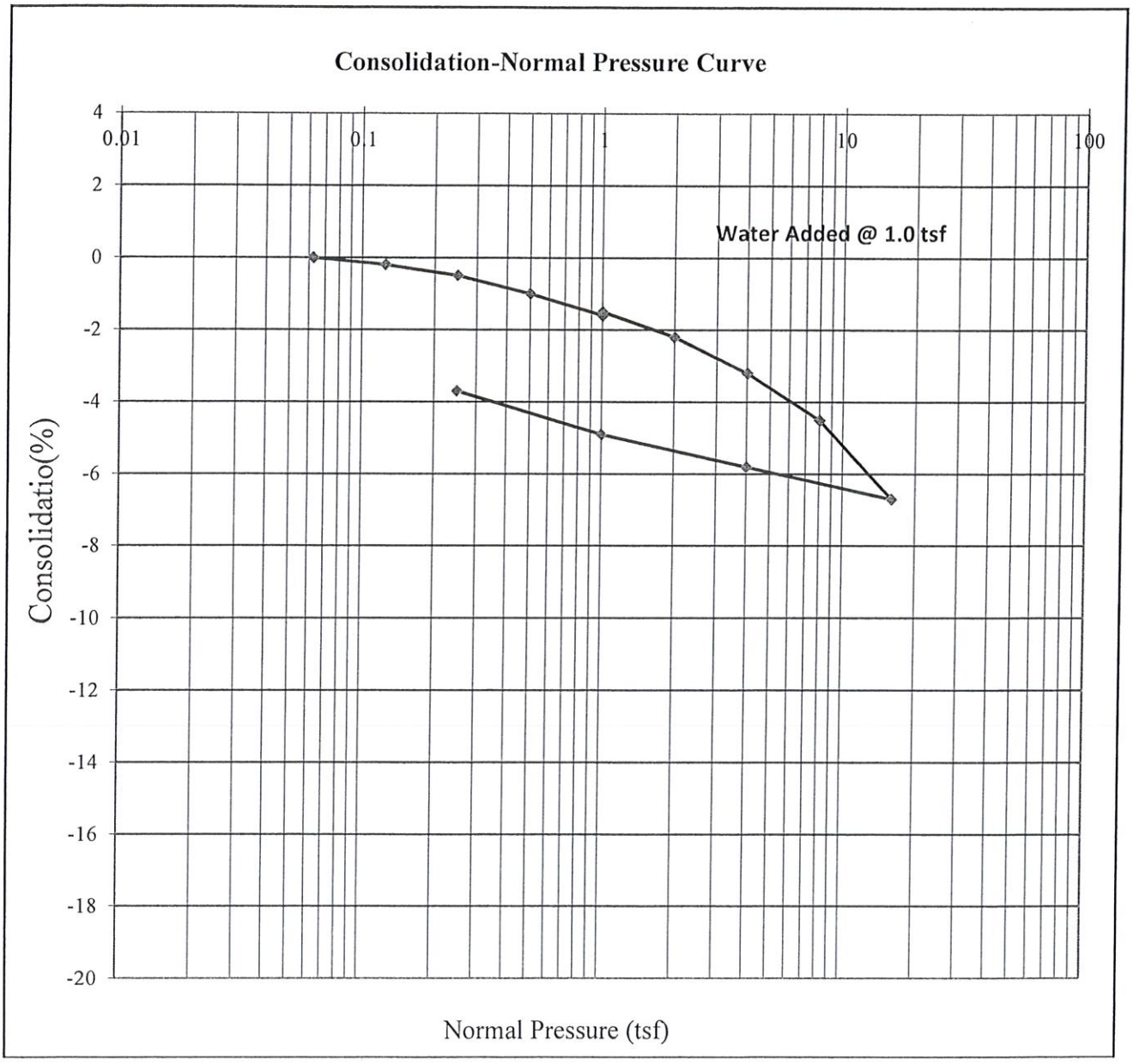
Init. Moisture Content (%)	19.48
Init. Dry Density (PCF)	108.6
Init. Void Ratio	0.49

% Hydroconsolidation:	-0.1
Total Consolidation @ 16 tsf	-12.0

CONSOLIDATION TEST DIAGRAM | **Plate: C-3**

GeoSoils Consultants Inc.

CLEINT:	Keene
WORK ORDER:	7853
TEST DATE:	6/28/2023
SAMPLE:	B-2 @ 5.0'
SOIL CLASSIFICATION:	Dark brown slightly sandy clayey SILT.



Init. Moisture Content (%)	21.45
Init. Dry Density (PCF)	103.9
Init. Void Ratio	0.62

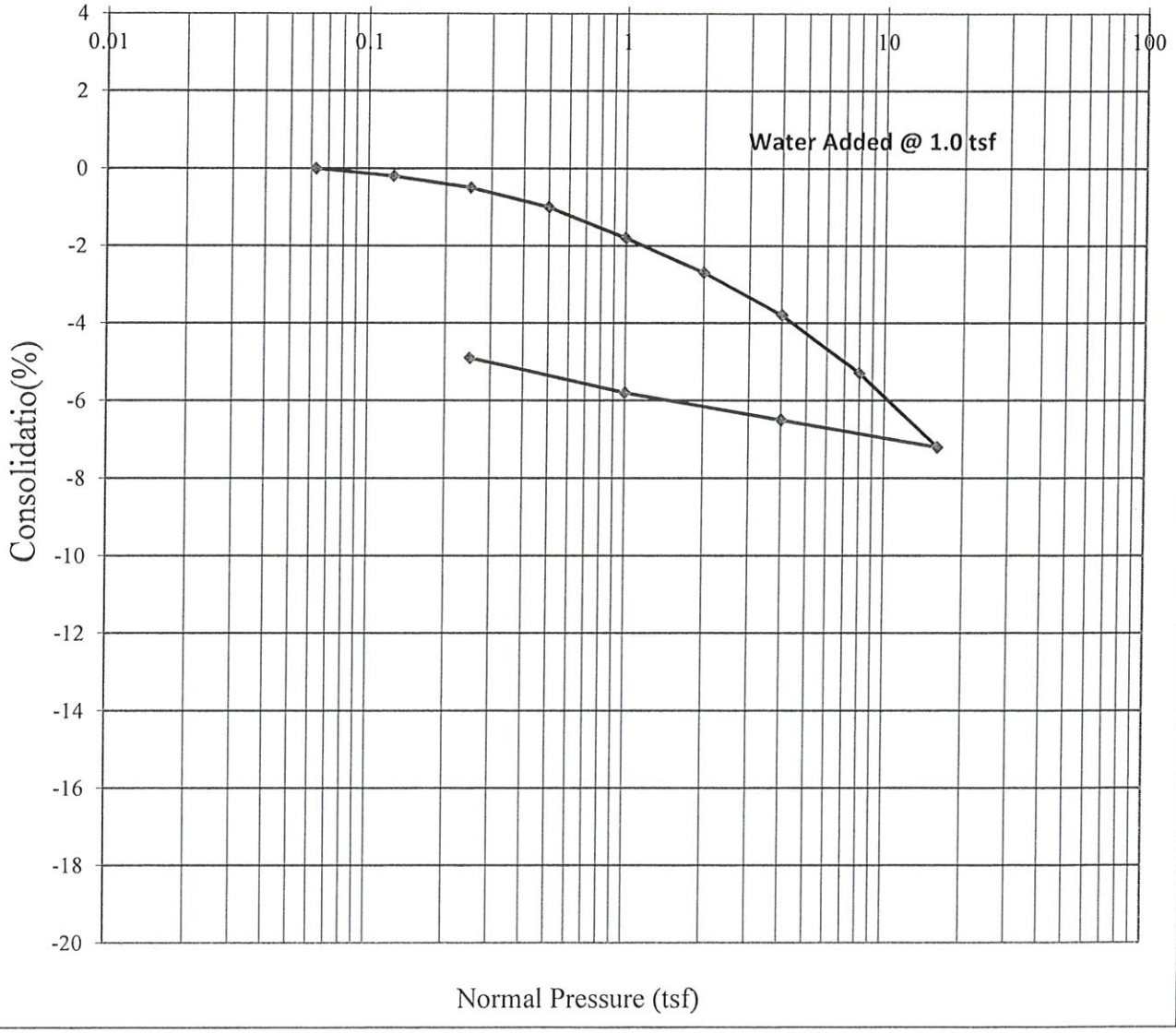
% Hydroconsolidation:	**0.1**
Total Consolidation @ 16 tsf	**-6.7**

CONSOLIDATION TEST DIAGRAM | **Plate: C-4**

GeoSoils Consultants Inc.

CLEINT:	Keene
WORK ORDER:	7853
TEST DATE:	6/28/2023
SAMPLE:	B-3 @ 10.0'
SOIL CLASSIFICATION:	Dark brown slightly sandy clayey SILT.

Consolidation-Normal Pressure Curve



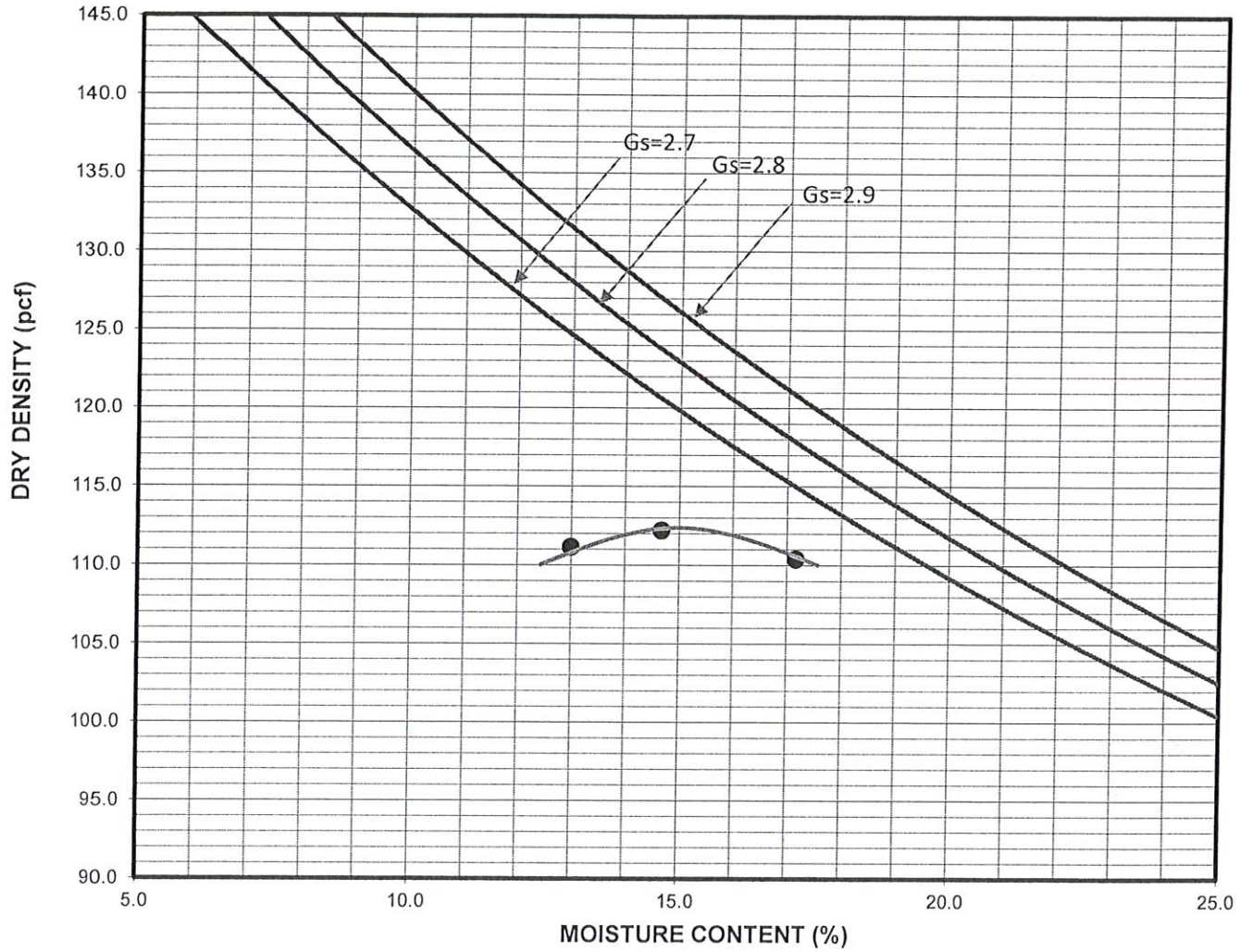
Init. Moisture Content (%)	17.42
Init. Dry Density (PCF)	114.5
Init. Void Ratio	0.47

% Hydroconsolidation:	**0.0**
Total Consolidation @ 16 tsf	**-7.2**

CONSOLIDATION TEST DIAGRAM | **Plate: C-5**

GeoSoils Consultants Inc.

Client:	Keene
Work Order:	7853
Test Date:	6/29/2023
Sample:	B-1 @ 0-5.0'
Soil Classification:	Dark brown slightly clayey sandy SILT.
Compaction Procedure:	ASTM D 1557 Method A
Lab and QC by:	RA



MAXIMUM DRY DENSITY:	112.5
OPTIMUM MOISTURE CONTENT (%):	15.0

A	Mold diameter (in)	4	4	4	4	4
B	Mold height (in)	4.581	4.581	4.581	4.581	4.581
C	Wt. of Mold (g)	4276	4276	4276	4276	4276
D	Moist Soil + Mold (g)	6177	6224	6234	0	0
E	Soil Wt. (g)	**1901**	**1948**	**1958**	**-4276**	**-4276**
F	Volume of mold (ft3)	**0.0334**	**0.0334**	**0.0334**	**0.0334**	**0.0334**
G	Volume of mold (cm3)	**944.99**	**944.99**	**944.99**	**944.99**	**944.99**
H	Moist Density (g/cm3)	**2.01166**	**2.0613975**	**2.071979598**	**-4.524916**	**-4.52492**
M	Wt. of wet soil (g)	200	200	200	200	200
N	Wt. of dry soiltare (g)	177	174.4	170.7	176.1	175
O	Wt. of water (g)	**23**	**25.6**	**29.3**	**23.9**	**25**
P	Moisture Content (%)	**13.0**	**14.7**	**17.2**	#N/A	#N/A
Q	Dry Density (g/cm3)	**1.8**	**1.8**	**1.8**	#N/A	#N/A
R	Dry Unit Weight (pcf)	**111.1**	**112.2**	**110.4**	#N/A	#N/A

Plate: MDD-1

Table 1 - Laboratory Tests on Soil Samples

GeoSoils Consultants, Inc.
Keene
Your #7853, HDR Lab #23-0466LAB
16-Jun-23

Sample ID			B-1 @ 0-5'
Resistivity		**Units**	
as-received		ohm-cm	4,800
minimum		ohm-cm	760
pH			7.3
Electrical Conductivity		mS/cm	5.04
Chemical Analyses			
Cations			
calcium	Ca^{2+}	mg/kg	6,630
magnesium	Mg^{2+}	mg/kg	134
sodium	Na^{1+}	mg/kg	345
potassium	K^{1+}	mg/kg	68
ammonium	NH_4^{1+}	mg/kg	ND
Anions			
carbonate	CO_3^{2-}	mg/kg	ND
bicarbonate	HCO_3^{1-}	mg/kg	125
fluoride	F^{1-}	mg/kg	ND
chloride	Cl^{1-}	mg/kg	6.0
sulfate	SO_4^{2-}	mg/kg	16,300
nitrate	NO_3^{1-}	mg/kg	4.0
phosphate	PO_4^{3-}	mg/kg	ND
Other Tests			
sulfide	S^{2-}	qual	na
Redox		mV	na

< 1000 ∴ severely corrosive

/10,000 = 1.63 ∴ severely corrosive

Minimum resistivity and pH per CTM 643, Chloride per CTM 422, Sulfate per CTM 417

Electrical conductivity in millisiemens/cm and chemical analyses were made on a 1:5 soil-to-water extract.

mg/kg = milligrams per kilogram (parts per million) of dry soil.

Redox = oxidation-reduction potential in millivolts

ND = not detected

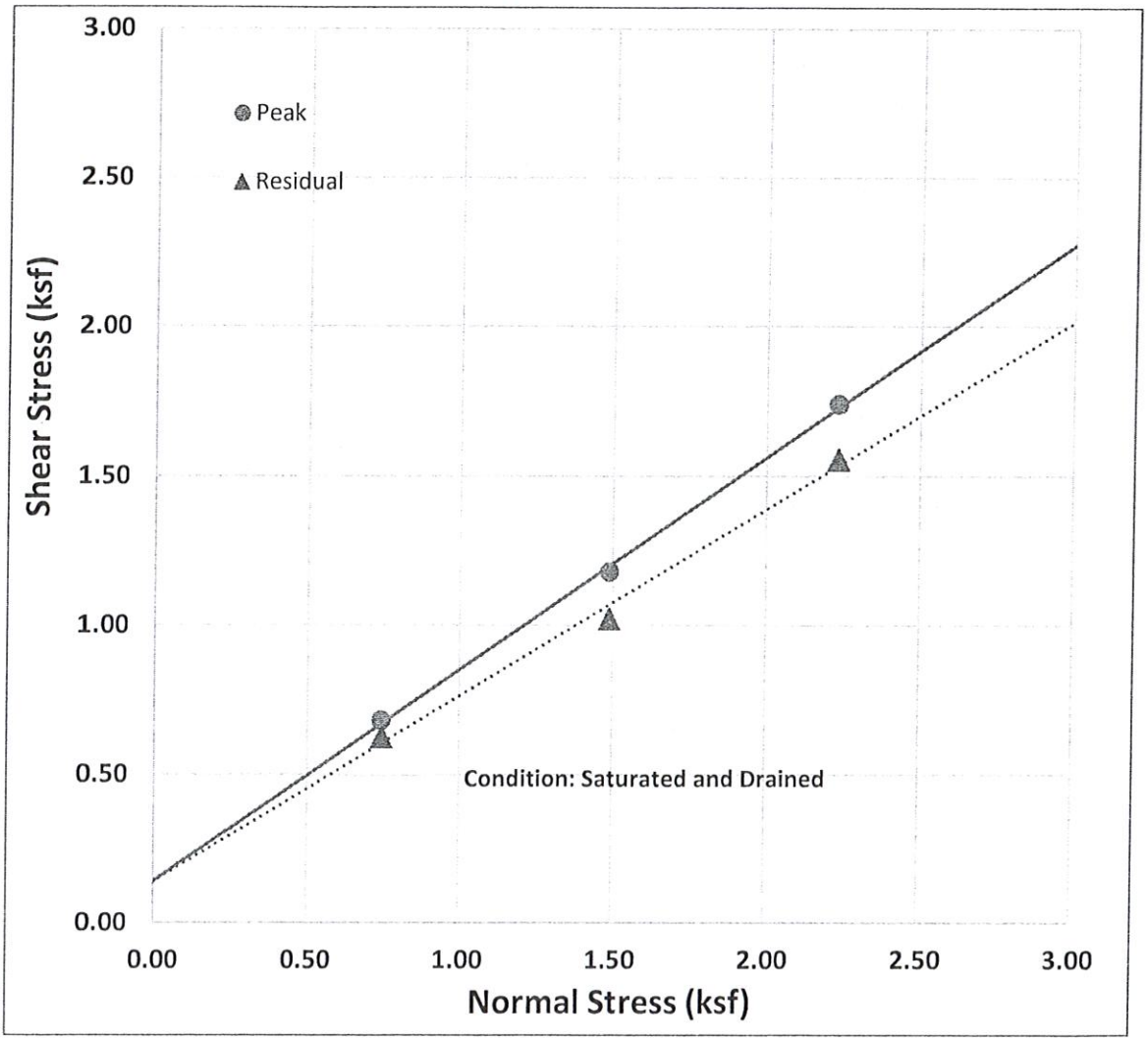
na = not analyzed

GeoSoils Consultants Inc.

Cleint:	Keene
Work Order:	7853
Test Date:	6/29/2023
Sample:	B-1 @ 0-5.0'
Soil Classification:	Dark brown slightly clayey sandy SILT.
Lab and QC By:	RA

Peak	
C (psf)	φ (°)
140	34

Residual	
C (psf)	φ (°)
140	31



Along or Cross Bedding?
N/A

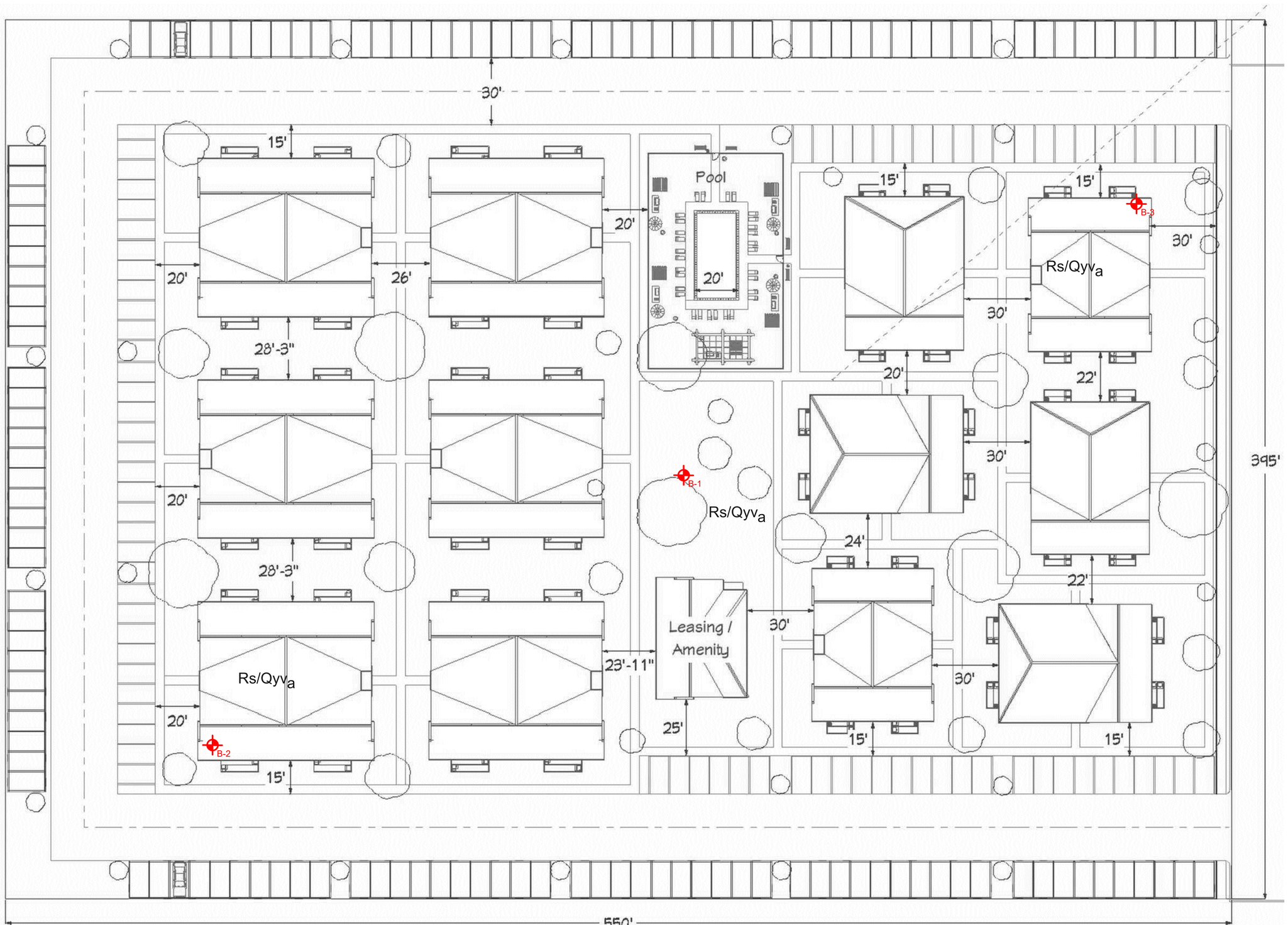
Initial Moisture Content (%)
25.46

Natural or Remolded?
Remolded

Initial Dry Density (pcf)
87.3

DIRECT SHEAR DIAGRAM

Plate: DS-1



EXPLANATION

Rs	RESIDUAL SOIL
Qyv$_a$	ALLUVIUM
B-3	APPROXIMATE LOCATION OF BORING

GSC GeoSoils Consultants Inc.
GEOTECHNICAL ● GEOLOGIC
6634 Valjean Avenue
Van Nuys, CA 91406

GEOLOGIC MAP
32281 RIVERSIDE DRIVE
LAKE ELSINORE, CALIFORNIA
KEENE

WORK ORDER	DATE	SCALE
7853	7/2023	1" = 20'

REVISED

PLATE 1

MDN 23642

X:\2001 w.o\gic-cad\7853\5-31-23\CURRENT\BORING LOCATION MAP 7-11-23.dwg, 7/17/2023 4:12:06 PM, AutoCAD PDF (General Documentation).pc3

Appendix F1 – Phase I Environmental Site Assessment

PARTNER
Engineering and Science, Inc.®



PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

32281 Riverside Drive
Lake Elsinore, California 92530

Report Date: February 21, 2023
Partner Project No. 23-397410.1



Prepared for:

WJK Development Co. and RSI Equity
28392 Airoso Street
Rancho Mission Viejo, California 92694

PARTNER
Engineering and Science, Inc.

February 21, 2023

Mr. Grant Keene
WJK Development Co. and RSI Equity
28392 Airoso Street
Rancho Mission Viejo, California 92694

Subject: Phase I Environmental Site Assessment
32281 Riverside Drive
Lake Elsinore, California 92530
Partner Project No. 23-397410.1

Dear Mr. Keene:

Partner Engineering and Science, Inc. (Partner) is pleased to provide this Phase I Environmental Site Assessment (Phase I ESA) report of the abovementioned address (the "subject property"). This assessment was performed in conformance with the scope and limitations as detailed in the ASTM Practice E1527-13 and E1527-21 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process and Client Agreement.

This assessment included a site reconnaissance as well as research and interviews with representatives of the public, property ownership, site manager, and regulatory agencies. An assessment was made, conclusions stated, and recommendations outlined.

We appreciate your trust in Partner and the opportunity to provide environmental services to you. If you have any questions concerning this report, or if we can assist you in any other matter, please contact me at 310-439-3438

Sincerely,

Mike Cunneen
Relationship Manager

EXECUTIVE SUMMARY

Partner Engineering and Science, Inc. (Partner) has performed a Phase I Environmental Site Assessment (ESA) in accordance with the scope of work and limitations of ASTM E1527-13 and E1527-21, the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (AAI) (40 CFR Part 312) and set forth by WJK Development Co. and RSI Equity for the property located at 32281 Riverside Drive in Lake Elsinore, Riverside County, California (the "subject property").

Property Description

The subject property is located on the northwest side of Riverside Drive within a residential, commercial and vacant land area of Riverside County. Please refer to the table below for further description of the subject property:

Subject Property Data	
Address(es):	32281 Riverside Drive, Lake Elsinore, California
Property Use:	Vacant land
Land Acreage (Ac):	4.95 Ac
Assessor's Parcel Number (APN):	379-315-033
Site Assessment Performed By:	Amanda Plagge of Partner
Site Assessment Conducted On:	February 15, 2023
Regulatory Radius Report Date:	February 1, 2023
Report Date:	February 21, 2023
FOIAs Date:	February 2023

The subject property is currently vacant land with remnants of foundations associated with the former onsite structures located on the central and southern portions of the property. In addition, the subject property is overgrown with natural vegetation throughout the site and former courtyard, asphalt-paved parking areas in poor condition as well as chain link/concrete masonry fencing along the property perimeter. No onsite operations are currently conducted; however, the site is planned for redevelopment.

According to available historical sources, the subject property was formerly developed with agricultural land (row crops and/or orchards) from at least 1938 to 1954. By 1962, the site was redeveloped with a resort complete with forty guest rooms, courtyard, swimming pool and shed-like structure on the southern corner of the property. This development was later razed in 2004; however, the foundation and paved surface parking lots were left in place. Tenants of the former subject property development included Conni TL (1974-1977); Mrs. Hammer Anselm (1977); Laundry Dry Cleaning (1974 and 1977); The Grove (1984-1986); and Lakeside Health Resort (1986-1992).

The adjoining properties are tabulated below:

Immediately Surrounding Properties	
Direction	**Adjoining Property**
Northeast:	A cement lined canal beyond which are several single-family residences (3497-3515 Lake Crest Drive)
East:	Riverside Drive and canal beyond which is a vacant parcel (379-100-002)
Southeast:	Riverside Drive beyond which are Coyote Cove Lakeside Camping (32310 Riverside Drive) and EVMWD A-4 Lift Station (32390 Riverside Drive)

Immediately Surrounding Properties	
Southwest:	Single-family residences (3500-3804 Eisenhower Drive)
Northwest:	Single-family residences (1100-1122 Monroe Street)

According to topographic map interpretation and a previous subsurface investigation conducted on a nearby property (32789 Riverside Drive, Case No. T10000011799), the depth of groundwater in the vicinity of the subject property is inferred to be approximately 44 to 50 feet bgs, and groundwater flow inferred to be toward the southeast.

Findings and Opinions

Recognized Environmental Condition

A recognized environmental condition (REC) refers to the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment. The following was identified during the course of this assessment:

- According to reviewed historic documentation, the subject property was developed with a resort from circa 1962 until 2004. This development was formerly occupied by "The Grove" from at least 1984 to 1986 and "Lakeside Health Resort" from at least 1986 to 1992. Upon further investigation, an LA Times article dated May 22, 1988, reported the former onsite developments were utilized as a retreat for officials of the laundry workers union as early as the late-1950's. According to the reviewed city directories, dry-cleaning services were conducted onsite from at least 1974 to 1977. In addition to commercial laundry facilities for the cleaning of sheets and towels for guest rooms, resorts and/or hotels sometimes provide dry-cleaning services as a hospitality amenity. Dry cleaning operations typically use chlorinated solvents, particularly tetrachloroethylene (PCE), during the dry-cleaning process. These solvents, even when properly stored and disposed, can be released from these facilities in small, frequent releases through floor drains, cracked concrete, and sewer systems. Chlorinated solvents are highly mobile chemicals that can easily accumulate in soil and migrate to groundwater beneath a facility.

  No permits to operate dry cleaning machines were identified for the subject property address with the South Coast Air Quality Management District (SCAQMD). Furthermore, no regulatory database listings were identified for the possible dry-cleaning services conducted onsite including hazardous waste generation and removal of chlorinated solvents, releases or contamination events. Nevertheless, this facility operated prior to the promulgation of the Resource Conservation and Recovery Act (RCRA) in 1980 (with amendments for small quantity generators in 1984), the legislation that regulates the handling and disposal of hazardous materials and wastes. Furthermore, the SCAQMD was not founded until 1976. As such, this facility operated virtually unregulated while at the subject property. Partner attempted to obtain any additional information regarding subsurface conditions at the subject property; however, none was available. Based on the type of chemicals associated with dry cleaning services and lack of regulatory oversight at the time of operation, the former onsite dry-cleaning services represents a REC.

- The subject property was historically used for agricultural purposes. There is a potential that agricultural chemicals, such as pesticides, herbicides and fertilizers, were used onsite, and that the subject property has been impacted by the use of such agricultural chemicals. Due to the planned redevelopment of the subject property for residential and/or commercial use, this potential is considered an REC.

Controlled Recognized Environmental Condition

A controlled recognized environmental condition (CREC) refers to a REC affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities with hazardous substances or petroleum products allowed to remain in place subject to implementation of required controls (for example, activity and use limitations or other property use limitations). The following was identified during the course of this assessment:

- Partner did not identify any CRECs during the course of this assessment.

Historical Recognized Environmental Condition

A historical recognized environmental condition (HREC) refers to a previous release of hazardous substances or petroleum products affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities and meeting unrestricted use criteria established by the applicable regulatory authority or authorities without subjecting the subject property to any controls (for example, activity and use limitations or other property use limitations). The following was identified during the course of this assessment:

- Partner did not identify any HRECs during the course of this assessment.

Business Environmental Risk

A *Business Environmental Risks (BER)* is a risk which can have a material environmental or environmentally driven impact on the business associated with the current or planned use of commercial real estate, not necessarily related to those environmental issues required to be investigated in this practice. The following was identified during the course of this assessment:

- Partner did not identify any BERs during the course of this assessment.

Significant Data Gaps

No significant data gaps affecting the ability of the Environmental Professional to identify a REC were encountered during this assessment.

Conclusions and Recommendations

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM E1527-13 and E1527-21 of 32281 Riverside Drive in Lake Elsinore, Riverside County, California (the "subject property"). Any exceptions to, or deletions from, this practice are described in Section 1.5 of this report.

This assessment has revealed evidence of recognized environmental conditions and/or environmental issues in connection with the subject property. Based on the conclusions of this assessment, Partner recommends the following:

- A limited subsurface investigation should be conducted in order to determine the presence or absence of soil, soil vapor, and/or groundwater contamination due to the historical use of the subject property.

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1.0 INTRODUCTION

Partner Engineering and Science, Inc. (Partner) has performed a Phase I Environmental Site Assessment (ESA) in conformance with the scope and limitations of ASTM E1527-13 and E1527-21 and the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (AAI) (40 CFR Part 312) for the property located at 32281 Riverside Drive in Lake Elsinore, Riverside County, California (the "subject property"). Any exceptions to, or deletions from, this scope of work are described in the report.

1.1 Purpose

The purpose of this ESA is to identify existing or potential Recognized Environmental Conditions (as defined by ASTM Standard E1527-13 and E1527-21) affecting the subject property that: 1) constitute or result in a material violation or a potential material violation of any applicable environmental law; 2) impose any material constraints on the operation of the subject property or require a material change in the use thereof; 3) require clean-up, remedial action or other response with respect to Hazardous Substances or Petroleum Products on or affecting the subject property under any applicable environmental law; 4) may affect the value of the subject property; and 5) may require specific actions to be performed with regard to such conditions and circumstances. The information contained in the ESA Report will be used by Client to: 1) evaluate its legal and financial liabilities for transactions related to foreclosure, purchase, sale, loan origination, loan workout or seller financing; 2) evaluate the subject property's overall development potential, the associated market value and the impact of applicable laws that restrict financial and other types of assistance for the future development of the subject property; and/or 3) determine whether specific actions are required to be performed prior to the foreclosure, purchase, sale, loan origination, loan workout or seller financing of the subject property.

This ESA was performed to permit the User to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) liability (hereinafter, the "landowner liability protections," or "LLPs"). ASTM Standard E1527-13 constitutes "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" as defined at 42 U.S.C. §9601(35)(B).

1.2 Scope of Work

The scope of work for this ESA is in accordance with and to the extent necessary to achieve the goal of the requirements set forth in the ASTM Standard E1527-13 and E1527-21. This assessment included: 1) a property and adjoining site reconnaissance; 2) interviews with key personnel; 3) a review of historical sources; 4) a review of regulatory agency records; and 5) a review of a regulatory database report provided by a third-party vendor. Partner contacted local agencies, such as environmental health departments, fire departments and building departments to obtain readily ascertainable information to determine any current and/or former hazardous substances usage, storage and/or releases of hazardous substances on the subject property. Additionally, Partner researched readily available information on the presence of activity and use limitations (AULs) at these agencies. As defined by ASTM E1527-21, AULs include both legal (that is, institutional) and physical (that is, engineering) controls that may include legal or physical restrictions or limitations on the use of, or access to, a site or facility: 1) to reduce or eliminate potential exposure to

hazardous substances or petroleum products in the soil, soil vapor, groundwater, or surface water on the subject property; or 2) to prevent activities that could interfere with the effectiveness of a response action, in order to ensure maintenance of a condition of no significant risk to public health or the environment. These legal or physical restrictions, which may include institutional and/or engineering controls (IC/ECs), are intended to prevent adverse impacts to individuals or populations that may be exposed to hazardous substances and petroleum products in the soil, soil vapor, groundwater, and/or surface water on a property.

If requested by Client, this report may also include the identification, discussion of, and/or limited sampling of asbestos-containing materials (ACMs), lead-based paint (LBP), mold, and/or radon.

1.3 Limitations

Partner warrants that the findings and conclusions contained herein were accomplished in accordance with the methodologies set forth in the Scope of Work. These methodologies are described as representing good commercial and customary practice for conducting an ESA of a property for the purpose of identifying recognized environmental conditions. There is a possibility that even with the proper application of these methodologies there may exist on the subject property conditions that could not be identified within the scope of the assessment or which were not reasonably identifiable from the available information. Partner believes that the information obtained from the record review and the interviews concerning the subject property is reliable. However, Partner cannot and does not warrant or guarantee that the information provided by these other sources is accurate or complete. The conclusions and findings set forth in this report are strictly limited in time and scope to the date of the evaluations. The conclusions presented in the report are based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of agreed-upon services or the time and budgeting restraints imposed by the Client. No other warranties are implied or expressed.

Some of the information provided in this report is based upon personal interviews, and research of available documents, records, and maps held by the appropriate government and private agencies. This report is subject to the limitations of historical documentation, availability, and accuracy of pertinent records, and the personal recollections of those persons contacted.

This practice does not address requirements of any state or local laws or of any federal laws other than the all appropriate inquiry provisions of the LLPs. Further, this report does not intend to address all of the compliance and safety concerns, if any, associated with the subject property.

Environmental concerns, which are beyond the scope of a Phase I ESA as defined by ASTM include the following: ACMs, LBP, radon, and lead in drinking water. These issues may affect environmental risk at the subject property and may warrant discussion and/or assessment; however, are considered non-scope issues. If specifically requested by the Client, these non-scope issues are discussed in Section 6.3.

1.4 User Reliance

WJK Development Co. and RSI Equity engaged Partner to perform this assessment in accordance with an agreement governing the nature, scope and purpose of the work as well as other matters critical to the engagement. All reports, both verbal and written, are for the sole use and benefit of WJK Development Co. and RSI Equity . Either verbally or in writing, third parties may come into possession of this report or all or part of the information generated as a result of this work. In the absence of a written agreement with Partner

granting such rights, no third parties shall have rights of recourse or recovery whatsoever under any course of action against Partner, its officers, employees, vendors, successors or assigns. Any such unauthorized user shall be responsible to protect, indemnify and hold Partner, Client and their respective officers, employees, vendors, successors and assigns harmless from any and all claims, damages, losses, liabilities, expenses (including reasonable attorneys' fees) and costs attributable to such Use. Unauthorized use of this report shall constitute acceptance of and commitment to these responsibilities, which shall be irrevocable and shall apply regardless of the cause of action or legal theory pled or asserted. Additional legal penalties may apply.

1.5 Limiting Conditions

The findings and conclusions contain all of the limitations inherent in these methodologies that are referred to in ASTM E1527-13 and E1527-21.

Specific limitations and exceptions to this ESA are more specifically set forth below:

- Interviews with past or current owners, operators and occupants were not reasonably ascertainable and thus constitute a data gap. Based on information obtained from other historical sources, this data gap is not expected to alter the findings of this assessment.
- Partner requested information relative to deed restrictions and environmental liens, a title search, and completion of the AAI User Questionnaire from the Report User. This information was not provided at the time of the assessment.
- Partner was unable to determine the property use at 5-year intervals, which constitutes a data gap. Except for property tax files and recorded land title records, which were not considered to be sufficiently useful, Partner reviewed all standard historical sources and conducted appropriate interviews.
- Partner's view of the ground during the site assessment was obstructed due to vegetative overgrowth. Based on information obtained from other historical sources, this limitation is not expected to alter the overall findings of this assessment.
- Partner submitted Freedom of Information Act (FOIA) requests to Riverside County Department of Environmental Health (RCDEH) and City of Lake Elsinore Building Department (LEBD) for information pertaining to hazardous substances, underground storage tanks, releases, inspection records, etc. for the subject property and/or adjoining properties. As of this writing, these agencies have not responded to Partners request. Based on information obtained from other historical resources, this limitation is not expected to alter the overall findings of this assessment.

2.0 SITE DESCRIPTION

2.1 Site Location and Legal Description

The subject property at 32281 Riverside Drive in Lake Elsinore, California is located on the northwest side of Riverside Drive. According to the Riverside County Assessor, the subject property is legally described as "*4.95 ACRES M/L IN LOT 154 MB 111/059 TR 13799*". Ownership is currently vested in Qi Liang Chang since 2014.

Please refer to Figure 1: Site Location Map, Figure 2: Site Plan, Figure 3: Topographic Map, and Appendix A: Site Photographs for the location and site characteristics of the subject property.

2.2 Current Property Use

The subject property is currently vacant land with remnants of foundations associated with the former onsite structures located on the central and southern portions of the property. In addition, the subject property is overgrown with natural vegetation throughout the site and former courtyard, asphalt-paved parking areas in poor condition as well as chain link/concrete masonry fencing along the property perimeter. No onsite operations are currently conducted; however, the site is planned for redevelopment.

The subject property is designated for residential development by the City of Lake Elsinore.

The subject property was identified as a Handlers from Hazardous Waste Manifest Data (HAZNET) site in the regulatory database report of Section 4.2.

2.3 Current Use of Adjoining Properties

The subject property is located within a residential, commercial and vacant land area of Riverside County. During the vicinity reconnaissance, Partner observed the land uses on adjoining properties as defined in ASTM E1527-13 and E1527-21 as any real property or properties the border of which is contiguous or partially contiguous with that of the property, or that would be contiguous or partially contiguous with that of the property but for a street, road, or other public thoroughfare separating them. The adjoining properties are tabulated below:

Immediately Surrounding Properties	
Direction	**Adjoining Property**
Northeast:	Canal beyond which are several single-family residences (3497-3515 Lake Crest Drive)
East:	Riverside Drive and canal beyond which is a vacant parcel (379-100-002)
Southeast:	Riverside Drive beyond which are Coyote Cove Lakeside Camping (32310 Riverside Drive) and EVMWD A-4 Lift Station (32390 Riverside Drive)
Southwest:	Single-family residences (3500-3804 Eisenhower Drive)
Northwest:	Single-family residences (1100-1122 Monroe Street)

The adjoining properties were identified as Clandestine Drug Lab Sites (CDL), California Hazardous Material Incident Report System (CHMIRS), Generators from Hazardous Waste Manifest Data (HAZ GEN), California Environmental Reporting System Hazardous Waste Sites (CERS HAZ), Riverside County – Disclosure Facility List (HZH RIVERSIDE) and Delisted County Records (DELISTED COUNTY) sites in the regulatory database report of Section 4.2.

2.4 Physical Setting Sources

2.4.1 Topography

The 2021 United States Geological Survey (USGS) *Alberhill, California* Quadrangle 7.5-minute series topographic map was reviewed for this ESA. According to the contour lines on the topographic map, the subject property is located at approximately 1.267 feet above mean sea level (MSL). The contour lines in the area of the subject property indicate the area is sloping gently towards the southeast.

A copy of the most recent topographic map is included as Figure 3 of this report.

2.4.2 Hydrology

While under natural and undisturbed conditions shallow groundwater flow most frequently follows the topography of the land surface, natural or man-made features can affect flow direction, and the presumed flow may not match the actual flow directions at the subject property and vicinity. Topographic map interpretation suggests the direction of groundwater flow in the vicinity of the subject property is inferred to be toward the southeast.

According to a previous subsurface investigation conducted on a nearby property (32789 Riverside Drive, Case No. T10000011799), the depth of groundwater in the vicinity of the subject property is inferred to be approximately 44 to 50 feet bgs.

The nearest surface water in the vicinity of the subject property is Lake Elsinore located approximately 0.28-miles southeast of the subject property. No settling ponds, lagoons, surface impoundments, wetlands or natural catch basins were observed at the subject property during this assessment.

According to available information, a public water system operated by the Elsinore Valley Municipal Water District serves the subject property vicinity. According to the 2019 Annual Water Quality Report, the sources of public water for Lake Elsinore is a mix of local groundwater and imported water from the Colorado River Aqueduct and State Water Project in Northern California. Based on the Water Wells database provided by EDR, the closest municipal well is located approximately 525 feet to the northwest of the subject property.

2.4.3 Geology/Soils

The subject property is situated within the Peninsular ranges of the geomorphic province of the State of California. The Peninsular range is series of ranges separated by northwest trending valleys and traversed by several major active faults. The Whittier-Elsinore, San Jacinto, Newport-Inglewood, and San Andreas faults are major active fault systems located in the vicinity of the subject property. Major tectonic activity associated with these and other faults within this regional tectonic framework are typically right-lateral strike-slip movements. The Peninsular ranges extend into lower California, are bound to the east by the Colorado River, and extend into the Los Angeles Basin and the island group surrounding the continental shelf.

Based on information obtained from the USDA Natural Resources Conservation Service Web Soil Survey online database, the subject property is mapped as Garretson very fine sandy loam. The Garretson series is a member of the fine-loamy, mixed, nonacid, thermic family of Typic Xerorthents. Typically, Garretson soils have brown and yellowish brown, slightly acid, gravelly very fine sandy loam and gravelly loam A horizons

and yellowish brown, brown and grayish brown, slightly acid and neutral, gravelly loam C horizons. Slopes range from 0 to 2 percent.

2.4.4 Flood Zone Information

Partner performed a review of the Flood Insurance Rate Map, published by the Federal Emergency Management Agency. According to Community Panel Number 06065C2017G, dated August 28, 2008, the subject property appears to be located in Zone X (shaded); defined as moderate risk areas within the 0.2-percent-annual-chance floodplain.

3.0 HISTORICAL INFORMATION

Partner obtained historical use information about the subject property from a variety of sources. A chronological listing of the historical data found is summarized in the table below:

Historical Use Information		
Years	**Resource**	**Description/Use**
1938-1954	Topographic Maps, Aerial Photographs	Agricultural Land (Row Crops and/or Orchards)
1962-2004	Aerial Photographs, Topographic Maps	Commercial
2004-Present	Aerial Photographs, Assessor Records, City Directories, Topographic Maps	Vacant Land

Tenants of the former subject property development included Conni TL (1974-1977); Mrs. Hammer Anselm (1977); Laundry Dry Cleaning (1974 and 1977); The Grove (1984-1986); and Lakeside Health Resort (1986-1992).

The subject property was historically used for agricultural purposes. There is a potential that agricultural chemicals, such as pesticides, herbicides and fertilizers, were used onsite, and that the subject property has been impacted by the use of such agricultural chemicals. Due to the planned redevelopment of the subject property, this potential is considered an REC.

According to reviewed historic documentation, the subject property was developed with a resort circa 1962 until 2004. This development was formerly occupied by "The Grove" from at least 1984 to 1986 and "Lakeside Health Resort" from at least 1986 to 1992. Upon further investigations, an LA Times article dated May 22, 1988, reported the former onsite developments were utilized as a retreat for officials of the laundry workers union as early as the late-1950's. According to the reviewed city directories, dry-cleaning services were conducted onsite from at least 1974 to 1977. In addition to commercial laundry facilities for the cleaning of sheets and towels for guest rooms, resorts and/or hotels sometimes provide dry-cleaning services as a hospitality amenity. Dry cleaning operations typically use chlorinated solvents, particularly tetrachloroethylene (PCE), during the dry-cleaning process. These solvents, even when properly stored and disposed, can be released from these facilities in small, frequent releases through floor drains, cracked concrete, and sewer systems. Chlorinated solvents are highly mobile chemicals that can easily accumulate in soil and migrate to groundwater beneath a facility.

No permits to operate dry cleaning machine(s) were identified for the subject property address with the South Coast Air Quality Management District (SCAQMD). Furthermore, no regulatory database listings were identified for the possible dry-cleaning services conducted onsite including hazardous waste generation and removal of chlorinated solvents, releases or contamination events. Nevertheless, this facility operated prior to the promulgation of Resource Conservation and Recovery Act (RCRA) in 1980 (with amendments for small quantity generators in 1984), the legislation that regulates the handling and disposal of hazardous materials and wastes. Furthermore, the SCAQMD was not founded until 1976. As such, this facility operated virtually unregulated while at the subject property. Partner attempted to obtain any additional information regarding subsurface conditions at the subject property; however, none was available. Based on the type of

chemicals associated with dry cleaning services and lack of regulatory oversight at the time of operation, the former onsite dry-cleaning services represents a REC.

3.1 Aerial Photograph Review

Partner obtained available aerial photographs of the subject property and surrounding area from Environmental Risk Information Services (ERIS) on February 1, 2023. The inferred uses of the subject property and adjoining properties as interpreted from the aerial photographs in Appendix B are tabulated below:

Date:	***1938***	***Scale:***	***1"=500'***
Subject Property:	Appears to be developed with agricultural land (row crops)		
Northeast:	Appears to be developed with a residential-like structure and areas of agricultural land (row crops and orchards)		
East:	Appears to be developed with agricultural land (row crops) across a roadway		
Southeast:	Appears to be developed with two residential-like structures and area of agricultural land (row crops) across a roadway		
Southwest:	Appears to be developed with agricultural land (row crops)		
Northwest:	Appears to be developed with agricultural land (row crops)		

Date:	***1949, 1953***	***Scale:***	***1"=500'***
Subject Property:	Appears to be developed with agricultural land (orchards)		
Northeast:	No significant changes visible		
East:	Appears to be developed with a structure across a roadway		
Southeast:	Appears to be developed with several residential-like structures and associated structures and areas of agricultural land (orchards) across a roadway		
Southwest:	Appears to be developed with agricultural land (orchards)		
Northwest:	Appears to be developed with agricultural land (orchards)		

Date:	***1962, 1967, 1976***	***Scale:***	***1"=500'***
Subject Property:	Appears to be developed with a resort-like structure which is presented in a u-shape on the northern portion of the property; a swimming pool is visible within the courtyard central to the structure; in addition, a shed-like structure is visible on the southern corner of the property and orchards are visible throughout the property		
Northeast:	No significant changes visible		
East:	No significant changes visible		
Southeast:	No significant changes visible		
Southwest:	Appears to be developed in part of the developments located on the subject property with continued access roadways extending from the subject property to the southwest and orchards		
Northwest:	Appears to be developed with several structures and access roadways associated with the developments located on the subject property and orchards		

Date:	***1980***	***Scale:***	***1"=500'***
Subject Property:	An addition appears to be completed to the previously noted structure along the northwest border of the property; no other significant changes visible		
Northeast:	Appears to be vacant land across a canal		

Date:	*1980*	*Scale:*	*1"=500'*
East:	Appears to be vacant land across the intersection of a canal and roadway		
Southeast:	Appears to be developed with the current campground and associated permanent structures across a roadway		
Southwest:	Appears to be vacant graded land		
Northwest:	Appears to be vacant graded land		

Date:	*1985, 1994*	*Scale:*	*1"=500'*
Subject Property:	No significant changes visible		
Northeast:	Appears to be developed with several single-family residences across a canal		
East:	No significant changes visible		
Southeast:	No significant changes visible		
Southwest:	Appears to be developed with several single-family residences		
Northwest:	Appears to be developed with several single-family residences		

Date:	*2002*	*Scale:*	*1"=500'*
Subject Property:	No significant changes visible		
Northeast:	No significant changes visible		
East:	Appears to be developed with the current lift station across a roadway; no other significant changes visible		
Southeast:	No significant changes visible		
Southwest:	No significant changes visible		
Northwest:	No significant changes visible		

Date:	*2005, 2009, 2012, 2014, 2016, 2018, 2020*	*Scale:*	*1"=500'*
Subject Property:	The former structures appear to have been razed with the foundations still visible; the remaining areas appear to be vacant land with several trees		
Northeast:	No significant changes visible		
East:	No significant changes visible		
Southeast:	No significant changes visible		
Southwest:	No significant changes visible		
Northwest:	No significant changes visible		

Copies of select aerial photographs are included in Appendix B of this report.

3.2 Fire Insurance Maps

Partner reviewed the collection of Fire insurance maps (FIMS) from ERIS on February 1, 2023. FIM coverage was not available for the subject property.

A copy of the no coverage documentation is included in Appendix B of this report.

3.3 City Directories

Partner reviewed historical city directories obtained from ERIS on February 16, 2023, for past names and businesses that were listed for the subject property and adjoining properties. The findings are tabulated below:

City Directory Search for the Subject Property (32281 Riverside Drive)	
Year(s)	**Occupant Listed**
1974	Conni TL; Mrs. Hammer Anselm; **Laundry Dry Cleaning**
1977	Cionni TL; **Laundry Dry Cleaning**
1984	The Grove
1986	The Grove
1991	Lakeside Health Resort
1996	XXXX
2001	Lee John

According to reviewed city directories, dry cleaning services were conducted onsite from at least 1974 to 1977. Please refer to Section 3.0 for further discussion of same.

Due to the dense development of the surrounding areas, only commercial developments are addressed in the tables below:

City Directory Search for Southeastern Adjoining Properties (32310 and 32390 Riverside Drive)	
Year(s)	**Occupant Listed**
1974	Residential (32390)
1977	XXXX (32390)
1984	Jordan's Campground, Residential (32310); XXXX (32390)
1986	Jordan's Campground, Residential (32310); XXXX (32390)
1991	Jordan's Campground, Apartments, Multi-Family Residential (32310); XXXX (32390)
1996	Apartments, Multi-Family Residential (32310); XXXX (32390)
2001	Kay Jordan's Campground, Apartments, Multi-Family Residential (32310); XXXX (32390)
2003	Outhouse Inc., Residential (32310)
2008	Outhouse Inc., Residential (32310)
2020	Coyote Cove Lakeside Camping, Residential (32310)
2022	Coyote Cove Lakeside Camping, Residential (32310)

* XXXX= A phone number is present but is not registered to a tenant or is disconnected.

Based on the city directory review, no environmentally sensitive listings were identified for the adjacent property addresses.

Copies of reviewed city directories are included in Appendix B of this report.

3.4 Historical Topographic Maps

Partner reviewed historical topographic maps obtained from ERIS on February 15, 2023. The following inferred uses of the subject property and adjoining properties interpreted from topographic maps in Appendix B and are tabulated below:

Date:	*1942*
Subject Property:	Depicted as unimproved land
Northeast:	Depicted as unimproved land across a roadway
East:	Depicted as unimproved land across a roadway
Southeast:	Depicted as developed with a structure across a roadway
Southwest:	Depicted as unimproved land across a dirt roadway
Northwest:	Depicted as unimproved land

Date:	*1954*
Subject Property:	Depicted as developed with agricultural land (orchards)
Northeast:	Depicted as developed with orchards
East:	Not depicted on the topographic map
Southeast:	Depicted as developed with two structures and areas of unimproved land
Southwest:	Depicted as developed with orchards
Northwest:	Depicted as developed with orchards

Date:	*1973*
Subject Property:	Depicted as developed with a u-shaped structure which runs parallel to the northeast, southeast and southwestern borders of the property along with access roadways; the central portion of the property is depicted as vacant land and/or courtyard
Northeast:	No significant changes depicted
East:	Depicted as unimproved land across Riverside Drive
Southeast:	Depicted as developed with two structures and areas of unimproved land across Riverside Drive
Southwest:	Depicted as developed with three structures, access roadways and areas of vacant land
Northwest:	Depicted as developed with several structures and areas of vacant land

Date:	*1982*
Subject Property:	Depicted with an addition to the previously noted structure along the northwest portion of the property; no other significant changes visible
Northeast:	Depicted as vacant land
East:	No significant changes depicted
Southeast:	No significant changes depicted
Southwest:	No significant changes depicted
Northwest:	Depicted with an access roadway and areas of vacant land

Date:	*1988*
Subject Property:	No significant changes depicted
Northeast:	Depicted as tinted denoting dense development
East:	No significant changes depicted
Southeast:	No significant changes depicted
Southwest:	No significant changes depicted
Northwest:	Depicted as tinted denoting dense developments with access roadways

Date:	*1997*
Subject Property:	No significant changes depicted
Northeast:	Depicted as tinted denoting dense development across a canal
East:	Depicted as vacant land across the intersection of Riverside Drive and a dirt roadway
Southeast:	Depicted as developed with a dirt roadway across Riverside Drive; no other significant changes depicted
Southwest:	Depicted as tinted denoting dense development

Date:	*1997*
Northwest:	No significant changes depicted

Date:	*2015, 2018, 2021*
Subject Property:	Development, with the exception of roadways, is not depicted on these maps.
Northeast:	Development, with the exception of roadways, is not depicted on these maps.
East:	Development, with the exception of roadways, is not depicted on these maps.
Southeast:	Development, with the exception of roadways, is not depicted on these maps.
Southwest:	Development, with the exception of roadways, is not depicted on these maps.
Northwest:	Development, with the exception of roadways, is not depicted on these maps.

Copies of reviewed topographic maps are included in Appendix B of this report.

4.0 REGULATORY RECORDS REVIEW

4.1 Regulatory Agencies

4.1.1 Health Department

Regulatory Agency Data	
Name of Agency:	Riverside County Department of Environmental Health (RCDEH)
Point of Contact:	Ms. Renida Claude
Agency Address:	4065 County Circle Drive, Room 104, Riverside, California 92513
Agency Phone Number:	(951) 358-5055
Date of Contact:	February 2023
Method of Communication:	Email
Summary of Communication: As of the date of this report, Partner has not received a response from the RCDEH for inclusion in this report.	

4.1.3 Fire Department

The Riverside County Department of Environmental Health is the Certified Unified Program Agency (CUPA) for the City of Lake Elsinore and is responsible for regulating facilities. Jurisdiction over management of hazardous materials, hazardous waste, and underground storage tanks (USTs) within the City of Lake Elsinore falls under the oversight of the RCDEH, and not the Riverside County Fire Department, as discussed in Section 4.1.1, Health Department.

4.1.4 Air Pollution Control Agency

Regulatory Agency Data	
Name of Agency:	South Coast Air Quality Management District (SCAQMD)
Point of Contact:	Stacey Walkowiak
Agency Website:	http://www3.aqmd.gov/webappl/fim/prog/search.aspx
Agency Address:	21865 Copley Drive, Diamond Bar, California 91765
Agency Phone Number:	(909) 396-2000
Date of Contact:	February 2023
Method of Communication:	Online Database/Online Request
Summary of Communication: No Permits to Operate (PTO), Notices of Violation (NOV), or the presence of AULs, dry cleaning machines, or USTs were on file for the subject property with the SCAQMD for the subject property address. According to Ms. Walkowiak with the SCAQMD, a total of three notices to comply (NTC) and two complaints were issued for asbestos removal activities prior to the demolition of the former onsite structure in 2004. An additional complaint regarding asbestos was issued in 2007 for the subject property. However, no additional details or reports were identified for this listing.	

4.1.5 Regional Water Quality Agency

Regulatory Agency Data	
Name of Agency:	State Water Resources Control Board (SWRCB) Santa Ana Regional Water Quality Control Board (RWQCB)
Agency Website:	http://geotracker.waterboards.ca.gov/
Agency Phone Number:	(951) 782-4130

Regulatory Agency Data	
Date of Contact:	February 2023
Method of Communication:	Online Database
Summary of Communication: No records regarding hazardous substance use, storage or releases, or the presence of USTs and AULs on the subject property were on file with the RWQCB.	

4.1.6 Department of Toxic Substances Control

Regulatory Agency Data	
Name of Agency:	California Department of Toxic Substances Control (DTSC) EnviroStor and Hazardous Waste Tracking System (HWTS)
Agency Websites:	http://www.envirostor.dtsc.ca.gov/public/ http://hwts.dtsc.ca.gov/report_search.cfm?id=5
Agency Phone Number:	(877) 786-9427
Date of Contact:	February 2023
Method of Communication:	Online Database
Summary of Communication: No records regarding hazardous substance use, storage or releases, or the presence of USTs and AULs on the subject property were on file with the EnviroStor online database. The subject property was identified on the HWTS database and further discussed in Section 4.2.2.	

4.1.7 Building Department

Regulatory Agency Data	
Name of Agency:	City of Lake Elsinore Building Department (LEBD)
Point of Contact:	City Clerk
Agency Address:	130 South Main Street, Lake Elsinore, California 92530
Agency Phone Number:	(951) 674-3124
Date of Contact:	February 2023
Method of Communication:	Online
Summary of Communication: As of the date of this report, Partner has not received a response from the LEBD for inclusion in this report.	

4.1.8 Planning Department

Regulatory Agency Data	
Name of Agency:	City of Lake Elsinore Planning Division (LEPD)
Agency Website:	http://davis.lake-elsinore.org/portal/apps/webappviewer/index
Agency Address:	130 South Main Street, Lake Elsinore, California 92530
Agency Phone Number:	(951) 674-3124
Date of Contact:	February 2023
Method of Communication:	Online Zoning Map
Summary of Communication: According to records reviewed, the subject property is zoned RMU for Residential Mixed-Use development by the City of Lake Elsinore.	

4.1.9 Oil & Gas Exploration

Regulatory Agency Data	
Name of Agency:	California Geologic Energy Management Division (CalGEM)
Point of Contact:	Well Finder Database
Agency Website:	https://www.conservation.ca.gov/calgem/Pages/WellFinder.aspx
Agency Phone Number:	(562) 637-4400
Date of Contact:	February 2023
Method of Communication:	Online Research
Summary of Communication: According to CalGEM, no oil or gas wells are located on or adjoining to the subject property.	

4.1.10 Assessor's Office

Regulatory Agency Data	
Name of Agency:	Riverside County Assessor (RCA)
Agency Website:	http://pic.asrclkrec.com/
Agency Address:	4080 Lemon St, 1st Floor Riverside, California
Agency Phone Number:	(951) 955-9553
Date of Contact:	February 2023
Method of Communication:	Online Database
Summary of Communication: According to records reviewed, the subject property is identified by Assessor Parcel Number (APN) 379-315-033 and is currently owned by Qi Liang Chang since 2014. The subject property is located on a 4.95-acre lot.	

Copies of pertinent documents are included in Appendix B of this report.

4.2 Mapped Database Records Search

The regulatory database report provided by ERIS documents the listing of sites identified on federal, state, county, city, and tribal (when applicable) standard source environmental databases within the approximate minimum search distance (AMSD) specified by ASTM E1527-13 and E1527-21. The data from these sources are updated as these data are released and integrated into one database. The information contained in this report was compiled from publicly available sources.

The environmental database information is used to identify environmental concerns in connection with the subject property. The listings also serve to identify the known indications of the storage, use, generation, disposal, or release of hazardous substance at the subject property and the potential for contaminants to migrate onto the subject property from off-site sources in groundwater or soil in the form of liquids or vapor.

Using the ASTM definition of migration, Partner considers the migration of hazardous substances or petroleum products in any form onto the subject property during the evaluation of each site listed on the radius report, which includes solid, liquid, and vapor.

4.2.1 Regulatory Database Summary

The following table lists the number of sites as categorized by the regulatory database within the prescribed AMSD. The locations of the sites are plotted utilizing a geographic information system, which geocodes the site addresses. The accuracy of the geocoded locations is approximately +/-300 feet.

Radius Report Data				
Database	**AMSD Radius (mile)**	**Subject Property**	**Adjoining Properties**	**Sites of Concern**
Federal NPL	1.00	N	N	N
Delisted NPL Site	0.50	N	N	N
Federal SEMS Site	0.50	N	N	N
Federal SEMS-ARCHIVE	0.50	N	N	N
Federal RCRA CORRACTS Facility	1.00	N	N	N
Federal RCRA TSDF Facility	0.50	N	N	N
Federal RCRA Generators Site (LQG, SQG, VSQG, CESQG)	Subject and Adjoining	N	N	N
Federal IC/EC Registries	Subject Property	N	N	N
Federal ERNS Site	Subject Property	N	N	N
State/Tribal Equivalent NPL	1.00	N	N	N
State/Tribal Equivalent CERCLIS	1.00	N	N	N
State/Tribal Landfill/Solid Waste Disposal Site	0.50	N	N	N
State/Tribal Leaking Storage Tank Site (LUST/LPST)	0.50	N	N	N
State/Tribal Registered Storage Tank Sites (UST/AST)	Subject and Adjoining	N	N	N
State/Tribal IC/EC Registries	Subject and Adjoining	N	N	N
State/Tribal Voluntary Cleanup Sites (VCP)	0.50	N	N	N
State/Tribal Spills	0.25	N	N	N
Federal Brownfield Sites	0.50	N	N	N
State Brownfield Sites	0.50	N	N	N
Other Databases	Varies	**Y**	**Y**	N

4.2.2 Subject Property Listings

The subject property is identified as a HAZNET site in the regulatory database report, as discussed below:

- **John Lee** at 32281 Riverside Drive was identified as an inactive hazardous waste generator between 2004 and 2005 under EPA ID No. CAC002580846. However, no manifests were available for review. This listing is likely associated with the demolition activities that were conducted in 2004. Based on the lack of hazardous wastes generated, inactive facility status and regulatory oversight during operation, this listing is not expected to represent a significant environmental concern.

4.2.3 Adjoining Property Listings

The adjoining property to the southeast is identified as a CERS HAZ, HZH RIVERSIDE and DELISTED COUNTY site in the regulatory database report, as discussed below:

- **EVMWD A-4 Liftstation** at 32390 Riverside Drive, is located to the southeast of the subject property across Riverside Drive and situated hydrologically downgradient. This facility is identified as a chemical storage facility of hypochlorous acid, sodium salt, pentahydrate and diesel associated with an onsite emergency generator under CERS ID No. 10324441. Violations for various administrative errors were issued by the RCDEH during compliance evaluations conducted in 2014 and 2021. These violations were returned to compliance at later dates. Based on the lack of reported releases/violations and regulatory oversight, these listings are not expected to represent a significant environmental concern.

- **MetroPCS California LLC (LA3410B)** at 32310 Riverside Drive, is located to the southeast of the subject property across Riverside Drive and situated hydrologically downgradient. This site is identified as a former facility with records that were removed from the county of CUPA databases as of June 10, 2015. Records may be removed from the county lists made available by the respective county departments because they are inactive, or because they have been deemed to be below reportable thresholds. Nevertheless, based on the lack of reported releases/violations, inactive facility status and regulatory oversight during operation, this listing is not expected to represent a significant environmental concern.

The adjoining property to the northwest is identified as a CDL, CHMIRS, and HAZ GEN site in the regulatory database report, as discussed below:

- **Riverside County Fire/Anderson & Anderson Meth Lab** at 1110 Monroe Street, is located to the northwest of the subject property and situated hydrologically upgradient. This site was identified as a methamphetamine lab following a drug bust. A total of 10-gallons of chemicals were identified onsite on April 9, 1996. No contamination was identified onsite. Based on the foregoing and closure of the site, these listings are not expected to represent a significant environmental concern.

4.2.4 Surrounding Area Listings of Concern to Subject Property

No sites of concern are identified in the regulatory database report.

4.2.5 Unplottable Listings

No unplottable listings of concern are identified in the regulatory database report.

A copy of the regulatory database report is included in Appendix C of this report.

5.0 USER PROVIDED INFORMATION AND INTERVIEWS

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* must conduct the following inquiries required by 40 CFR 312.25, 312.28, 312.29, 312.30, and 312.31. The *User* should provide the following information to the *environmental professional*. Failure to provide this information could result in a determination that *all appropriate inquiries* is not complete. The *User* is asked to provide information or knowledge of the following:

- Review Title and Judicial Records for Environmental Liens and AULs
- Specialized Knowledge or Experience of the User
- Actual Knowledge of the User
- Reason for Significantly Lower Purchase Price
- Commonly Known or *Reasonably Ascertainable* information
- Degree of Obviousness
- Reason for Preparation of this Phase I ESA

Fulfillment of these user responsibilities is key to qualification for the identified defenses to CERCLA liability. Partner requested our Client to provide information to satisfy User Responsibilities as identified in Section 6 of the ASTM guidance.

Pursuant to ASTM E1527-13 and E1527-21, Partner requested the following site information from WJK Development Co. and RSI Equity (User of this report).

User Responsibilities		
Item	**Provided By User**	**Not Provided By User**
AAI User Questionnaire		**X**
Title Records, Environmental Liens, and AULs		**X**
Specialized Knowledge		**X**
Actual Knowledge		**X**
Valuation Reduction for Environmental Issues		**X**
Identification of Key Site Manager	**X**	
Reason for Performing Phase 1 ESA	**X**	
Prior Environmental Reports		**X**
Other		**X**

5.1 Interviews

5.1.1 Interview with Owner

The owner of the subject property since 2014, identified as Qi Liang Chang, indicated the property was historically used for recreation and is currently vacant land.

5.1.2 Interview with Report User

Please refer to Section 5.2 below for information requested from the Report User. The information requested was not received prior to the issuance of this report. Because the Report User (Client) is a lender, it is understood that the Report User would not have knowledge of the property that would significantly impact

our ability to satisfy the objectives of this assessment. The lack of this information is not considered to represent a significant data gap.

5.1.3 Interview with Key Site Manager

The owner, Qi Liang Chang, was interviewed as discussed in Section 5.1.1.

5.1.4 Interviews with Past Owners, Operators, and Occupants

Interviews with past owners, operators and occupants were not conducted since information regarding the potential for contamination at the subject property was obtained from other sources.

5.2 User Provided Information

5.2.1 Title Records, Environmental Liens, and AULs

Partner was not provided with title records or environmental lien and AUL information for review as part of this assessment.

5.2.2 Specialized Knowledge

No specialized knowledge of environmental conditions associated with the subject property was provided by the User at the time of the assessment.

5.2.3 Actual Knowledge of the User

No actual knowledge of any environmental lien or AULs encumbering the subject property or in connection with the subject property was provided by the User at the time of the assessment.

5.2.4 Valuation Reduction for Environmental Issues

No knowledge of valuation reductions associated with the subject property was provided by the User at the time of the assessment.

5.2.5 Commonly Known or Reasonably Ascertainable Information

The User did not provide information that is commonly known or reasonably ascertainable within the local community about the subject property at the time of the assessment.

5.2.6 Previous Reports and Other Provided Documentation

No previous reports or other pertinent documentation was provided to Partner for review during the course of this assessment.

6.0 SITE RECONNAISSANCE

The weather at the time of the site visit was sunny and clear. Refer to Section 1.5 for limitations encountered during the field reconnaissance and Sections 2.1 and 2.2 for subject property operations. The table below provides the site assessment details:

Site Assessment Data	
Site Assessment Performed By:	Amanda Plagge
Site Assessment Conducted On:	February 15, 2023

Partner was unaccompanied during the site reconnaissance.

No potential environmental concerns were identified during the onsite reconnaissance.

6.1 General Site Characteristics

6.1.1 Solid Waste Disposal

Solid waste is not currently generated onsite. No evidence of illegal dumping of solid waste was observed during the Partner site reconnaissance. However, several areas of trash debris were identified throughout the site.

6.1.2 Sewage Discharge and Disposal

Sanitary discharges on the subject property are directed into the municipal sanitary sewer system. The City of Lake Elsinore services the subject property vicinity. No wastewater treatment facilities were observed or reported on the subject property. No septic systems were observed or reported on the subject property.

6.1.3 Stormwater and Surface Water Drainage

Stormwater is removed from the subject property primarily by sheet flow action across the paved surfaces towards stormwater drains located in the public right of way and ground infiltration of unpaved areas on the subject property. Storm water drains discharge to a municipal owned and maintained storm sewer system. No drywells were identified on the subject property.

6.1.4 Source of Heating and Cooling

Based on the lack of onsite structures, no heating or cooling sources were observed onsite.

6.1.5 Wells and Cisterns

No aboveground evidence of wells or cisterns was observed during the site reconnaissance.

6.1.6 Wastewater

Domestic wastewater generated at the subject property is disposed by means of the sanitary sewer system. No industrial processes are currently performed at the subject property.

6.1.7 Septic Systems

No septic systems were observed or reported on the subject property.

6.1.8 Additional Site Observations

No additional general site characteristics were observed during the site reconnaissance.

6.2 Potential Environmental Hazards

6.2.1 Hazardous Substances and Petroleum Products Used or Stored at the Subject Property

No hazardous substances or petroleum products were observed on the subject property during the site reconnaissance.

6.2.2 Aboveground & Underground Hazardous Substance or Petroleum Product Storage Tanks (ASTs/USTs)

No evidence of current or former ASTs or USTs was observed during the site reconnaissance.

6.2.3 Evidence of Releases

No spills, stains, or other indications that a surficial release has occurred at the subject property were observed.

6.2.4 Polychlorinated Biphenyls (PCBs)-Containing Items

No potential PCB-containing equipment (transformers, oil-filled switches, hoists, lifts, dock levelers, hydraulic elevators, etc.) was observed on the subject property during Partner's reconnaissance.

6.2.5 Strong, Pungent, or Noxious Odors

No strong, pungent or noxious odors were evident during the site reconnaissance.

6.2.6 Pools of Liquid

No pools of liquid were observed on the subject property during the site reconnaissance.

6.2.7 Drains, Sumps, and Clarifiers

No drains, sumps, or clarifiers, other than those associated with storm water removal, were observed on the subject property during the site reconnaissance.

6.2.8 Pits, Ponds, and Lagoons

No pits, ponds, or lagoons were observed on the subject property.

6.2.9 Stressed Vegetation

No stressed vegetation was observed on the subject property.

6.2.10 Additional Potential Environmental Hazards

No additional environmental hazards, including landfill activities or radiological hazards, were observed.

6.3 Non-Scope ASTM Considerations

6.3.1 Asbestos-Containing Materials (ACMs)

Asbestos is the name given to a number of naturally occurring, fibrous silicate minerals mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The

Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1926.1101 requires certain construction materials to be presumed to contain asbestos, for purposes of this regulation. All thermal system insulation (TSI), surfacing material, and asphalt/vinyl flooring that are present in a building that have not been appropriately tested are "presumed asbestos-containing material" (PACM).

Based on the lack of onsite structures, ACMs were not considered within the scope of this assessment.

6.3.2 Lead-Based Paint (LBP)

Lead is a highly toxic metal that affects virtually every system of the body. LBP is defined as any paint, varnish, stain, or other applied coating that has 1 mg/cm2 (or 5,000 ug/g or 0.5% by weight) or more of lead. Congress passed the Residential Lead-Based Paint Hazard Reduction Act of 1992, also known as "Title X", to protect families from exposure to lead from paint, dust, and soil. Under Section 1017 of Title X, intact LBP on most walls and ceilings is not considered a "hazard," although the condition of the paint should be monitored and maintained to ensure that it does not become deteriorated. Further, Section 1018 of this law directed the Housing and Urban Development (HUD) and the US EPA to require the disclosure of known information on LBP and LBP hazards before the sale or lease of most housing built before 1978.

Due to the lack of onsite structures, LBP was not considered within the scope of this assessment.

6.3.3 Radon

Radon is a colorless, odorless, naturally occurring, radioactive, inert, gaseous element formed by radioactive decay of radium (Ra) atoms. The US EPA has prepared a map to assist National, State, and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three Radon Zones, according to the table below:

EPA Radon Zones		
EPA Zones	**Average Predicted Radon Levels**	**Potential**
Zone 1	Exceed 4.0 pCi/L	Highest
Zone 2	Between 2.0 and 4.0 pCi/L	Moderate
Zone 3	Less than 2.0 pCi/L	Low

It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the US EPA recommends site-specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures.

Radon sampling was not conducted as part of this assessment. Review of the US EPA Map of Radon Zones places the subject property in Zone 2. Based upon the radon zone classification, radon is not considered to be a significant environmental concern.

6.3.4 Lead in Drinking Water

According to available information, a public water system operated by the Elsinore Valley Municipal Water District (EVMWD) serves the subject property vicinity. According to the 2019 Annual Water Quality Report, water supplied to the subject property is in compliance with all State and Federal regulations pertaining to drinking water standards, including lead and copper. Water sampling was not conducted to verify water quality.

6.3.5 Mold

Molds are microscopic organisms found virtually everywhere, indoors and outdoors. Mold will grow and multiply under the right conditions, needing only sufficient moisture (e.g.in the form of very high humidity, condensation, or water from a leaking pipe, etc.) and organic material (e.g., ceiling tile, drywall, paper, or natural fiber carpet padding).

Based on the lack of onsite structures, mold growth and water damage were not considered within the scope of this assessment.

6.3.6 Wetlands

The subject property does not appear to be a designated wetland area based on information obtained from the United States Fish and Wildlife Service; however, a comprehensive wetlands survey would be required in order to formally determine actual wetlands on the subject property. No settling ponds, lagoons, surface impoundments, wetlands or natural catch basins were observed at the subject property during this assessment.

6.4 Adjoining Property Reconnaissance

The adjoining property reconnaissance consisted of observing the adjoining properties from the subject property premises. No items of environmental concern were identified on the adjoining properties during the site assessment, including hazardous substances, petroleum products, ASTs, USTs, evidence of releases, PCBs, strong or noxious odors, pools of liquids, sumps or clarifiers, pits or lagoons, stressed vegetation, or any other potential environmental hazards.

7.0 VAPOR ENCROACHMENT CONDITIONS

Partner conducted a limited non-intrusive vapor screening on the subject property to identify, to the extent feasible, the potential for vapor encroachment conditions (VECs) in connection with the subject property. This included consideration of chemicals of concern (COC) that may migrate as vapors into the subsurface of the subject property as a result of contaminated soil and groundwater on or near the property.

This screening utilized readily available data sources previously discussed in this Phase I ESA that includes:

- the physical setting of the subject property (Section 2.4),
- standard historical sources for the subject property, adjoining, and surrounding area (Section 3.0),
- known or potentially contaminated sites as identified from information from regulatory agencies and sites on Federal, State, tribal and local databases (Section 4.0), and
- information from the site reconnaissance (Section 6.0) of the subject property and observations of the surrounding properties.

The results of our data collection, reconnaissance, and analysis are tabulated below:

Area of Concern	Likely or Known VEC to Subject Property
Subject Property Existing Operations or Conditions	None identified that impact the subject property.
Historical Uses of the Subject Property	See Section 3.0 Historical Information
Adjoining Property Operations or Existing Conditions	None identified that impact the subject property.
Historical Uses of Adjoining Properties or Nearby Properties	None identified that impact the subject property.
Regulatory Review of sites identified on Federal, State, tribal and Local Environmental Databases which were located in the AMSD	None identified that impact the subject property.

Based on the findings of the limited non-intrusive vapor screening, a vapor intrusion concern cannot be ruled out in connection with the historic use of the subject property. As such, additional assessment is recommended.

8.0 FINDINGS AND CONCLUSIONS

Findings and Opinions

Recognized Environmental Condition

A recognized environmental condition (REC) refers to the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment. The following was identified during the course of this assessment:

- According to reviewed historic documentation, the subject property was developed with a resort from circa 1962 until 2004. This development was formerly occupied by "The Grove" from at least 1984 to 1986 and "Lakeside Health Resort" from at least 1986 to 1992. Upon further investigation, an LA Times article dated May 22, 1988, reported the former onsite developments were utilized as a retreat for officials of the laundry workers union as early as the late-1950's. According to the reviewed city directories, dry-cleaning services were conducted onsite from at least 1974 to 1977. In addition to commercial laundry facilities for the cleaning of sheets and towels for guest rooms, resorts and/or hotels sometimes provide dry-cleaning services as a hospitality amenity. Dry cleaning operations typically use chlorinated solvents, particularly tetrachloroethylene (PCE), during the dry-cleaning process. These solvents, even when properly stored and disposed, can be released from these facilities in small, frequent releases through floor drains, cracked concrete, and sewer systems. Chlorinated solvents are highly mobile chemicals that can easily accumulate in soil and migrate to groundwater beneath a facility.

  No permits to operate dry cleaning machines were identified for the subject property address with the South Coast Air Quality Management District (SCAQMD). Furthermore, no regulatory database listings were identified for the possible dry-cleaning services conducted onsite including hazardous waste generation and removal of chlorinated solvents, releases or contamination events. Nevertheless, this facility operated prior to the promulgation of the Resource Conservation and Recovery Act (RCRA) in 1980 (with amendments for small quantity generators in 1984), the legislation that regulates the handling and disposal of hazardous materials and wastes. Furthermore, the SCAQMD was not founded until 1976. As such, this facility operated virtually unregulated while at the subject property. Partner attempted to obtain any additional information regarding subsurface conditions at the subject property; however, none was available. Based on the type of chemicals associated with dry cleaning services and lack of regulatory oversight at the time of operation, the former onsite dry-cleaning services represents a REC.

- The subject property was historically used for agricultural purposes. There is a potential that agricultural chemicals, such as pesticides, herbicides and fertilizers, were used onsite, and that the subject property has been impacted by the use of such agricultural chemicals. Due to the planned redevelopment of the subject property for residential and/or commercial use, this potential is considered an REC.

Controlled Recognized Environmental Condition

A controlled recognized environmental condition (CREC) refers to a REC affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities with hazardous substances or petroleum products allowed to remain in place subject to implementation of required controls (for example, activity and use limitations or other property use limitations). The following was identified during the course of this assessment:

- Partner did not identify any CRECs during the course of this assessment.

Historical Recognized Environmental Condition

A historical recognized environmental condition (HREC) refers to a previous release of hazardous substances or petroleum products affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities and meeting unrestricted use criteria established by the applicable regulatory authority or authorities without subjecting the subject property to any controls (for example, activity and use limitations or other property use limitations). The following was identified during the course of this assessment:

- Partner did not identify any HRECs during the course of this assessment.

Business Environmental Risk

A *Business Environmental Risks (BER)* is a risk which can have a material environmental or environmentally driven impact on the business associated with the current or planned use of commercial real estate, not necessarily related to those environmental issues required to be investigated in this practice. The following was identified during the course of this assessment:

- Partner did not identify any BERs during the course of this assessment.

Significant Data Gaps

No significant data gaps affecting the ability of the Environmental Professional to identify a REC were encountered during this assessment.

Conclusions and Recommendations

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM E1527-13 and E1527-21 of 32281 Riverside Drive in Lake Elsinore, Riverside County, California (the "subject property"). Any exceptions to, or deletions from, this practice are described in Section 1.5 of this report.

This assessment has revealed evidence of recognized environmental conditions and/or environmental issues in connection with the subject property. Based on the conclusions of this assessment, Partner recommends the following:

- A limited subsurface investigation should be conducted in order to determine the presence or absence of soil, soil vapor, and/or groundwater contamination due to the historical use of the subject property.

9.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

Partner has performed a Phase I Environmental Site Assessment of the property located at 32281 Riverside Drive in Lake Elsinore, Riverside County, California in conformance with the scope and limitations of the protocol and the limitations stated earlier in this report. Exceptions to or deletions from this protocol are discussed earlier in this report.

By signing below, Partner declares that, to the best of our professional knowledge and belief, we meet the definition of *Environmental Professional* as defined in §312.10 of 40 CFR §312. Partner has the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the subject *property*. Partner has developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Prepared By:



Amanda Plagge
Environmental Professional

Reviewed By:



Elizabeth Shule
Senior Project Manager

10.0 REFERENCES

Reference Documents

American Society for Testing and Materials, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, ASTM Designation: E1527-13 and E1527-21

Environmental Risk Information Services (ERIS), Database Report, February 2023

Federal Emergency Management Agency, Federal Insurance Administration, National Flood Insurance Program, Flood Insurance Map, accessed via internet, February 2023

United States Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey, accessed via the internet, February 2023

United States Environmental Protection Agency, EPA Map of Radon Zones (Document EPA-402-R-93-071), accessed via the internet, February 2023

United States Fish and Wildlife Service, National Wetlands Inventory, accessed via the internet, February 2023

United States Geological Survey, accessed via the Internet, February 2023

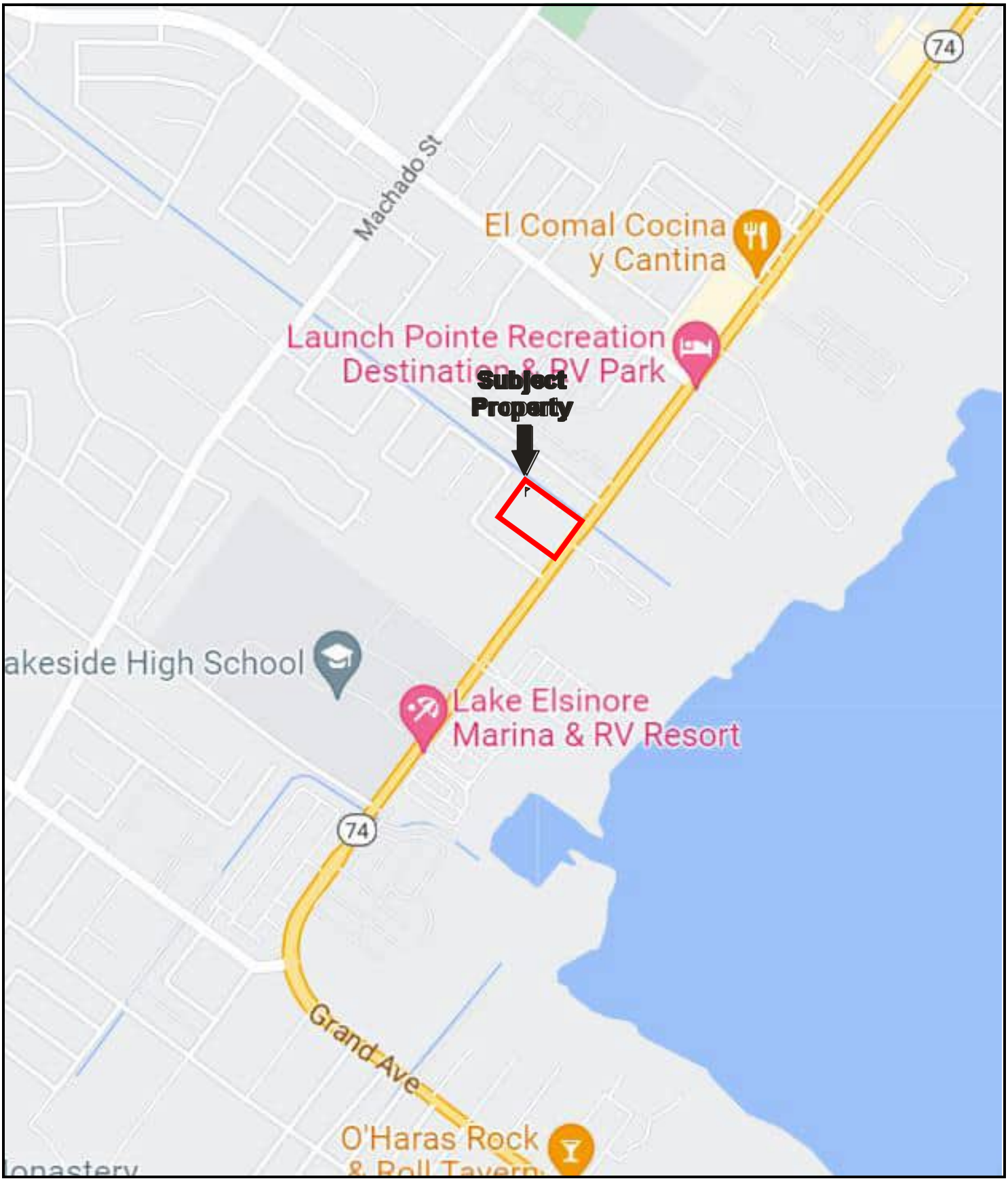
United States Geological Survey Topographic Map 2021, 7.5-minute series, accessed via internet, February 2023

FIGURES

1 SITE LOCATION MAP

2 SITE PLAN

3 TOPOGRAPHIC MAP



N

Drawing Not To Scale

KEY:
Subject Property

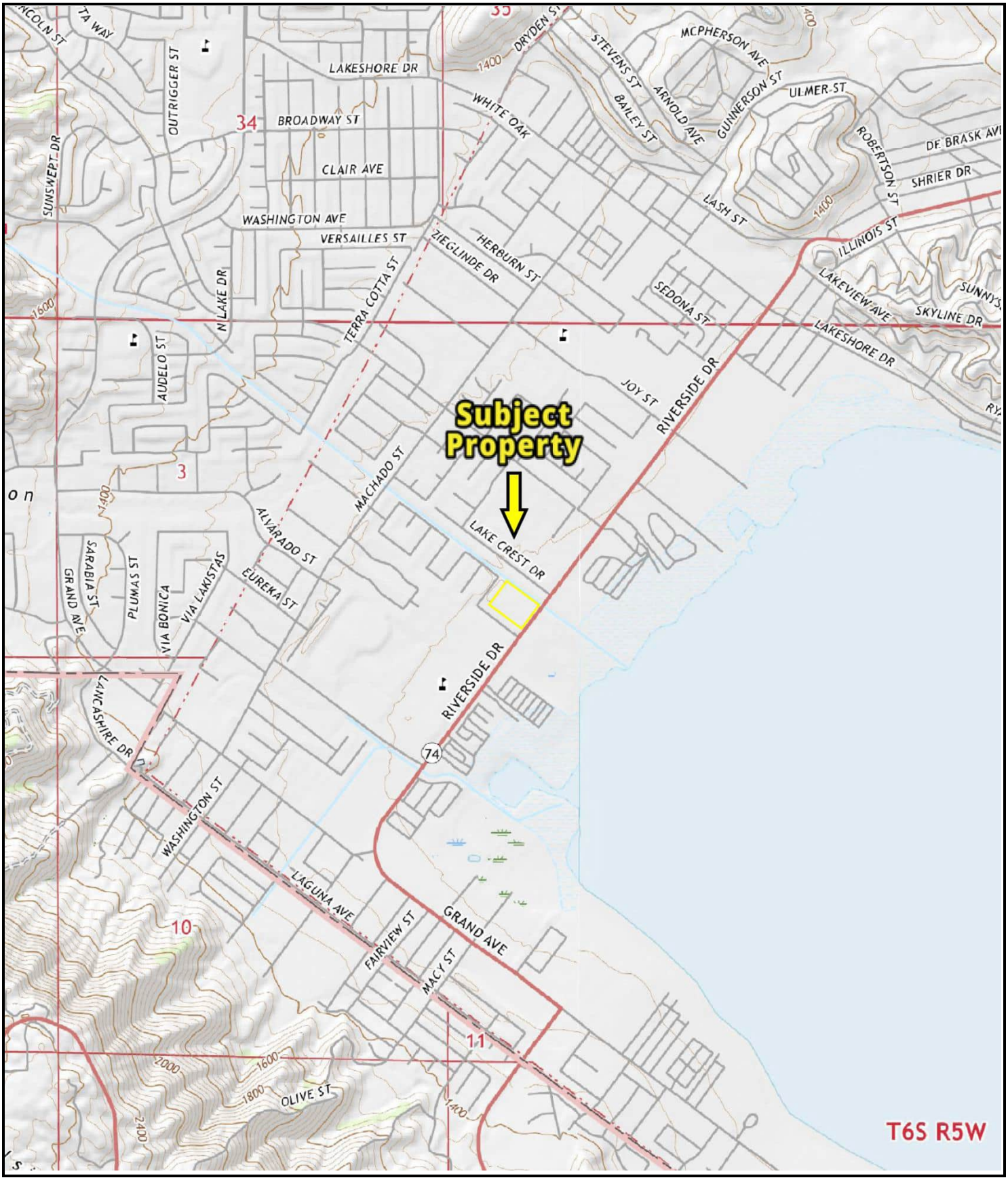
FIGURE 1: SITE LOCATION MAP
Project No. 23-397410.1

PARTNER



FIGURE 2: SITE PLAN
Project No. 23-397410.1

PARTNER



N

USGS 7.5 Minute *Alberhill, CA* Quadrangle
Created: 2021

KEY:
Subject Property

FIGURE 3: TOPOGRAPHIC MAP
Project No. 23-397410.1

PARTNER

APPENDIX A: SITE PHOTOGRAPHS



1. View of the subject property facing northwest from Riverside Drive



2. View of the subject property facing north from Riverside Drive



3. View of the entrance on the eastern corner of the property



4. View of the southeastern border of the subject property facing southwest



5. View of the southeastern border of the subject property facing northeast



6. View of the central portion of the subject property from the southeastern border



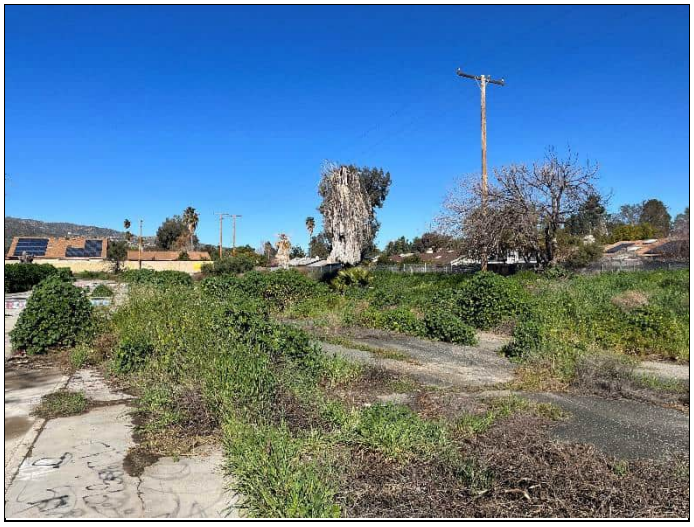
7. View of the northeast foundation of the former onsite structure



8. View of the central portion of the property facing west from the eastern corner of the property



9. View of the southeastern foundation of the former onsite structure



10. View of the northeastern border of the subject property facing northwest from the eastern corner



11. View of the central potion of the property facing southwest from the northeastern border



12. View of typical trash debris throughout the subject property



13. View of the northern corner of the subject property



14. View of the northwestern foundation of the former onsite structure



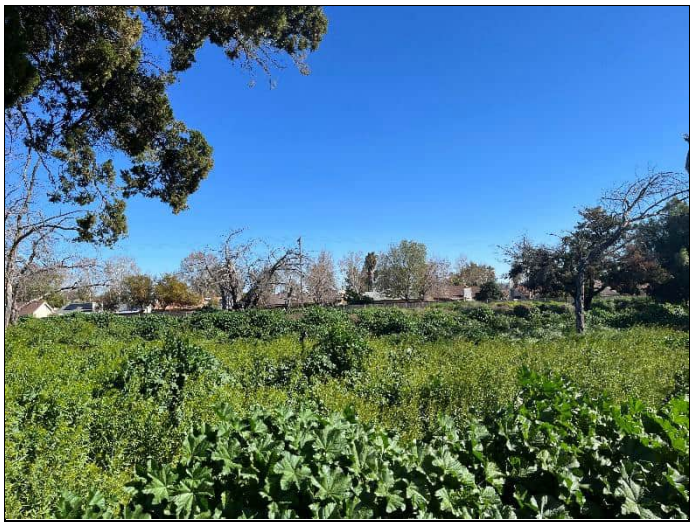
15. View of the southwestern foundation of the former onsite structure



16. View of the western corner of the subject property



17. View of the southwestern border of the subject property from the northwestern border



18. View of the central portion of the subject property facing north from the southern portion of the site



19. View of the southeastern foundation of the former onsite structure



20. View of the southern corner of the subject property



21. View of the adjoining properties to the northeast of the subject property across a canal



22. View of the adjoining properties to the southeast of the subject property across Riverside Drive



23. View of the adjoining properties to the southwest of the subject property



24. View of the adjoining properties to the northwest of the subject property

APPENDIX B: HISTORICAL/REGULATORY DOCUMENTATION

PARTNER

HISTORICAL AERIALS

Project Property: 32281 Riverside Drive
32281 Riverside Drive
RIVERSIDE CA 92530

Project No: 23-397410.1

Requested By: Partner Engineering and Science, Inc.

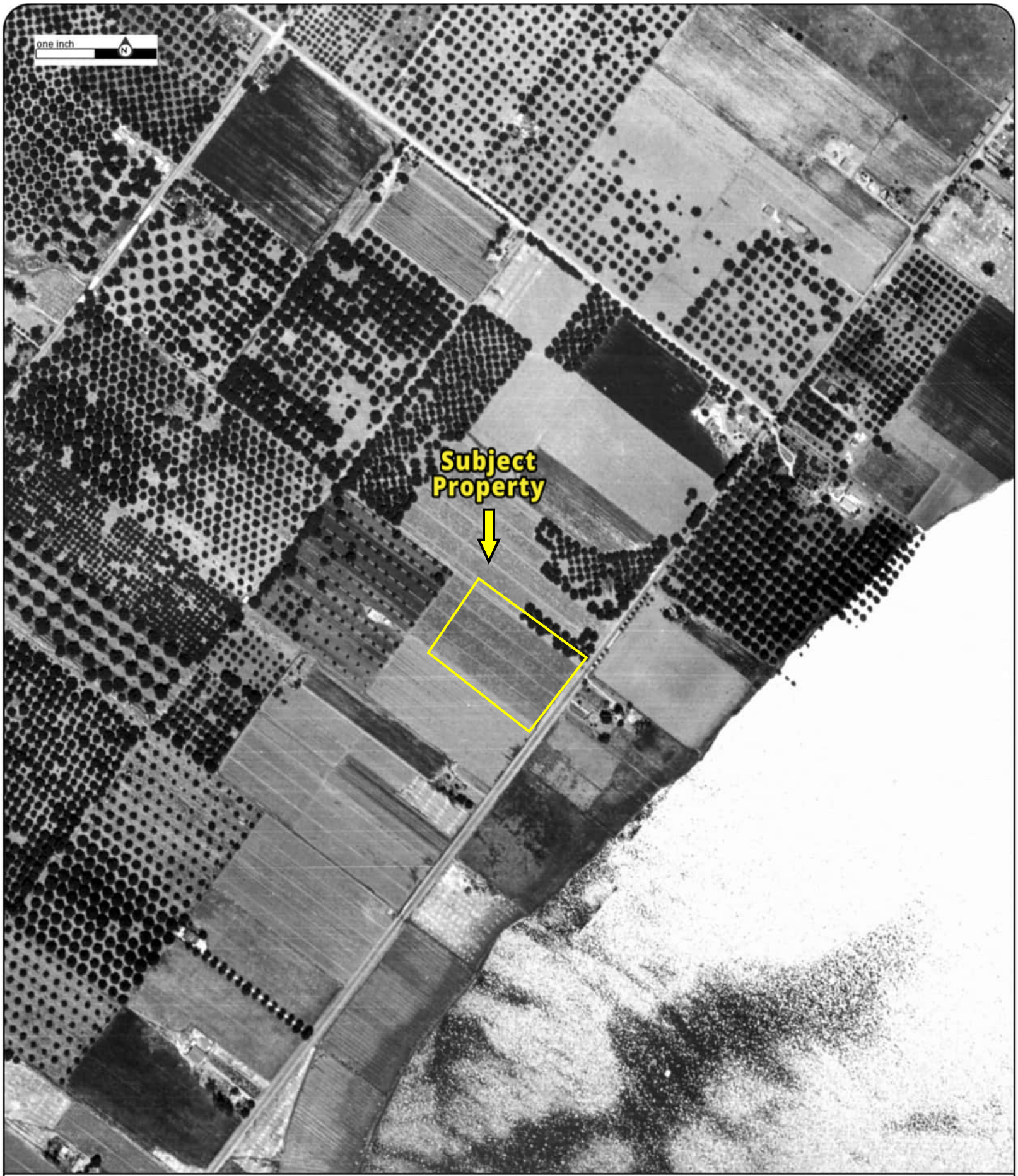
Order No: 23013100616

Date Completed: February 01,2023

Aerial Maps included in this report are produced by the sources listed above and are to be used for research purposes including a phase I report. Maps are not to be resold as commercial property. ERIS provides no warranty of accuracy or liability. The information contained in this report has been produced using aerial photos listed in above sources by ERIS Information Inc. (in the US) and ERIS Information Limited Partnership (in Canada), both doing business as 'ERIS'. The maps contained in this report do not purport to be and do not constitute a guarantee of the accuracy of the information contained herein. Although ERIS has endeavored to present information that is accurate, ERIS disclaims, any and all liability for any errors, omissions, or inaccuracies in such information and data, whether attributable to inadvertence, negligence or otherwise, and for any consequences arising therefrom. Liability on the part of ERIS is limited to the monetary value paid for this report.

Environmental Risk Information Services
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1.866.517.5204 | info@erisinfo.com | erisinfo.com

Date	Source	Scale	Comments
1938	Agricultural Stabilization & Conserv. Service	1" = 500'	
1949	Agricultural Stabilization & Conserv. Service	1" = 500'	
1953	Agricultural Stabilization & Conserv. Service	1" = 500'	
1962	FAIRCHILD	1" = 500'	
1967	Agricultural Stabilization & Conserv. Service	1" = 500'	
1976	Private	1" = 500'	
1980	Private	1" = 500'	
1985	United States Geological Survey	1" = 500'	
1994	United States Geological Survey	1" = 500'	
2002	United States Geological Survey	1" = 500'	
2005	United States Department of Agriculture	1" = 500'	
2009	United States Department of Agriculture	1" = 500'	
2012	United States Department of Agriculture	1" = 500'	
2014	United States Department of Agriculture	1" = 500'	
2016	United States Department of Agriculture	1" = 500'	
2018	United States Department of Agriculture	1" = 500'	
2020	United States Department of Agriculture	1" = 500'	



Year: 1938
Source: ASCS
Scale: 1" = 500'
Comment:

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Approx Center: -117.37792734,33.67341244

Order No: 23013100616

PARTNER

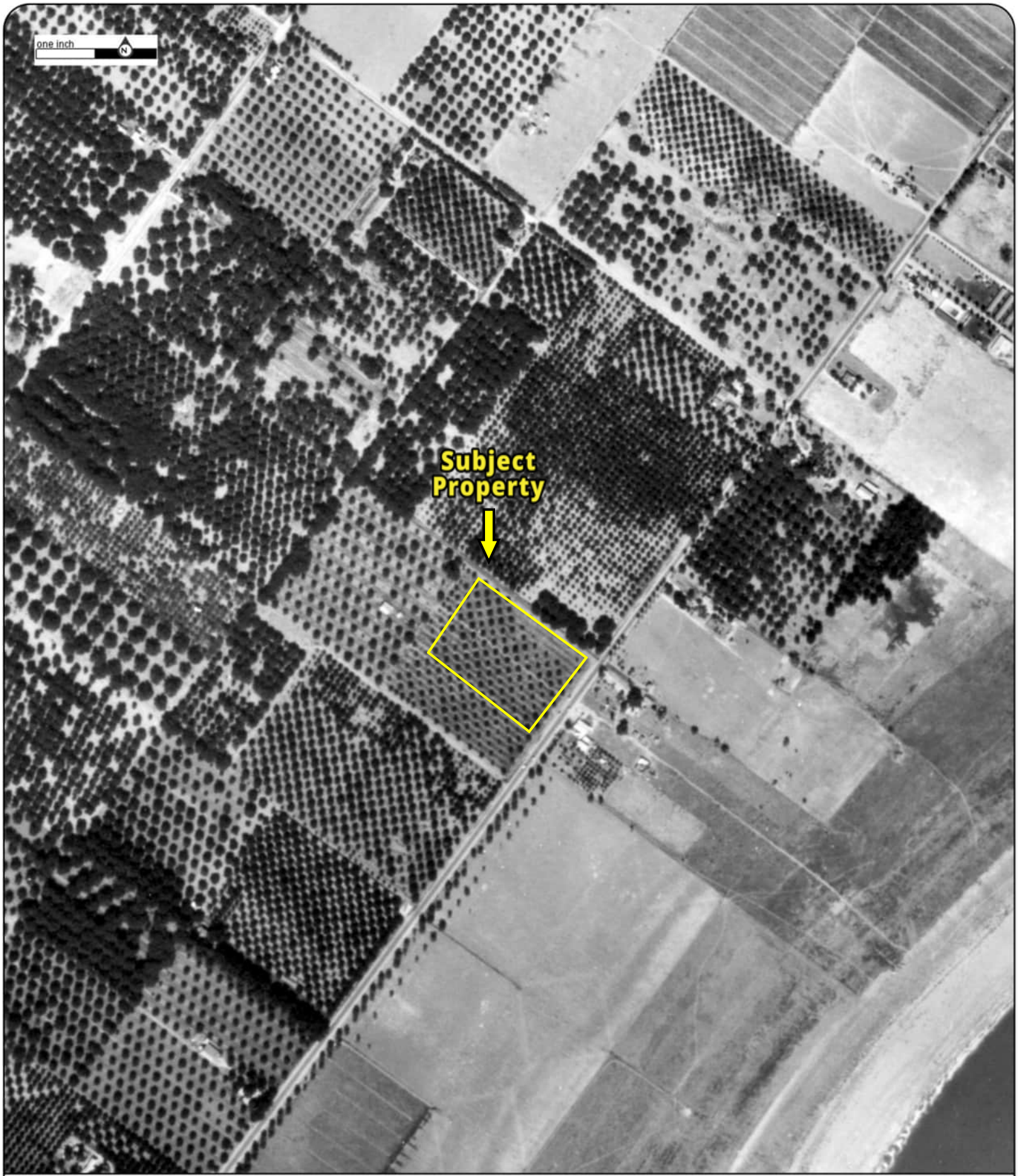


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Order No: 23013100616

PARTNER



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PARTNER

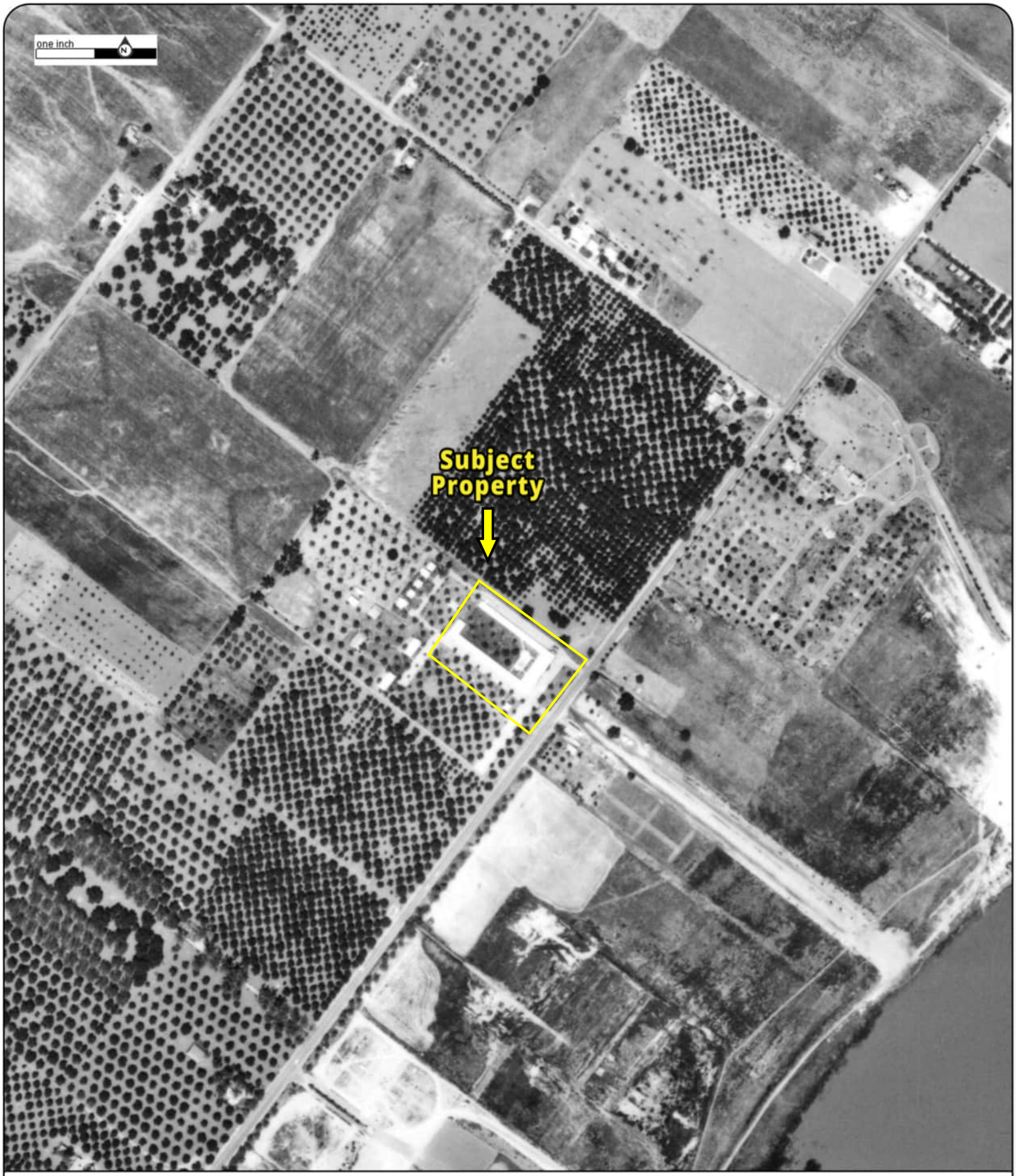


Year: 1962
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Order No: 23013100616

PARTNER



Year: 1967
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Approx Center: -117.37792734,33.67341244

Order No: 23013100616

PARTNER



Year: 1976
Source: PRIVATE
Scale: 1" = 500'
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Approx Center: -117.37792734,33.67341244

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PARTNER

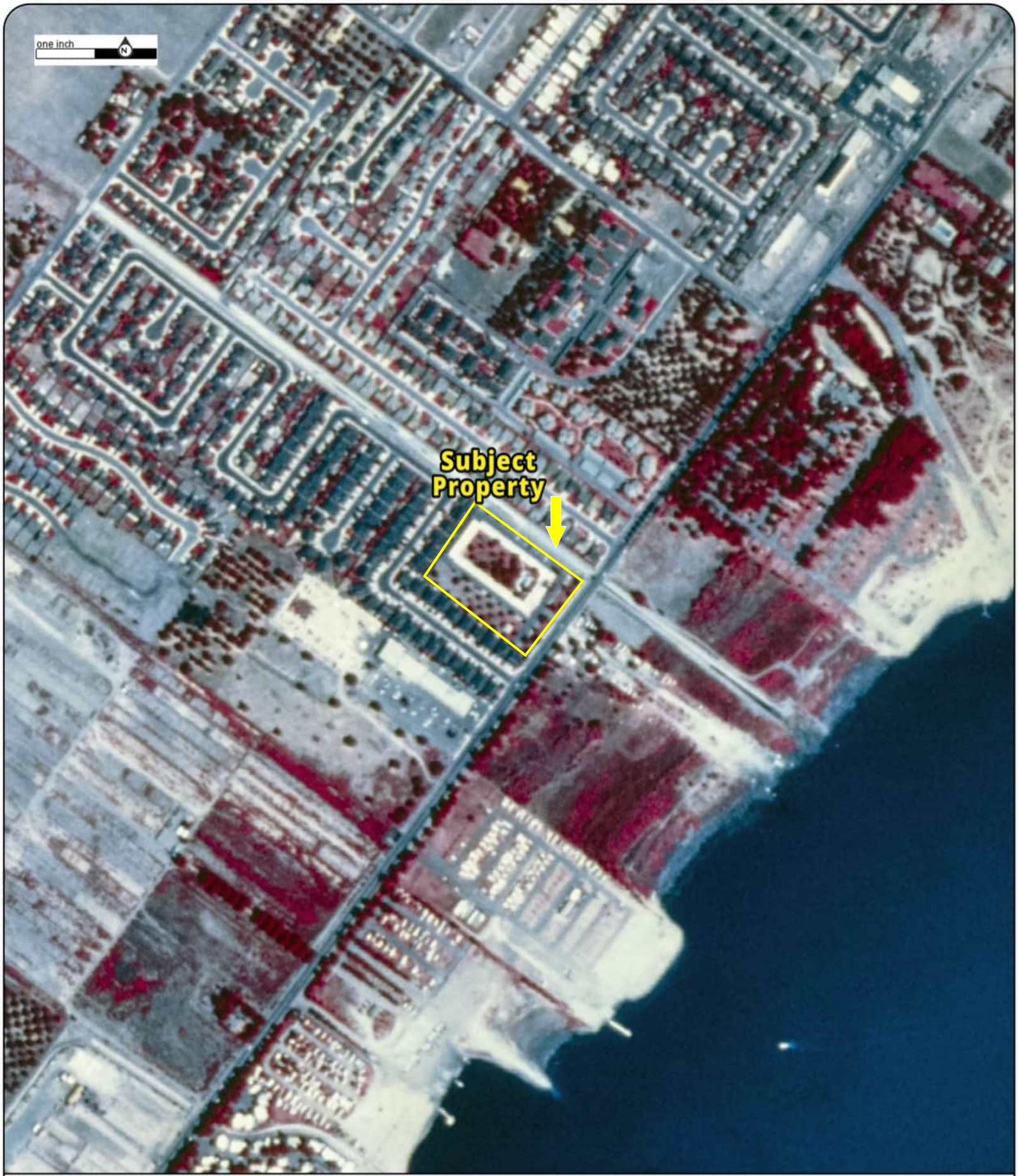


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Order No: 23013100616

PARTNER



Year: 1985
Source: USGS
Scale: 1" = 500'
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Approx Center: -117.37792734,33.67341244

Order No: 23013100616

PARTNER



Year: 1994
Source: USGS
Scale: 1" = 500'
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Approx Center: -117.37792734,33.67341244

Order No: 23013100616

PARTNER



Year: 2002
Source: USGS
Scale: 1" = 500'
Comment:

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Approx Center: -117.37792734,33.67341244

Order No: 23013100616

PARTNER



Year: 2005
Source: USDA
Scale: 1" = 500'
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Approx Center: -117.37792734,33.67341244

Order No: 23013100616

PARTNER



Year: 2009
Source: USDA
Scale: 1" = 500'
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Approx Center: -117.37792734,33.67341244

Order No: 23013100616

PARTNER



Year: 2012
Source: USDA
Scale: 1" = 500'
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Approx Center: -117.37792734,33.67341244

Order No: 23013100616

PARTNER

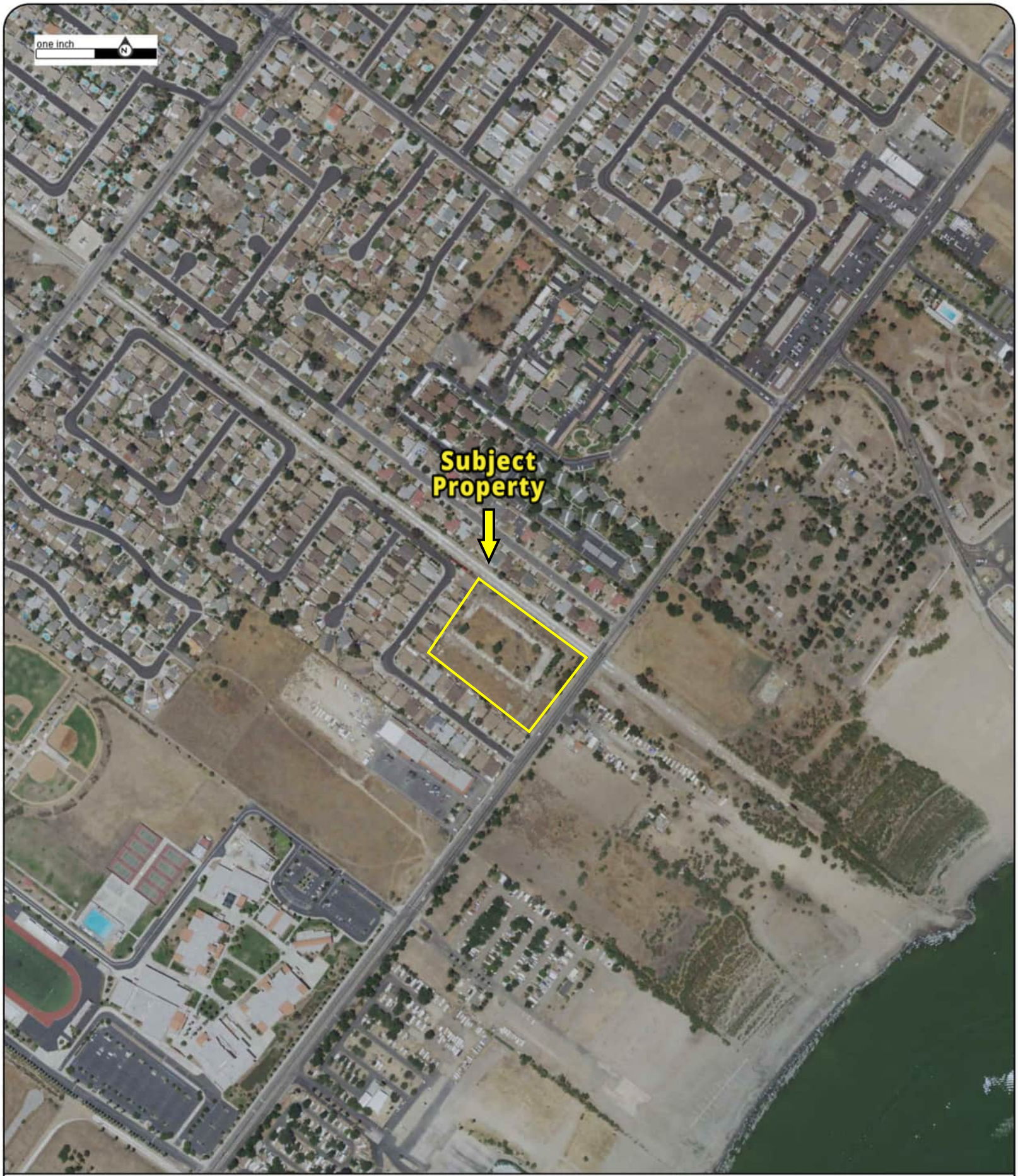


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Order No: 23013100616

PARTNER



Year: 2016
Source: USDA
Scale: 1" = 500'
Comment:

Address: 32281 Riverside Drive, RIVERSIDE, CA
Approx Center: -117.37792734,33.67341244

Order No: 23013100616

PARTNER



Year: 2018
Source: USDA
Scale: 1" = 500'
Comment:

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Approx Center: -117.37792734,33.67341244

Order No: 23013100616

PARTNER



Year: 2020
Source: USDA
Scale: 1" = 500'
Comment:

Address: 32281 Riverside Drive, RIVERSIDE, CA
Approx Center: -117.37792734,33.67341244

Order No: 23013100616

PARTNER

FIRE INSURANCE MAPS

Project Property:	32281 Riverside Drive 32281 Riverside Drive RIVERSIDE CA 92530
Project No:	23-397410.1
Requested By:	Partner Engineering and Science, Inc.
Order No:	23013100616
Date Completed:	February 01, 2023

Please note that no information was found for your site or adjacent properties.

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CITY DIRECTORY

Project Property:	*32281 Riverside Drive* *32281 Riverside Drive* *LAKE ELSINORE,CA 92530*
Project No:	*23-397410.1*
Requested By:	*Partner Engineering and Science, Inc.*
Order No:	*23013100616*
Date Completed:	*February 16, 2023*

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February 16, 2023
RE: CITY DIRECTORY RESEARCH
32281 Riverside Drive
LAKE ELSINORE,CA 92530

Thank you for contacting ERIS for an City Directory Search for the site described above. Our staff has conducted a reverse listing City Directory search to determine prior occupants of the subject site and adjacent properties. We have provided the nearest addresses(s) when adjacent addresses are not listed. If we have searched a range of addresses, all addresses in that range found in the Directory are included.

Note: Reverse Listing Directories generally are focused on more highly developed areas. Newly developed areas may be covered in the more recent years, but the older directories will tend to cover only the "central" parts of the city. To complete the search, we have either utilized the ACPL, Library of Congress, State Archives, and/or a regional library or history center as well as multiple digitized directories. These do not claim to be a complete collection of all reverse listing city directories produced.

ERIS has made every effort to provide accurate and complete information but shall not be held liable for missing, incomplete or inaccurate information. To complete this search we used the general range(s) below to search for relevant findings. If you believe there are additional addresses or streets that require searching please contact us at 866-517-5204.

Search Criteria:
ALL of Eisenhower Dr
BEG-3525 of Lake Crest Dr
ALL of Monroe St
32000-32400 of Riverside Dr
Search Notes:

Search Results Summary

Date	Source	Comment
2022	DIGITAL BUSINESS DIRECTORY	
2020	DIGITAL BUSINESS DIRECTORY	
2016	DIGITAL BUSINESS DIRECTORY	
2012	DIGITAL BUSINESS DIRECTORY	
2008	DIGITAL BUSINESS DIRECTORY	
2003	DIGITAL BUSINESS DIRECTORY	
2001	HAINES	
1996	HAINES	
1991	HAINES	
1986	HAINES	
1984	HAINES	
1977	HAINES	
1974	HAINES	
1971	HAINES	

2022 EISENHOWER DR

SOURCE: DIGITAL BUSINESS DIRECTORY

3503 **CHERYL LASHINSKI**...*RESIDENTIAL*
3505 **CHERI BARRY**...*RESIDENTIAL*
3506 **GERALD BENTLUY**...*RESIDENTIAL*
3507 **JEROME MORENO**...*RESIDENTIAL*
3507 **RODOLFO MAYLLEN**...*RESIDENTIAL*
3508 **JOSE DE JESUS GODOY**...*RESIDENTIAL*
3509 **ELEAZAR RAMIREZ**...*RESIDENTIAL*
3600 **BRYAN ERETH**...*RESIDENTIAL*
3600 **JODI KRIVITSKY**...*RESIDENTIAL*
3600 **JOSHUA PAUOSON**...*RESIDENTIAL*
3602 **LAURA CALDERON**...*RESIDENTIAL*
3603 **SCOTT BARKER**...*RESIDENTIAL*
3604 **ARNOLDO ESTRADA**...*RESIDENTIAL*
3608 **MAGDALENA OCAMPO**...*RESIDENTIAL*
3608 **ROBERT VELOZ**...*RESIDENTIAL*
3609 **CINDY VEGA**...*RESIDENTIAL*
3700 **WALTER QUINTOS**...*RESIDENTIAL*
3701 **HILDA OCON**...*RESIDENTIAL*
3702 **LINDA BENTLEY**...*RESIDENTIAL*
3702 **N LIVERMORE**...*RESIDENTIAL*
3703 **FIDENCIO DELGADO**...*RESIDENTIAL*
3706 **JOSE CRUZ**...*RESIDENTIAL*
3706 **RAY CRUZ**...*RESIDENTIAL*
3707 **ENRIQUE LUQUE**...*RESIDENTIAL*
3709 **ROMAN MENDOZA**...*RESIDENTIAL*
3709 **ROSA TREJO**...*RESIDENTIAL*
3800 **STEFANIE JACKSON**...*RESIDENTIAL*
3804 **MONIQUE ROSALES**...*RESIDENTIAL*
3805 **24 HOUR HANDYMAN**...*UNCLASSIFIED ESTABLISHMENTS*
3806 **FRANCISCO CORNEJO**...*RESIDENTIAL*
3808 **LAURA ATKINSON**...*RESIDENTIAL*
3809 **EVA SPRUELL**...*RESIDENTIAL*
3901 **JUAN BARRAGAN**...*RESIDENTIAL*
3901 **OPHELIA EHRET**...*RESIDENTIAL*
3903 **BLANCA PELAYO**...*RESIDENTIAL*
3903 **JOSE PELAYO**...*RESIDENTIAL*

2022 LAKE CREST DR

SOURCE: DIGITAL BUSINESS DIRECTORY

3496 **SHELDON JONES**...*RESIDENTIAL*
3499 **STEVE PRADO**...*RESIDENTIAL*
3500 **ARTURO MENDOZA**...*RESIDENTIAL*
3500 **VIRGINIA GECK**...*RESIDENTIAL*
3500 **WILFREDO SANCHEZ**...*RESIDENTIAL*
3503 **ROCIO ROMERO**...*RESIDENTIAL*
3505 **HENRY DELANO**...*RESIDENTIAL*
3507 **DOMINGA CHAMU**...*RESIDENTIAL*
3508 **RICHARD GUILD**...*RESIDENTIAL*
3509 **DEMETRIO CONTRERAS**...*RESIDENTIAL*
3510 **HECTOR ESQUEDA**...*RESIDENTIAL*
3512 **JOSEPH CAVALLUCCI**...*RESIDENTIAL*
3513 **FRANCISCO TAPIA**...*RESIDENTIAL*
3515 **ARTURO COLUNGA**...*RESIDENTIAL*
3516 **EDWARD ALVARADO**...*RESIDENTIAL*
3516 **JOSE ARELIZ**...*RESIDENTIAL*
3516 **STEVEN SLADEK**...*RESIDENTIAL*
3517 **BRIAN OIEN**...*RESIDENTIAL*
3517 **LISA ESQUEZA**...*RESIDENTIAL*
3518 **IRMA BEDOLLA**...*RESIDENTIAL*
3521 **M OLESON**...*RESIDENTIAL*
3522 **CATHY LEE**...*RESIDENTIAL*
3522 **JASON SOLVEY**...*RESIDENTIAL*
3523 **CLAUDIA VERA**...*RESIDENTIAL*
3523 **JOSEPH LAFONTAINE**...*RESIDENTIAL*
3524 **OSCAR PEREZ**...*RESIDENTIAL*
3525 **PABLO DOMINGUEZ**...*RESIDENTIAL*

2022 MONROE ST

SOURCE: DIGITAL BUSINESS DIRECTORY

1100 **HATSUE ROSS**...*RESIDENTIAL*
1103 **KATRINA GARRETT**...*RESIDENTIAL*
1103 **SAMANTHA BURROWBRIDGE**...*RESIDENTIAL*
1105 **MARIO BUENROSTRO**...*RESIDENTIAL*
1105 **RAYMOND VEGA**...*RESIDENTIAL*
1106 **MICHAEL MOORE**...*RESIDENTIAL*
1109 **DAVID CAYETANO**...*RESIDENTIAL*
1110 **SEAN SHEEN**...*RESIDENTIAL*
1112 **RAMON RAMIREZ**...*RESIDENTIAL*
1113 **ABELINA GONZALEZ**...*RESIDENTIAL*
1114 **FRANCISCO OCHOA**...*RESIDENTIAL*
1115 **DANIEL CORONADO**...*RESIDENTIAL*
1115 **GLADYS GONZALEZ**...*RESIDENTIAL*
1117 **JOSE MENA**...*RESIDENTIAL*
1117 **JUDY NATERA**...*RESIDENTIAL*
1118 **MARTHA MEZA**...*RESIDENTIAL*
1119 **JUAN NAJERA**...*RESIDENTIAL*
1120 **JENNIFER GURROLA**...*RESIDENTIAL*
1120 **MARIO GURROLA**...*RESIDENTIAL*
1122 **RON FRIASER**...*RESIDENTIAL*
1122 **RONDAL FRAISER**...*RESIDENTIAL*
1123 **HERBERT BARAJAS**...*RESIDENTIAL*
1131 **FRANCISCO FARIAS**...*RESIDENTIAL*
1133 **ROSALBA PRECIADO**...*RESIDENTIAL*

2022 RIVERSIDE DR

SOURCE: DIGITAL BUSINESS DIRECTORY

88 total records. Part 1 of 2

32000 **A CREW ENVIRONMENTAL INC**...*FIRE DAMAGE RESTORATION*
32000 **BEATRICE BARTLETT**...*RESIDENTIAL*
32000 **BETTY BELL**...*RESIDENTIAL*
32000 **DORIS HERT**...*RESIDENTIAL*
32000 **EDWARD DELORME**...*RESIDENTIAL*
32000 **ERIC DOMAGLA**...*RESIDENTIAL*
32000 **FRED BLASKOVICH**...*RESIDENTIAL*
32000 **GEORGE RICHMOND**...*RESIDENTIAL*
32000 **GERMA ALBARENGA**...*RESIDENTIAL*
32000 **GUY SCOTT**...*RESIDENTIAL*
32000 **HERSHAL FITZHUGH**...*RESIDENTIAL*
32000 **JAMES PALMER**...*RESIDENTIAL*
32000 **JANET LAMPTON**...*RESIDENTIAL*
32000 **LAKE PARK RV RESORT & LODGE**...*CAMPGROUNDS*
32000 **LAKE PARK RV RESORT & LODGE**...*HOTELS & MOTELS*
32000 **LAKE PARK RV RESORT LODGE**...*RESORTS*
32000 **LARRY MOSKOWITZ**...*RESIDENTIAL*
32000 **MARTINA MAYORAL**...*RESIDENTIAL*
32000 **MIKE FRANCISCO**...*RESIDENTIAL*
32000 **OLIVER PADILLA**...*RESIDENTIAL*
32000 **ON SITE AUTO GLASS SVC**...*AUTOMOBILE REPAIRING & SERVICE*
32000 **RICHARD JOHNS**...*RESIDENTIAL*
32000 **RUBY'S HOUSEKEEPING**...*HOUSE CLEANING*
32000 **SUSAN CYPHER**...*RESIDENTIAL*
32040 **BOBBER**...*NONCLASSIFIED ESTABLISHMENTS*
32040 **CRYSTAL PICKETT**...*RESIDENTIAL*
32040 **PYRAMID ENTERPRISES INC**...*CAMPGROUNDS*
32040 **ROCKY MOUNTAIN RECREATION**...*BUSINESS SERVICES NEC*
32040 **ROCKY MOUNTAIN RECREATION**...*BUSINESS MANAGEMENT CONSULTANTS*
32209 **BARBARA ROBERTS**...*RESIDENTIAL*
32209 **DENIS REILLY**...*RESIDENTIAL*
32209 **DIMITRA GORDON**...*RESIDENTIAL*
32209 **DORIS HOUSTON**...*RESIDENTIAL*
32209 **GENE LOPEZ**...*RESIDENTIAL*
32209 **HERMAN GRAY**...*RESIDENTIAL*
32209 **ISIDRO OROZCO**...*RESIDENTIAL*
32209 **JESSICA KENNY**...*RESIDENTIAL*
32209 **JILL ALLEN**...*RESIDENTIAL*
32209 **JORGE GUTIERREZ**...*RESIDENTIAL*
32209 **KIMBERLY ANN BUCHANAN**...*RESIDENTIAL*
32209 **LAKE VIEW APARTMENTS**...*APARTMENTS*
32209 **LAKE VIEW APARTMENTS**...*FEDERAL GOVERNMENT CONTRACTORS*
32209 **LUCETTE GUILLORY**...*RESIDENTIAL*
32209 **MARIE POVILAT**...*RESIDENTIAL*
32209 **MARYLYUN LINDLEY**...*RESIDENTIAL*
32209 **PATRICIA HEROLD**...*RESIDENTIAL*
32209 **PEGGIE DELROY**...*RESIDENTIAL*
32209 **ROGER FATLAND**...*RESIDENTIAL*
32209 **SANIE SABEH**...*RESIDENTIAL*
32209 **SARAH PITTS**...*RESIDENTIAL*
32209 **SHAWONA ROYAL**...*RESIDENTIAL*
32209 **STEPHEN LOLLOCK**...*RESIDENTIAL*
32209 **TAMMY ELLIOTT**...*RESIDENTIAL*
32209 **VERONICA JOHNSON**...*RESIDENTIAL*
32211 **ANDREW ABBASCIA**...*RESIDENTIAL*
32211 **DIANNA CARTER**...*RESIDENTIAL*
32211 **DONNIE HALL**...*RESIDENTIAL*
32211 **DOROTHY ALLEN**...*RESIDENTIAL*
32211 **HOPE HERNANDEZ**...*RESIDENTIAL*
32211 **ISABELLA MARINO**...*RESIDENTIAL*
32211 **ISIDORO SOTO**...*RESIDENTIAL*
32211 **KATHLEEN HARPER**...*RESIDENTIAL*
32211 **KIMBERLY LOVE**...*RESIDENTIAL*
32211 **MARIA SALCIDO**...*RESIDENTIAL*
32211 **MARY SANCHEZ**...*RESIDENTIAL*
32211 **MICHELE SERRANO**...*RESIDENTIAL*
32211 **MITCHELL DAVIS**...*RESIDENTIAL*

2022 RIVERSIDE DR

SOURCE: DIGITAL BUSINESS DIRECTORY

Part 2 of 2

32211 **ROSAURA RAYA**...*RESIDENTIAL*
32211 **SHELESIA WATERS**...*RESIDENTIAL*
32211 **STEPHANIE LOPEZ**...*RESIDENTIAL*
32211 **SUZETTE LARUE**...*RESIDENTIAL*
32211 **VERONICA RODRIGUEZ**...*RESIDENTIAL*
32211 **VICTOR OROSCO**...*RESIDENTIAL*
32211 **YORILIA BELTRAN**...*RESIDENTIAL*
32310 **COYOTE COVE LAKESIDE CAMPING**...*CAMPGROUNDS*
32310 **MILA SANGALANG**...*RESIDENTIAL*
32310 **NATHANIEL ERWIN JR**...*RESIDENTIAL*
32310 **PAUL RUDDY**...*RESIDENTIAL*
32391 **ALL PRO ENGINE MOWER SALES**...*LAWN MOWERS*
32391 **CAMPERS OTPOST AMRCN SOUTHWEST**...*NONCLASSIFIED ESTABLISHMENTS*
32391 **MOOSE LODGE 1021**...*NONPROFIT ORGANIZATIONS*
32391 **MOOSE LODGE 1021**...*HOTELS & MOTELS*
32391 **MOOSE LODGE 1021**...*FRATERNAL ORGANIZATIONS*
32391 **NUEVA CREACION ASAMBLEA DE DS**...*RELIGIOUS ORGANIZATIONS*
32391 **NUEVA CREACION CHURCH OF GOD**...*CHURCHES*
32391 **WALLS INSPECTION CO**...*INSPECTION SERVICE*
32397 **JAVA HUT**...*COFFEE SHOPS*

2020 EISENHOWER DR

SOURCE: DIGITAL BUSINESS DIRECTORY

3503 **CHERYL LASHINSKI**...*RESIDENTIAL*
3505 **CHERI BARRY**...*RESIDENTIAL*
3506 **GERALD BENTLUY**...*RESIDENTIAL*
3506 **TERESA WILSON**...*RESIDENTIAL*
3507 **JEROME MORENO**...*RESIDENTIAL*
3507 **RODOLFO MAYLLEN**...*RESIDENTIAL*
3508 **JOSE DE JESUS GODOY**...*RESIDENTIAL*
3508 **LOURDEZ GODOY**...*RESIDENTIAL*
3509 **ELEAZAR RAMIREZ**...*RESIDENTIAL*
3600 **BRYAN ERETH**...*RESIDENTIAL*
3600 **JOSHUA PAUOSON**...*RESIDENTIAL*
3602 **LAURA CALDERON**...*RESIDENTIAL*
3603 **JULIA BARKER**...*RESIDENTIAL*
3604 **ARNOLDO ESTRADA**...*RESIDENTIAL*
3607 **SEGUNDO DIAZ**...*RESIDENTIAL*
3608 **ISABEL VELOZ**...*RESIDENTIAL*
3608 **MAGDALENA OCAMPO**...*RESIDENTIAL*
3609 **CINDY VEGA**...*RESIDENTIAL*
3700 **CAROLINE QUINTOS**...*RESIDENTIAL*
3702 **LINDA BENTLEY**...*RESIDENTIAL*
3702 **N LIVERMORE**...*RESIDENTIAL*
3703 **FIDENCIO DELGADO**...*RESIDENTIAL*
3706 **JOSE CRUZ**...*RESIDENTIAL*
3707 **ENRIQUE LUQUE**...*RESIDENTIAL*
3709 **ROMAN MENDOZA**...*RESIDENTIAL*
3709 **ROSA TREJO**...*RESIDENTIAL*
3800 **STEFANIE JACKSON**...*RESIDENTIAL*
3803 **MEENA ISLAM**...*RESIDENTIAL*
3804 **MONIQUE ROSALES**...*RESIDENTIAL*
3805 **24 HOUR HANDYMAN**...*UNCLASSIFIED ESTABLISHMENTS*
3806 **FRANCISCO CORNEJO**...*RESIDENTIAL*
3808 **LAURA ATKINSON**...*RESIDENTIAL*
3809 **EVA SPRUELL**...*RESIDENTIAL*
3901 **JUAN BARRAGAN**...*RESIDENTIAL*
3903 **BLANCA PELAYO**...*RESIDENTIAL*
3905 **ROLY NELSON**...*RESIDENTIAL*

2020 LAKE CREST DR

SOURCE: DIGITAL BUSINESS DIRECTORY

3500 **ARTURO MENDOZA**...*RESIDENTIAL*
3500 **VIRGINIA GECK**...*RESIDENTIAL*
3500 **WILFREDO SANCHEZ**...*RESIDENTIAL*
3503 **ROCIO ROMERO**...*RESIDENTIAL*
3504 **NICK RAJEWSKI**...*RESIDENTIAL*
3505 **HENRY DELANO**...*RESIDENTIAL*
3507 **DOMINGA CHAMU**...*RESIDENTIAL*
3508 **RICHARD GUILD**...*RESIDENTIAL*
3509 **CESAR CONTRERAS**...*RESIDENTIAL*
3510 **HECTOR ESQUEDA**...*RESIDENTIAL*
3512 **JOSEPH CAVALLUCCI**...*RESIDENTIAL*
3513 **FRANCISCO TAPIA**...*RESIDENTIAL*
3515 **ALEXANDRIA COLUNGA**...*RESIDENTIAL*
3516 **EDWARD ALVARADO**...*RESIDENTIAL*
3516 **JOSE ARELIZ**...*RESIDENTIAL*
3516 **STEVEN SLADEK**...*RESIDENTIAL*
3517 **BRIAN OIEN**...*RESIDENTIAL*
3517 **LISA ESQUEZA**...*RESIDENTIAL*
3518 **IRMA BEDOLLA**...*RESIDENTIAL*
3521 **LISA OLESON**...*RESIDENTIAL*
3522 **ASHLEY LEE**...*RESIDENTIAL*
3522 **JASON SOLVEY**...*RESIDENTIAL*
3523 **JOSEPH LAFONTAINE**...*RESIDENTIAL*
3524 **OSCAR PEREZ**...*RESIDENTIAL*
3525 **PABLO DOMINGUEZ**...*RESIDENTIAL*

2020 MONROE ST

SOURCE: DIGITAL BUSINESS DIRECTORY

1100 **HATSUE ROSS**...*RESIDENTIAL*
1103 **KATRINA GARRETT**...*RESIDENTIAL*
1103 **SAMANTHA BURROWBRIDGE**...*RESIDENTIAL*
1105 **JENNIFER VEGA**...*RESIDENTIAL*
1105 **MARIO BUENROSTRO**...*RESIDENTIAL*
1106 **MICHAEL MOORE**...*RESIDENTIAL*
1109 **DAVID CAYETANO**...*RESIDENTIAL*
1110 **SEAN SHEEN**...*RESIDENTIAL*
1112 **RAMON RAMIREZ**...*RESIDENTIAL*
1113 **ABELINA GONZALEZ**...*RESIDENTIAL*
1114 **FRANCISCO OCHOA**...*RESIDENTIAL*
1117 **JOSE MENA**...*RESIDENTIAL*
1117 **JUDY NATERA**...*RESIDENTIAL*
1118 **MARTHA MEZA**...*RESIDENTIAL*
1119 **JUAN NAJERA**...*RESIDENTIAL*
1120 **INES GURROLA**...*RESIDENTIAL*
1122 **RONDAL FRAISER**...*RESIDENTIAL*
1123 **ANTOLIN BARAJAS**...*RESIDENTIAL*
1127 **ELIZABETH CISNEROS**...*RESIDENTIAL*
1131 **FRANCISCO FARIAS**...*RESIDENTIAL*
1133 **ROSALBA PRECIADO**...*RESIDENTIAL*

93 total records. Part 1 of 2

32000 **A CREW ENVIRONMENTAL INC**...*FIRE DAMAGE RESTORATION*
32000 **ANN DEON**...*RESIDENTIAL*
32000 **BEATRICE BARTLETT**...*RESIDENTIAL*
32000 **BERNEDA HAHN**...*RESIDENTIAL*
32000 **BETTY BELL**...*RESIDENTIAL*
32000 **DONALD LAMPTON**...*RESIDENTIAL*
32000 **DONNA DELORME**...*RESIDENTIAL*
32000 **DORIS HERT**...*RESIDENTIAL*
32000 **ERIC DOMAGLA**...*RESIDENTIAL*
32000 **FRED BLASKOVICH**...*RESIDENTIAL*
32000 **GEORGE RICHMOND**...*RESIDENTIAL*
32000 **GERMA ALBARENGA**...*RESIDENTIAL*
32000 **GUY SCOTT**...*RESIDENTIAL*
32000 **HERSHAL FITZHUGH**...*RESIDENTIAL*
32000 **JAMES PALMER**...*RESIDENTIAL*
32000 **JANINE BRESACH**...*RESIDENTIAL*
32000 **LAKE PARK RV RESORT LODGE**...*RESORTS*
32000 **LAKE PARK RV RESORT & LODGE**...*CAMPGROUNDS*
32000 **LAKE PARK RV RESORT & LODGE**...*HOTELS & MOTELS*
32000 **LARRY MOSKOWITZ**...*RESIDENTIAL*
32000 **LAURA TRENTON**...*RESIDENTIAL*
32000 **MARTINA MAYORAL**...*RESIDENTIAL*
32000 **MIKE FRANCISCO**...*RESIDENTIAL*
32000 **OLIVER PADILLA**...*RESIDENTIAL*
32000 **ON SITE AUTO GLASS SVC**...*AUTOMOBILE REPAIRING & SERVICE*
32000 **RICHARD JOHNS**...*RESIDENTIAL*
32000 **RICHARD TORORETE**...*RESIDENTIAL*
32000 **RUBY'S HOUSEKEEPING**...*HOUSE CLEANING*
32000 **SUSAN CYPHER**...*RESIDENTIAL*
32000 **TERRY BARBER**...*RESIDENTIAL*
32000 **TONYA JARVIS**...*RESIDENTIAL*
32040 **CRYSTAL PICKETT**...*RESIDENTIAL*
32040 **PYRAMID ENTERPRISES INC**...*CAMPGROUNDS*
32040 **ROCKY MOUNTAIN RECREATION**...*BUSINESS SERVICES NEC*
32040 **ROCKY MOUNTAIN RECREATION**...*BUSINESS MANAGEMENT CONSULTANTS*
32209 **BRANDIE HOUSTON**...*RESIDENTIAL*
32209 **DENIS REILLY**...*RESIDENTIAL*
32209 **DIMITRA GORDON**...*RESIDENTIAL*
32209 **FABIOLA GUTIERREZ**...*RESIDENTIAL*
32209 **GENE LOPEZ**...*RESIDENTIAL*
32209 **GILBERTO RODRIGUEZ**...*RESIDENTIAL*
32209 **HERMAN GRAY**...*RESIDENTIAL*
32209 **ISIDRO OROZCO**...*RESIDENTIAL*
32209 **JESSE LOPEZ**...*RESIDENTIAL*
32209 **JESSICA KENNY**...*RESIDENTIAL*
32209 **JILL ALLEN**...*RESIDENTIAL*
32209 **KIMBERLY ANN BUCHANAN**...*RESIDENTIAL*
32209 **LAKE VIEW APARTMENTS**...*FEDERAL GOVERNMENT CONTRACTORS*
32209 **LAKE VIEW APARTMENTS**...*APARTMENTS*
32209 **LUCETTE GUILLORY**...*RESIDENTIAL*
32209 **MARIA RODRIGUEZ**...*RESIDENTIAL*
32209 **MARYLYUN LINDLEY**...*RESIDENTIAL*
32209 **PATRICIA HEROLD**...*RESIDENTIAL*
32209 **PEGGIE DELROY**...*RESIDENTIAL*
32209 **ROGER FATLAND**...*RESIDENTIAL*
32209 **SANIE SABEH**...*RESIDENTIAL*
32209 **SARAH PITTS**...*RESIDENTIAL*
32209 **SHAWONA ROYAL**...*RESIDENTIAL*
32209 **STEPHEN LOLLOCK**...*RESIDENTIAL*
32209 **VERONICA JOHNSON**...*RESIDENTIAL*
32211 **DIANNA CARTER**...*RESIDENTIAL*
32211 **DONNIE HALL**...*RESIDENTIAL*
32211 **DOROTHY ALLEN**...*RESIDENTIAL*
32211 **HOPE HERNANDEZ**...*RESIDENTIAL*
32211 **ISABELLA MARINO**...*RESIDENTIAL*
32211 **ISIDORO SOTO**...*RESIDENTIAL*
32211 **KATHLEEN HARPER**...*RESIDENTIAL*

2020 RIVERSIDE DR
SOURCE: DIGITAL BUSINESS DIRECTORY

Part 2 of 2

32211 **MARIA SALCIDO**...*RESIDENTIAL*
32211 **MARY SANCHEZ**...*RESIDENTIAL*
32211 **MICHELE SERRANO**...*RESIDENTIAL*
32211 **MITCHELL DAVIS**...*RESIDENTIAL*
32211 **REGINA REYES**...*RESIDENTIAL*
32211 **ROSAURA RAYA**...*RESIDENTIAL*
32211 **SHELESIA WATERS**...*RESIDENTIAL*
32211 **STEPHANIE LOPEZ**...*RESIDENTIAL*
32211 **SUZETTE LARUE**...*RESIDENTIAL*
32211 **VERONICA RODRIGUEZ**...*RESIDENTIAL*
32211 **VICTOR OROSCO**...*RESIDENTIAL*
32211 **VIRIDIANA GARCIA**...*RESIDENTIAL*
32310 **COYOTE COVE LAKESIDE CAMPING**...*CAMPGROUNDS*
32310 **MILA SANGALANG**...*RESIDENTIAL*
32310 **NATHANIEL ERWIN JR**...*RESIDENTIAL*
32310 **PAUL RUDDY**...*RESIDENTIAL*
32391 **ALL-PRO ENGINE MOWER SALES**...*LAWN MOWERS*
32391 **CAMPERS OTPOST-AMRCN SOUTHWEST**...*NONCLASSIFIED ESTABLISHMENTS*
32391 **MOOSE LODGE 1021**...*NONPROFIT ORGANIZATIONS*
32391 **MOOSE LODGE 1021**...*FRATERNAL ORGANIZATIONS*
32391 **MOOSE LODGE 1021**...*HOTELS & MOTELS*
32391 **NUEVA CREACION ASAMBLEA DE DS**...*RELIGIOUS ORGANIZATIONS*
32391 **NUEVA CREACION CHURCH OF GOD**...*CHURCHES*
32391 **WALLS INSPECTION CO**...*INSPECTION SERVICE*
32397 **JAVA HUT**...*COFFEE SHOPS*

2016 EISENHOWER DR

SOURCE: DIGITAL BUSINESS DIRECTORY

3501 **GUSTAVO ORTIZ**...*RESIDENTIAL*
3501 **NORMA ORTIZ**...*RESIDENTIAL*
3503 **CHERYL LASHINSKI**...*RESIDENTIAL*
3505 **CHERI BARRY**...*RESIDENTIAL*
3506 **TERESA WILSON**...*RESIDENTIAL*
3507 **JEROME MORENO**...*RESIDENTIAL*
3508 **JOSE DE JESUS GODOY**...*RESIDENTIAL*
3508 **LOURDEZ GODOY**...*RESIDENTIAL*
3508 **YESENIA GODOY**...*RESIDENTIAL*
3509 **ELEAZAR RAMIREZ**...*RESIDENTIAL*
3509 **MARIA RAMIREZ**...*RESIDENTIAL*
3509 **NATANAEL RAMIREZ**...*RESIDENTIAL*
3600 **BRYAN ERETH**...*RESIDENTIAL*
3604 **ARNOLDO ESTRADA**...*RESIDENTIAL*
3604 **MARIA ESTRADA**...*RESIDENTIAL*
3606 **ESTHER GUTIERREZ**...*RESIDENTIAL*
3606 **RAFAEL GUTIERREZ**...*RESIDENTIAL*
3608 **ISABEL VELOZ**...*RESIDENTIAL*
3608 **MAGDALENA OCAMPO**...*RESIDENTIAL*
3608 **ROBERT VELOZ**...*RESIDENTIAL*
3609 **CINDY VEGA**...*RESIDENTIAL*
3700 **CAROLINE QUINTOS**...*RESIDENTIAL*
3700 **WALTER QUINTOS**...*RESIDENTIAL*
3702 **N LIVERMORE**...*RESIDENTIAL*
3703 **FIDENCIO DELGADO**...*RESIDENTIAL*
3706 **JOSE CRUZ**...*RESIDENTIAL*
3706 **RAY CRUZ**...*RESIDENTIAL*
3707 **ENRIQUE LUQUE**...*RESIDENTIAL*
3709 **ROMAN MENDOZA**...*RESIDENTIAL*
3709 **ROSA MENDOZA**...*RESIDENTIAL*
3709 **ROSA TREJO**...*RESIDENTIAL*
3803 **MARIA PENUELA**...*RESIDENTIAL*
3803 **MEENA ISLAM**...*RESIDENTIAL*
3803 **SADAF ISLAM**...*RESIDENTIAL*
3804 **MONIQUE ROSALES**...*RESIDENTIAL*
3805 **24 HOUR HANDYMAN**...*UNCLASSIFIED ESTABLISHMENTS*
3809 **CYNTHIA SOLIS**...*RESIDENTIAL*
3809 **EVA SPRUELL**...*RESIDENTIAL*
3901 **JUAN BARRAGAN**...*RESIDENTIAL*
3905 **ROLY NELSON**...*RESIDENTIAL*

2016 LAKE CREST DR

SOURCE: DIGITAL BUSINESS DIRECTORY

3500 **ARTURO MENDOZA**...*RESIDENTIAL*
3500 **VIRGINIA GECK**...*RESIDENTIAL*
3503 **ROCIO ROMERO**...*RESIDENTIAL*
3504 **JOSEPH RAJEWSKI**...*RESIDENTIAL*
3504 **NICK RAJEWSKI**...*RESIDENTIAL*
3505 **CALI CONSTRUCTION**...*CONSTRUCTION COMPANIES*
3505 **HENRY DELANO**...*RESIDENTIAL*
3505 **MARIA DELANO**...*RESIDENTIAL*
3507 **DOMINGA CHAMU**...*RESIDENTIAL*
3509 **CESAR CONTRERAS**...*RESIDENTIAL*
3509 **DEMETRIO CONTRERAS**...*RESIDENTIAL*
3509 **MARTHA CONTRERAS**...*RESIDENTIAL*
3509 **MAYTE CONTRERAS**...*RESIDENTIAL*
3510 **HECTOR ESQUEDA**...*RESIDENTIAL*
3510 **SILVIA ESQUEDA**...*RESIDENTIAL*
3512 **JOSEPH CAVALLUCCI**...*RESIDENTIAL*
3513 **FRANCISCO TAPIA**...*RESIDENTIAL*
3515 **ALEXANDRIA COLUNGA**...*RESIDENTIAL*
3515 **ARTURO COLUNGA**...*RESIDENTIAL*
3515 **CECILIA COLUNGA**...*RESIDENTIAL*
3515 **IRENE COLUNGA**...*RESIDENTIAL*
3515 **LORAINE COLUNGA**...*RESIDENTIAL*
3516 **EDWARD ALVARADO**...*RESIDENTIAL*
3516 **JOSE ARELIZ**...*RESIDENTIAL*
3516 **STEVEN SLADEK**...*RESIDENTIAL*
3517 **LISA ESQUEZA**...*RESIDENTIAL*
3518 **IRMA BEDOLLA**...*RESIDENTIAL*
3521 **LISA OLESON**...*RESIDENTIAL*
3521 **M OLESON**...*RESIDENTIAL*
3522 **ASHLEY LEE**...*RESIDENTIAL*
3522 **CATHY LEE**...*RESIDENTIAL*
3522 **JASON SOLVEY**...*RESIDENTIAL*
3524 **DENNIS QUON**...*RESIDENTIAL*
3524 **OSCAR PEREZ**...*RESIDENTIAL*
3525 **PABLO DOMINGUEZ**...*RESIDENTIAL*

2016 MONROE ST

SOURCE: DIGITAL BUSINESS DIRECTORY

1100 **ROBERT ROSS**...*RESIDENTIAL*
1103 **KATRINA GARRETT**...*RESIDENTIAL*
1103 **SAMANTHA BURROWBRIDGE**...*RESIDENTIAL*
1105 **MARIO BUENROSTRO**...*RESIDENTIAL*
1106 **MICHAEL MOORE**...*RESIDENTIAL*
1112 **RAMON RAMIREZ**...*RESIDENTIAL*
1115 **DANIEL CORONADO**...*RESIDENTIAL*
1117 **JOSE MENA**...*RESIDENTIAL*
1117 **JUDY NATERA**...*RESIDENTIAL*
1118 **MARTHA MEZA**...*RESIDENTIAL*
1119 **JUAN MARTINEZ**...*RESIDENTIAL*
1122 **RON FRIASER**...*RESIDENTIAL*
1123 **ANTOLIN BARAJAS**...*RESIDENTIAL*
1123 **ESTELA BARAJAS**...*RESIDENTIAL*
1123 **HERBERT BARAJAS**...*RESIDENTIAL*
1123 **LINDA BARAJAS**...*RESIDENTIAL*
1123 **MICHELLE BARAJAS**...*RESIDENTIAL*
1131 **FRANCISCO FARIAS**...*RESIDENTIAL*
1133 **ROSALBA PRECIADO**...*RESIDENTIAL*

2016 RIVERSIDE DR

SOURCE: DIGITAL BUSINESS DIRECTORY

80 total records. Part 1 of 2

32000 **A CREW ENVIRONMENTAL INC**...*FIRE DAMAGE RESTORATION*
32000 **ANN DEON**...*RESIDENTIAL*
32000 **BERNEDA HAHN**...*RESIDENTIAL*
32000 **BETTY BELL**...*RESIDENTIAL*
32000 **BRUCE KELVIN**...*RESIDENTIAL*
32000 **DEE HAHN**...*RESIDENTIAL*
32000 **DONNA DELORME**...*RESIDENTIAL*
32000 **DORIS HERT**...*RESIDENTIAL*
32000 **EDWARD DELORME**...*RESIDENTIAL*
32000 **FRED BLASKOVICH**...*RESIDENTIAL*
32000 **GEORGE MELNIKOFF**...*RESIDENTIAL*
32000 **GEORGE RICHMOND**...*RESIDENTIAL*
32000 **GERMA ALBARENGA**...*RESIDENTIAL*
32000 **GUI HAHN**...*RESIDENTIAL*
32000 **GUY HAHN**...*RESIDENTIAL*
32000 **GUY SCOTT**...*RESIDENTIAL*
32000 **JAMES PALMER**...*RESIDENTIAL*
32000 **JANINE BRESACH**...*RESIDENTIAL*
32000 **LAKE PARK RV RESORT & LODGE**...*HOTELS & MOTELS*
32000 **LAKE PARK RV RESORT & LODGE**...*CAMPGROUNDS*
32000 **LARRY MOSKOWITZ**...*RESIDENTIAL*
32000 **LAURA TRENTON**...*RESIDENTIAL*
32000 **MARTINA MAYORAL**...*RESIDENTIAL*
32000 **MIKE FRANCISCO**...*RESIDENTIAL*
32000 **OLIVER PADILLA**...*RESIDENTIAL*
32000 **RICHARD JOHNS**...*RESIDENTIAL*
32000 **RUBY'S HOUSEKEEPING**...*HOUSE CLEANING*
32000 **STEVEN BRESACH**...*RESIDENTIAL*
32000 **SUSAN CYPHER**...*RESIDENTIAL*
32000 **TERRY BARBER**...*RESIDENTIAL*
32040 **CRYSTAL PICKETT**...*RESIDENTIAL*
32040 **PYRAMID ENTERPRISES INC**...*CAMPGROUNDS*
32040 **ROCKY MOUNTAIN RECREATION**...*BUSINESS SERVICES NEC*
32209 **DENIS REILLY**...*RESIDENTIAL*
32209 **DORIS HOUSTON**...*RESIDENTIAL*
32209 **FABIOLA GUTIERREZ**...*RESIDENTIAL*
32209 **FIDENCIO LOPEZ**...*RESIDENTIAL*
32209 **GILBERTO RODRIGUEZ**...*RESIDENTIAL*
32209 **HERMAN GRAY**...*RESIDENTIAL*
32209 **ISIDRO OROZCO**...*RESIDENTIAL*
32209 **JESSICA KENNY**...*RESIDENTIAL*
32209 **JILL ALLEN**...*RESIDENTIAL*
32209 **JORGE GUTIERREZ**...*RESIDENTIAL*
32209 **KIMBERLY ANN BUCHANAN**...*RESIDENTIAL*
32209 **LAKE VIEW APARTMENTS**...*APARTMENTS*
32209 **MARIA RODRIGUEZ**...*RESIDENTIAL*
32209 **MARYLYUN LINDLEY**...*RESIDENTIAL*
32209 **PACO CASTILLO**...*RESIDENTIAL*
32209 **PATRICIA HEROLD**...*RESIDENTIAL*
32209 **PEGGIE DELROY**...*RESIDENTIAL*
32209 **ROGER FATLAND**...*RESIDENTIAL*
32209 **SANIE SABEH**...*RESIDENTIAL*
32209 **SARAH PITTS**...*RESIDENTIAL*
32209 **SAUNDRA TOLIVER**...*RESIDENTIAL*
32209 **STEPHEN LOLLOCK**...*RESIDENTIAL*
32209 **VERONICA JOHNSON**...*RESIDENTIAL*
32211 **DONNIE HALL**...*RESIDENTIAL*
32211 **DOROTHY ALLEN**...*RESIDENTIAL*
32211 **FRANCES MENDOZA**...*RESIDENTIAL*
32211 **HOPE HERNANDEZ**...*RESIDENTIAL*
32211 **ISABELLA MARINO**...*RESIDENTIAL*
32211 **ISIDORO SOTO**...*RESIDENTIAL*
32211 **KATHLEEN HARPER**...*RESIDENTIAL*
32211 **MARIA SALCIDO**...*RESIDENTIAL*
32211 **MARY SANCHEZ**...*RESIDENTIAL*
32211 **REGINA REYES**...*RESIDENTIAL*
32211 **ROSAURA RAYA**...*RESIDENTIAL*
32211 **STEPHANIE LOPEZ**...*RESIDENTIAL*

2016 RIVERSIDE DR

SOURCE: DIGITAL BUSINESS DIRECTORY

Part 2 of 2

32211 **V LOPEZ**...*RESIDENTIAL*
32211 **VICTOR OROSCO**...*RESIDENTIAL*
32211 **VIRIDIANA GARCIA**...*RESIDENTIAL*
32391 **ATM**...*AUTOMATED TELLER MACHINES*
32391 **JIM'S AUTO GLASS REPAIR**...*FINISH CARPENTRY CONTRACTORS*
32391 **MOOSE LODGE 1021**...*HOTELS & MOTELS*
32391 **MOTHERLODE THRIFTSTORE**...*THRIFT SHOPS*
32391 **NUEVA CREACION ASAMBLEA DE DS**...*RELIGIOUS ORGANIZATIONS*
32391 **TEMPLO NUEVA CREACION**...*CHURCHES*
32391 **WALLS INSPECTION CO**...*INSPECTION SERVICE*
32397 **JAVA HUT**...*COFFEE SHOPS*

2012 EISENHOWER DR

SOURCE: DIGITAL BUSINESS DIRECTORY

3500 **HECTOR FLORES**...*RESIDENTIAL*
3500 **MARTIN BRISENO**...*RESIDENTIAL*
3500 **RAYA ROSAURA**...*RESIDENTIAL*
3500 **SILVIA NEVARES**...*RESIDENTIAL*
3502 **JOSE GOMEZ**...*RESIDENTIAL*
3502 **VERONICA LLAMAS**...*RESIDENTIAL*
3503 **AGUAYO CRISTINA**...*RESIDENTIAL*
3503 **BONNI RODRIGUEZ**...*RESIDENTIAL*
3503 **CRISTINA AGUAYO**...*RESIDENTIAL*
3508 **JOSE GODOY**...*RESIDENTIAL*
3509 **MARIA RAMIREZ**...*RESIDENTIAL*
3602 **MIGUEL ESTRADA**...*RESIDENTIAL*
3606 **ESTER GUTIERREZ**...*RESIDENTIAL*
3606 **GUTIERREZ RAFAEL**...*RESIDENTIAL*
3606 **RAFAEL GUTIERREZ**...*RESIDENTIAL*
3607 **DIANA ALCOCER**...*RESIDENTIAL*
3608 **ROBERT VELOZ**...*RESIDENTIAL*
3608 **VELOZ ROBERT**...*RESIDENTIAL*
3700 **CARMEN CRUZ**...*RESIDENTIAL*
3700 **MARIA MANZO**...*RESIDENTIAL*
3702 **B CHILDERS**...*RESIDENTIAL*
3703 **FIDENCIO DELGADO**...*RESIDENTIAL*
3704 **ACOSTA ELIZABETH**...*RESIDENTIAL*
3704 **D ELSWORTH**...*RESIDENTIAL*
3704 **ELIZABETH ACOSTA**...*RESIDENTIAL*
3704 **FRANCISCO ACOSTA**...*RESIDENTIAL*
3704 **JAVIER ACOSTA**...*RESIDENTIAL*
3704 **YARI BARBOSA**...*RESIDENTIAL*
3706 **DEAN MORRIS**...*RESIDENTIAL*
3706 **PHIL BOURASSA**...*RESIDENTIAL*
3709 **ROSA TREJO**...*RESIDENTIAL*
3800 **SELMA PARKER**...*RESIDENTIAL*
3803 **LOPEZ LUCRECIA**...*RESIDENTIAL*
3803 **LUCRECIA LOPEZ**...*RESIDENTIAL*
3805 **ANNA DISUMMO**...*RESIDENTIAL*
3805 **NORBERTO DISUMMO**...*RESIDENTIAL*
3807 **CINDY PEREZ**...*RESIDENTIAL*
3807 **JOVITA PEREZ**...*RESIDENTIAL*
3807 **PEREZ TOMAS**...*RESIDENTIAL*
3807 **TOMAS PEREZ**...*RESIDENTIAL*
3905 **OLLIE NELSON**...*RESIDENTIAL*

2012 LAKE CREST DR

SOURCE: DIGITAL BUSINESS DIRECTORY

3496 **BRANDON AYOU**...*RESIDENTIAL*
3496 **JENNIFER BRENNAN**...*RESIDENTIAL*
3496 **SHEIDON JONES**...*RESIDENTIAL*
3496 **SHELDON JONES**...*RESIDENTIAL*
3496 **TRISHA JONES**...*RESIDENTIAL*
3497 **ROGELIO SANCHEZ**...*RESIDENTIAL*
3499 **SILVIA PRADO**...*RESIDENTIAL*
3499 **STEVEN PRADO**...*RESIDENTIAL*
3500 **LETICIA MORAN**...*RESIDENTIAL*
3500 **VIRGINIA GECK**...*RESIDENTIAL*
3501 **MARIA DESANTIAGO**...*RESIDENTIAL*
3501 **MIGUEL DESANTIAGO**...*RESIDENTIAL*
3504 **JOSE MARTINEZ**...*RESIDENTIAL*
3505 **HENRY DELANO**...*RESIDENTIAL*
3505 **JOSE DELANO**...*RESIDENTIAL*
3506 **AJ GREY**...*RESIDENTIAL*
3506 **WILBERT DANIELS**...*RESIDENTIAL*
3507 **DOMINGA CHAMU**...*RESIDENTIAL*
3507 **MARTIN SANDOVAL**...*RESIDENTIAL*
3508 **SHAWNA GUILD**...*RESIDENTIAL*
3509 **JASON SANDEFUR**...*RESIDENTIAL*
3512 **TRACY CAVALLUCCI**...*RESIDENTIAL*
3515 **ARTURO COLUNGA**...*RESIDENTIAL*
3515 **IRENE COLUNGA**...*RESIDENTIAL*
3515 **JOESPH JONES**...*RESIDENTIAL*
3515 **LORAINE COLUNGA**...*RESIDENTIAL*
3516 **AMY SLADEK**...*RESIDENTIAL*
3516 **STEVE SLADEK**...*RESIDENTIAL*
3517 **MANUELA SOLIS**...*RESIDENTIAL*
3518 **GUILLERMO HERNANDEZ**...*RESIDENTIAL*
3518 **HERNANDEZ GUILLERMO**...*RESIDENTIAL*
3518 **VITAELIA CAZARRUBIAS**...*RESIDENTIAL*
3518 **VITAELIA HERNANDEZ**...*RESIDENTIAL*
3520 **ELIAS BETTENCOURT**...*RESIDENTIAL*
3520 **RAQUEL BETTENCOURT**...*RESIDENTIAL*
3521 **LISA OLESON**...*RESIDENTIAL*
3521 **M OLESON**...*RESIDENTIAL*
3522 **CATHY LEE**...*RESIDENTIAL*
3522 **JASON SOLVEY**...*RESIDENTIAL*
3523 **LAFONTAINE MARGARET**...*RESIDENTIAL*
3523 **MARGARET LAFONTAINE**...*RESIDENTIAL*
3525 **EMANI NAGESWARA**...*RESIDENTIAL*
3525 **MABEL EMANI**...*RESIDENTIAL*
3525 **MABEL VERA**...*RESIDENTIAL*
3525 **NAGESWARA EMANI**...*RESIDENTIAL*
3525 **RODOLFO MAYLLEN**...*RESIDENTIAL*

2012 MONROE ST

SOURCE: DIGITAL BUSINESS DIRECTORY

1100 **HATSUE ROSS**...*RESIDENTIAL*
1100 **ROBERT ROSS**...*RESIDENTIAL*
1101 **SERGIO SOLIS CONTRERAS**...*RESIDENTIAL*
1102 **GRISELDA CAMPOS**...*RESIDENTIAL*
1104 **MARICAR SERRANO**...*RESIDENTIAL*
1105 **D S WALLPAPERING & PAINTING**...*PAINTERS*
1105 **MARIO BUENROSTRO**...*RESIDENTIAL*
1106 **RICHARD RIDDELL**...*RESIDENTIAL*
1107 **E CAMPBELL**...*RESIDENTIAL*
1107 **J CAMPBELL**...*RESIDENTIAL*
1111 **ALEJANDRO TADEO**...*RESIDENTIAL*
1112 **MARIANELA RAMIREZ GUZMAN**...*RESIDENTIAL*
1112 **RAMON GUZMAN**...*RESIDENTIAL*
1112 **RAMON RAMIREZ**...*RESIDENTIAL*
1113 **ADELA MONTES**...*RESIDENTIAL*
1113 **MEHCHSAC MONTES**...*RESIDENTIAL*
1113 **MONTES MEHCHSAC**...*RESIDENTIAL*
1115 **LILIA FLORES**...*RESIDENTIAL*
1115 **ULYSSES FLORES**...*RESIDENTIAL*
1117 **JOSE MENA**...*RESIDENTIAL*
1117 **SERGIO MENA**...*RESIDENTIAL*
1119 **JUAN NAJERA**...*RESIDENTIAL*
1119 **MARIA YAPIAS**...*RESIDENTIAL*
1119 **NELIDA NAJERA MARTINEZ**...*RESIDENTIAL*
1121 **BARAJAS FERNANDO**...*RESIDENTIAL*
1121 **FERNANDO BARAJAS**...*RESIDENTIAL*
1121 **VIVIANA BARAJAS**...*RESIDENTIAL*
1122 **RON FRIASER**...*RESIDENTIAL*
1122 **RONDAL FRAISER**...*RESIDENTIAL*
1129 **GUILLERMINA CARRI**...*RESIDENTIAL*
1129 **GUILLERMINA PERULERO**...*RESIDENTIAL*
1131 **FARIAS FRANCISCO**...*RESIDENTIAL*
1131 **FRANCISCO FARIAS**...*RESIDENTIAL*
1131 **GEORGINA JIMENEZ**...*RESIDENTIAL*
1133 **ISIDRO PRECIADO**...*RESIDENTIAL*
1133 **MARIA PRECIADO**...*RESIDENTIAL*

2012 RIVERSIDE DR

SOURCE: DIGITAL BUSINESS DIRECTORY

32000 **A CREW ENVIRONMENTAL INC**...*FIRE DAMAGE RESTORATION*
32000 **BEN REDARD**...*RESIDENTIAL*
32000 **DEAN WILLIAMS**...*RESIDENTIAL*
32000 **DOROTHY LEAKE**...*RESIDENTIAL*
32000 **FRED BLASKOVICH**...*RESIDENTIAL*
32000 **GUSTAVO GUERRA**...*RESIDENTIAL*
32000 **JUANITA WILLIAMS**...*RESIDENTIAL*
32000 **LAKE PARK RESORT**...*CAMPGROUNDS*
32000 **LYLE MIKESELL**...*RESIDENTIAL*
32000 **OLIVER PADILLA**...*RESIDENTIAL*
32000 **RENE BARBER**...*RESIDENTIAL*
32000 **RONDA TALLEY**...*RESIDENTIAL*
32000 **STERLING ROGER**...*RESIDENTIAL*
32000 **TERRY BARBER**...*RESIDENTIAL*
32000 **VEDA LINDSEY**...*RESIDENTIAL*
32000 **WILLIAM STROOK**...*RESIDENTIAL*
32040 **FRANK MCCHRYSTAL**...*RESIDENTIAL*
32040 **PYRAMID ENTERPRISES INC**...*GOVERNMENT OFFICES-CITY, VILLAGE & TWP*
32209 **LAKE VIEW APARTMENTS**...*APARTMENTS*
32209 **MELINDA CHARLESTON**...*RESIDENTIAL*
32211 **DEBRAH LINDSEY**...*RESIDENTIAL*
32211 **E MERRITT**...*RESIDENTIAL*
32211 **ISIDORO SOTO**...*RESIDENTIAL*
32211 **ISIDRO CASTREJON**...*RESIDENTIAL*
32211 **J MERRITT**...*RESIDENTIAL*
32211 **JEAN MONGLE**...*RESIDENTIAL*
32211 **JUSTEN FOUST**...*RESIDENTIAL*
32211 **M GUTIERREZ**...*RESIDENTIAL*
32211 **MARIA RAMOS**...*RESIDENTIAL*
32211 **MARTHA DAMIAN**...*RESIDENTIAL*
32211 **N BLANTON**...*RESIDENTIAL*
32211 **RACHEL GALVAN**...*RESIDENTIAL*
32211 **REYNA ESQUEDA**...*RESIDENTIAL*
32211 **ROBERT TRUZ**...*RESIDENTIAL*
32211 **RUE LA**...*RESIDENTIAL*
32211 **TERESA ULLOA**...*RESIDENTIAL*
32310 **LEON STOTTS**...*RESIDENTIAL*
32310 **M BRIGGS**...*RESIDENTIAL*
32310 **MELODY SCHALLOCK**...*RESIDENTIAL*
32391 **DEL LAGO THRIFTY STORE**...*THRIFT SHOPS*
32391 **ELSINORE BICYCLES**...*BICYCLES-DEALERS*
32391 **MOTHERLODE**...*NONCLASSIFIED ESTABLISHMENTS*
32391 **PITIS LITTLE MARKET**...*POTTERY*
32391 **TEMPLO NUEVA CREACION**...*CHURCHES*
32391 **WALLS INSPECTION CO**...*INSPECTION SERVICE*
32397 **JAVA HUT**...*COFFEE SHOPS*

2008 EISENHOWER DR

SOURCE: DIGITAL BUSINESS DIRECTORY

3500 **ARMANDO RAYA**...*RESIDENTIAL*
3505 **KATHY SANCHEZ**...*RESIDENTIAL*
3508 **JOSE D GODOY**...*RESIDENTIAL*
3602 **C STRONG**...*RESIDENTIAL*
3604 **A ESTRADA**...*RESIDENTIAL*
3708 **JEFF FAUS**...*RESIDENTIAL*
3709 **R EMANI**...*RESIDENTIAL*
3803 **SCOTT BEECHAM**...*RESIDENTIAL*
3805 **ANNA M DISUMMO**...*RESIDENTIAL*
3805 **NORBERTO F DISUMMO**...*RESIDENTIAL*
3806 **JESUS PEREZ**...*RESIDENTIAL*
3806 **LYDIA ROMO**...*RESIDENTIAL*
3807 **JOVITA PEREZ**...*RESIDENTIAL*
3808 **ESTELLA JONES**...*RESIDENTIAL*
3903 **SAUL REYES**...*RESIDENTIAL*
3905 **ROLY NELSON**...*RESIDENTIAL*

2008 LAKE CREST DR

SOURCE: DIGITAL BUSINESS DIRECTORY

3497 **DUANE RENEE**...*RESIDENTIAL*
3501 **MARIA E HURTADO**...*RESIDENTIAL*
3504 **JERRY CANTRELL**...*RESIDENTIAL*
3504 **LYNNE CANTRELL**...*RESIDENTIAL*
3508 **RICHARD GUILD**...*RESIDENTIAL*
3512 **JOSEPH CAVALLUCCI**...*RESIDENTIAL*
3516 **STEVE JR SLADEK**...*RESIDENTIAL*
3518 **VITAELIA CAZARRUBIAS**...*RESIDENTIAL*

2008 MONROE ST

SOURCE: DIGITAL BUSINESS DIRECTORY

1100 **ROBERT & HATSUE ROSS**...*RESIDENTIAL*
1105 **D S WALLPAPERING & PAINTING**...*PAINTERS*
1105 **D S WALLPAPERING & PAINTING**...*PTG, PPR HANG CONTR*
1109 **DONALD HARRISON**...*RESIDENTIAL*
1112 **ANA M SAAL**...*RESIDENTIAL*
1117 **JUDY NATERA**...*RESIDENTIAL*
1119 **NEMECIA CANAS**...*RESIDENTIAL*
1122 **RON L FRIASER**...*RESIDENTIAL*
1125 **JUANA MARKS**...*RESIDENTIAL*
1133 **ISIDRO PRECIADO**...*RESIDENTIAL*

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32000 **A CREW ENVIRONMENTAL INC**...*GEN REMOD 1-FAM HOUSE*
32000 **AVALON LIMOUSINES**...*LIMO RENT WITH DRIVER*
32000 **B SIMMONS**...*RESIDENTIAL*
32000 **BERNARD L BOND**...*RESIDENTIAL*
32000 **BILL SCOTT**...*RESIDENTIAL*
32000 **BRIAN TULLEDGE**...*RESIDENTIAL*
32000 **C GAUSS**...*RESIDENTIAL*
32000 **CHARLES HIBBARD**...*RESIDENTIAL*
32000 **CLARENCE JOHNSON**...*RESIDENTIAL*
32000 **CORI BLOUNT**...*RESIDENTIAL*
32000 **D & D LEAKE**...*RESIDENTIAL*
32000 **E F MATTHEWS**...*RESIDENTIAL*
32000 **FRANK NEFF**...*RESIDENTIAL*
32000 **IRVING KASOW**...*RESIDENTIAL*
32000 **J ADAY**...*RESIDENTIAL*
32000 **J PORTZER**...*RESIDENTIAL*
32000 **JACKIE D SHAFER**...*RESIDENTIAL*
32000 **JOANNE BROOKES**...*RESIDENTIAL*
32000 **JOHN & LYNN HEIER**...*RESIDENTIAL*
32000 **KEITH SMITH**...*RESIDENTIAL*
32000 **LAKE PARK RESORT**...*CAMPGROUNDS*
32000 **LAKE PARK RESORT**...*TRLR PARKS,CAMPSITE*
32000 **LARRY & CAROL JOHNSON**...*RESIDENTIAL*
32000 **LARRY W TATE**...*RESIDENTIAL*
32000 **LESTER & SHARON M ROSE**...*RESIDENTIAL*
32000 **MARLA RICE**...*RESIDENTIAL*
32000 **N KUPRION**...*RESIDENTIAL*
32000 **PHIL RESER**...*RESIDENTIAL*
32000 **RICHARD L JOHNS**...*RESIDENTIAL*
32000 **SEE YOU IN CHURCH**...*ADVERTISING-DIRECTORY & GUIDE*
32000 **THOMAS MESSERALL**...*RESIDENTIAL*
32000 **WILLIAM D HIBBARD**...*RESIDENTIAL*
32040 **FUN TIME RENTAL**...*BOATS-RENTAL & CHARTER*
32040 **LAKE ELSINORE CAMP GROUND**...*GOVERNMENT OFFICES-CITY, VILLAGE & TWP*
32209 **BARBARA & RALPH GARCIA**...*RESIDENTIAL*
32209 **CELIA HERNANDEZ**...*RESIDENTIAL*
32209 **CONSTANCE HARRELL**...*RESIDENTIAL*
32209 **DANIELLE GUTIERREZ**...*RESIDENTIAL*
32209 **DELANE RINEER**...*RESIDENTIAL*
32209 **DUMITRU LUPASCU**...*RESIDENTIAL*
32209 **EAGLE CARLOS WHITE**...*RESIDENTIAL*
32209 **I QUINN**...*RESIDENTIAL*
32209 **JUAN CASTELLANOS**...*RESIDENTIAL*
32209 **KENNETH A LYTLE**...*RESIDENTIAL*
32209 **KENNETH MCKINLEY**...*RESIDENTIAL*
32209 **L SIMONS**...*RESIDENTIAL*
32209 **LAKE VIEW APARTMENTS**...*APARTMENTS*
32209 **LAKEVIEW APARTMENTS**...*APARTMENT BLD OPERS*
32209 **LISA ROBINSON**...*RESIDENTIAL*
32209 **LUCAS DANIELS**...*RESIDENTIAL*
32209 **LYLE GIBSON**...*RESIDENTIAL*
32209 **MARGARET WATKINS**...*RESIDENTIAL*
32209 **MELISSA SCHOFIELD**...*RESIDENTIAL*
32209 **MOISES GUTIERREZ**...*RESIDENTIAL*
32209 **PETE SALAZAR**...*RESIDENTIAL*
32209 **PETRA HERNANDEZ**...*RESIDENTIAL*
32209 **PETRA RIOS**...*RESIDENTIAL*
32209 **ROBERT CARTER**...*RESIDENTIAL*
32209 **ROSA GARCIA**...*RESIDENTIAL*
32209 **S JACKSON**...*RESIDENTIAL*
32209 **SILVIA T LAMPLE**...*RESIDENTIAL*
32209 **THERESA HADDOX**...*RESIDENTIAL*
32209 **TORRE MARTHA DE LA**...*RESIDENTIAL*
32209 **VIRGINIA NIEVES**...*RESIDENTIAL*
32211 **ANGELICA DUARTE**...*RESIDENTIAL*
32211 **DANIEL LEMUS**...*RESIDENTIAL*
32211 **DAVID ANDERSON**...*RESIDENTIAL*

2008 RIVERSIDE DR
SOURCE: DIGITAL BUSINESS DIRECTORY

Part 2 of 2

32211 **DOROTHY ALLEN**...*RESIDENTIAL*
32211 **ELENA BENDEZU**...*RESIDENTIAL*
32211 **ISIDRO CASTREJON**...*RESIDENTIAL*
32211 **J HOWELL**...*RESIDENTIAL*
32211 **LORI DINKELACKER**...*RESIDENTIAL*
32211 **MARIA E SALCIDO**...*RESIDENTIAL*
32211 **OLIVIA FLORES**...*RESIDENTIAL*
32211 **THOMAS GARTLAND**...*RESIDENTIAL*
32211 **YESENIA MEJIA**...*RESIDENTIAL*
32211 **ZACHARY SMITH**...*RESIDENTIAL*
32310 **GAYLE KEENAN**...*RESIDENTIAL*
32310 **JERRY GILCRIST**...*RESIDENTIAL*
32310 **LINDA BOWES**...*RESIDENTIAL*
32310 **OUTHOUSE INC**...*TRLR PARKS,CAMPSITE*
32310 **OUTHOUSE INC**...*CAMPGROUNDS*
32310 **THOMAS WHITE**...*RESIDENTIAL*
32310 **THOMAS WHITES**...*RESIDENTIAL*
32391 **CAMPERS OTPOST OF AMRCN STHWST**...*WHOL TRANSPORTATION EQUIPMENT*
32391 **ELSINORE ELECTRICAL SUPPLY INC**...*ELECTRICAL SUPPS*
32391 **ELSINORE ELECTRICAL SUPPLY INC**...*ELECTRIC EQUIPMENT & SUPPLIES-WHOLESALE*
32391 **ELVIRAS**...*RESTAURANTS*
32391 **ELVIRAS**...*EATING PLACES*
32391 **HARRIS REAL ESTATE**...*REAL ESTATE AGT,MGR*
32391 **HARRIS REAL ESTATE**...*REAL ESTATE*
32391 **SAMPSONIC**...*ELECTRIC CONTRACTORS*
32391 **SAMPSONIC**...*ELECTRICAL WORK*
32391 **SMITHS DISCOUNT OUTLET FURN**...*GIFT SHOP*
32391 **SMITHS DISCOUNT OUTLET FURN**...*FURNITURE-DEALERS-RETAIL*
32391 **TEMPLO NUEVA CREACION**...*CHURCHES*
32391 **TEMPLO NUEVA CREACION**...*RELIGIOUS ORGANIZ*
32391 **WALLS INSPECTION CO**...*INSPECTION SERVICE*
32391 **WALLS INSPECTION CO**...*MPICTURE REL SVS*
32397 **JAVA HUT**...*BEVERAGE STORES*
32397 **JAVA JUNKIE DRIVE THRU**...*COFFEE SHOPS*

2003 EISENHOWER DR

SOURCE: DIGITAL BUSINESS DIRECTORY

3500 **ARMANDO RAYA**...*RESIDENTIAL*
3503 **JAMES HORSLEY**...*RESIDENTIAL*
3508 **JOSE D GODOY**...*RESIDENTIAL*
3608 **M OCAMPO**...*RESIDENTIAL*
3701 **PEDRO & SILVIA CISNEROS**...*RESIDENTIAL*
3704 **JOSE E MIRAMONTES**...*RESIDENTIAL*
3708 **GUADALUPE DIAZ**...*RESIDENTIAL*
3800 **WALTER CLAUDE**...*RESIDENTIAL*
3803 **SCOTT BEECHAM**...*RESIDENTIAL*
3805 **ANNA M DISUMMO**...*RESIDENTIAL*
3805 **NORBERTO F DISUMMO**...*RESIDENTIAL*
3806 **EMMA ZAMORA**...*RESIDENTIAL*

2003 LAKE CREST DR

SOURCE: DIGITAL BUSINESS DIRECTORY

3496 **JAMIE ROSS**...*RESIDENTIAL*
3497 **DUANE & C RENEE**...*RESIDENTIAL*
3500 **ALBERTO GARCIA**...*RESIDENTIAL*
3504 **JERRY CANTRELL**...*RESIDENTIAL*
3504 **LYNNE CANTRELL**...*RESIDENTIAL*
3508 **RICHARD GUILD**...*RESIDENTIAL*
3509 **WALTER LEE**...*RESIDENTIAL*
3510 **DENNIS ANKNEY**...*RESIDENTIAL*
3514 **RAY P JOHNSON**...*RESIDENTIAL*
3516 **STEVE JR SLADEK**...*RESIDENTIAL*

2003 MONROE ST

SOURCE: DIGITAL BUSINESS DIRECTORY

1100 **ROBERT & HATSUE ROSS**...*RESIDENTIAL*
1105 **D S WALLPAPERING & PAINTING**...*RESIDENTIAL PAINTING*
1109 **DONALD HARRISON**...*RESIDENTIAL*
1111 **JAMES STEVENSON**...*RESIDENTIAL*
1112 **SANTOS C DE JESUS**...*RESIDENTIAL*
1117 **DONNA & GERALD BAILEY**...*RESIDENTIAL*
1122 **RON L FRIASER**...*RESIDENTIAL*
1127 **ALEJANDRO ROSALES**...*RESIDENTIAL*
1131 **WATTERS BOOKKEEPING SVC**...*ACCOUNTING SERVICES, EXCEPT AUDITING*
1133 **DIANE PRECIADO**...*RESIDENTIAL*
1133 **ISIDRO PRECIADO**...*RESIDENTIAL*

2003 RIVERSIDE DR

SOURCE: DIGITAL BUSINESS DIRECTORY

32000 **B MARSH**...*RESIDENTIAL*
32000 **BILL SCOTT**...*RESIDENTIAL*
32000 **CHARLES HIBBARD**...*RESIDENTIAL*
32000 **E F MATTHEWS**...*RESIDENTIAL*
32000 **FREEMAN JR MILES**...*RESIDENTIAL*
32000 **GARY & ROBIN BERCUME**...*RESIDENTIAL*
32000 **GLENN & COLLEEN WISNER**...*RESIDENTIAL*
32000 **J PORTZER**...*RESIDENTIAL*
32000 **JOHN W ALLEN**...*RESIDENTIAL*
32000 **KEITH SMITH**...*RESIDENTIAL*
32000 **LAKE PARK RESORT**...*MOTELS*
32000 **LESTER M & SHARON ROSE**...*RESIDENTIAL*
32000 **N KUPRION**...*RESIDENTIAL*
32000 **PHIL RESER**...*RESIDENTIAL*
32000 **RHONDA ROBINSON**...*RESIDENTIAL*
32000 **SAM TUCK**...*RESIDENTIAL*
32000 **TED & JACKIE CURTIS**...*RESIDENTIAL*
32000 **THOMAS MESSERALL**...*RESIDENTIAL*
32000 **TOM DUNKS**...*RESIDENTIAL*
32000 **WAYNE & PATSY TOWLER**...*RESIDENTIAL*
32000 **WILLIAM HIBBARD**...*RESIDENTIAL*
32040 **LAKE ELSINORE CAMP GROUND**...*LEGISLATIVE BODIES, LEVEL OF GOVERNMENT*
32209 **BEVERLEE HILL**...*RESIDENTIAL*
32209 **CONSTANCE HARRELL**...*RESIDENTIAL*
32209 **I QUINN**...*RESIDENTIAL*
32209 **JEAN HALL**...*RESIDENTIAL*
32209 **KENNETH A LYTLE**...*RESIDENTIAL*
32209 **KENNETH MCKINLEY**...*RESIDENTIAL*
32209 **KRISTY VALONA**...*RESIDENTIAL*
32209 **L OSBORNE**...*RESIDENTIAL*
32209 **L SIMONS**...*RESIDENTIAL*
32209 **LAKE VIEW APARTMENTS**
32209 **MELINDA LEGRO**...*RESIDENTIAL*
32209 **PAM WHITCOMB**...*RESIDENTIAL*
32209 **PETRA HERNANDEZ**...*RESIDENTIAL*
32209 **SAMUEL ROSS**...*RESIDENTIAL*
32209 **SILVIA T LAMPLE**...*RESIDENTIAL*
32209 **THERESA HADDOX**...*RESIDENTIAL*
32209 **TOM PENNINGTON**...*RESIDENTIAL*
32211 **ELENA BENDEZU**...*RESIDENTIAL*
32211 **JAMES TURPIN**...*RESIDENTIAL*
32211 **LATANYA ZANDERS**...*RESIDENTIAL*
32211 **MARGARET BROWN**...*RESIDENTIAL*
32211 **OLIVIA FLORES**...*RESIDENTIAL*
32310 **N WILSON**...*RESIDENTIAL*
32310 **OUTHOUSE INC**
32310 **THOMAS WHITE**...*RESIDENTIAL*
32391 **CALIFORNIA GLASS & SUPPLY**
32391 **CLARK FORENSIC SVC INC**
32391 **ELSINORE ELECTRIC SUPPLY**
32391 **ELVIRA'S**...*STEAK AND BARBECUE RESTAURANTS*
32391 **EXCHANGE TECNOLOGIES INTL INC**
32391 **SAMPSONIC**...*ELECTRIC POWER SYSTEMS CONTRACTORS*
32391 **TAPATIO EL**...*RESIDENTIAL*
32391 **TEMPLO NUEVA CREACION**
32391 **WALLS INSPECTION CO**

2001 EISENHOWER DR

SOURCE: HAINES

3500	RAYA ARMANDO
3501	LITTLEFIELD MARVIN
3502	XXXX
3503	BATTAGLIA MARK
3503	LASHINSKI CHERYL
3504	MAY NOTINE
3505	MAY NORINA
3506	MAY NORINA
3507	MOORE HELEN
3507	WHITE JAFFREY
3508	GODOY JOSA D
3509	RAMIREZ ELEAZAR
3509	ROLLINS BRAD
3600	VICTOR WILLIAM
3601	MARAVILLA HAYDEA
3602	GRIFFITH SUSAN
3602	STRONG C
3604	XXXX
3605	ROPP JIMM
3606	GUTIERREZ RAFAEL
3608	VELOZ ROTARI
3700	BONNEY BRUCE
3701	CAMPBELL NORMA
3701	MIRAMONTES RUBEN
3702	MAY ROY
3703	RUCH JAMES
3705	DECKER BERNARD
3705	MORGAN ROBERT
3705	YANG ELSIE
3707	LUQUE ENRIQUE
3709	EMANIR
3709	FAUS JETF
3800	SULLENDER EDWARD
3801	ACKERMAN HAROLD
3802	LIND DAVE
3803	BEECHAM SCOTT
3804	TINCHER ELAINE
3805	DISUMMO ANNA MANA
3805	DISUMMO NORBERLO F
3806	LEZAMA MARCOS
3806	PEREZ JESUS
3807	PEREZ JOVILA
3808	FORNWALT HARRY
3808	JONES ESTELLA
3809	GULLION JON
3901	ADAMS GARY
3903	CRANDALL RAY
3903	REYES SAUL
3905	NELSON ROLY
3905	WATTERS SUSAN

2001 LAKE CREST DR

SOURCE: HAINES

35	: 2 CAVALLUCCI JOSEPH
3496	WHITTLE MICHAEL
3497	XXXX
3498	EVERS ROGER
3499	PRADO JESSIE
3500	GARCIA ABE 10
3501	HURTADO MANA E
3502	GIBBONS KM
3503	CAMEROS ALEJANDRO
3504	CANTRELL JERRY
3504	CANTRELL LYNNE
3505	DELANO HENRY
3506	SALINE JOSEPH
3507	GAY NINA
3508	GUILD RICHARD
3509	LEE WAKTER
3510	ANKNEY DENNIS
3510	ROBINSON MARGOL
3511	POWERS C
3513	HIRSHMAN BRYON
3514	ARRENQUIN ELADIO
3515	COLUNGA ARTURO
3516	SLADEK STEVE J
3517	SOLIS TNAA
3518	CAZARRUBIAS VITAELIA
3518	HERNANDEZ G
3519	KEHOE JAMES
3520	BAYNE STEVEN
3521	OLESON M
3523	LAFONTAINE DAVID
3524	QUON DENNIS
3525	CASTILLO RICHARD
3526	FORREST JAS

2001 MONROE ST

SOURCE: HAINES

1100	ROSS HAISUE
1100	ROSS ROBERT
1101	KANE CAMERON
1102	MCDONALD JOHN
1103	GADDY WARREN
1104	AVILA JOSE
1105	BUENROSTRO MARLO
1106	MOORE MICHAEL
1107	FRANCO AKITA
1108	SNYDER VERA
1109	HARRISON DONALD
1109	ORTIZ LORENZO
1110	SULLENDER EDWARD
1111	KINNSCH DONALD
1112	SHEPPERD CRYSTAL
1113	QUINTERO FILBERTO
1114	ORTIZ LORENZO
1115	WINTER JUSTINE
1116	LUCE BRUCE
1117	NATERA JUDY
1117	RUIZ JULIO
1118	FLORES RAUDEL
1119	ACEVES MARTIN
1119	CANAS NEMECIA
1120	CAPON TREVOR
1121	BALLOID DONALD
1122	FRIASER RON L
1123	BARAJAS HERBERT
1125	GADDY WARREN
1127	RUSSO PETER
1129	STEWART SLEVE
1131	NELSON SUSAN
1131	WATTERS BOOKKEEPING SERVICES
1133	HERNANDEZ MARIA
1133	PRECIADO ISIDRO

2001 RIVERSIDE DR

SOURCE: HAINES

31761	XXXX
32000	LAKE PARK RESORT
32000	MULTI TENANT RESIDENTIAL
32040	JONES LINDA
32040	LAKE ELSN CTY PKS {&} REC CMP GAND
32209	LAKE VIEW APARTMENT
32209	LAKE VIEW APTS
32209	MULTI TENANT RESIDENTIAL
32209	WHITE EAGLE CARLOS
32211	APARTMENTS
32211	MULTI TENANT RESIDENTIAL
32281	LEE JOHN
32290	XXXX
32310	APARTMENTS
32310	KAY JORDAN CAMP
32310	MULTI TENANT RESIDENTIAL
32390	XXXX
32391	EXCHANGE TECHOLOGIES INTL INC
32391	CA GLASS & SUPPLY
32391	CAMPERS OUTPOST OF THE AMER SW
32391	CLARK FORENSIC SVCS INC
32391	ELSINORE ELECTRIC SUPPLY
32391	ELVIRAS RESTAURANT
32391	SAMPSONIC
32391	SEERS WHOM
32391	WALLS INSPECTION CO
32500	MULTI TENANT RESIDENTIAL
32500	ROADRUNNER AV PK
32500	ROADRUNNER RV PARK

1996 EISENHOWER DR

SOURCE: HAINES

3500	RAYA ARMANDO
3502	XXXX
3503	HORSLEY JAS L
3505	XXXX
3507	XXXX
3508	XXXX
3509	XXXX
3701	CISNEROS PEDRO
3701	CISNEROS SILVIA
3703	XXXX
3705	VINSON R
3706	XXXX
3707	XXXX
3708	DIAZ GUADALUPE
3800	CLAUDE WALTER
3802	XXXX
3803	BEECHAM SCOTT
3805	DISUMMO ANNA MARIA
3806	XXXX
3808	CORTES PRIMO S
3809	XXXX
3901	XXXX
3903	XXXX
3905	FARRIS CHERYL
3905	FARRIS MATTHEW

1996 LAKE CREST DR

SOURCE: HAINES

3496	RAMIREZ DELFINA
3497	RENEE C
3497	RENEE DUANE
3498	XXXX
3499	XXXX
3500	GARCIA ALBERTO
3503	XXXX
3504	CANTRELL JERRY
3504	CANTRELL LYNNE
3505	XXXX
3507	XXXX
3508	GUILD RICHARD
3509	LEE WALTER
3510	ANKNEY DENNIS
3512	LEVANDUSKI JOHN M
3513	HIRSHMAN LORRAINE
3515	XXXX
3516	SLADEK STEVE JR
3518	XXXX
3520	XXXX
3521	XXXX
3525	XXXX
3526	FORREST JAS

1996 MONROE ST

SOURCE: HAINES

1100	ROSS HAISUE
1100	ROSS ROBT
1102	XXXX
1105	XXXX
1106	WILLIS CALVIN
1106	WILLIS L
1108	XXXX
1110	XXXX
1111	STEVENSON JAMES
1114	XXXX
1115	HARDING ROBL
1116	XXXX
1117	BAILEY DONNA
1117	BAILEY GERALD
1118	XXXX
1120	XXXX
1122	FRIASER RON L
1125	XXXX
1127	ROSALES ALEJANDRO
1131	WINDOW WIZARD ADVR
1133	XXXX

1996 RIVERSIDE DR

SOURCE: HAINES

31761	XXXX
32000	LAKE PARK RESORT
32000	MULTI TENANT RESIDENTIAL
32040	DEARAGON ALEJANDRA
32040	LAKE ELSN CTY PARKS
32040	LAKE ELSN STATE PRK
32209	LAKE VIEW APARTMENT
32209	LAKE VIEW APTS
32209	MULTI TENANT RESIDENTIAL
32211	APARTMENTS
32211	MULTI TENANT RESIDENTIAL
32281	XXXX
32290	XXXX
32310	APARTMENTS
32310	MULTI TENANT RESIDENTIAL
32390	XXXX
32391	CA GLASS & SUPPLY
32391	EL TAPATIO
32391	ELSINORE ELECTRICAL
32391	HARRIS REAL ESTATE
32391	SAMPSONIC
32391	SEERS LUMBER CO INC
32391	WALLS INSPECTION CO
32500	APARTMENTS
32500	MULTI TENANT RESIDENTIAL

1991 EISENHOWER DR

SOURCE: HAINES

3500	XXXX
3501	WOOD JAMES L
3502	XXXX
3503	HORSLEY JAS L
3504	LEWIS MARY E
3505	SANDERSON JOHN
3506	MARTIN ARNOLD
3507	BALDWIN HENRY
3507	BALDWIN TINA
3508	XXXX
3509	HEINRICHS WAYNE
3600	BAXTER ROBERT K
3601	SWAPP RALPH E
3602	MILLER JAMES W
3602	MIRLY CYNTHIA F
3603	XXXX
3604	GRAVES DEVID C
3605	TURNWALL DOUG
3606	ELLERY TUCK PAINTNG
3606	TUCK ELLERY F 3D
3607	MOORE HELEN
3608	XXXX
3609	FREHNER DENNIS A
3700	BONNEY BRUCE 8
3700	NANCE DIANE
3701	XXXX
3702	ZAHL LINDE J
3703	XXXX
3704	HUBBARD DONALD R
3705	WINDER LES
3706	XXXX
3707	XXXX
3708	SHORT DEAN
3708	WHEATLEY ALLEN D
3709	DELGADO FRANCOIS
3800	BRENNER MICHAEL J J
3801	SANDERS PAT
3802	XXXX
3803	SMITH WILLIAM H
3804	KIZZIAR DEBORAH L
3805	DISUMMO ANNA MARIA
3806	SHERIDAN LARRY :
3807	NEWCOMB DARRELL C
3808	LEMOINE DONALD L
3809	HUNTER JAS P
3901	ADAMS GARY A
3901	DALE MATTHEW S
3901	ELLIOTT CAROLYN
3903	XXXX
3905	KELLEY THOMAS M
3905	ROBERTS CHERYL
3905	ROBERTS RON

1991 LAKE CREST DR

SOURCE: HAINES

3496	SCHNIEP GEORGE L
3497	RENEE C
3497	RENEE DUANE
3498	XXXX
3499	JOHNSON WILLETA
3499	PLANX KENNETH L
3500	FISCHER STEVE W
3501	FISCHER KIM A
3502	SUPPA STEVEN
3503	MELLODY FRANK
3504	SPANJER GEORGE E
3504	STEPHENSON BRIAN J
3505	ROACH WM
3507	XXXX
3508	GUILD RICHARD
3509	KISTNER MARTIN A
3510	XXXX
3511	LINDVALL ROGER
3512	XXXX
3513	FORBY LARRY D
3514	BLEEKER JAMES R
3515	WALTERS NORMAN E
3515	WRIGHT LA
3516	MCELREA DONALD J
3516	SLADEK STEVE JR
3517	THYSELL DONALD J
3518	XXXX
3519	MALDONADO ALFRED JR
3520	RAZOR MELISSA
3521	BROWN JACK C
3522	XXXX
3523	BUSANOVITCH RONALE
3524	QUON DENNIS K
3525	ALAIMO JAS
3526	NELSON THEODORE E

1991 MONROE ST

SOURCE: HAINES

1100	ROSS HATSUE
1100	ROSS ROBL
1102	WOODCOCK KATHLEEN
1103	SAUNDERS KARI L
1104	WEBER DAVID
1105	XXXX
1106	SKALSKI STEVEN
1107	SMITH CLIFFORD A
1108	MAIER CHERY ! L
1109	FIGUEROA TONY
1110	1111 BABKOW JUDY
1110	BABKOW STEPHEN
1110	WARD JOANNA
1112	HOLIDAY SUSAN G
1113	GABY EDWARD C
1114	SMITH DAVID
1115	MORALES J
1115	MORALES M
1116	XXXX
1117	BAILEY DONNA
1117	BAILEY GERALD
1118	BURGIN JAS
1119	RYAN B S
1119	RYAN RF
1120	XXXX
1121	LASH WILLARD P
1121	WILKINSON THOMAS C
1122	FRIASER RON L
1122	IBACH LYNNELTE M
1122	JOHNSON LILA C
1123	SWARTZEL JOHN A
1125	XXXX
1127	ROSALES ALEJANDRO
1129	DEMEURERS ALAN C ,
1131	KAISER DENNIS E
1133	KAVANAGH KELLY
1133	REZBER KATHLEEN

1991 RIVERSIDE DR

SOURCE: HAINES

31750	XXXX
31761	XXXX
32000	LAKE PARK RESORT
32000	LAKE PARK RESORT
32000	MULTI TENANT RESIDENTIAL
32040	CA ST PK & REC BUS SV
32040	CA ST PK & REC CMPGRD
32040	CA ST PK & REC RANGER
32040	HOGUE JAS
32040	HOGUE LINDA
32040	JONES LINDA K
32040	LAKE ELSN STATE PRK
32040	WATKINS MARLENE A
32209	LAKE VIEW APARTMENT
32209	LAKE VIEW APTS
32209	MULTI TENANT RESIDENTIAL
32211	APARTMENTS
32211	BILLS REFRIGERATION
32211	MULTI TENANT RESIDENTIAL
32281	LAKESIDE HLTH RESRT
32290	XXXX
32310	APARTMENTS
32310	K JORDANS CAMPGRND
32310	MULTI TENANT RESIDENTIAL
32390	XXXX
32391	BUILDING
32391	CA GLASS & SUPPLY
32391	CHERRY OVERHD DOOR
32391	EL SENOR GRAPHICS
32391	ELSINORE ELECTRICAL
32391	HASKELL BRIAN C CO
32391	LEEBOS CAFE
32391	MONIQUES BTY SLN
32391	REGAL CONCRETE
32391	ROSS & ROSS PHOTO
32391	SAMPSONIC
32391	SEEAS LUMBER CO INC
32500	APARTMENTS
32500	MULTI TENANT RESIDENTIAL
32500	ROADRUNNER RV PARK

1986 EISENHOWER DR

SOURCE: HAINES

3503	HORSLEY JAS L
3504	XXXX
3505	XXXX
3506	LICK DON
3506	LICK LINDA
3507	BALDWIN HENRY
3507	BALDWIN PEGGY
3508	BALDRIDGE DAVE
3600	XXXX
3603	XXXX
3604	GRAVES DAVID
3605	TURNWALL DOUG
3608	XXXX
3702	XXXX
3705	VANTASSEL ORRISON
3707	XXXX
3708	HANSHEW RICK
3708	XXXX
3709	MYBERGER CHAS
3800	METZE DAN
3800	METZE DOROTHY
3801	HORTON A
3806	MUMMA DON
3808	KEPLEY RAMONA

1986 LAKE CREST DR

SOURCE: HAINES

3497	RENEE C
3497	RENEE DUANE
3499	PLANK KENNETH L
3500	FISCHER STEVE
3503	MELLODY FRANK
3505	ROACH WM
3507	HOLSMAN LAURI
3512	BARBARO RICHARD
3515	WRIGHT LA
3516	MENDEZ JOE
3517	MOBLEY JULIE
3517	MOBLEY RUSSELL
3518	PALMER DEREK
3520	JAMES TINA
3524	BAKER BILL W
3525	ALAIMO JAS
3528	MINIX LEN

1986 MONROE ST

SOURCE: HAINES

1100	ROSS ROBT
1102	XXXX
1103	XXXX
1105	DS WALLPPRNG & PNTNG
1105	SPIELBERGER DAVID
1106	XXXX
1107	BAGGETT LEE
1108	FUNDERBRUK CLARENCE
1108	FUNDERBUAK ERIKA
1109	XXXX
1110	SHIPES KARL
1110	SNIPES LEONA
1111	XXXX
1113	HEFFERNAN SCOTT
1114	BARANGER KATHY
1114	BARANGER WALT
1115	HALEY J
1116	XXXX
1119	COATESJARMAN STEVEN
1120	CARLE BRIAN
1121	BROWN MICK
1122	FRAISER R
1122	JOHNSON L
1123	XXXX
1126	XXXX
1129	XXXX
1131	ELLIANO PATRICK
1133	GUILD RICHARD

1986 RIVERSIDE DR

SOURCE: HAINES

32000	APARTMENTS
32000	LAKE PARK RESORT
32000	MAMMOTH LK PAINTING
32000	MULTI TENANT RESIDENTIAL
32040	CA ST PKAPEC
32040	CA ST PKAREC BUS CMPGAD SV
32040	CA ST PKAREC RANGER
32040	HOGUE JAS
32040	HOGUE LINDA
32040	LAKE ELSK STATE PARK
32040	WATKINS SCOTT
32209	BARLEY APARTMENTS
32209	LAKE ELSN INVESTORS
32209	MULTI TENANT RESIDENTIAL
32211	APARTMENTS
32211	BILLS REFRIGERATION
32211	MULTI TENANT RESIDENTIAL
32281	GROVE THE
32290	XXXXX
32310	DRIGGERS LOYD
32310	JORDAN KAY
32310	JORDANS CAMPGRND
32310	KAYS BARN
32310	MARSHEK EUGENE
32390	XXXX
32391	ALL CITY ELEC SPLY
32391	BUILDING
32391	CA GLASS & SUPPLY
32391	DIRECTORS MATG LOAN
32391	ELSINORE MEAT {&} DELI
32391	HOT LINE PHONE LTD
32391	LAKE ELSH VLY RLTRS
32391	LEEBOS FOOD SERVICE
32391	MAKEUP CASE BTY SPL
32391	MONIQUES BTY SLN
32391	MUSKRAT
32391	RANCHO LAWNMOWER
32391	SAMPSONIC
32391	SEERS LUMBER CO INC
32391	SMITH JACK D
32391	SUNSHINE PET CENTER
32391	THE MAKEUP CASE BTY
32500	APARTMENTS
32500	MULTI TENANT RESIDENTIAL
32500	ROADRUNNER RV PARK

1984 EISENHOWER DR

SOURCE: HAINES

3503 BIDDULPH EARL
3504 RONNE ERWIN
3505 XXXX
3506 LICK LINDA
3507 BALDWIN HENRY
3508 BALDRIDGE A H
3600 PEASLEY ROBT
3603 XXXX
3604 GRAVES DAVID
3605 TURNWALL DOUG
3608 WAGONER GLEN D
3609 PREECE LARRY
3702 NANCE D
3706 EGGE CRAIG NASRYLND
3707 HENNEKAN CHAS
3708 CHAPIN ROBT
3709 MYBERGER CHAS
3800 METZE DAN
3806 XXXX
3901 HEYDEN D
3903 DAVID JACK
3905 GERAGHTY MICHAEL

1984 LAKE CREST DR

SOURCE: HAINES

RANGE NOT LISTED

1984 MONROE ST

SOURCE: HAINES

1100	ROSS ROBT
1102	BOWLAND PAUL
1104	ELLWOOD WM
1105	DS WALLPPRNG & PNTNG
1105	SPIELBERGER DAVID
1107	BAGGETT LEE
1108	XXXX
1109	YOCOM STEPHEN
1110	JUSZCZAK FELIX
1111	BABKOW STEPHEN
1112	MIHM MARK D
1113	HOBSON JOE
1114	BARRANGER WALT
1116	XXXX
1119	COATESJARMAN STEVEN
1120	FOX D
1122	FRAISER R
1122	JOHNSON L
1123	BOSLEY JOHN
1125	FELBER RANDY
1129	ALZATE CARLOS
1131	ELLIANO PATRICK
1133	GUILD RICHARD

1984 RIVERSIDE DR

SOURCE: HAINES

31761	XXXX
32040	CA ST PK & REC BUS SV
32040	CA ST PRKS & REC
32040	LAKE ELSN STATE PRX
32209	APARTMENTS
32209	LAKE ELSN INVESTORS
32211	APARTMENTS
32211	MULTI TENANT RESIDENTIAL
32281	GROVE THE
32290	XXXX
32310	BYRD JOEL RAY
32310	FERGUSON DONNA
32310	JORDAN KAY
32310	JORDANS CAMPGRND
32310	KAYS BARN
32310	WEBB RONALD
32341	KARASOULAS D
32341	LAKELAND ESCROW
32390	XXXX
32391	BRIGHT WAY ELEC SPL
32391	BUILDING
32391	CA GLASS & SUPPLY
32391	INSTANT PACKAGING
32391	LAKE ELSN YLY ALTAS
32391	LAKESIDE BOUTIQUE
32391	MAKEUP CASE BTY SPL
32391	RIP IT SALES INC
32391	SEERS LUMBER CO INC
32391	SMITH JACK D
32391	SUNSHINE PET CENTER
32391	SUSIES BEAUTY SALON
32391	THE MAKEUP CASE BTY
32500	ROADRUNNER RV PARK
32693	BURGESS TOMMY L
33209	MULTI TENANT RESIDENTIAL

1977 EISENHOWER DR

SOURCE: HAINES

STREET NOT LISTED

1977 LAKE CREST DR

SOURCE: HAINES

STREET NOT LISTED

1977 MONROE ST

SOURCE: HAINES

STREET NOT LISTED

1977 RIVERSIDE DR

SOURCE: HAINES

31761	**FALCONER SMITH**
32040	**CALIF ST PKS & RECRTN**
32040	**LAKE ELSN STATE PRK**
32040	**SPECHT HARRY R**
32281	**CIONNI T L**
32281	**LAUNDRY DRY CLEANNG**
32290	**XXXX**
32341	**KARASOULAS D**
32390	**XXXX**
32500	**RDADRUNNER THE**
32789	**EDMONDSON DON**

1974 EISENHOWER DR

SOURCE: HAINES

STREET NOT LISTED

1974 LAKE CREST DR

SOURCE: HAINES

STREET NOT LISTED

1974 MONROE ST

SOURCE: HAINES

STREET NOT LISTED

1974 RIVERSIDE DR

SOURCE: HAINES

31761	**FOLEY FRANCIS JR**
32040	**CAL ST PARKS & REC**
32040	**CALIF ST PKS & RECRTN**
32040	**LAKE ELSN RECRTN**
32040	**LAKE ELSN STATE PRK**
32040	**SPECHT HARRY R**
32281	**CIONNI T L**
32281	**HAMMER ANSELM MRS**
32281	**LAUNDRY DRY CLEANNG**
32290	**XXXX**
32341	**KARASOULAS D**
32390	**RORIPAUGH HELMA**
32500	**TOMLINS ROADRUNNER**
32789	**MADDOX JOHN D**
32789	**STANLEY JERRY**

1971 EISENHOWER DR

SOURCE: HAINES

STREET NOT LISTED

1971 LAKE CREST DR

SOURCE: HAINES

STREET NOT LISTED

1971 MONROE ST

SOURCE: HAINES

STREET NOT LISTED

1971 RIVERSIDE DR

SOURCE: HAINES

STREET NOT LISTED

TOPOGRAPHIC MAPS

Project Property:	32281 Riverside Drive 32281 Riverside Drive RIVERSIDE CA 92530
Project No:	23-397410.1
Requested By:	Partner Engineering and Science, Inc.
Order No:	23013100616
Date Completed:	February 15, 2023

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We have searched USGS collections of current topographic maps and historical topographic maps for the project property. Below is a list of maps found for the project property and adjacent area. Maps are from 7.5 and 15 minute topographic map series, if available.

Year	Map Series
1942	15
1954	7.5
1973	7.5
1974	7.5
1982	7.5
1988	7.5
1997	7.5
2015	7.5
2018	7.5
2021	7.5

Topographic Map Symbology for the maps may be available in the following documents:

Pre-1947

Page 223 of 1918 Topographic Instructions

Page 130 of 1928 Topographic Instructions

1947-2009

Topographic Map Symbols

2009-present

US Topo Map Symbols

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1942 *(1-1942)*
Aerial Photo Year: 1939

Quadrangle(s): Lake Elsinore, CA(1-1942)

Order No. 23013100616

Source: USGS 15 Minute Topographic Map

PARTNER



1954 (1-1954)
Aerial Photo Year: 1951

Quadrangle(s): Alberhill, CA(1-1954)

Order No. 23013100616

Source: USGS 7.5 Minute Topographic Map

PARTNER



1973

(1-1973) *Aerial Photo Year: 1973* *Photo Revision Year: 1973*

(2-1973) *Aerial Photo Year: 1973* *Photo Revision Year: 1973*

Quadrangle(s): Alberhill, CA(2-1973)
Elsinore, CA(1-1973)

Order No. 23013100616

Source: USGS 7.5 Minute Topographic Map

PARTNER



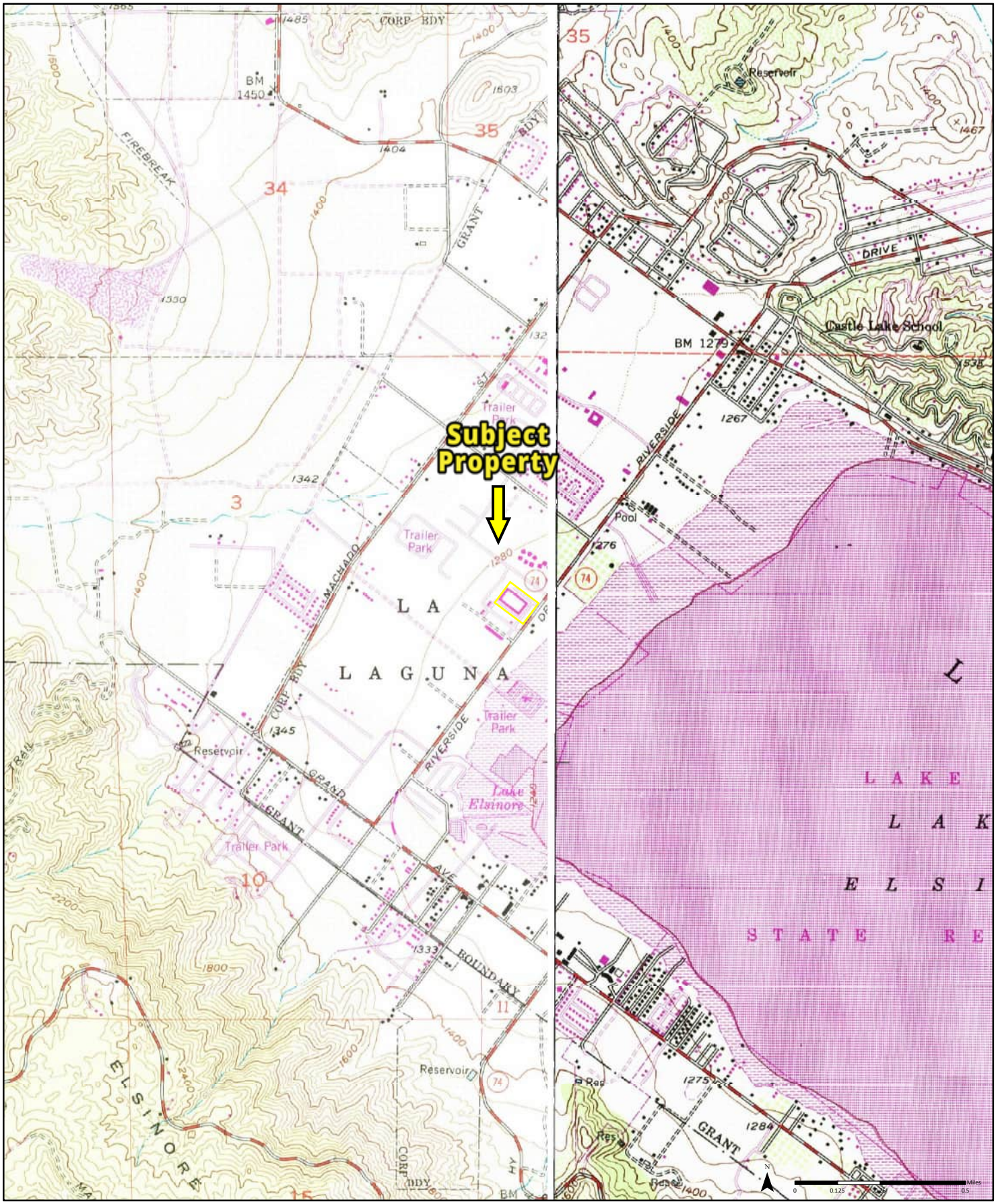
1974 *(1-1974)* *Aerial Photo Year: 1974* *(2-1974)* *Aerial Photo Year: 1974*

Quadrangle(s): Alberhill, CA(2-1974)
Elsinore, CA(1-1974)

Order No. 23013100616

Source: USGS 7.5 Minute Topographic Map

PARTNER



1982

(1-1982) *Aerial Photo Year: 1980* *Photo Revision Year: 1982*

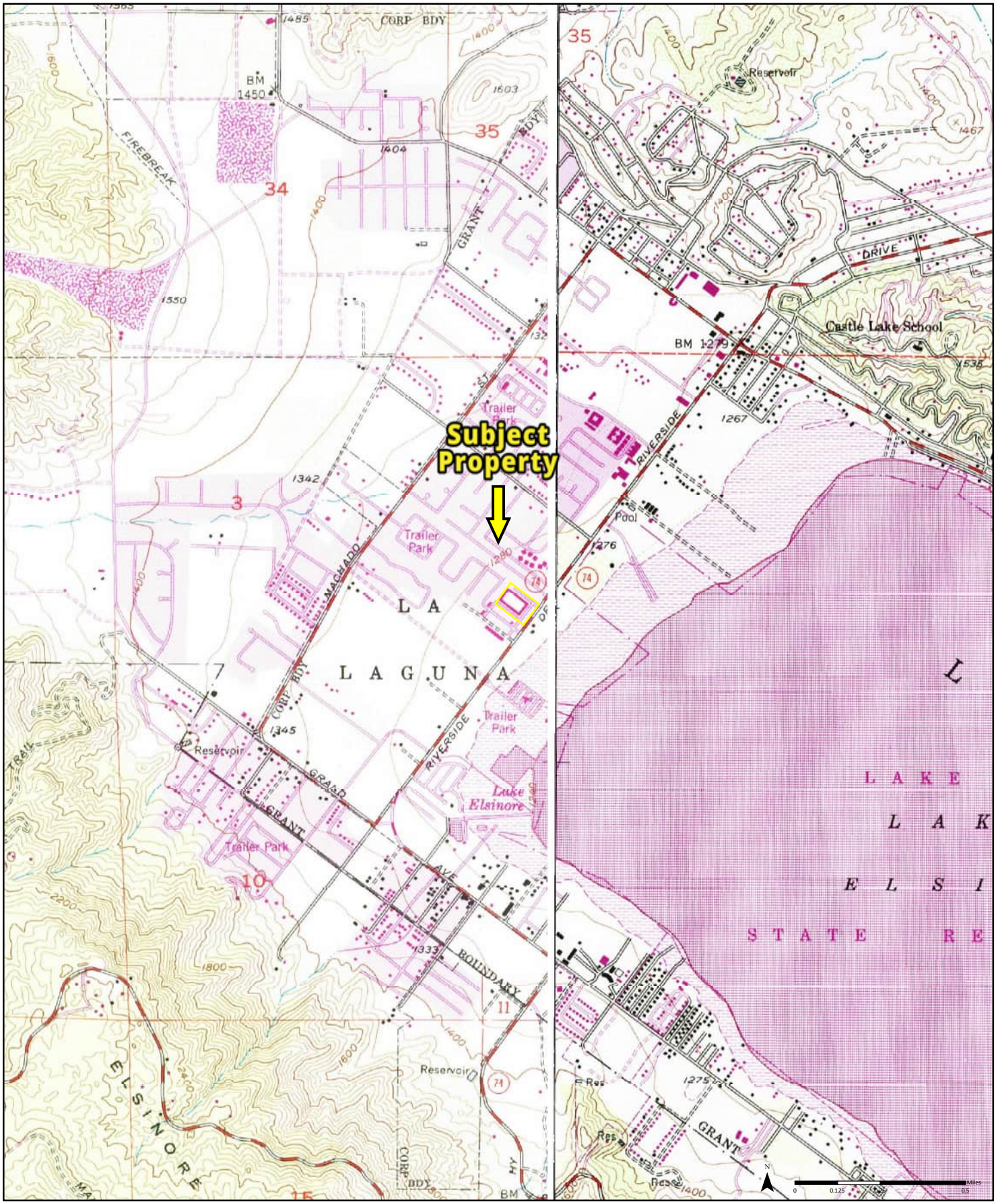
(2-1982) *Aerial Photo Year: 1980* *Photo Revision Year: 1982*

Quadrangle(s): Alberhill, CA(1-1982)
Lake Elsinore, CA(2-1982)

Order No. 23013100616

Source: USGS 7.5 Minute Topographic Map

PARTNER



1988

(1-1988) *Aerial Photo Year: 1985* *Photo Revision Year: 1988*

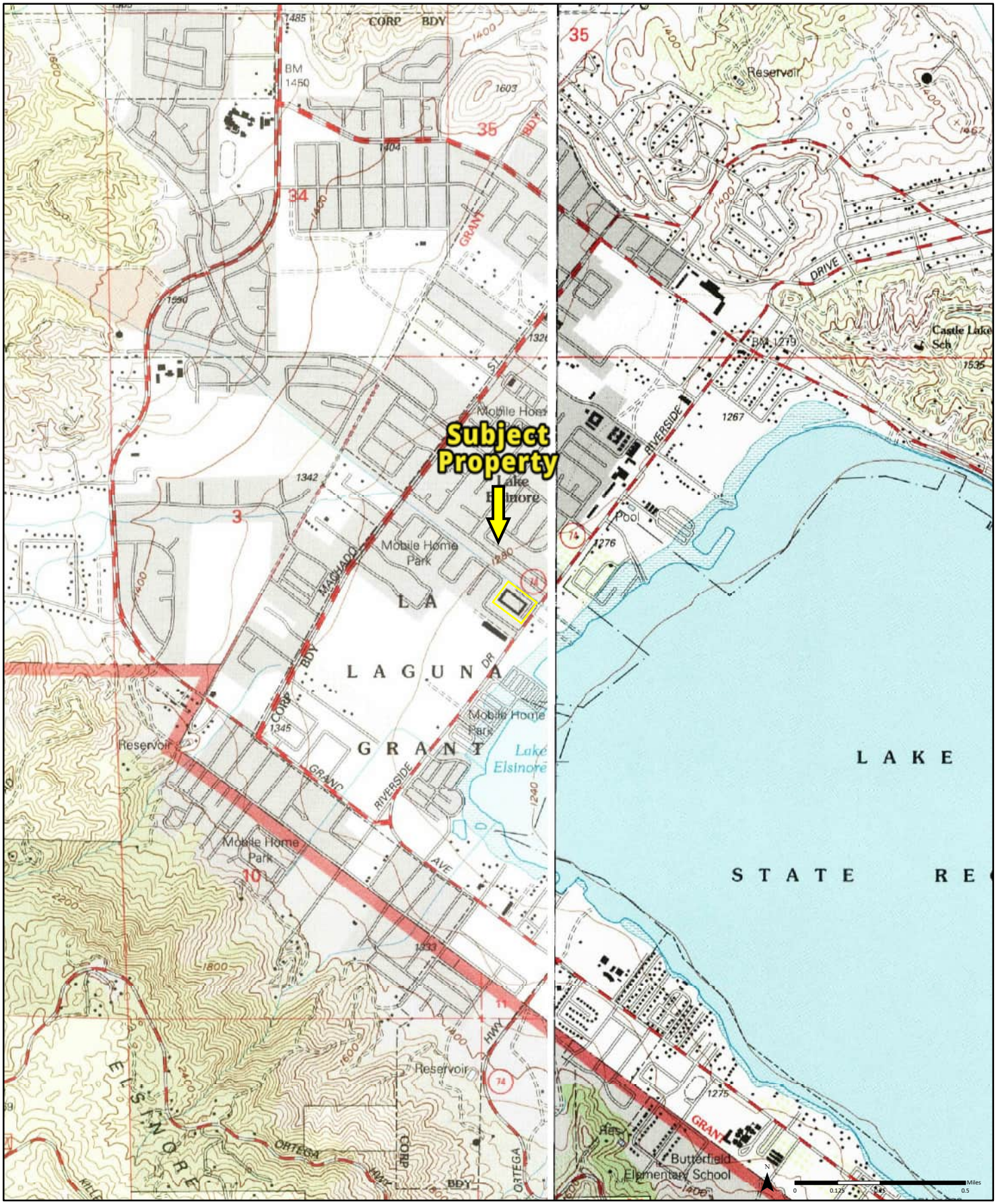
(2-1988) *Aerial Photo Year: 1985* *Photo Revision Year: 1988*

Quadrangle(s): Alberhill, CA(2-1988)
Lake Elsinore, CA(1-1988)

Order No. 23013100616

Source: USGS 7.5 Minute Topographic Map

PARTNER



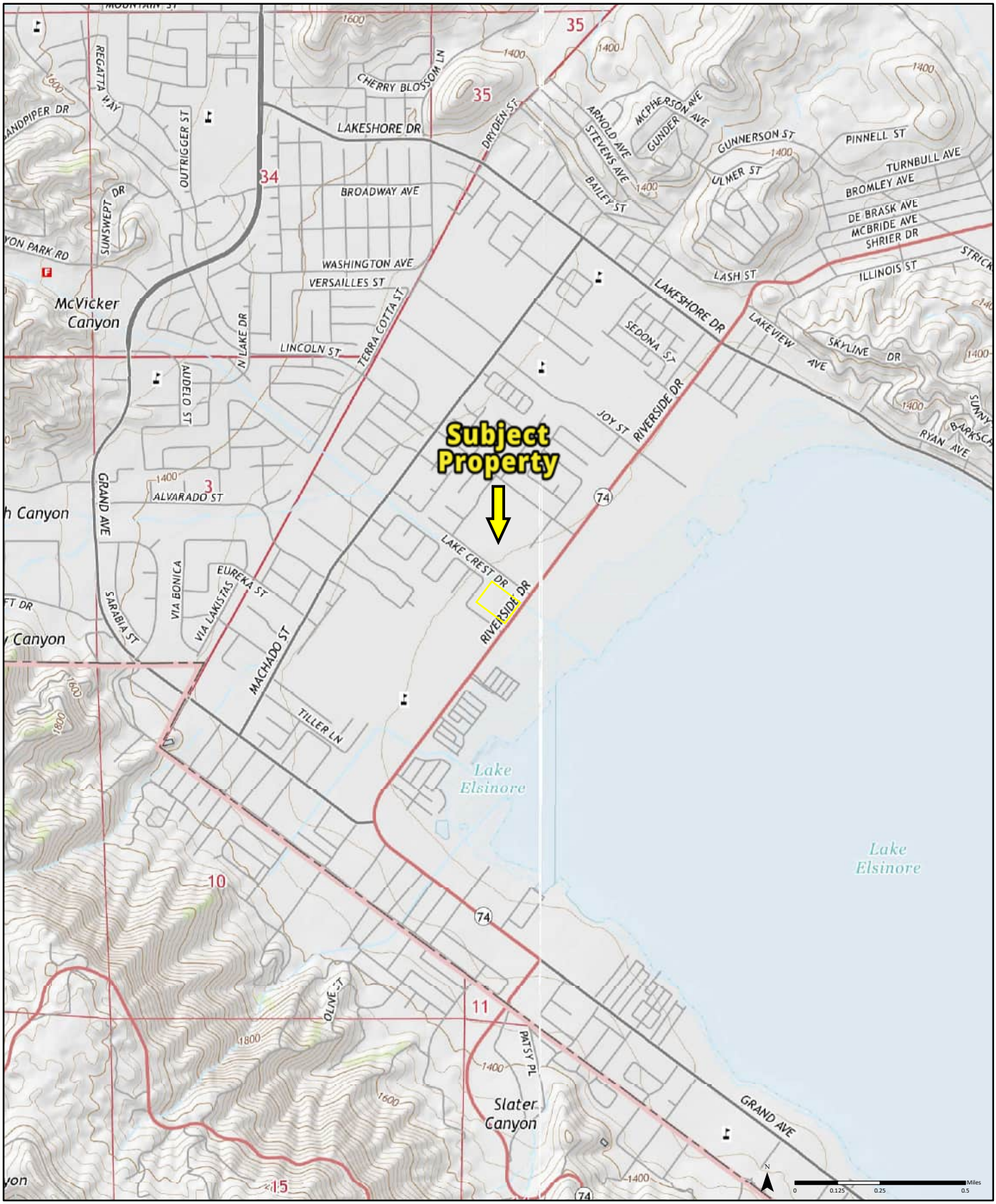
1997 *(1-1997)* *Aerial Photo Year: 1994* *(2-1997)* *Aerial Photo Year: 1994*

Quadrangle(s): Alberhill, CA(1-1997)
Lake Elsinore, CA(2-1997)

Order No. 23013100616

Source: USGS 7.5 Minute Topographic Map

PARTNER



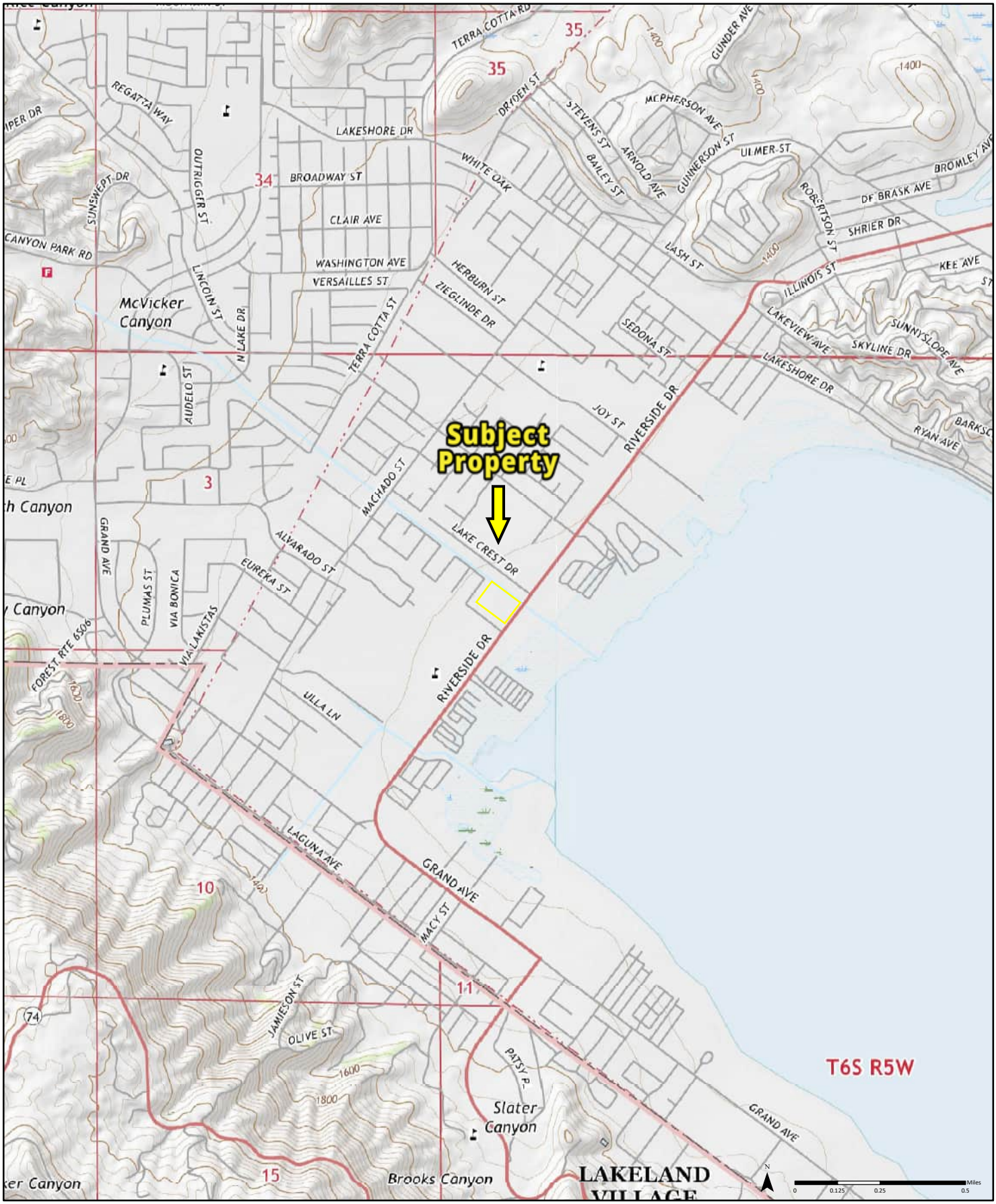
2015

Quadrangle(s): Alberhill, CA
Lake Elsinore, CA

Order No. 23013100616

Source: USGS 7.5 Minute Topographic Map

PARTNER



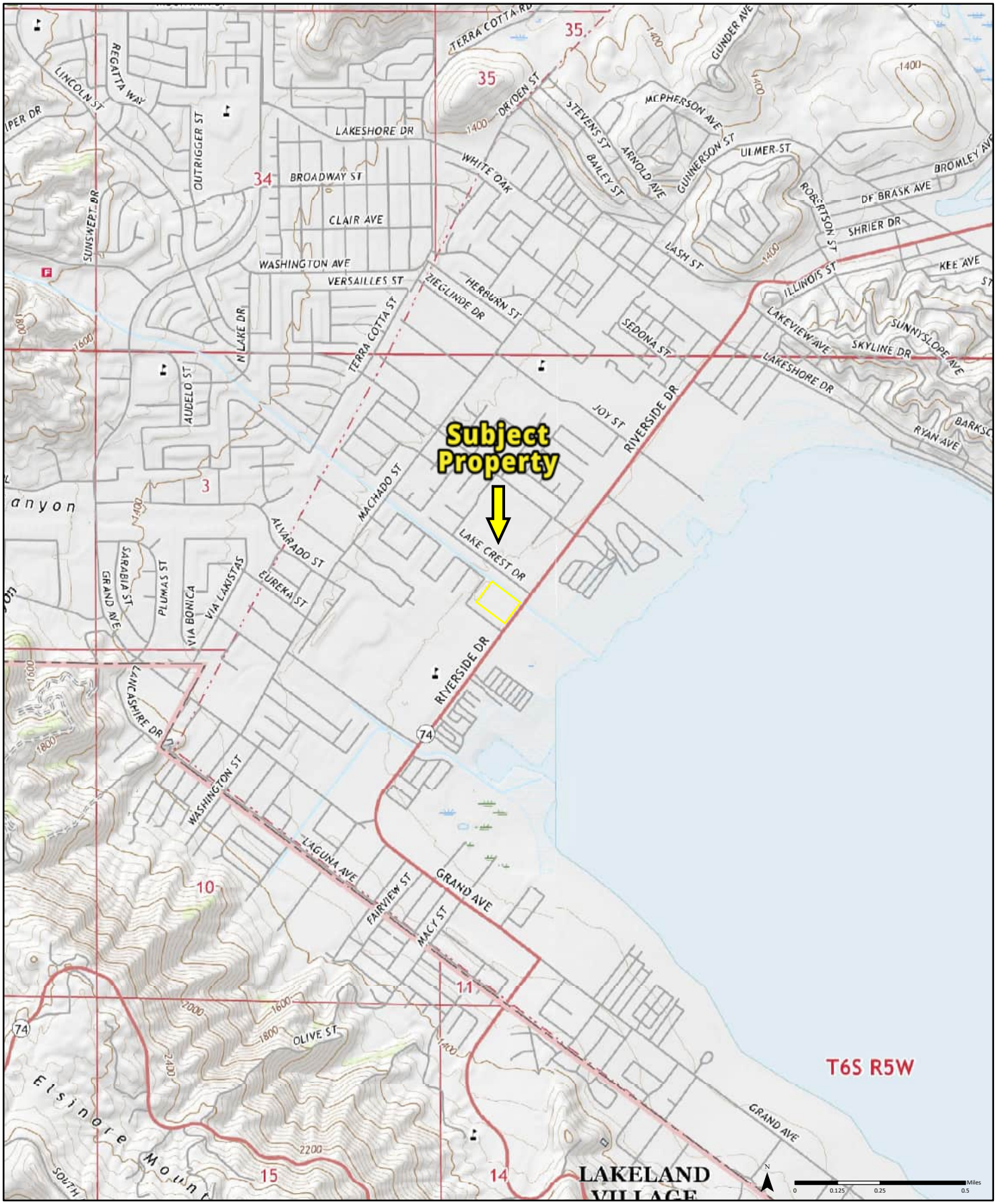
2018

Quadrangle(s): Alberhill, CA
Lake Elsinore, CA

Order No. 23013100616

Source: USGS 7.5 Minute Topographic Map

PARTNER



2021

Quadrangle(s): Alberhill, CA
Lake Elsinore, CA

Order No. 23013100616

Source: USGS 7.5 Minute Topographic Map

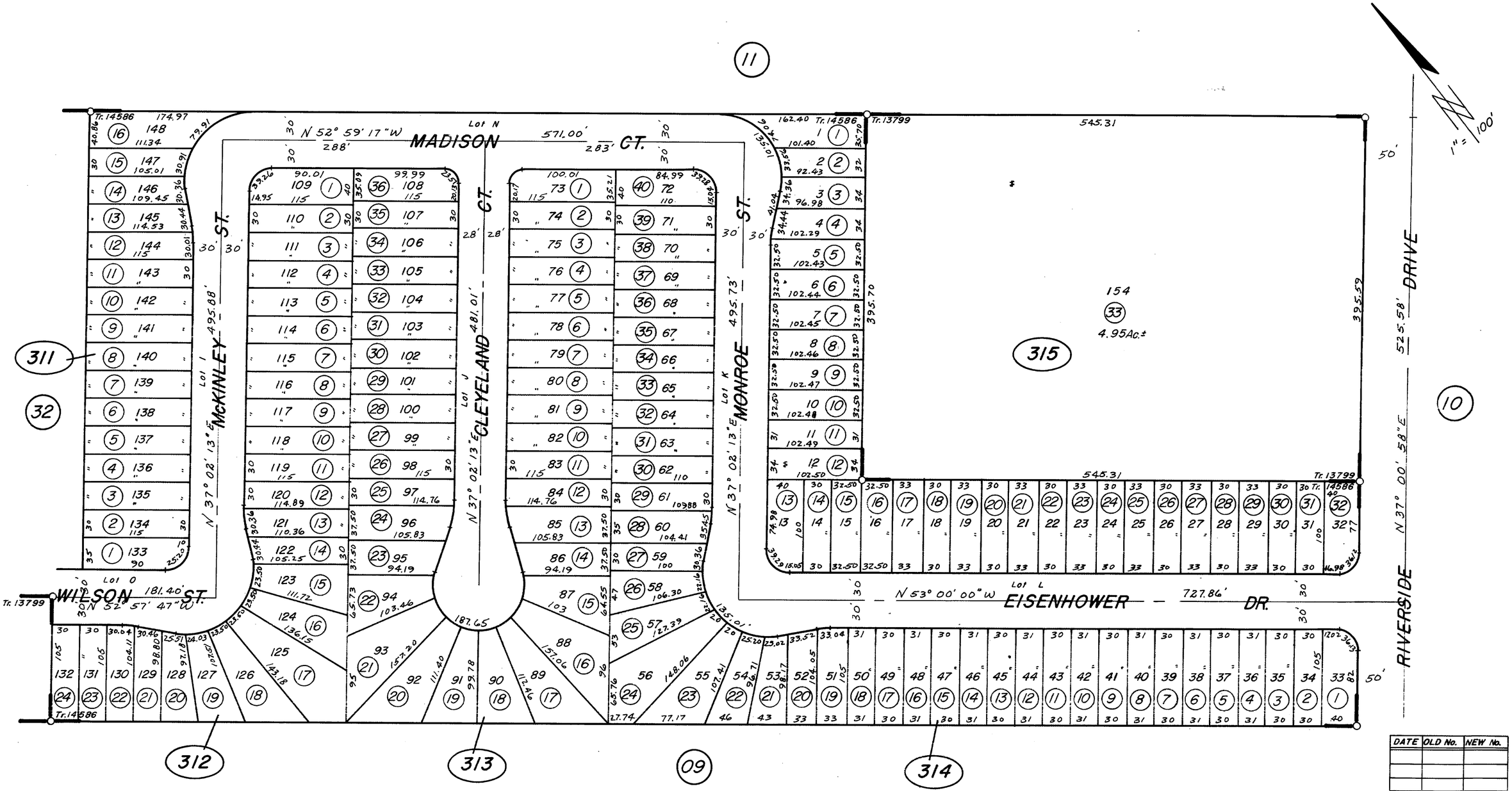
PARTNER

379-09

T.R.A. 005-028

379-31

POR. SEC. 3, T.6S., R.5W.



M.B. 111/59-63 Tract No. 13799
" 111/68-70 " " 14586

ASSESSOR'S MAP BK. 379 PG. 31
RIVERSIDE COUNTY, CALIF.
CW

MAR. 1980

DATE	OLD No.	NEW No.

Riverside County, CA - Community: Property Search
Property ID Number (PIN/APN): 379315033



Property ID Number (PIN/APN): 379315033

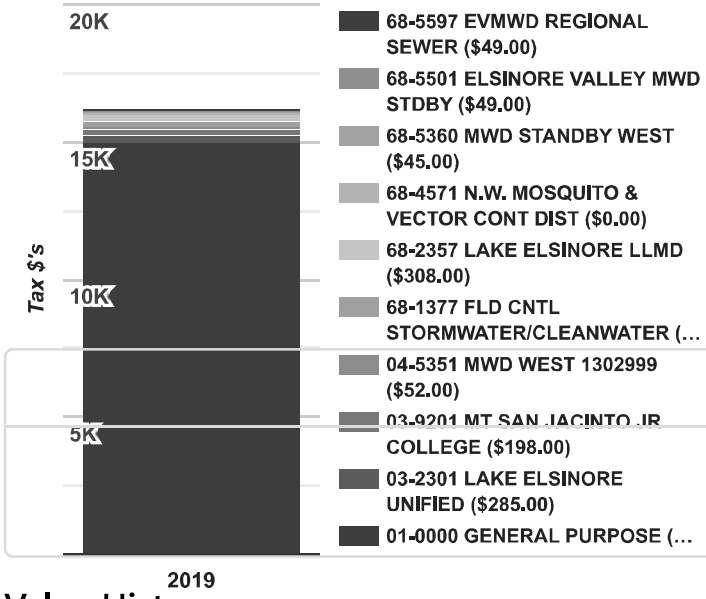


General Information

Property ID Number (PIN/APN)	**379315033**
Owner	More Information
Property Address	**32281 RIVERSIDE DR**
Property Type	**Vacant Commercial Land**
Tax Rate Area (TRA)	**005-028 LAKE ELSINORE**
Approximate Lot Size	**215,622 SqFt / 4.950 acres**
Legal Description	**4.95 ACRES M/L IN LOT 154 MB 111/059 TR 13799**

View Aerial Images | View Assessor Map | TLMA Survey Records

Tax Summary

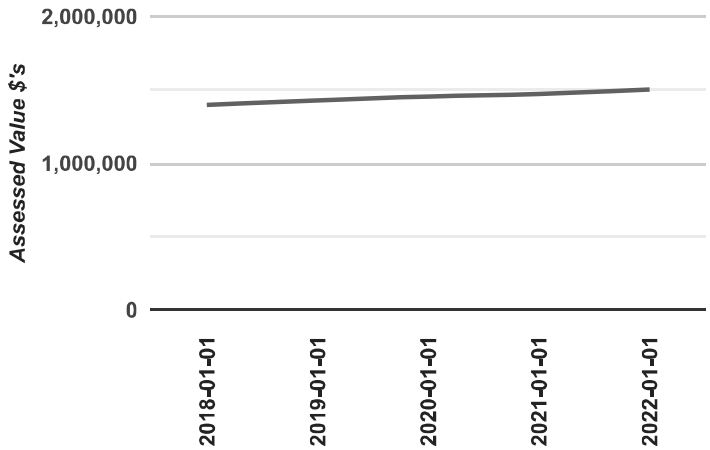


Total Tax

$16,214.00

Value History

Year	Event Type	Roll Caste	Event Date	Assessment				Net Taxable Value
				Land	Improvement	Living Improvement	Total	
2018	Annual	Annual	2018-01-01	$1,399,552	$0	$0	$1,399,552	$1,399,552
2019	Annual	Annual	2019-01-01	$1,427,543	$0	$0	$1,427,543	$1,427,543
2020	Annual	Annual	2020-01-01	$1,456,093	$0	$0	$1,456,093	$1,456,093
2021	Annual	Annual	2021-01-01	$1,471,178	$0	$0	$1,471,178	$1,471,178
2022	Annual	Annual	2022-01-01	$1,500,601	$0	$0	$1,500,601	$1,500,601



Assessed Value

7.22%

Increase since 2018

Sales History

Date	Document #	Sale Price	Sale Type	Qualified
11-14-2014	2014-0436503	$1,325,000	Straight Transfer	Qualified
12-21-2004	2004-1010030	$1,250,000	Straight Transfer	Qualified
02-01-2000	2000-038237	$750,000	Straight Transfer	Qualified
07-11-1986	1986-162232	$1,500,000	Straight Transfer	Qualified
02-03-1984	1984-022882	$800,000	Straight Transfer	Qualified

Buildings

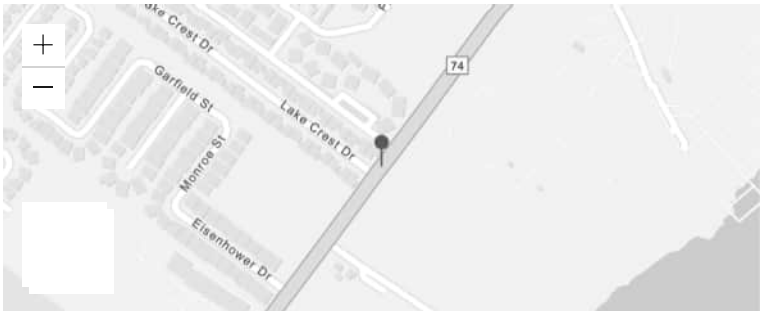
Building 1

Building Type	**Commercial / Industrial**
Year Built	**1776**
Has Fireplace	**No**

Handler Profile

CAC002580846 - JOHN LEE

Status: INACTIVE



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ID Number Profile

ID Number:	CAC002580846
Facility Name:	JOHN LEE
ID Number Status:	INACTIVE (expired: 4/25/2005)
ID Type:	TEMPORARY
ID Category:	STATE
Entity Types:	GENERATOR
Issued Date:	8/12/2004
Last Updated:	8/12/2004

Facility Address

32281 RIVERSIDE DR
LAKE ELSINORE, CA 92530
RIVERSIDE County
(33.673874, -117.376222)

Mailing Address

3564 CENTRAL AVE STE 2H
RIVERSIDE, CA 92506

Owner

JOHN LEE
3564 CENTRAL AVE STE 2H
RIVERSIDE, CA 92506
(951) 788-1483

Contact

JOHN LEE
3564 CENTRAL AVE STE 2H
RIVERSIDE, CA 92506
(951) 788-1483

CalEnviroScreen 4.0 Results

Census Tract: 6065043003 (Population: 7243)

The results for each indicator range from 0-100 and represent the percentile ranking of census tract 6065043003 relative to other census tracts.

Overall Percentiles		**Environmental Effects**	
CalEnviroScreen:	64	Cleanup Sites:	0
Pollution Burden:	21	Groundwater Threats:	0
Population Characteristics:	95	Hazardous Waste:	5
		Solid Waste:	0

NAICS Codes

Annual ID Number Verification History

Year	Status	Method	VQ Number	Verified By

No results found matching your search criteria.

Page Size: 10 0 to 0 of 0 Page 0 of 0

Manifests

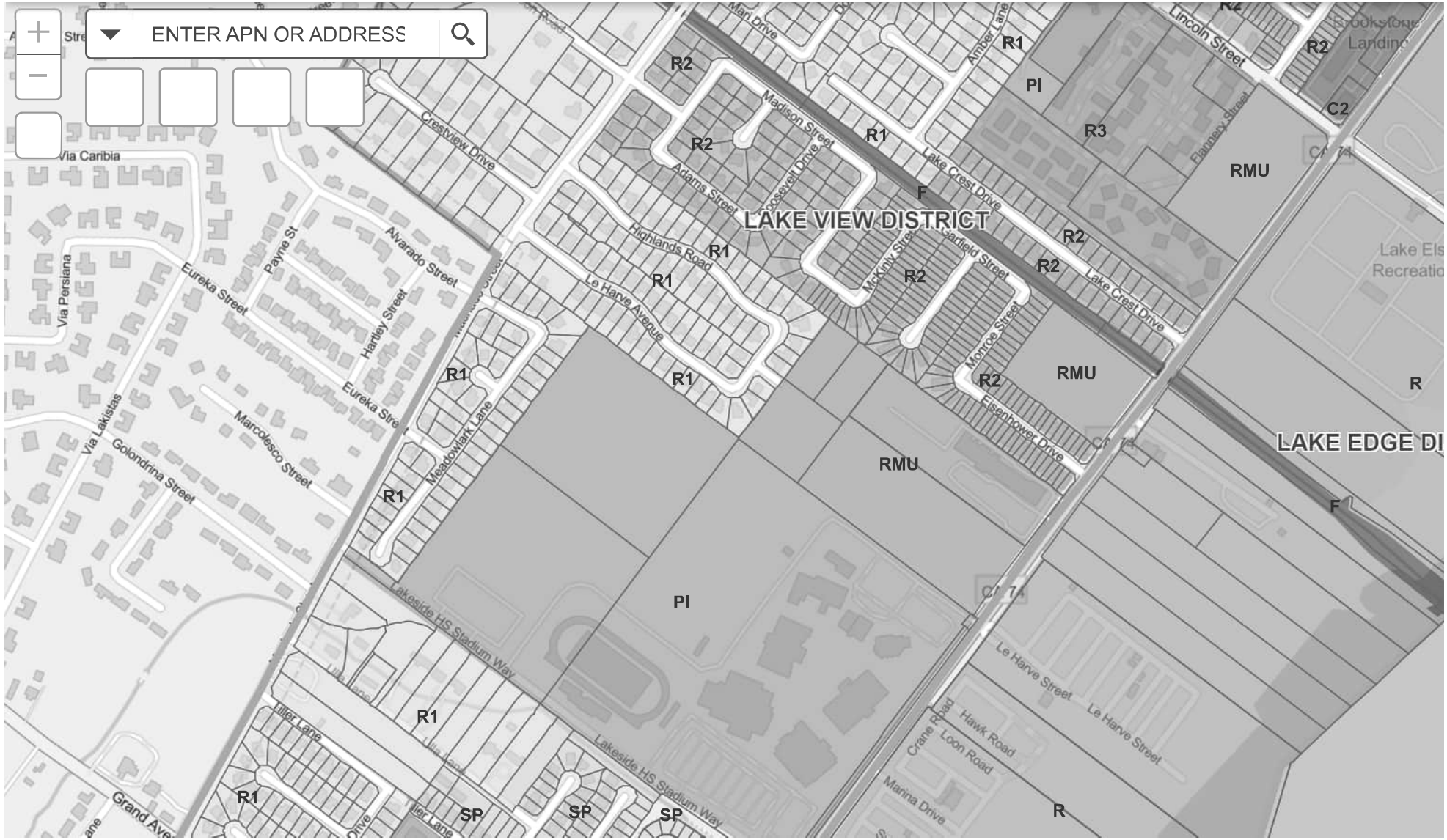
No Manifest Data for this ID Number.

Waste Code Matrix

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Planning Dept. APN/Address Lookup

Foldable Theme, Web AppBuilder for ArcGIS



ADVERTISEMENT

TRAVEL & EXPERIENCES

Taking a Health Break at Lake Elsinore Resort

BY MICHELE GRIMM AND TOM GRIMM

MAY 22, 1988 12 AM PT

<I> THE GRIMMS OF LAGUNA BEACH ARE AUTHORS OF "AWAY FOR THE WEEKEND," A TRAVEL GUIDE TO SOUTHERN CALIFORNIA. </I>

LAKE ELSINORE — Healthy times have returned to the Lake Elsinore area. The Lakeside Health Resort opened recently and promises to help guests lose both weight . . . and their cares.

Also in full swing is a reborn hot springs haven, Glen Ivy. Boasting the Southland's only red-clay bath, this daytime resort has been dubbed "Club Mud."

The Luiseno Indians were the first to soak away their aches and ills at Lake Elsinore. They called the spot Etengvo Wumona (hot springs by the little sea).

ADVERTISING



When white settlers discovered the medicinal waters they established a town and turned it into a popular health spa. However, the Great Depression drained away spa goers, and most of Elsinore's mineral wells were capped.

Visitors began to return in 1957 when the lake became a state recreation area and attracted boaters, water skiers and fishermen. Thermal updrafts in the mountain-bordered valley also makes it a center for hang gliders and ultralight aircraft pilots.

Birthday Celebration

Nowadays, health fans are finding good reasons to revisit the lakeside city that's celebrating its 100th birthday.

One of Lake Elsinore's original spa buildings still stands, the 1887 Crescent Bath House, a well-preserved redwood structure that's been designated a national historic landmark. It's now an antique store called the Chimes.

Vintage furniture, china, glassware, clocks and other collectibles fill the former spa's recreation rooms. Go down the long hall to see more antiques and the Roman-style bathtubs, as well as the men's and women's massage rooms. One chamber has been turned into a mini-museum of Lake Elsinore memorabilia.

In the older downtown section of the city, the Chimes is the most interesting place to start your visit. Be sure to ask owners Lory and Wilma Watts about the resident ghost.

Get there from Los Angeles by going south on Interstate 5 to join the Riverside Freeway (California 91) east, and exit south at Corona on Interstate 15 to Lake Elsinore.

Take the Main Street exit, then turn right on Graham Avenue to the two-story colonial building with fancy grillwork on the upper porch. The Chimes is open only on weekends from June 4; phone (714) 674-3456.

Across the street you can get visitor information at the turn-of-the-century Santa Fe train depot, restored as a centennial project for the Lake Elsinore Valley Chamber of Commerce. It's open 9 a.m. to 5 p.m. weekdays; phone (714) 674-2577.

New Health Spa

To reach Lake Elsinore's newest active health spa, continue on Graham Avenue to join Lakeshore Drive, which overlooks the water. At the junction with Riverside Drive (California 74), turn left and go about a mile to the Lakeside Health Resort, an unfancy but full-service fitness center for mind and body. It's on five peaceful acres across the highway from the lake.

The spa opened in 1986, guided by a general manager who came from the Oaks at Ojai and instructors who formerly worked at the Golden Door, Rancho La Puerta and the Bermuda Inn.

As you'll discover on a tour of the property, Lakeside Health Resort occupies the 1950s vacation retreat for officials of the laundry workers union. Its 40 rooms have been renovated to accommodate single, double or triple occupants.

The resort features heated indoor and outdoor pools, a hot tub, sauna, exercise gym and weight room, along with a tanning booth, beauty salon and massage rooms.

Guests join in a daily activity schedule that includes a series of 45-minute exercise classes, starting with a morning walk along the lakeside or a more rigorous mountain hike. Lectures about fitness, diet and mental and emotional health are included.

Three low-calorie meals are also part of the daily weight-loss and wellness schedule. Guests are welcome to spend a minimum of two nights, but for long-term results, the staff recommends a full week.

Total cost for lodging, meals, exercise and lecture programs, with use of all facilities, is $903 a week single, $693 per person double and $553 per person triple occupancy, plus tax and a 10% service charge.

Nightly rates are $129 single, $99 each for a double and $79 each for a triple. Call the Lakeside Health Resort, (714) 674-1501, or toll-free (800) 472-8583.

Elsinore State Park

Nearby, on the other side of Riverside Drive, look for the entrance to Lake Elsinore State Park, a concession-operated center for visitors who like to camp, picnic, boat and fish.

Campers have a choice of 1,000 first-come, first-served sites ($9.50 a night), including 520 with electrical hookups ($3 extra). You can rent a rowboat or kayak or launch your own boat. Fishermen try for bass, catfish, bluegill and crappie.

Daily admission to the park is $3 a vehicle with two persons, 50 cents for each additional person. Call (714) 674-3177 for more information.

Private marinas and campgrounds flank the park. At 32000 Riverside Drive is Lake Park Resort, which offers motel rooms ($40) and cabin accommodations with kitchens ($50), plus full-hookup RV sites ($13). Call (714) 674-7911.

Another RV campground is north of Lake Elsinore in Temescal Canyon, the Glen Ivy Recreational Vehicle Resort where full hookups cost $15 a night. Phone (714) 737-4261.

It’s close by the area’s other popular spa, Glen Ivy Hot Springs, which is open from 10 a.m. to 6 p.m. daily. From Riverside Drive head north on Lakeshore Drive, which becomes Temescal Canyon Road and parallels the freeway to the RV resort and hot springs entrance.

Glen Ivy has been a back-country soaking spot since 1890; its bathing and other facilities have been upgraded and expanded considerably in the past decade.

Mineral water from the hot springs fills a host of swimming, therapy and lounging pools and whirlpool baths. You’ll also find an ocher-colored pool where bathers pat on red clay to tone up their skin. Private rooms are available for massages and wraps.

All-day entry to Glen Ivy Hot Springs is $14.75 per person on weekends and holidays, $12.50 weekdays ($11.50 weekdays for senior citizens and children). Call (714) 737-4723.

Return to Los Angeles by rejoining Interstate 15 north to California 91 west and Interstate 5 north.

Round trip from Los Angeles for a healthy dose of fun in Lake Elsinore is 180 miles.

TRAVEL & EXPERIENCES



It's a date

Get our L.A. Goes Out newsletter, with the week's best events, to help you explore and experience our city.

Feb. 7, 2023

CALIFORNIA

Bracing for ‘superbloom’ chasers, Lake Elsinore closes road to popular hiking trail

Feb. 6, 2023

CALIFORNIA

Are the conditions ripe for a ‘superbloom’ in rain-soaked California? Here’s what experts say

Feb. 3, 2023

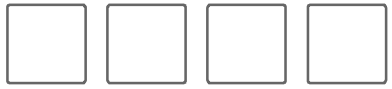
LIFESTYLE

How to have the best Sunday in L.A., according to afterparty king Joel Kim Booster

Feb. 3, 2023

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APPENDIX C: REGULATORY DATABASE REPORT

PARTNER

DATABASE REPORT

Project Property:	*32281 Riverside Drive* *32281 Riverside Drive* *RIVERSIDE CA 92530*
Project No:	*23-397410.1*
Report Type:	*Database Report*
Order No:	*23013100616*
Requested by:	*Partner Engineering and Science, Inc.*
Date Completed:	*February 1, 2023*

Environmental Risk Information Services
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Executive Summary

Property Information:

Project Property:		*32281 Riverside Drive* *32281 Riverside Drive RIVERSIDE CA 92530*
Project No:		*23-397410.1*
Coordinates:		
	Latitude:	*33.67351*
	Longitude:	*-117.377733*
	UTM Northing:	*3,726,009.62*
	UTM Easting:	*464,966.13*
	UTM Zone:	*UTM Zone 11S*
Elevation:		*1,268 FT*

Order Information:

Order No:	*23013100616*
Date Requested:	*January 31, 2023*
Requested by:	*Partner Engineering and Science, Inc.*
Report Type:	*Database Report*

Historicals/Products:

Aerial Photographs	*Historical Aerials (with Project Boundaries)*
ERIS Xplorer	*ERIS Xplorer*
Excel Add-On	*Excel Add-On*
Fire Insurance Maps	*US Fire Insurance Maps*
Physical Setting Report (PSR)	*Physical Setting Report (PSR)*
Vapor Screening Tool	*Vapor Screening Tool*

Executive Summary: Report Summary

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
Standard Environmental Records								
Federal								
DOE FUSRAP	Y	1	0	0	0	0	0	0
NPL	Y	1	0	0	0	0	0	0
PROPOSED NPL	Y	1	0	0	0	0	0	0
DELETED NPL	Y	0.5	0	0	0	0	-	0
SEMS	Y	0.5	0	0	0	0	-	0
SEMS ARCHIVE	Y	0.5	0	0	0	0	-	0
ODI	Y	0.5	0	0	0	0	-	0
CERCLIS	Y	0.5	0	0	0	0	-	0
IODI	Y	0.5	0	0	0	0	-	0
CERCLIS NFRAP	Y	0.5	0	0	0	0	-	0
CERCLIS LIENS	Y	PO	0	-	-	-	-	0
RCRA CORRACTS	Y	1	0	0	0	0	0	0
RCRA TSD	Y	0.5	0	0	0	**1**	-	**1**
RCRA LQG	Y	0.25	0	0	0	-	-	0
RCRA SQG	Y	0.25	0	0	0	-	-	0
RCRA VSQG	Y	0.25	0	0	0	-	-	0
RCRA NON GEN	Y	0.25	0	0	**3**	-	-	**3**
RCRA CONTROLS	Y	0.5	0	0	0	0	-	0
FED ENG	Y	0.5	0	0	0	0	-	0
FED INST	Y	0.5	0	0	0	0	-	0
LUCIS	Y	0.5	0	0	0	0	-	0
NPL IC	Y	0.5	0	0	0	0	-	0
ERNS 1982 TO 1986	Y	PO	0	-	-	-	-	0
ERNS 1987 TO 1989	Y	PO	0	-	-	-	-	0
ERNS	Y	PO	0	-	-	-	-	0
FED BROWNFIELDS	Y	0.5	0	0	0	0	-	0
FEMA UST	Y	0.25	0	0	0	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
FRP	Y	0.25	0	0	0	-	-	0
DELISTED FRP	Y	0.25	0	0	0	-	-	0
HIST GAS STATIONS	Y	0.25	0	0	0	-	-	0
REFN	Y	0.25	0	0	0	-	-	0
BULK TERMINAL	Y	0.25	0	0	0	-	-	0
SEMS LIEN	Y	PO	0	-	-	-	-	0
SUPERFUND ROD	Y	1	0	0	0	0	0	0
State								
RESPONSE	Y	1	0	0	0	0	0	0
ENVIROSTOR	Y	1	0	0	0	0	**1**	**1**
DELISTED ENVS	Y	1	0	0	0	0	0	0
SWF/LF	Y	0.5	0	0	0	0	-	0
SWRCB SWF	Y	0.5	0	0	0	0	-	0
WMUD	Y	0.5	0	0	0	0	-	0
HWP	Y	1	0	0	0	0	0	0
SWAT	Y	0.5	0	0	0	0	-	0
C&D DEBRIS RECY	Y	0.5	0	0	0	0	-	0
RECYCLING	Y	0.5	0	0	0	0	-	0
PROCESSORS	Y	0.5	0	0	0	0	-	0
CONTAINER RECY	Y	0.5	0	0	0	0	-	0
LDS	Y	0.5	0	0	0	0	-	0
LUST	Y	0.5	0	0	0	**1**	-	**1**
DELISTED LST	Y	0.5	0	0	0	0	-	0
UST	Y	0.25	0	0	0	-	-	0
UST CLOSURE	Y	0.5	0	0	0	0	-	0
HHSS	Y	0.25	0	0	0	-	-	0
UST SWEEPS	Y	0.25	0	0	**1**	-	-	**1**
AST	Y	0.25	0	0	0	-	-	0
AST SWRCB	Y	0.25	0	0	0	-	-	0
TANK OIL GAS	Y	0.25	0	0	0	-	-	0
DELISTED TNK	Y	0.25	0	0	**1**	-	-	**1**
CERS TANK	Y	0.25	0	0	0	-	-	0
DELISTED CTNK	Y	0.25	0	0	0	-	-	0
HIST TANK	Y	0.25	0	0	0	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
LUR	Y	0.5	0	0	0	0	-	0
CALSITES	Y	0.5	0	0	0	0	-	0
HLUR	Y	0.5	0	0	0	0	-	0
DEED	Y	0.5	0	0	0	0	-	0
VCP	Y	0.5	0	0	0	0	-	0
CLEANUP SITES	Y	0.5	0	0	0	0	-	0
DELISTED CLEANUP	Y	0.5	0	0	0	0	-	0
DELISTED COUNTY	Y	0.25	0	**1**	0	-	-	**1**
Tribal								
INDIAN LUST	Y	0.5	0	0	0	0	-	0
INDIAN UST	Y	0.25	0	0	0	-	-	0
DELISTED INDIAN LST	Y	0.5	0	0	0	0	-	0
DELISTED INDIAN UST	Y	0.25	0	0	0	-	-	0
County								
LOP RIVERSIDE	Y	0.5	0	0	0	0	-	0
UST RIVERSIDE	Y	0.25	0	0	0	-	-	0
Additional Environmental Records								
Federal								
FINDS/FRS	Y	PO	0	-	-	-	-	0
TRIS	Y	PO	0	-	-	-	-	0
PFAS TRI	Y	0.5	0	0	0	0	-	0
PFAS NPL	Y	0.5	0	0	0	0	-	0
PFAS WATER	Y	0.5	0	0	0	0	-	0
PFAS SSEHRI	Y	0.5	0	0	0	0	-	0
ERNS PFAS	Y	0.5	0	0	0	0	-	0
HMIRS	Y	0.125	0	0	-	-	-	0
NCDL	Y	0.125	0	0	-	-	-	0
TSCA	Y	0.125	0	0	-	-	-	0
HIST TSCA	Y	0.125	0	0	-	-	-	0
FTTS ADMIN	Y	PO	0	-	-	-	-	0
FTTS INSP	Y	PO	0	-	-	-	-	0
PRP	Y	PO	0	-	-	-	-	0
SCRD DRYCLEANER	Y	0.5	0	0	0	0	-	0
ICIS	Y	PO	0	-	-	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
FED DRYCLEANERS	Y	0.25	0	0	0	-	-	0
DELISTED FED DRY	Y	0.25	0	0	0	-	-	0
FUDS	Y	1	0	0	0	0	0	0
FORMER NIKE	Y	1	0	0	0	0	0	0
PIPELINE INCIDENT	Y	PO	0	-	-	-	-	0
MLTS	Y	PO	0	-	-	-	-	0
HIST MLTS	Y	PO	0	-	-	-	-	0
MINES	Y	0.25	0	0	0	-	-	0
SMCRA	Y	1	0	0	0	0	0	0
MRDS	Y	1	0	0	0	0	**1**	**1**
LM SITES	Y	1	0	0	0	0	0	0
ALT FUELS	Y	0.25	0	0	0	-	-	0
CONSENT DECREES	Y	0.25	0	0	0	-	-	0
AFS	Y	PO	0	-	-	-	-	0
SSTS	Y	0.25	0	0	0	-	-	0
PCBT	Y	0.5	0	0	0	0	-	0
PCB	Y	0.5	0	0	0	0	-	0
State								
DRYCLEANERS	Y	0.25	0	0	0	-	-	0
DELISTED DRYCLEANERS	Y	0.25	0	0	0	-	-	0
DRYC GRANT	Y	0.25	0	0	0	-	-	0
PFAS	Y	0.5	0	0	0	0	-	0
PFAS GW	Y	0.5	0	0	**2**	**1**	-	**3**
HWSS CLEANUP	Y	0.5	0	0	0	0	-	0
TOXIC PITS	Y	1	0	0	0	0	0	0
DTSC HWF	Y	0.5	0	0	0	0	-	0
INSP COMP ENF	Y	1	0	0	0	0	0	0
SCH	Y	1	0	0	0	0	**1**	**1**
CHMIRS	Y	PO	0	**1**	-	-	-	**1**
HIST CHMIRS	Y	PO	0	-	-	-	-	0
HAZNET	Y	PO	**1**	-	-	-	-	**1**
HAZ GEN	Y	PO	0	**1**	-	-	-	**1**
HAZ TSD	Y	0.5	0	0	0	0	-	0
HIST MANIFEST	Y	PO	0	-	-	-	-	0
HW TRANSPORT	Y	0.125	0	0	-	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
WASTE TIRE	Y	PO	0	-	-	-	-	0
MEDICAL WASTE	Y	0.25	0	0	0	-	-	0
HIST CORTESE	Y	0.5	0	0	0	0	-	0
CDO/CAO	Y	0.5	0	0	0	0	-	0
CERS HAZ	Y	0.125	0	**1**	-	-	-	**1**
DELISTED HAZ	Y	0.5	0	0	0	0	-	0
GEOTRACKER	Y	0.125	0	0	-	-	-	0
MINE	Y	1	0	0	0	0	0	0
LIEN	Y	PO	0	-	-	-	-	0
WASTE DISCHG	Y	0.25	0	0	0	-	-	0
EMISSIONS	Y	0.25	0	0	0	-	-	0
CDL	Y	0.125	0	**1**	-	-	-	**1**
Tribal	***No Tribal additional environmental record sources available for this State.***							
County								
HWG RIVERSIDE	Y	0.125	0	0	-	-	-	0
HZH RIVERSIDE	Y	0.125	0	**1**	-	-	-	**1**
MED WST RIVERSIDE	Y	0.25	0	0	0	-	-	0
RMP RIVERSIDE	Y	PO	0	-	-	-	-	0
	Total:		**1**	**6**	**7**	**3**	**3**	**20**

**** PO – Property Only***
**** 'Property and adjoining properties' database search radii are set at 0.25 miles.***

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number
1	HAZNET	JOHN LEE	32281 RIVERSIDE DR LAKE ELSINORE CA 92530	ENE	0.00 / 0.00	-1	21

Executive Summary: Site Report Summary - Surrounding Properties

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number
2	CDL		1110 MONROE LAKE ELSINORE CA 92530	WNW	0.02 / 81.92	7	21
2	CHMIRS	riverside county fire	1110 monroe street lake elsinore CA ***Control No | Notified Date:*** 4/9/1996	WNW	0.02 / 81.92	7	21
2	HAZ GEN	ANDERSON & ANDERSON METH LAB	1110 MONROE LAKE ELSINORE CA 925300000	WNW	0.02 / 81.92	7	22
3	HZH RIVERSIDE	EVMWD A-4 Liftstation	32390 Riverside Dr Lake Elsinore CA 92530	SE	0.03 / 141.54	-5	22
3	CERS HAZ	EVMWD A-4 Liftstation	32390 RIVERSIDE DR LAKE ELSINORE CA 92530	SE	0.03 / 141.54	-5	22
4	DELISTED COUNTY	MetroPCS California LLC (LA3410B)	32310 Riverside Dr Lake Elsinore CA 92530	SE	0.04 / 189.16	-4	25
5	RCRA NON GEN	ROBERT PORTILLO	1129 MCKINLEY STREET LAKE ELSINORE CA 92530 ***EPA Handler ID:*** CAC003119590	WNW	0.13 / 701.83	19	25
6	RCRA NON GEN	YAZMIN CASTANEDA	1134 MCKINLEY ST LAKE ELSINORE CA 92530-5307 ***EPA Handler ID:*** CAC002971723	WNW	0.13 / 704.52	19	26
7	PFAS GW		CA	N	0.19 / 987.67	24	27
8	RCRA NON GEN	LAKESIDE HIGH SCHOOL	32593 RIVERSIDE DR LAKE ELSINORE CA 92530 ***EPA Handler ID:*** CAL000406007	SSW	0.19 / 991.72	-3	33
9	PFAS GW		CA	N	0.19 / 1,000.72	24	34
10	DELISTED TNK	LAKE ELSINORE REC. AREA	32040 RIVERSIDE DR Lake Elsinore CA 92530	ENE	0.21 / 1,117.06	6	46

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number
10	UST SWEEPS	LAKE ELSINORE RECREATIONA AREA	32040 RIVERSIDE DR LAKE ELSINORE CA	ENE	0.21 / 1,117.06	6	47
			C C* | *Status: A33-000-1923 | ACTIVE				
11	RCRA TSD	CORY HOOVER	804 ROBIN DR LAKE ELSINORE CA 92530	NE	0.38 / 1,981.12	22	47
			EPA Handler ID: CAC003015356				
12	PFAS GW		 CA	NW	0.42 / 2,242.31	47	48
13	LUST	PARDEE HOMES	32789 RIVERSIDE DRIVE LAKE ELSINORE CA 92530	SW	0.42 / 2,243.10	1	60
			Global ID* | *Status Date* | *Status: T10000011799 | 6/4/2019 | COMPLETED - CASE CLOSED				
14	MRDS	PINACATE	RIVERSIDE COUNTY LAKE ELSINORE CA 92530	ESE	0.71 / 3,733.18	-25	66
			Dep ID: 10110517				
15	SCH	ELSINORE HIGH SCHOOL NO. 4	GRAND AVENUE/RIVERSIDE DRIVE LAKE ELSINORE CA 92530	SSW	0.71 / 3,739.09	33	66
			Estor/EPA ID* | *Cleanup Status: 33010016 | NO FURTHER ACTION AS OF 11/29/2000				
15	ENVIROSTOR	ELSINORE HIGH SCHOOL NO. 4	GRAND AVENUE/RIVERSIDE DRIVE LAKE ELSINORE CA 92530	SSW	0.71 / 3,739.09	33	68
			Estor/EPA ID* | *Cleanup Status: 33010016 | NO FURTHER ACTION AS OF 11/29/2000				

Executive Summary: Summary by Data Source

Standard

Federal

RCRA TSD - RCRA non-CORRACTS TSD Facilities

A search of the RCRA TSD database, dated Nov 7, 2022 has found that there are 1 RCRA TSD site(s) within approximately 0.50 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
CORY HOOVER	804 ROBIN DR LAKE ELSINORE CA 92530	NE	0.38 / 1,981.12	11
	***EPA Handler ID**: CAC003015356*			

RCRA NON GEN - RCRA Non-Generators

A search of the RCRA NON GEN database, dated Nov 7, 2022 has found that there are 3 RCRA NON GEN site(s) within approximately 0.25 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
ROBERT PORTILLO	1129 MCKINLEY STREET LAKE ELSINORE CA 92530	WNW	0.13 / 701.83	5
	***EPA Handler ID**: CAC003119590*			
YAZMIN CASTANEDA	1134 MCKINLEY ST LAKE ELSINORE CA 92530-5307	WNW	0.13 / 704.52	6
	***EPA Handler ID**: CAC002971723*			

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
LAKESIDE HIGH SCHOOL	32593 RIVERSIDE DR LAKE ELSINORE CA 92530	SSW	0.19 / 991.72	8
	***EPA Handler ID**: CAL000406007*			

State

ENVIROSTOR - EnviroStor Database

A search of the ENVIROSTOR database, dated Oct 17, 2022 has found that there are 1 ENVIROSTOR site(s) within approximately 1.00 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
ELSINORE HIGH SCHOOL NO. 4	GRAND AVENUE/RIVERSIDE DRIVE LAKE ELSINORE CA 92530	SSW	0.71 / 3,739.09	15
	***Estor/EPA ID	Cleanup Status**: 33010016	NO FURTHER ACTION AS OF 11/29/2000*		

LUST - Leaking Underground Fuel Tank Reports

A search of the LUST database, dated Nov 16, 2022 has found that there are 1 LUST site(s) within approximately 0.50 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
PARDEE HOMES	32789 RIVERSIDE DRIVE LAKE ELSINORE CA 92530	SW	0.42 / 2,243.10	13
	Global ID* | *Status Date* | *Status: *T10000011799* | *6/4/2019* | *COMPLETED - CASE CLOSED*			

UST SWEEPS - Statewide Environmental Evaluation and Planning System

A search of the UST SWEEPS database, dated Oct 1, 1994 has found that there are 1 UST SWEEPS site(s) within approximately 0.25 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
LAKE ELSINORE RECREATIONA AREA	32040 RIVERSIDE DR LAKE ELSINORE CA	ENE	0.21 / 1,117.06	10
	C C* | *Status: *A33-000-1923* | *ACTIVE*			

DELISTED TNK - Delisted Storage Tanks

A search of the DELISTED TNK database, dated Nov 15, 2022 has found that there are 1 DELISTED TNK site(s) within approximately 0.25 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
LAKE ELSINORE REC. AREA	32040 RIVERSIDE DR Lake Elsinore CA 92530	ENE	0.21 / 1,117.06	10

DELISTED COUNTY - Delisted County Records

A search of the DELISTED COUNTY database, dated Nov 28, 2022 has found that there are 1 DELISTED COUNTY site(s) within approximately 0.25 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
MetroPCS California LLC (LA3410B)	32310 Riverside Dr Lake Elsinore CA 92530	SE	0.04 / 189.16	4

Non Standard

Federal

MRDS - Mineral Resource Data System

A search of the MRDS database, dated Mar 15, 2016 has found that there are 1 MRDS site(s) within approximately 1.00 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
PINACATE	RIVERSIDE COUNTY LAKE ELSINORE CA 92530	ESE	0.71 / 3,733.18	14

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
	***Dep ID**: 10110517*			

State

PFAS GW - PFOA/PFOS Groundwater

A search of the PFAS GW database, dated Nov 11, 2022 has found that there are 3 PFAS GW site(s) within approximately 0.50 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
	CA	N	0.19 / 987.67	7
	CA	N	0.19 / 1,000.72	9
	CA	NW	0.42 / 2,242.31	12

SCH - School Property Evaluation Program Sites

A search of the SCH database, dated Oct 17, 2022 has found that there are 1 SCH site(s) within approximately 1.00 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
ELSINORE HIGH SCHOOL NO. 4	GRAND AVENUE/RIVERSIDE DRIVE LAKE ELSINORE CA 92530	SSW	0.71 / 3,739.09	15
	***Estor/EPA ID**	**Cleanup Status**: 33010016 | NO FURTHER ACTION AS OF 11/29/2000*		

CHMIRS - California Hazardous Material Incident Report System (CHMIRS)

A search of the CHMIRS database, dated Aug 15, 2022 has found that there are 1 CHMIRS site(s) within approximately 0.02 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
riverside county fire	1110 monroe street lake elsinore CA	WNW	0.02 / 81.92	2
	***Control No**	**Notified Date**: 4/9/1996*		

HAZNET - Handlers from Hazardous Waste Manifest Data

A search of the HAZNET database, dated Oct 24, 2016 has found that there are 1 HAZNET site(s) within approximately 0.02 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
JOHN LEE	32281 RIVERSIDE DR LAKE ELSINORE CA 92530	ENE	0.00 / 0.00	1

HAZ GEN - Generators from Hazardous Waste Manifest Data

A search of the HAZ GEN database, dated Dec 31, 2017 has found that there are 1 HAZ GEN site(s) within approximately 0.02 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
ANDERSON & ANDERSON METH LAB	1110 MONROE LAKE ELSINORE CA 925300000	WNW	0.02 / 81.92	2

CERS HAZ - California Environmental Reporting System (CERS) Hazardous Waste Sites

A search of the CERS HAZ database, dated Oct 7, 2022 has found that there are 1 CERS HAZ site(s) within approximately 0.12 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
EVMWD A-4 Liftstation	32390 RIVERSIDE DR LAKE ELSINORE CA 92530	SE	0.03 / 141.54	3

CDL - Clandestine Drug Lab Sites

A search of the CDL database, dated Jan 19, 2021 has found that there are 1 CDL site(s) within approximately 0.12 miles of the project property.

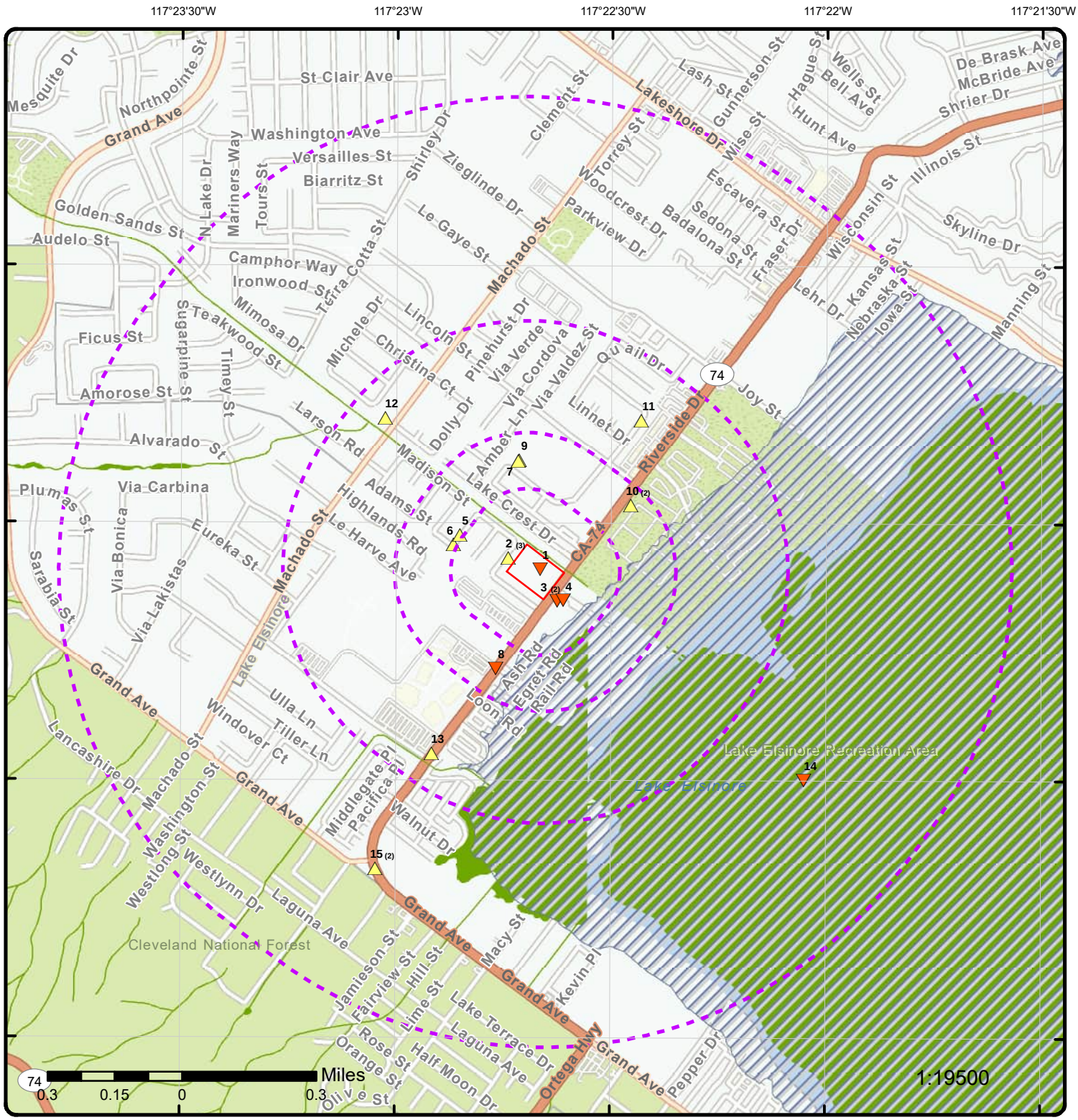
Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
	1110 MONROE LAKE ELSINORE CA 92530	WNW	0.02 / 81.92	2

County

HZH RIVERSIDE - Riverside County - Disclosure Facility List

A search of the HZH RIVERSIDE database, dated Jul 5, 2022 has found that there are 1 HZH RIVERSIDE site(s) within approximately 0.12 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
EVMWD A-4 Liftstation	32390 Riverside Dr Lake Elsinore CA 92530	SE	0.03 / 141.54	3



Map: 1.0 Mile Radius

Order Number: 23013100616

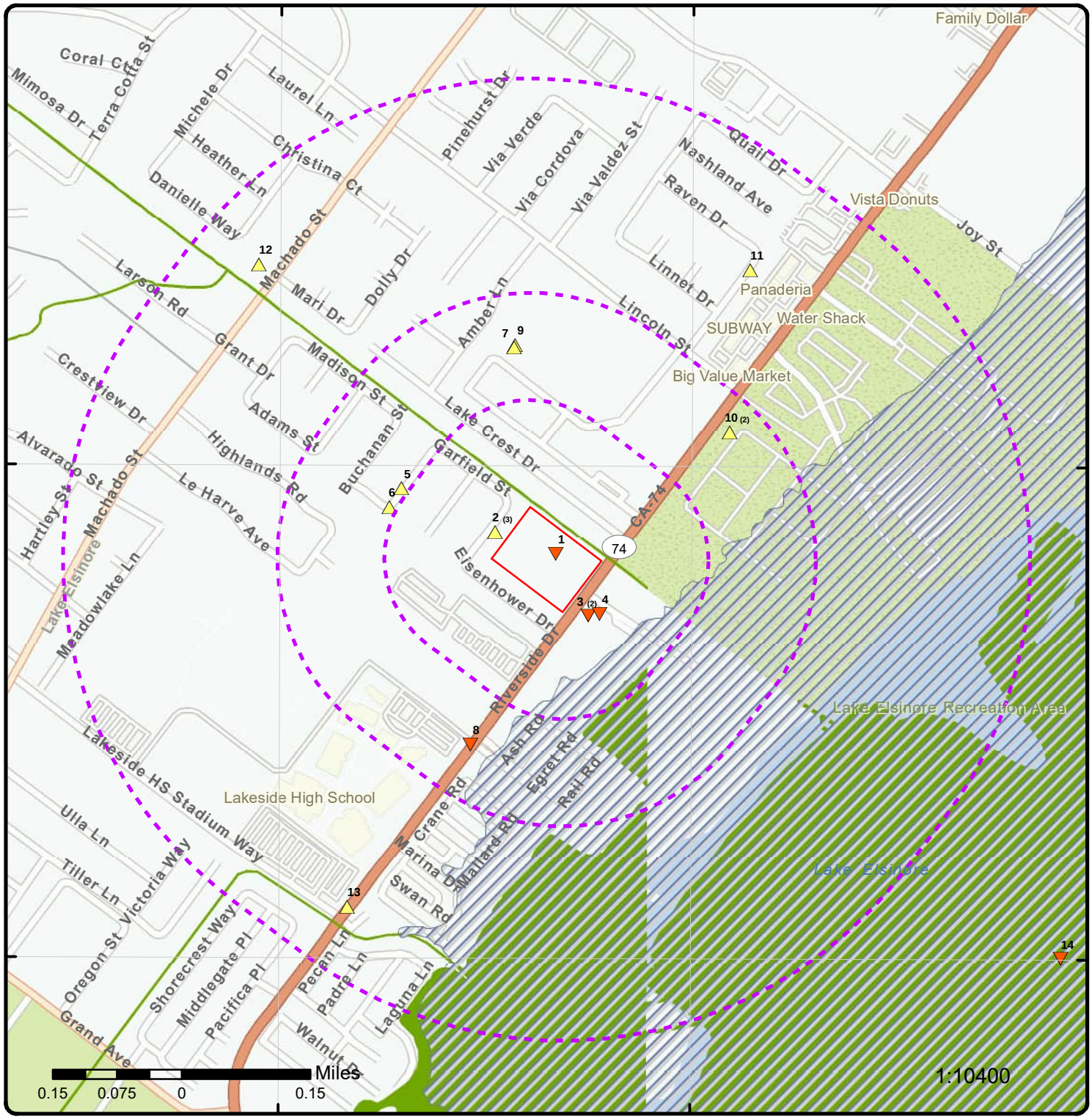
Address: 32281 Riverside Drive, RIVERSIDE, CA

ERIS

- Project Property
- Buffer Outline
- Sites with Higher Elevation
- Sites with Same Elevation
- Sites with Lower Elevation
- Sites with Unknown Elevation
- Areas with Higher Elevation
- Areas with Same Elevation
- Areas with Lower Elevation
- Areas with Unknown Elevation
- Freeways; Highways
- Traffic Circle; Ramp
- Major & Minor Arterial
- Traffic Circle; Ramp
- Local Road
- Rail
- State
- Country
- National Wetland
- Indian Reserve Land
- Plume
- 100 Year Flood Zone
- 500 Year Flood Zone
- FWS Special Designation Areas
- National Priorities List (Active, Delisted, Proposed, Institutional Control)

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Map: 0.5 Mile Radius

Order Number: 23013100616

Address: 32281 Riverside Drive, RIVERSIDE, CA

ERIS

- Project Property
- Buffer Outline
- Sites with Higher Elevation
- Sites with Same Elevation
- Sites with Lower Elevation
- Sites with Unknown Elevation
- Areas with Higher Elevation
- Areas with Same Elevation
- Areas with Lower Elevation
- Areas with Unknown Elevation
- Freeways; Highways
- Traffic Circle; Ramp
- Major & Minor Arterial
- Traffic Circle; Ramp
- Local Road
- Rail
- State
- Country
- National Wetland
- Indian Reserve Land
- Plume
- 100 Year Flood Zone
- 500 Year Flood Zone
- FWS Special Designation Areas
- National Priorities List (Active, Delisted, Proposed, Institutional Control)

Source: © 2021 ESRI StreetMap Premium

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Map: 0.25 Mile Radius

Order Number: 23013100616

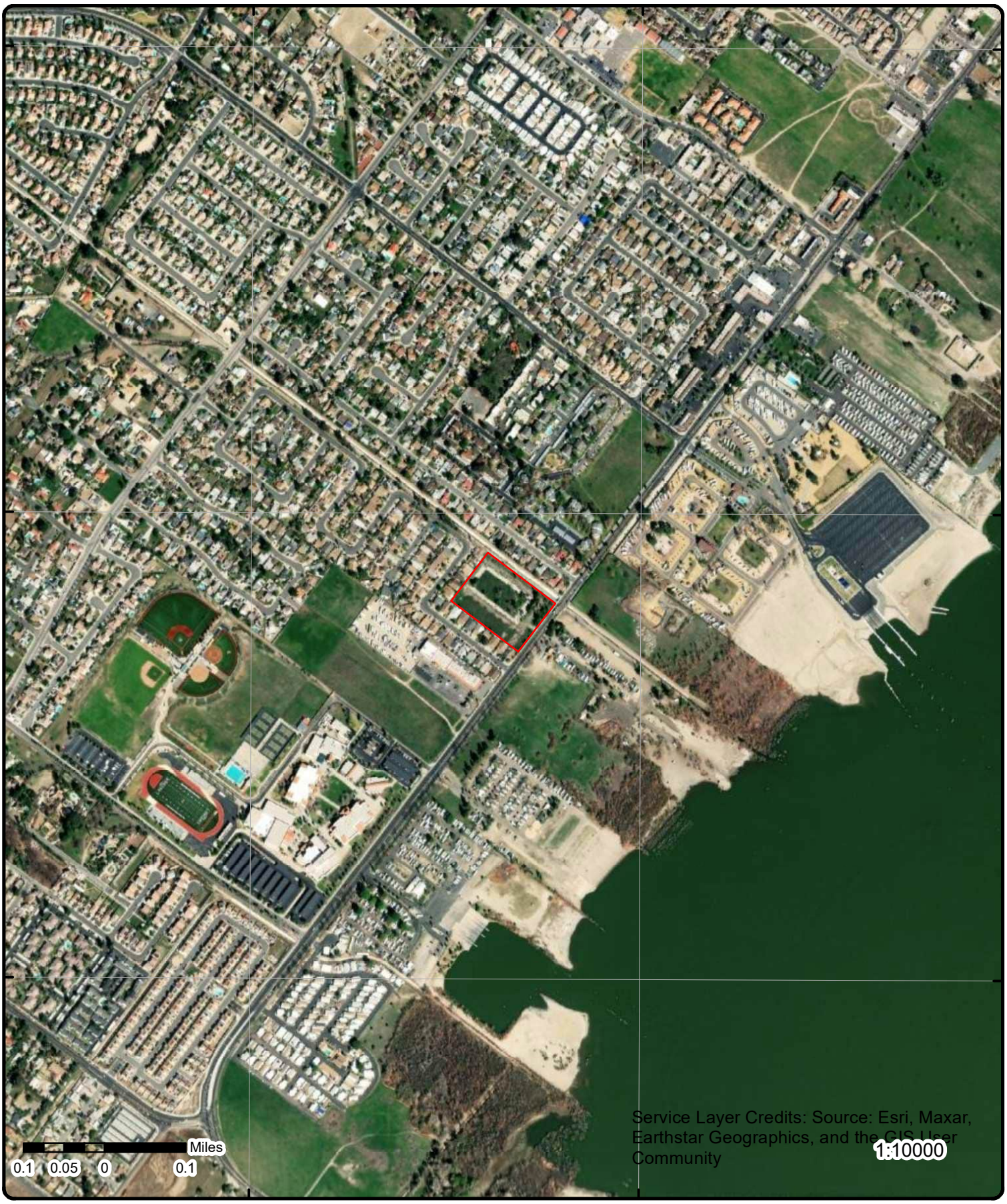
Address: 32281 Riverside Drive, RIVERSIDE, CA

ERIS

- Project Property
- Buffer Outline
- Sites with Higher Elevation
- Sites with Same Elevation
- Sites with Lower Elevation
- Sites with Unknown Elevation
- Areas with Higher Elevation
- Areas with Same Elevation
- Areas with Lower Elevation
- Areas with Unknown Elevation
- Freeways; Highways
- Traffic Circle; Ramp
- Major & Minor Arterial
- Traffic Circle; Ramp
- Local Road
- Rail
- State
- Country
- National Wetland
- Indian Reserve Land
- Plume
- 100 Year Flood Zone
- 500 Year Flood Zone
- FWS Special Designation Areas
- National Priorities List (Active, Delisted, Proposed, Institutional Control)

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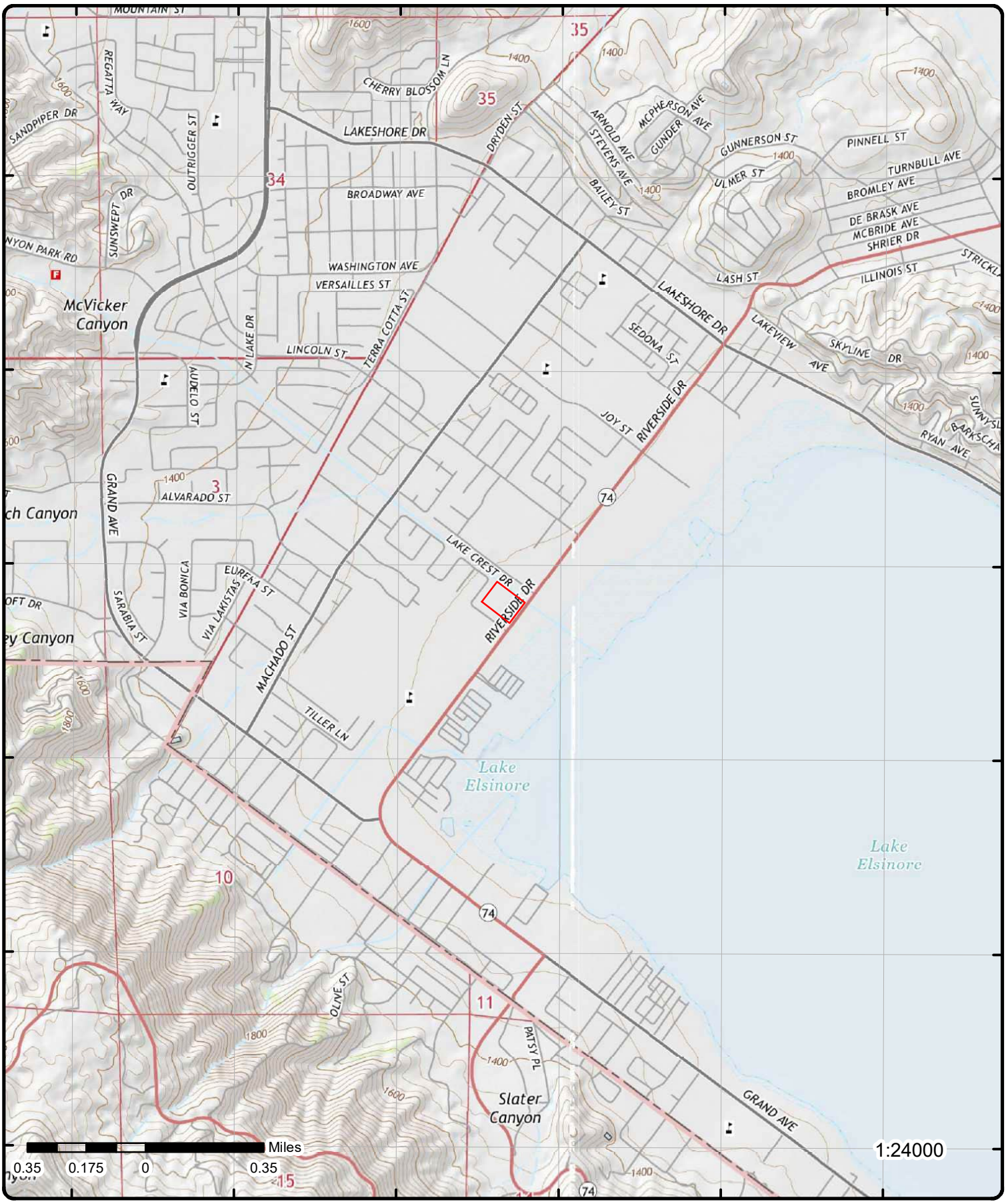
Aerial **Year: 2022**

Order Number: 23013100616

Address: 32281 Riverside Drive, RIVERSIDE, CA

Source: ESRI World Imagery

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Topographic Map

Year: 2015

Order Number: 23013100616

Address: 32281 Riverside Drive, CA

Quadrangle(s): Lake Elsinore, CA; Alberhill, CA

Source: USGS Topographic Map

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Detail Report

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
1	1 of 1	ENE	0.00 / 0.00	1,267.28 / -1	JOHN LEE 32281 RIVERSIDE DR LAKE ELSINORE CA 92530	HAZNET

SIC Code:
NAICS Code:
EPA ID: CAC002580846
Create Date: 8/12/2004
Fac Act Ind: No
Inact Date: 4/25/2005
County Code: 33
County Name: Riverside
Mail Name:
Mailing Addr 1: 3564 CENTRAL AVE STE 2H
Mailing Addr 2:
Owner Fax:
Mailing City: RIVERSIDE
Mailing State: CA
Mailing Zip: 92506
Region Code: 4
Owner Name: JOHN LEE
Owner Addr 1: 3564 CENTRAL AVE STE 2H
Owner Addr 2:
Owner City: RIVERSIDE
Owner State: CA
Owner Zip: 92506
Owner Phone: 9517881483
Details DTSC HWTS: The Department of Toxic Substances Control (DTSC) makes available a Waste Code Matrix showing each Waste Code, its description, and annual amounts in its Hazardous Waste Tracking System: https://hwts.dtsc.ca.gov/search
DTSC Handler Profile url: https://hwts.dtsc.ca.gov/facility/CAC002580846

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
2	1 of 3	WNW	0.02 / 81.92	1,274.77 / 7	1110 MONROE LAKE ELSINORE CA 92530	CDL

Clue: 1996-04-034
Date: 4/9/1996
County: RIVERSIDE
Lab Type: L
Lab Type Description: Illegal Drug Lab - location where an illegal drug lab was operated or drug lab equipment and/or materials were stored.

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
2	2 of 3	WNW	0.02 / 81.92	1,274.77 / 7	riverside county fire 1110 monroe street lake elsinore CA	CHMIRS

Control No:
County: RIVERSIDE
Year: 1996
URL:
Notified Date: 4/9/1996
Notified Date Time: 06:38:53 PM

California Hazardous Material Incident Report System (as of 1993 to 1996)

Contained: NO
Substance: methamphetamine lab
Type: CHEMICAL
Qty:
Other:
Measure:
Amount: 10 gals.
Water: YES
Water Way:
Location: 1110 monroe street
Description: drug bust.
Incident Date: 1603/09, Apr 96
Injuries?: NO
Fatals?: NO
Evacs?: NO
Cleanup: county health
Site: RESIDENCE
City: lake elsinore
County: RIVERSIDE
ZIP:

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
2	3 of 3	WNW	0.02 / 81.92	1,274.77 / 7	ANDERSON & ANDERSON METH LAB 1110 MONROE LAKE ELSINORE CA 925300000	HAZ GEN

Epa ID: CLU960005576
Facility County: 33
Address 2:
County: Riverside
Details DTSC HWTS: The Department of Toxic Substances Control (DTSC) makes available a Waste Code Matrix showing each Waste Code, its description, and annual amounts in its Hazardous Waste Tracking System: https://hwts.dtsc.ca.gov/search
Handler Profile URL:

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
3	1 of 2	SE	0.03 / 141.54	1,262.89 / -5	EVMWD A-4 Liftstation 32390 Riverside Dr Lake Elsinore CA 92530	HZH RIVERSIDE

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
3	2 of 2	SE	0.03 / 141.54	1,262.89 / -5	EVMWD A-4 Liftstation 32390 RIVERSIDE DR LAKE ELSINORE CA 92530	CERS HAZ

Site ID: 28934
Latitude: 33.672365
Longitude: -117.377489
County:

Regulated Programs

EI ID: 10324441
EI Description: Chemical Storage Facilities

Violations

Violation Date: 01/21/2021
Violation Source: CERS
Violation Program: HMRRP
Violation Division: Riverside County Department of Env Health
Citation: Un-Specified
Violation Notes:

Returned to compliance on 10/19/2021. The 120 gallon diesel tank labeling is worn off due to sun damage. Owner/operator shall label the tank with the word "Diesel" or "Diesel Fuel."

Violation Description:

Business Plan Program - Operations/Maintenance - General Local Ordinance

Violations

Violation Date: 12/09/2014
Violation Source: CERS
Violation Program: HMRRP
Violation Division: Riverside County Department of Env Health
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Notes:

Returned to compliance on 05/20/2016.

Violation Description:

Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.

Enforcements

Enf Action Date: 12/09/2014 ***Enf Action Program:*** HMRRP
Enf Action Type: Notice of Violation (Unified Program) ***Enf Action Source:*** CERS
Enf Action Division: Riverside County Department of Env Health
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:

Evaluations

Eval Date: 01/21/2021
Violations Found: Yes
Eval General Type: Other/Unknown
Eval Type: Other, not routine, done by local agency
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS
Eval Notes:

Eval Date: 12/05/2017
Violations Found: No
Eval General Type: Compliance Evaluation Inspection
Eval Type: Routine done by local agency
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS
Eval Notes:

Eval Date: 01/13/2015
Violations Found: No
Eval General Type: Other/Unknown
Eval Type: Other, not routine, done by local agency
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS
Eval Notes:

Eval Date: 01/21/2021
Violations Found: No
Eval General Type: Compliance Evaluation Inspection
Eval Type: Routine done by local agency
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS
Eval Notes:

Eval Date: 10/19/2021
Violations Found: No
Eval General Type: Other/Unknown
Eval Type: Other, not routine, done by local agency
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS
Eval Notes:

The violation was observed to be corrected.; Note: data in [EVAL Notes] field for some records is truncated from the source.

Eval Date: 12/09/2014
Violations Found: Yes
Eval General Type: Compliance Evaluation Inspection
Eval Type: Routine done by local agency
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS
Eval Notes:

Affiliations

Affil Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title:
Address: 31315 Chaney Street
City: Lake Elsinore
State: CA
Country:
Zip Code: 92530
Phone:

Affil Type Desc: Property Owner
Entity Name: EVMWD
Entity Title:
Address: 31315 Chaney Street
City: Lake Elsinore
State: CA
Country: United States
Zip Code: 92530
Phone: (951) 674-3146

Affil Type Desc: Parent Corporation
Entity Name: EVMWD: Elsinore Valley Municipal Water District
Entity Title:
Address:
City:
State:
Country:
Zip Code:
Phone:

Affil Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title:
Address: 4065 County Circle Drive, Room 104
City: Riverside
State: CA
Country:
Zip Code: 92503
Phone: (951) 358-5055

Affil Type Desc: Identification Signer
Entity Name: David A Smith
Entity Title: Maintenance Manager
Address:
City:
State:
Country:
Zip Code:
Phone:

Affil Type Desc: Environmental Contact
Entity Name: David A Smith
Entity Title:
Address: 31315 Chaney Street
City: Lake Elsinore
State: CA
Country:
Zip Code: 92530
Phone:

Affil Type Desc: Legal Owner
Entity Name: EVMWD
Entity Title:
Address: 31315 Chaney Street City10.0038 Lake Elsinore State CA ZIP/Postal Code

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

City: Lake Elsinore
State: CA
Country: United States
Zip Code: 92530
Phone: (951) 674-3146

Affil Type Desc: Operator
Entity Name: EVMWD
Entity Title:
Address:
City:
State:
Country:
Zip Code:
Phone: (951) 674-3146

Coordinates

Env Int Type Code: HMBP
Program ID: 10324441
Latitude: 33.672370
Longitude: -117.377490
Coord Name:
Ref Point Type Desc: Center of a facility or station.

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
4	1 of 1	SE	0.04 / 189.16	1,264.17 / -4	MetroPCS California LLC (LA3410B) 32310 Riverside Dr Lake Elsinore CA 92530	DELISTED COUNTY

Delisted County Records

Original Source Facility ID:
Original Source Name: Riverside County Disclosure Facility List
Record Date: 10-JUN-2015

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
5	1 of 1	WNW	0.13 / 701.83	1,286.97 / 19	ROBERT PORTILLO 1129 MCKINLEY STREET LAKE ELSINORE CA 92530	RCRA NON GEN

EPA Handler ID: CAC003119590
Gen Status Universe: No Report
Contact Name: ROBERT PORTILLO
Contact Address: 1129 MCKINLEY STREET, LAKE ELSINORE, CA, 92530,
Contact Phone No and Ext: 951-386-9239
Contact Email: ROBERTPORT58@GMAIL.COM
Contact Country:
County Name: RIVERSIDE
EPA Region: 09
Land Type:
Receive Date: 20210513
Location Latitude:
Location Longitude:

Violation/Evaluation Summary

Note: NO RECORDS: As of Nov 2022, there are no Compliance Monitoring and Enforcement (violation) records associated with this facility (EPA ID).

Handler Summary

Importer Activity: No
Mixed Waste Generator: No
Transporter Activity: No
Transfer Facility: No

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Onsite Burner Exemption: No
Furnace Exemption: No
Underground Injection Activity: No
Commercial TSD: No
Used Oil Transporter: No
Used Oil Transfer Facility: No
Used Oil Processor: No
Used Oil Refiner: No
Used Oil Burner: No
Used Oil Market Burner: No
Used Oil Spec Marketer: No

Hazardous Waste Handler Details

Sequence No: 1
Receive Date: 20210513
Handler Name: ROBERT PORTILLO
Source Type: Implementer
Federal Waste Generator Code: N
Generator Code Description: Not a Generator, Verified

Owner/Operator Details

Owner/Operator Ind: Current Owner
Type: Other
Name: ROBERT PORTILLO
Date Became Current:
Date Ended Current:
Phone: 951-386-9239
Source Type: Implementer
Street No:
Street 1: 1129 MCKINLEY STREET
Street 2:
City: LAKE ELSINORE
State: CA
Country:
Zip Code: 92530

Owner/Operator Ind: Current Operator
Type: Other
Name: ROBERT PORTILLO
Date Became Current:
Date Ended Current:
Phone: 951-386-9239
Source Type: Implementer
Street No:
Street 1: 1129 MCKINLEY STREET
Street 2:
City: LAKE ELSINORE
State: CA
Country:
Zip Code: 92530

6	1 of 1	WNW	0.13 / 704.52	1,286.63 / 19	YAZMIN CASTANEDA 1134 MCKINLEY ST LAKE ELSINORE CA 92530-5307	RCRA NON GEN

EPA Handler ID: CAC002971723
Gen Status Universe: No Report
Contact Name: YAZMIN CASTANEDA
Contact Address: 1134 MCKINLEY ST, LAKE ELSINORE, CA, 92530-5307,
Contact Phone No and Ext: 562-541-4552
Contact Email: GENEVADEGUIRE@ALLIANCE-ENVIRO.COM
Contact Country:
County Name: RIVERSIDE
EPA Region: 09
Land Type:
Receive Date: 20180719
Location Latitude: 33.674337
Location Longitude: -117.381041

Violation/Evaluation Summary

Note: NO RECORDS: As of Nov 2022, there are no Compliance Monitoring and Enforcement (violation) records associated with this facility (EPA ID).

Handler Summary

Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility:	No
Onsite Burner Exemption:	No
Furnace Exemption:	No
Underground Injection Activity:	No
Commercial TSD:	No
Used Oil Transporter:	No
Used Oil Transfer Facility:	No
Used Oil Processor:	No
Used Oil Refiner:	No
Used Oil Burner:	No
Used Oil Market Burner:	No
Used Oil Spec Marketer:	No

Hazardous Waste Handler Details

Sequence No:	1
Receive Date:	20180719
Handler Name:	YAZMIN CASTANEDA
Source Type:	Implementer
Federal Waste Generator Code:	N
Generator Code Description:	Not a Generator, Verified

Owner/Operator Details

Owner/Operator Ind:	Current Operator	***Street No:***	
Type:	Other	***Street 1:***	1134 MCKINLEY ST
Name:	YAZMIN CASTANEDA	***Street 2:***	
Date Became Current:		***City:***	LAKE ELSINORE
Date Ended Current:		***State:***	CA
Phone:	562-541-4552	***Country:***	
Source Type:	Implementer	***Zip Code:***	92530-5307

Owner/Operator Ind:	Current Owner	***Street No:***	
Type:	Other	***Street 1:***	1134 MCKINLEY ST
Name:	YAZMIN CASTANEDA	***Street 2:***	
Date Became Current:		***City:***	LAKE ELSINORE
Date Ended Current:		***State:***	CA
Phone:	562-541-4552	***Country:***	
Source Type:	Implementer	***Zip Code:***	92530-5307

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
7	1 of 1	N	0.19 / 987.67	1,291.66 / 24	CA	PFAS GW

Well ID:	100822	***SRS Latitude:***	33.804659553
Gm Dataset Name:	GAMA_SP-STUDY	***SRS Longitude:***	-118.314012912
Gm Data Source:	LLNL	***Latitude:***	33.677
Gm Well Category:	MUNICIPAL	***Longitude:***	-117.3786
SRS Datum:			
Gm Altwell Id1:	4S/14W-26A06S		
Gm Altwell Id2:			
Gm Altwell Id3:			

Well Details

Gm Cas No:		***SRC Chemical:***	C2802
Gm Result:	0	***SRC Result:***	0
Gm Result Modifier:	<	***SRC Result Modifie:***	
Gm Result Units:	NG/L	***SRC Result Units:***	ug/L
Gm Chemical Vvl:	PFHPA	***SRC Report Limit:***	.002
Gm Reporting Limit:	2	***SRC Analytic Meth:***	EPA 537.1

Gm Well Depth Ft: ***SRC Well Depth Ft:***
Gm Chemical Name: Perfluoroheptanoic acid
Gm Samp Collection Date: 04/15/2020
Gm Screen Top Depth Ft:
Gm Screen Bottom Depth Ft:
SRC Samp Collection Date: 04/15/2020
SRC Samp Collection Time:
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No: ***SRC Chemical:*** C2814
Gm Result: 0 ***SRC Result:*** 0
Gm Result Modifier: < ***SRC Result Modifie:***
Gm Result Units: NG/L ***SRC Result Units:*** ug/L
Gm Chemical Vvl: PFUNDCA ***SRC Report Limit:*** .002
Gm Reporting Limit: 2 ***SRC Analytic Meth:*** EPA 537.1
Gm Well Depth Ft: ***SRC Well Depth Ft:***
Gm Chemical Name: Perfluoroundecanoic acid
Gm Samp Collection Date: 04/15/2020
Gm Screen Top Depth Ft:
Gm Screen Bottom Depth Ft:
SRC Samp Collection Date: 04/15/2020
SRC Samp Collection Time:
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No: ***SRC Chemical:*** C2801
Gm Result: 0 ***SRC Result:*** 0
Gm Result Modifier: < ***SRC Result Modifie:***
Gm Result Units: NG/L ***SRC Result Units:*** ug/L
Gm Chemical Vvl: PFBSA ***SRC Report Limit:*** .002
Gm Reporting Limit: 2 ***SRC Analytic Meth:*** EPA 537.1
Gm Well Depth Ft: ***SRC Well Depth Ft:***
Gm Chemical Name: Perfluorobutanesulfonic acid
Gm Samp Collection Date: 04/15/2020
Gm Screen Top Depth Ft:
Gm Screen Bottom Depth Ft:
SRC Samp Collection Date: 04/15/2020
SRC Samp Collection Time:
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No: ***SRC Chemical:*** C2813
Gm Result: 0 ***SRC Result:*** 0
Gm Result Modifier: < ***SRC Result Modifie:***
Gm Result Units: NG/L ***SRC Result Units:*** ug/L
Gm Chemical Vvl: PFTRIDA ***SRC Report Limit:*** .002
Gm Reporting Limit: 2 ***SRC Analytic Meth:*** EPA 537.1
Gm Well Depth Ft: ***SRC Well Depth Ft:***
Gm Chemical Name: Perfluorotridecanoic acid
Gm Samp Collection Date: 04/15/2020
Gm Screen Top Depth Ft:
Gm Screen Bottom Depth Ft:
SRC Samp Collection Date: 04/15/2020
SRC Samp Collection Time:
SRC Screen Top Depth Ft:

SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No:
Gm Result: 0
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: HFPA-DA
Gm Reporting Limit: 5
Gm Well Depth Ft:
Gm Chemical Name: 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy) propanoic acid
Gm Samp Collection Date: 04/15/2020
Gm Screen Top Depth Ft:
Gm Screen Bottom Depth Ft:
SRC Samp Collection Date: 04/15/2020
SRC Samp Collection Time:
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: C2815
SRC Result: 0
SRC Result Modifie:
SRC Result Units: ug/L
SRC Report Limit: .005
SRC Analytic Meth: EPA 537.1
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 0
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFTEDA
Gm Reporting Limit: 2
Gm Well Depth Ft:
Gm Chemical Name: Perfluorotetradecanoic acid
Gm Samp Collection Date: 04/15/2020
Gm Screen Top Depth Ft:
Gm Screen Bottom Depth Ft:
SRC Samp Collection Date: 04/15/2020
SRC Samp Collection Time:
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: C2812
SRC Result: 0
SRC Result Modifie:
SRC Result Units: ug/L
SRC Report Limit: .002
SRC Analytic Meth: EPA 537.1
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 0
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: 11ClPF3OUDS
Gm Reporting Limit: 2
Gm Well Depth Ft:
Gm Chemical Name: 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
Gm Samp Collection Date: 04/15/2020
Gm Screen Top Depth Ft:
Gm Screen Bottom Depth Ft:
SRC Samp Collection Date: 04/15/2020
SRC Samp Collection Time:
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: C2817
SRC Result: 0
SRC Result Modifie:
SRC Result Units: ug/L
SRC Report Limit: .002
SRC Analytic Meth: EPA 537.1
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 0
SRC Chemical: C2807
SRC Result: 0

Gm Result Modifier:	<	**SRC Result Modifie:**	
Gm Result Units:	NG/L	**SRC Result Units:**	ug/L
Gm Chemical Vvl:	NETFOSAA	**SRC Report Limit:**	.002
Gm Reporting Limit:	2	**SRC Analytic Meth:**	EPA 537.1
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	N-Ethyl perfluorooctane sulfonamidoacetic acid		
Gm Samp Collection Date:	04/15/2020		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/15/2020		
SRC Samp Collection Time:			
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	C2816
Gm Result:	0	**SRC Result:**	0
Gm Result Modifier:	<	**SRC Result Modifie:**	
Gm Result Units:	NG/L	**SRC Result Units:**	ug/L
Gm Chemical Vvl:	9ClPF3ONS	**SRC Report Limit:**	.002
Gm Reporting Limit:	2	**SRC Analytic Meth:**	EPA 537.1
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid		
Gm Samp Collection Date:	04/15/2020		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/15/2020		
SRC Samp Collection Time:			
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	C2809
Gm Result:	0	**SRC Result:**	0
Gm Result Modifier:	<	**SRC Result Modifie:**	
Gm Result Units:	NG/L	**SRC Result Units:**	ug/L
Gm Chemical Vvl:	PFNDCA	**SRC Report Limit:**	.002
Gm Reporting Limit:	2	**SRC Analytic Meth:**	EPA 537.1
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorodecanoic acid		
Gm Samp Collection Date:	04/15/2020		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/15/2020		
SRC Samp Collection Time:			
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	C2803
Gm Result:	0	**SRC Result:**	0
Gm Result Modifier:	<	**SRC Result Modifie:**	
Gm Result Units:	NG/L	**SRC Result Units:**	ug/L
Gm Chemical Vvl:	PFHXSA	**SRC Report Limit:**	.002
Gm Reporting Limit:	2	**SRC Analytic Meth:**	EPA 537.1
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorohexanesulfonic acid		
Gm Samp Collection Date:	04/15/2020		
Gm Screen Top Depth Ft:			

Gm Screen Bottom Depth Ft:
SRC Samp Collection Date: 04/15/2020
SRC Samp Collection Time:
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No:
Gm Result: 0
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFOA
Gm Reporting Limit: 2
Gm Well Depth Ft:
Gm Chemical Name: Perfluorooctanoic acid
Gm Samp Collection Date: 04/15/2020
Gm Screen Top Depth Ft:
Gm Screen Bottom Depth Ft:
SRC Samp Collection Date: 04/15/2020
SRC Samp Collection Time:
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: C2806
SRC Result: 0
SRC Result Modifie:
SRC Result Units: ug/L
SRC Report Limit: .002
SRC Analytic Meth: EPA 537.1
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 0
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: ADONA
Gm Reporting Limit: 2
Gm Well Depth Ft:
Gm Chemical Name: 4,8-Dioxa-3H-perfluorononanoic acid
Gm Samp Collection Date: 04/15/2020
Gm Screen Top Depth Ft:
Gm Screen Bottom Depth Ft:
SRC Samp Collection Date: 04/15/2020
SRC Samp Collection Time:
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: C2818
SRC Result: 0
SRC Result Modifie:
SRC Result Units: ug/L
SRC Report Limit: .002
SRC Analytic Meth: EPA 537.1
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 0
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFNA
Gm Reporting Limit: 2
Gm Well Depth Ft:
Gm Chemical Name: Perfluorononanoic acid
Gm Samp Collection Date: 04/15/2020
Gm Screen Top Depth Ft:
Gm Screen Bottom Depth Ft:
SRC Samp Collection Date: 04/15/2020
SRC Samp Collection Time:
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: C2804
SRC Result: 0
SRC Result Modifie:
SRC Result Units: ug/L
SRC Report Limit: .002
SRC Analytic Meth: EPA 537.1
SRC Well Depth Ft:

Well Details

Gm Cas No:		***SRC Chemical:***	C2811
Gm Result:	0	***SRC Result:***	0
Gm Result Modifier:	<	***SRC Result Modifie:***	
Gm Result Units:	NG/L	***SRC Result Units:***	ug/L
Gm Chemical Vvl:	PFHA	***SRC Report Limit:***	.002
Gm Reporting Limit:	2	***SRC Analytic Meth:***	EPA 537.1
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	Perfluorohexanoic acid		
Gm Samp Collection Date:	04/15/2020		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/15/2020		
SRC Samp Collection Time:			
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	C2810
Gm Result:	0	***SRC Result:***	0
Gm Result Modifier:	<	***SRC Result Modifie:***	
Gm Result Units:	NG/L	***SRC Result Units:***	ug/L
Gm Chemical Vvl:	PFDOA	***SRC Report Limit:***	.002
Gm Reporting Limit:	2	***SRC Analytic Meth:***	EPA 537.1
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	Perfluorododecanoic acid		
Gm Samp Collection Date:	04/15/2020		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/15/2020		
SRC Samp Collection Time:			
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	C2808
Gm Result:	0	***SRC Result:***	0
Gm Result Modifier:	<	***SRC Result Modifie:***	
Gm Result Units:	NG/L	***SRC Result Units:***	ug/L
Gm Chemical Vvl:	NMEFOSAA	***SRC Report Limit:***	.002
Gm Reporting Limit:	2	***SRC Analytic Meth:***	EPA 537.1
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	N-Methyl perfluorooctane sulfonamidoacetic acid		
Gm Samp Collection Date:	04/15/2020		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/15/2020		
SRC Samp Collection Time:			
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	C2805
Gm Result:	0	***SRC Result:***	0
Gm Result Modifier:	<	***SRC Result Modifie:***	
Gm Result Units:	NG/L	***SRC Result Units:***	ug/L
Gm Chemical Vvl:	PFOS	***SRC Report Limit:***	.002
Gm Reporting Limit:	2	***SRC Analytic Meth:***	EPA 537.1

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Gm Well Depth Ft: ***SRC Well Depth Ft:***
Gm Chemical Name: Perfluorooctanoic sulfonate
Gm Samp Collection Date: 04/15/2020
Gm Screen Top Depth Ft:
Gm Screen Bottom Depth Ft:
SRC Samp Collection Date: 04/15/2020
SRC Samp Collection Time:
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

8	1 of 1	SSW	0.19 / 991.72	1,264.58 / -3	LAKESIDE HIGH SCHOOL 32593 RIVERSIDE DR LAKE ELSINORE CA 92530	RCRA NON GEN

EPA Handler ID: CAL000406007
Gen Status Universe: No Report
Contact Name: JULIE SCRANTON
Contact Address: 545 CHANEY ST, LAKE ELSINORE, CA, 92530,
Contact Phone No and Ext: 951-253-7180
Contact Email: JULIE.SCRANTON@LEUSD.K12.CA.US
Contact Country:
County Name: RIVERSIDE
EPA Region: 09
Land Type:
Receive Date: 20150413
Location Latitude: 33.668256
Location Longitude: -117.38128

Violation/Evaluation Summary

Note: NO RECORDS: As of Nov 2022, there are no Compliance Monitoring and Enforcement (violation) records associated with this facility (EPA ID).

Handler Summary

Importer Activity: No
Mixed Waste Generator: No
Transporter Activity: No
Transfer Facility: No
Onsite Burner Exemption: No
Furnace Exemption: No
Underground Injection Activity: No
Commercial TSD: No
Used Oil Transporter: No
Used Oil Transfer Facility: No
Used Oil Processor: No
Used Oil Refiner: No
Used Oil Burner: No
Used Oil Market Burner: No
Used Oil Spec Marketer: No

Hazardous Waste Handler Details

Sequence No: 1
Receive Date: 20150413
Handler Name: LAKESIDE HIGH SCHOOL
Source Type: Implementer
Federal Waste Generator Code: N
Generator Code Description: Not a Generator, Verified

Owner/Operator Details

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Owner/Operator Ind:	Current Operator	**Street No:**	
Type:	Other	**Street 1:**	545 CHANEY ST
Name:	JULIE SCRANTON	**Street 2:**	
Date Became Current:		**City:**	LAKE ELSINORE
Date Ended Current:		**State:**	CA
Phone:	951-253-7180	**Country:**	
Source Type:	Implementer	**Zip Code:**	92530

Owner/Operator Ind:	Current Owner	**Street No:**	
Type:	Other	**Street 1:**	545 CHANEY ST
Name:	LAKE ELSINORE USD	**Street 2:**	
Date Became Current:		**City:**	LAKE ELSINORE
Date Ended Current:		**State:**	CA
Phone:	951-253-7180	**Country:**	
Source Type:	Implementer	**Zip Code:**	92530

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9 | **1 of 1** | **N** | **0.19 / 1,000.72** | **1,291.95 / 24** | **CA** | **PFAS GW**

Well ID:	CA3310012_010_010	**SRS Latitude:**	33.677038
Gm Dataset Name:	DDW	**SRS Longitude:**	-117.378577
Gm Data Source:	DDW	**Latitude:**	33.677038
Gm Well Category:	MUNICIPAL	**Longitude:**	-117.378577
SRS Datum:			
Gm Altwell Id1:	3310012-010		
Gm Altwell Id2:			
Gm Altwell Id3:			

Well Details

Gm Cas No:		**SRC Chemical:**	2809
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFHA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorohexanoic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2804
Gm Result:	20	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFNA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	NULL
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorononanoic acid		
Gm Samp Collection Date:	11/25/2016		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	11/25/2016		
SRC Samp Collection Time:	08:16:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2804
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	PFNA	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	Perfluorononanoic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2805
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	PFOS	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	Perfluorooctanoic sulfonate		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2810
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	PFTEDA	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	Perfluorotetradecanoic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:45:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2812
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L

Gm Chemical Vvl: PFUNDCA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluoroundecanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:45:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFTEDA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorotetradecanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2810
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFTRIDA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorotridecanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:45:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2811
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFUNDCA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluoroundecanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Chemical: 2812
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

SRC Samp Collection Time: 09:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFTRIDA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorotridecanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2811
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: NMEFOSAA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: N-Methyl perfluorooctane sulfonamidoacetic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:45:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2818
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 10
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFHPA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluoroheptanoic acid
Gm Samp Collection Date: 11/25/2016
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 11/25/2016
SRC Samp Collection Time: 08:16:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2802
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth: NULL
SRC Well Depth Ft:

Well Details

Gm Cas No:		**SRC Chemical:**	2805
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFOS	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorooctanoic sulfonate		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:45:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2817
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	NETFOSAA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	N-Ethyl perfluorooctane sulfonamidoacetic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:45:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2801
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFBSA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorobutanesulfonic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2803
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFHXSA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorohexanesulfonic acid		

Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:45:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: NMEFOSAA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: N-Methyl perfluorooctane sulfonamidoacetic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2818
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: ADONA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: 4,8-Dioxa-3H-perfluorononanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:45:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2815
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFNA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorononanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:45:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2804
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:		***SRC Chemical:***	2813
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	11ClPF3OUDS	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2816
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	HFPA-DA	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy) propanoic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2807
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	PFNDCA	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	Perfluorodecanoic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:45:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2814
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L

Gm Chemical Vvl:	9ClPF3ONS	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2801
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFBSA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorobutanesulfonic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:45:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2802
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFHPA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluoroheptanoic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:45:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2806
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFOA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorooctanoic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		

SRC Samp Collection Time: 09:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFDOA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorododecanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2808
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: 11ClPF3OUDS
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:45:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2813
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFDOA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorododecanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:45:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2808
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:		**SRC Chemical:**	2815
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	ADONA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	4,8-Dioxa-3H-perfluorononanoic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2809
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFHA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorohexanoic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:45:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2806
Gm Result:	20	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFOA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	NULL
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorooctanoic acid		
Gm Samp Collection Date:	11/25/2016		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	11/25/2016		
SRC Samp Collection Time:	08:16:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2805
Gm Result:	40	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFOS	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	NULL
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorooctanoic sulfonate		

Gm Samp Collection Date: 11/25/2016
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 11/25/2016
SRC Samp Collection Time: 08:16:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No:
Gm Result: 30
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFHXSA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorohexanesulfonic acid
Gm Samp Collection Date: 11/25/2016
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 11/25/2016
SRC Samp Collection Time: 08:16:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2803
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth: NULL
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 90
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFBSA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorobutanesulfonic acid
Gm Samp Collection Date: 11/25/2016
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 11/25/2016
SRC Samp Collection Time: 08:16:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2801
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth: NULL
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFOA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorooctanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:45:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2806
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:		***SRC Chemical:***	2816
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	HFPA-DA	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy) propanoic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:45:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2803
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	PFHXSA	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	Perfluorohexanesulfonic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2802
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	PFHPA	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	Perfluoroheptanoic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	360		
Gm Screen Bottom Depth Ft:	940		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2814
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Gm Chemical Vvl: 9ClPF3ONS
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:45:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFNDCA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorodecanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2807
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: NETFOSAA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: N-Ethyl perfluorooctane sulfonamidoacetic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 360
Gm Screen Bottom Depth Ft: 940
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2817
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

10	1 of 2	ENE	0.21 / 1,117.06	1,273.46 / 6	LAKE ELSINORE REC. AREA 32040 RIVERSIDE DR Lake Elsinore CA 92530	DELISTED TNK

Delisted Storage Tanks

Facility ID: 438
Latitude: 33.680723
Longitude: -117.3698513
Permitting Agency: RIVERSIDE COUNTY
County: Riverside
Original Source: UST
Record Date: 30-JAN-2017

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
10	2 of 2	ENE	0.21 / 1,117.06	1,273.46 / 6	LAKE ELSINORE RECREATIONA AREA 32040 RIVERSIDE DR LAKE ELSINORE CA	UST SWEEPS

C C:	A33-000-1923	**D Filename:**	SITE16A
BOE:		**Page No:**	54
Comp:	1923	**County:**	RIVERSIDE
Status:	ACTIVE	**State :**	CA
No of Tanks:		**Zip:**	92530
Jurisdict:	RIVERSIDE COUNTY	**Latitude:**	33.67141
Agency:	ENVIRONMENTAL HEALTH - U.S.T.	**Longitude:**	-117.378489
Phone:		**Georesult:**	S5HPNTSCZA

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
11	1 of 1	NE	0.38 / 1,981.12	1,289.67 / 22	CORY HOOVER 804 ROBIN DR LAKE ELSINORE CA 92530	RCRA TSD

EPA Handler ID:	CAC003015356
Gen Status Universe:	No Report
Contact Name:	CORY HOOVER
Contact Address:	804 ROBIN DR, LAKE ELSINORE, CA, 92530,
Contact Phone No and Ext:	951-378-2087
Contact Email:	KERRIEP@CVECORP.COM
Contact Country:	
Land Type:	
County Name:	RIVERSIDE
EPA Region:	09
Receive Date:	20190516
Location Latitude:	33.678364
Location Longitude:	-117.373807

Violation/Evaluation Summary

Note:	NO RECORDS: As of Nov 2022, there are no Compliance Monitoring and Enforcement (violation) records associated with this facility (EPA ID).

Handler Summary

Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility:	No
Onsite Burner Exemption:	No
Smelting, Melting and Refining:	No
Underground Injection Control:	No
Commercial TSD:	No
Used Oil Transporter:	No
Used Oil Transfer Facility:	No
Used Oil Processor:	No
Used Oil Refiner:	No
Used Oil Burner:	No
Used Oil Market Burner:	No
Used Oil Spec Marketer:	No

Hazardous Waste Handler Details

Sequence No:	1
Receive Date:	20190516
Handler Name:	CORY HOOVER
Federal Waste Generator Code:	N
Generator Code Description:	Not a Generator, Verified
Source Type:	Implementer

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Owner/Operator Details

Owner/Operator Ind:	Current Owner	***Street No:***	
Type:	Other	***Street 1:***	804 ROBIN DR
Name:	CORY HOOVER	***Street 2:***	
Date Became Current:		***City:***	LAKE ELSINORE
Date Ended Current:		***State:***	CA
Phone:	951-378-2087	***Country:***	
Source Type:	Implementer	***Zip Code:***	92530

Owner/Operator Ind:	Current Operator	***Street No:***	
Type:	Other	***Street 1:***	804 ROBIN DR
Name:	CORY HOOVER	***Street 2:***	
Date Became Current:		***City:***	LAKE ELSINORE
Date Ended Current:		***State:***	CA
Phone:	951-378-2087	***Country:***	
Source Type:	Implementer	***Zip Code:***	92530

12	*1 of 1*	*NW*	*0.42 / 2,242.31*	*1,315.11 / 47*		***PFAS GW***
					CA	

Well ID:	CA3310012_012_012	***SRS Latitude:***	33.678398
Gm Dataset Name:	DDW	***SRS Longitude:***	-117.383766
Gm Data Source:	DDW	***Latitude:***	33.678398
Gm Well Category:	MUNICIPAL	***Longitude:***	-117.383766
SRS Datum:			
Gm Altwell Id1:	3310012-012		
Gm Altwell Id2:			
Gm Altwell Id3:			

Well Details

Gm Cas No:		***SRC Chemical:***	2812
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	PFUNDCA	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	Perfluoroundecanoic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2802
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	PFHPA	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	EPA 537.1
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	Perfluoroheptanoic acid		
Gm Samp Collection Date:	12/13/2021		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	12/13/2021		
SRC Samp Collection Time:	11:10:00		

SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFNA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorononanoic acid
Gm Samp Collection Date: 12/13/2021
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 12/13/2021
SRC Samp Collection Time: 11:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

SRC Chemical: 2804
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth: EPA 537.1
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFDOA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorododecanoic acid
Gm Samp Collection Date: 12/13/2021
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 12/13/2021
SRC Samp Collection Time: 11:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

SRC Chemical: 2808
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth: EPA 537.1
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFTRIDA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorotridecanoic acid
Gm Samp Collection Date: 12/13/2021
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 12/13/2021
SRC Samp Collection Time: 11:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

SRC Chemical: 2811
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth: EPA 537.1
SRC Well Depth Ft:

Well Details

Gm Cas No:

SRC Chemical: 2817

Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	NETFOSAA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	N-Ethyl perfluorooctane sulfonamidoacetic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2805
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFOS	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	EPA 537.1
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorooctanoic sulfonate		
Gm Samp Collection Date:	12/13/2021		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	12/13/2021		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2818
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	NMEFOSAA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	EPA 537.1
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	N-Methyl perfluorooctane sulfonamidoacetic acid		
Gm Samp Collection Date:	12/13/2021		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	12/13/2021		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2804
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFNA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorononanoic acid		
Gm Samp Collection Date:	10/15/2019		

Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:25:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No:
Gm Result: 2.5
Gm Result Modifier: =
Gm Result Units: NG/L
Gm Chemical Vvl: PFHXSA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorohexanesulfonic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:25:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2803
SRC Result: 2.5000000
SRC Result Modifie: N
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: ADONA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: 4,8-Dioxa-3H-perfluorononanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:25:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2815
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 10
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFHPA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluoroheptanoic acid
Gm Samp Collection Date: 11/25/2016
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 11/25/2016
SRC Samp Collection Time: 08:30:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2802
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth: NULL
SRC Well Depth Ft:

Well Details

Gm Cas No:		***SRC Chemical:***	2810
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	PFTEDA	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	Perfluorotetradecanoic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2806
Gm Result:	2	***SRC Result:***	2.0
Gm Result Modifier:	=	***SRC Result Modifie:***	N
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	PFOA	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	EPA 537.1
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	Perfluorooctanoic acid		
Gm Samp Collection Date:	12/13/2021		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	12/13/2021		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2804
Gm Result:	20	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	PFNA	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	NULL
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	Perfluorononanoic acid		
Gm Samp Collection Date:	11/25/2016		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	11/25/2016		
SRC Samp Collection Time:	08:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2803
Gm Result:	30	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	PFHXSA	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	NULL

Gm Well Depth Ft: ***SRC Well Depth Ft:***
Gm Chemical Name: Perfluorohexanesulfonic acid
Gm Samp Collection Date: 11/25/2016
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 11/25/2016
SRC Samp Collection Time: 08:30:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No: ***SRC Chemical:*** 2807
Gm Result: 2 ***SRC Result:***
Gm Result Modifier: < ***SRC Result Modifie:*** Y
Gm Result Units: NG/L ***SRC Result Units:*** NG/L
Gm Chemical Vvl: PFNDCA ***SRC Report Limit:***
Gm Reporting Limit: ***SRC Analytic Meth:*** EPA 537.1
Gm Well Depth Ft: ***SRC Well Depth Ft:***
Gm Chemical Name: Perfluorodecanoic acid
Gm Samp Collection Date: 12/13/2021
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 12/13/2021
SRC Samp Collection Time: 11:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No: ***SRC Chemical:*** 2818
Gm Result: 2 ***SRC Result:***
Gm Result Modifier: < ***SRC Result Modifie:*** Y
Gm Result Units: NG/L ***SRC Result Units:*** NG/L
Gm Chemical Vvl: NMEFOSAA ***SRC Report Limit:***
Gm Reporting Limit: ***SRC Analytic Meth:***
Gm Well Depth Ft: ***SRC Well Depth Ft:***
Gm Chemical Name: N-Methyl perfluorooctane sulfonamidoacetic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:25:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No: ***SRC Chemical:*** 2809
Gm Result: 2 ***SRC Result:***
Gm Result Modifier: < ***SRC Result Modifie:*** Y
Gm Result Units: NG/L ***SRC Result Units:*** NG/L
Gm Chemical Vvl: PFHA ***SRC Report Limit:***
Gm Reporting Limit: ***SRC Analytic Meth:*** EPA 537.1
Gm Well Depth Ft: ***SRC Well Depth Ft:***
Gm Chemical Name: Perfluorohexanoic acid
Gm Samp Collection Date: 12/13/2021
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 12/13/2021
SRC Samp Collection Time: 11:10:00
SRC Screen Top Depth Ft:

SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: NETFOSAA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: N-Ethyl perfluorooctane sulfonamidoacetic acid
Gm Samp Collection Date: 12/13/2021
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 12/13/2021
SRC Samp Collection Time: 11:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2817
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth: EPA 537.1
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFTEDA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorotetradecanoic acid
Gm Samp Collection Date: 12/13/2021
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 12/13/2021
SRC Samp Collection Time: 11:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2810
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth: EPA 537.1
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFOS
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorooctanoic sulfonate
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:25:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2805
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
SRC Chemical: 2814
SRC Result:

Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	9ClPF3ONS	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2801
Gm Result:	90	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFBSA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	NULL
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorobutanesulfonic acid		
Gm Samp Collection Date:	11/25/2016		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	11/25/2016		
SRC Samp Collection Time:	08:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2816
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	HFPA-DA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	EPA 537.1
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy) propanoic acid		
Gm Samp Collection Date:	12/13/2021		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	12/13/2021		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2803
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFHXSA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	EPA 537.1
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorohexanesulfonic acid		
Gm Samp Collection Date:	12/13/2021		
Gm Screen Top Depth Ft:	0		

Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 12/13/2021
SRC Samp Collection Time: 11:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFNDCA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorodecanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:25:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2807
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 40
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFOS
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorooctanoic sulfonate
Gm Samp Collection Date: 11/25/2016
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 11/25/2016
SRC Samp Collection Time: 08:30:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2805
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth: NULL
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFHA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorohexanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:25:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2809
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:		***SRC Chemical:***	2813
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	11ClPF3OUDS	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	EPA 537.1
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid		
Gm Samp Collection Date:	12/13/2021		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	12/13/2021		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2814
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	9ClPF3ONS	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	EPA 537.1
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid		
Gm Samp Collection Date:	12/13/2021		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	12/13/2021		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2808
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	PFDOA	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	
Gm Well Depth Ft:		***SRC Well Depth Ft:***	
Gm Chemical Name:	Perfluorododecanoic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		***SRC Chemical:***	2801
Gm Result:	2	***SRC Result:***	
Gm Result Modifier:	<	***SRC Result Modifie:***	Y
Gm Result Units:	NG/L	***SRC Result Units:***	NG/L
Gm Chemical Vvl:	PFBSA	***SRC Report Limit:***	
Gm Reporting Limit:		***SRC Analytic Meth:***	

Gm Well Depth Ft: ***SRC Well Depth Ft:***
Gm Chemical Name: Perfluorobutanesulfonic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:25:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No: ***SRC Chemical:*** 2801
Gm Result: 2 ***SRC Result:***
Gm Result Modifier: < ***SRC Result Modifie:*** Y
Gm Result Units: NG/L ***SRC Result Units:*** NG/L
Gm Chemical Vvl: PFBSA ***SRC Report Limit:***
Gm Reporting Limit: ***SRC Analytic Meth:*** EPA 537.1
Gm Well Depth Ft: ***SRC Well Depth Ft:***
Gm Chemical Name: Perfluorobutanesulfonic acid
Gm Samp Collection Date: 12/13/2021
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 12/13/2021
SRC Samp Collection Time: 11:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No: ***SRC Chemical:*** 2815
Gm Result: 2 ***SRC Result:***
Gm Result Modifier: < ***SRC Result Modifie:*** Y
Gm Result Units: NG/L ***SRC Result Units:*** NG/L
Gm Chemical Vvl: ADONA ***SRC Report Limit:***
Gm Reporting Limit: ***SRC Analytic Meth:*** EPA 537.1
Gm Well Depth Ft: ***SRC Well Depth Ft:***
Gm Chemical Name: 4,8-Dioxa-3H-perfluorononanoic acid
Gm Samp Collection Date: 12/13/2021
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 12/13/2021
SRC Samp Collection Time: 11:10:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No: ***SRC Chemical:*** 2802
Gm Result: 2 ***SRC Result:***
Gm Result Modifier: < ***SRC Result Modifie:*** Y
Gm Result Units: NG/L ***SRC Result Units:*** NG/L
Gm Chemical Vvl: PFHPA ***SRC Report Limit:***
Gm Reporting Limit: ***SRC Analytic Meth:***
Gm Well Depth Ft: ***SRC Well Depth Ft:***
Gm Chemical Name: Perfluoroheptanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:25:00
SRC Screen Top Depth Ft:

SRC Screen Bottom Depth Ft:
SRC Lab Note:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: 11ClPF3OUDS
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:25:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2813
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFOA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorooctanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:25:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2806
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 2
Gm Result Modifier: <
Gm Result Units: NG/L
Gm Chemical Vvl: PFTRIDA
Gm Reporting Limit:
Gm Well Depth Ft:
Gm Chemical Name: Perfluorotridecanoic acid
Gm Samp Collection Date: 10/15/2019
Gm Screen Top Depth Ft: 0
Gm Screen Bottom Depth Ft: 440
SRC Samp Collection Date: 10/15/2019
SRC Samp Collection Time: 09:25:00
SRC Screen Top Depth Ft:
SRC Screen Bottom Depth Ft:
SRC Lab Note:
SRC Chemical: 2811
SRC Result:
SRC Result Modifie: Y
SRC Result Units: NG/L
SRC Report Limit:
SRC Analytic Meth:
SRC Well Depth Ft:

Well Details

Gm Cas No:
Gm Result: 20
SRC Chemical: 2806
SRC Result:

Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFOA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	NULL
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluorooctanoic acid		
Gm Samp Collection Date:	11/25/2016		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	11/25/2016		
SRC Samp Collection Time:	08:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2816
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	HFPA-DA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy) propanoic acid		
Gm Samp Collection Date:	10/15/2019		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	10/15/2019		
SRC Samp Collection Time:	09:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Well Details

Gm Cas No:		**SRC Chemical:**	2812
Gm Result:	2	**SRC Result:**	
Gm Result Modifier:	<	**SRC Result Modifie:**	Y
Gm Result Units:	NG/L	**SRC Result Units:**	NG/L
Gm Chemical Vvl:	PFUNDCA	**SRC Report Limit:**	
Gm Reporting Limit:		**SRC Analytic Meth:**	EPA 537.1
Gm Well Depth Ft:		**SRC Well Depth Ft:**	
Gm Chemical Name:	Perfluoroundecanoic acid		
Gm Samp Collection Date:	12/13/2021		
Gm Screen Top Depth Ft:	0		
Gm Screen Bottom Depth Ft:	440		
SRC Samp Collection Date:	12/13/2021		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
13	1 of 1	SW	0.42 / 2,243.10	1,269.15 / 1	PARDEE HOMES 32789 RIVERSIDE DRIVE LAKE ELSINORE CA 92530	LUST

Global ID:	T10000011799	**Census Tract:**	6065043003
Status Date:	6/4/2019	**Match Key:**	T10000011799
Case Type:	LUST CLEANUP SITE	**County:**	RIVERSIDE
Oil Field:		**Latitude:**	33.6665077933923
Oil Field Operator:		**Longitude:**	-117.384011756592
Status:	COMPLETED - CASE CLOSED		

LUST Cleanup Sites from GeoTracker Cleanup Sites Data Download - Facilities Detail

CUF Case: NO
Lead Agency: SANTA ANA RWQCB (REGION 8)
Case Worker: MAO
Local Agency:
RB Case No:
Local Case No:
File Location: All Files are on GeoTracker or in the Local Agency Database
Potential COC:
Potential Media of Concern:
Begin Date: 3/26/1990
How Discovered:
How Discovered Description:
Stop Method:
Stop Description:
Calwater Watershed Name: San Jacinto Valley - Elsinore Valley - Elsinore (802.31)
DWR GW Subbasin Name: Elsinore - Elsinore Valley (8-004.01)
Disadvantaged Community: Disadvantaged Community
CalEnvScreen Score:
Coordinate Source: Google Map Move
Discharge Cause: Unknown
Discharge Source: Piping
EPA Region: 9
Leak Reported Dt: 1990-04-20 00:00:00
Military DoD Site: No
No Further Action Dt: 2019-06-04 00:00:00
Qty Rlsd Gallons:
Facility Project Sub Type:
Calenviroscreen 3 Score: 61-65%
Calenviroscreen 4 Score: 60-65%
Site History:

LUST Cleanup Sites from GeoTracker Cleanup Sites Data Download - Regulatory Activity

Action Type: RESPONSE
Date : 1/23/2019
Action: Site Investigation Workplan - Regulator Responded

Action Type: ENFORCEMENT
Date : 8/31/2018
Action: Staff Letter

Action Type: RESPONSE
Date : 11/20/2018
Action: Soil Vapor Intrusion Investigation Report

Action Type: Other
Date : 3/26/1990
Action: Leak Discovery

Action Type: ENFORCEMENT
Date : 1/30/2019
Action: Staff Letter

Action Type: Other
Date : 4/20/1990
Action: Leak Reported

Action Type: RESPONSE
Date : 2/22/2019
Action: Request for Closure - Regulator Responded

Action Type: ENFORCEMENT
Date : 4/4/2019
Action: Notification - Public Notice of Case Closure

Action Type: RESPONSE

Date : 9/12/2018
Action: Correspondence

Action Type: ENFORCEMENT
Date : 6/3/2019
Action: Closure/No Further Action Letter

LUST Cleanup Sites from GeoTracker Cleanup Sites Data Download - Regulatory Contacts

Contact Type: Regional Board Caseworker
Contact Name: MIGUEL OVIEDO
Organization Name: SANTA ANA RWQCB (REGION 8)
Address: 3737 Main Street, Suite 500
City: RIVERSIDE
Email: miguel.oviedo@waterboards.ca.gov
Phone No: 9517823238

LUST Cleanup Sites from GeoTracker Cleanup Sites Data Download - Status History

Status: Completed - Case Closed
Status Date: 6/4/2019

Status: Open - Case Begin Date
Status Date: 3/26/1990

Status: Open - Eligible for Closure
Status Date: 3/13/2019

Status: Open - Active
Status Date: 7/12/2018

LUST Sites from GeoTracker Search - Regulatory Profile

Site Facility Name: PARDEE HOMES
Site Facility Type: LUST CLEANUP SITE
Cleanup Status: COMPLETED - CASE CLOSED
Address: 32789 RIVERSIDE DRIVE
City: LAKE ELSINORE
Zip: 92530
County: RIVERSIDE
Report Link: https://geotracker.waterboards.ca.gov/profile_report?global_id=T10000011799
Cleanup Status Detail: COMPLETED - CASE CLOSED AS OF 6/4/2019
Project Status:
Cleanup History Link: https://geotracker.waterboards.ca.gov/profile_report_include?global_id=T10000011799&tabname=regulatoryhistory
Potential COC: NONE SPECIFIED
Potential Media of Concern: NONE SPECIFIED
File Location: ALL FILES ARE ON GEOTRACKER OR IN THE LOCAL AGENCY DATABASE
User Defined Beneficial Use:
Designated Beneficial Use: MUN, AGR, PROC
DWR GW Sub Basin: Elsinore - Elsinore Valley (8-004.01)
Calwater Watershed Name: San Jacinto Valley - Elsinore Valley - Elsinore (802.31)
Post Closure Site Management:
Future Land Use:
Cleanup Oversight Agencies: SANTA ANA RWQCB (REGION 8) (LEAD)
CASEWORKER: MIGUEL OVIEDO
CUF Claim:
CUF Priority Assig:
CUF Amount Paid:
WDR Place Type:
WDR File:
WDR Order:
Project Oversight Agencies:
Facility Type:
Composting Method:
Gndwater Monitoring Freque:

Designated Beneficial Use Desc: Municipal and Domestic Supply, Agricultural Supply, Industrial Process Supply
Site History:

No site history available

LUST Sites from GeoTracker Search - Cleanup Status History

Status: Open - Active
Date : 7/12/2018

Status: Open - Case Begin Date
Date : 3/26/1990

Status: Open - Eligible for Closure
Date : 3/13/2019

Status: Completed - Case Closed
Date : 6/4/2019

Sites from GeoTracker Search - Regulatory Activities (as of Oct 17, 2022)

Action Type: Other Regulatory Actions
Action: Closure/No Further Action Letter
Action Date: 6/3/2019
Received Issue Date: 6/3/2019
Doc Link: https://geotracker.waterboards.ca.gov/view_documents?global_id=T10000011799&enforcement_id=6403924&temptable=ENFORCEMENT
Title Description Comments:

Case Closure/NFA

Action Type: Notices
Action: Notification - Public Notice of Case Closure
Action Date: 4/4/2019
Received Issue Date: 4/4/2019
Doc Link: https://geotracker.waterboards.ca.gov/view_documents?global_id=T10000011799&enforcement_id=6398276&temptable=ENFORCEMENT
Title Description Comments:

Pardee Homes 60-Day Public Notice of Closure

Action Type: Response Requested - Other
Action: Request for Closure - Regulator Responded
Action Date: 2/22/2019
Received Issue Date: 2/22/2019
Doc Link: https://geotracker.waterboards.ca.gov/view_documents_all?global_id=T10000011799&doc_id=5995018
Title Description Comments:

Memorandum - Groundwater Sampling

Action Type: Other Regulatory Actions
Action: Staff Letter
Action Date: 1/30/2019
Received Issue Date: 1/30/2019
Doc Link: https://geotracker.waterboards.ca.gov/view_documents?global_id=T10000011799&enforcement_id=6384120&temptable=ENFORCEMENT
Title Description Comments:

Work Plan Response

Action Type: Response Requested - Workplans
Action: Site Investigation Workplan - Regulator Responded

Action Date: 1/23/2019
Received Issue Date: 1/23/2019
Doc Link: https://geotracker.waterboards.ca.gov/view_documents_all?global_id=T10000011799&doc_id=5983825
Title Description Comments:

Workplan – Additional Site Assessment

Action Type: Response Requested - Reports
Action: Soil Vapor Intrusion Investigation Report
Action Date: 11/20/2018
Received Issue Date: 11/20/2018
Doc Link: https://geotracker.waterboards.ca.gov/view_documents_all?global_id=T10000011799&doc_id=5988141
Title Description Comments:

Equivalent Soil Concentrations Evaluation and Request for Reconsideration

Action Type: Response Requested - Other
Action: Correspondence
Action Date: 9/12/2018
Received Issue Date: 9/12/2018
Doc Link: https://geotracker.waterboards.ca.gov/view_documents_all?global_id=T10000011799&doc_id=5980312
Title Description Comments:

Time Extension Request for Submittal of Work Plan

Action Type: Other Regulatory Actions
Action: Staff Letter
Action Date: 8/31/2018
Received Issue Date: 8/31/2018
Doc Link: https://geotracker.waterboards.ca.gov/view_documents?global_id=T10000011799&enforcement_id=6368732&temptable=ENFORCEMENT
Title Description Comments:

Response to Limited Phase II ESA Report

Action Type: Leak Action
Action: Leak Reported
Action Date: 4/20/1990
Received Issue Date:
Doc Link:
Title Description Comments:

Action Type: Leak Action
Action: Leak Discovery
Action Date: 3/26/1990
Received Issue Date:
Doc Link:
Title Description Comments:

Sites from GeoTracker Search - Documents (as of Oct 17, 2022)

Document Type: Site Documents
Document Date: 2/22/2019
Type: REQUEST FOR CLOSURE
Size : 1,041 KB
Submitted By: NORMAN EKE (AUTH_RP)
Submitted:
Title: MEMORANDUM - GROUNDWATER SAMPLING **Note: Many records provided by the department have a truncated [Title] field.
Title Link: https://geotracker.waterboards.ca.gov/esi/uploads/geo_report/3553784310/T10000011799.PDF

Document Type: Site Documents
Document Date: 8/31/2018

Type: STAFF LETTER
Size :
Submitted By: MIGUEL OVIEDO (REGULATOR)
Submitted:
Title: RESPONSE TO LIMITED PHASE II ESA REPORT **Note: Many records provided by the department have a truncated [Title] field.
Title Link: https://geotracker.waterboards.ca.gov/view_documents?global_id=T10000011799&enforcement_id=6368732

Document Type: Site Documents
Document Date: 9/12/2018
Type: CORRESPONDENCE
Size :
Submitted By: MIGUEL OVIEDO (REGULATOR)
Submitted:
Title: TIME EXTENSION REQUEST FOR SUBMITTAL OF WORK PLAN **Note: Many records provided by the department have a truncated [Title] field.
Title Link: https://geotracker.waterboards.ca.gov/view_documents?global_id=T10000011799&document_id=5980312

Document Type: Site Documents
Document Date: 3/29/2018
Type: SITE ASSESSMENT REPORT
Size : 2,530 KB
Submitted By: NORMAN EKE (AUTH_RP)
Submitted:
Title: LIMITED PHASE II ESA - APROXIMATELY 19.71 ACRES/TENTATIVE TRACT MAP 33267 **Note: Many records provided by the department have a truncated [Title] field.
Title Link: https://geotracker.waterboards.ca.gov/esi/uploads/geo_report/7561844110/T10000011799.PDF

Document Type: Site Documents
Document Date: 4/20/1990
Type: TANK REMOVAL REPORT / UST SAMPLING REPORT
Size : 774 KB
Submitted By: NORMAN EKE (AUTH_RP)
Submitted:
Title: SUMMARY REPORT OF FINDINGS - UNDERGROUND STORAGE TANK REMOVAL **Note: Many records provided by the department have a truncated [Title] field.
Title Link: https://geotracker.waterboards.ca.gov/esi/uploads/geo_report/6438010871/T10000011799.PDF

Document Type: Site Documents
Document Date: 11/4/2004
Type: PHASE I ASSESSMENT REPORT
Size : 3,660 KB
Submitted By: NORMAN EKE (AUTH_RP)
Submitted:
Title: PHASE I ESA - 336 UNIT RESIDENTIAL DEVELOPMENT **Note: Many records provided by the department have a truncated [Title] field.
Title Link: https://geotracker.waterboards.ca.gov/esi/uploads/geo_report/4973822474/T10000011799.PDF

Document Type: Site Documents
Document Date: 6/3/2019
Type: CLOSURE/NO FURTHER ACTION LETTER
Size :
Submitted By: MIGUEL OVIEDO (REGULATOR)
Submitted:
Title: CASE CLOSURE/NFA **Note: Many records provided by the department have a truncated [Title] field.
Title Link: https://geotracker.waterboards.ca.gov/view_documents?global_id=T10000011799&enforcement_id=6403924

Document Type: Site Documents
Document Date: 1/30/2019
Type: STAFF LETTER
Size :
Submitted By: MIGUEL OVIEDO (REGULATOR)
Submitted:
Title: WORK PLAN RESPONSE **Note: Many records provided by the department have a truncated [Title] field.
Title Link: https://geotracker.waterboards.ca.gov/view_documents?global_id=T10000011799&enforcement_id=6384120

Document Type: Site Documents
Document Date: 1/22/2019
Type: SITE INVESTIGATION WORKPLAN

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Size :	1,582 KB
Submitted By:	NORMAN EKE (AUTH_RP)
Submitted:	
Title:	WORKPLAN – ADDITIONAL SITE ASSESSMENT **Note: Many records provided by the department have a truncated [Title] field.
Title Link:	https://geotracker.waterboards.ca.gov/esi/uploads/geo_report/4579751789/T10000011799.PDF
Document Type:	Site Documents
Document Date:	4/4/2019
Type:	NOTIFICATION - PUBLIC NOTICE OF CASE CLOSURE
Size :	
Submitted By:	MIGUEL OVIEDO (REGULATOR)
Submitted:	
Title:	PARDEE HOMES 60-DAY PUBLIC NOTICE OF CLOSURE **Note: Many records provided by the department have a truncated [Title] field.
Title Link:	https://geotracker.waterboards.ca.gov/view_documents?global_id=T10000011799&enforcement_id=6398276
Document Type:	Site Documents
Document Date:	11/20/2018
Type:	SOIL VAPOR INTRUSION INVESTIGATION REPORT
Size :	
Submitted By:	MIGUEL OVIEDO (REGULATOR)
Submitted:	
Title:	EQUIVALENT SOIL CONCENTRATIONS EVALUATION AND REQUEST FOR RECONSIDERATION **Note: Many records provided by the department have a truncated [Title] field.
Title Link:	https://geotracker.waterboards.ca.gov/view_documents?global_id=T10000011799&document_id=5988141

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
14	1 of 1	ESE	0.71 / 3,733.18	1,242.47 / -25	PINACATE RIVERSIDE COUNTY LAKE ELSINORE CA 92530	MRDS

Dep ID:	10110517	**I1:**	21
Dev Status:	PRODUCER	**Latitude:**	33.666687
Code List:	AU	**Longitude:**	-117.367493
Url:	http://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10110517		

Commodity

I1:	31	**Line:**	1
Code:	AU	**Inserted By:**	MRDS migration
Commodity:	Gold	**Insert Date:**	29-OCT-2002 09:00:24
Commodity Type:	Metallic	**Updated By:**	USGS
Commodity Group:	Gold	**Update Date:**	29-OCT-2002 09:01:17
Importance:	Primary		

Names

I1:	12	**Inserted By:**	MRDS migration
Status:	Current	**Insert Date:**	29-OCT-02
Site Name:	Pinacate	**Updated By:**	USGS
Line:	1	**Update Date:**	29-OCT-02

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
15	1 of 2	SSW	0.71 / 3,739.09	1,300.54 / 33	ELSINORE HIGH SCHOOL NO. 4 GRAND AVENUE/RIVERSIDE DRIVE LAKE ELSINORE CA 92530	SCH

Estor/EPA ID:	33010016	**Permit Renewal Lead:**	
Site Code:	404117	**Project Manager:**	
Nat Priority List:	NO	**Supervisor:**	SHAHIR HADDAD
Acres:	74 ACRES	**Public Partici Spclst:**	
Special Program:		**Census Tract:**	6065043003
Funding:	SCHOOL DISTRICT	**County:**	RIVERSIDE
Assembly District:	67	**Latitude:**	33.6638
Senate District:	28	**Longitude:**	-117.3841

School District:	LAKE ELSINORE UNIFIED SCHOOL DISTRICT
APN:	NONE SPECIFIED
Cleanup Status:	NO FURTHER ACTION AS OF 11/29/2000
Cleanup Oversight Agencies:	DTSC - LEAD AGENCY
Site Type:	SCHOOL
Office:	SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH
Past Use that Caused Contam:	AGRICULTURAL - ROW CROPS
Potential Media Affected:	SOIL
Potential Contamin of Concern:	

ARSENIC
LEAD
POLYCHLORINATED BIPHENYLS (PCBS)

SITE HISTORY:

The Site is 1/2 mile to the northwest of the base of the Lake Elsinore Mountains. The Site lies within the Elsinore Hydrologic Area (802.31) of the San Jacinto River Basin. The Site lies within an area designated as having existing beneficial or potential beneficial groundwater for municipal/domestic, agriculture and industrial puroses. Tha groundwater in the Site vicinity is anticipated to flow to the east-southeast, toward Lake Elsinore. There are 2 out of service wells located on Site. Access to the well does not allow a direct measurement of the depth to groundwater, however it is estimated that the depth to groundwater is less than 50 feet below grade.
The AMFEC Corporation reportedly operated a nursery at the Site from 1977 to 1984. Prior to the development of the nursery, the Site was agriculturally developed with walnut trees. The site is currently developed with a residential dwelling located on the southeastern portion of the property, however, the majority of the site consists of graded land overgrown with thick vegetation. Remnants of old structures were observed on the site on the northwestern portion of the site to the south of Machado street and in the central portion of the site (former vehicle maintenance area).

Status:	NO FURTHER ACTION
Program Type:	SCHOOL EVALUATION
CalEnviroScreen Score:	60-65%
Summary Link:	https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=33010016

Completed Activities

Title:	Environmental Oversight Agreement
Title Link:	https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=33010016&enforcement_id=6003750
Area Name:	
Area Link:	
Sub Area:	
Sub Area Link:	
Document Type:	Environmental Oversight Agreement
Date Completed:	7/31/2000
Comments:	

Title:	* Workplan
Title Link:	
Area Name:	
Area Link:	
Sub Area:	
Sub Area Link:	
Document Type:	* Workplan
Date Completed:	11/3/2000
Comments:	

Title:	Environmental Oversight Agreement
Title Link:	https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=33010016&enforcement_id=6003751
Area Name:	
Area Link:	
Sub Area:	
Sub Area Link:	
Document Type:	Environmental Oversight Agreement
Date Completed:	11/29/2000
Comments:	

Title:	Background Report - Phase I ESA Report
Title Link:	https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=33010016&doc_id=60263062
Area Name:	
Area Link:	
Sub Area:	

Sub Area Link:
Document Type: Other Report
Date Completed: 5/5/2000
Comments: Background report

Title: Preliminary Endangerment Assessment Report
Title Link: https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=33010016&doc_id=6003753
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Preliminary Endangerment Assessment Report
Date Completed: 8/17/2001
Comments:

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15 | ***2 of 2*** | ***SSW*** | ***0.71 / 3,739.09*** | ***1,300.54 / 33*** | ***ELSINORE HIGH SCHOOL NO. 4 GRAND AVENUE/RIVERSIDE DRIVE LAKE ELSINORE CA 92530*** | ***ENVIROSTOR***

Estor/EPA ID: 33010016
Site Code: 404117
Nat Priority List: NO
APN: NONE SPECIFIED
Census Tract: 6065043003
Site Type: SCHOOL
Address Description: GRAND AVENUE/RIVERSIDE DRIVE
Office: SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH
Special Program:
Funding: SCHOOL DISTRICT
Assembly District: 67
Senate District: 28
Permit Renewal Lead:
Public Partici Spclst:
Project Manager:
County: RIVERSIDE
Latitude: 33.6638
Longitude: -117.3841
Acres: 74 ACRES
Supervisor: SHAHIR HADDAD
Cleanup Status: NO FURTHER ACTION AS OF 11/29/2000
Cleanup Oversight Agencies: DTSC - LEAD AGENCY
School District: LAKE ELSINORE UNIFIED SCHOOL DISTRICT
Past Use that Caused Contam: AGRICULTURAL - ROW CROPS
Potential Media Affected: SOIL
Potential Contamin of Concern:

ARSENIC
LEAD
POLYCHLORINATED BIPHENYLS (PCBS)

Site History:

The Site is 1/2 mile to the northwest of the base of the Lake Elsinore Mountains. The Site lies within the Elsinore Hydrologic Area (802.31) of the San Jacinto River Basin. The Site lies within an area designated as having existing beneficial or potential beneficial groundwater for municipal/domestic, agriculture and industrial puroses. Tha groundwater in the Site vicinity is anticipated to flow to the east-southeast, toward Lake Elsinore. There are 2 out of service wells located on Site. Access to the well does not allow a direct measurement of the depth to groundwater, however it is estimated that the depth to groundwater is less than 50 feet below grade.
The AMFEC Corporation reportedly operated a nursery at the Site from 1977 to 1984. Prior to the development of the nursery, the Site was agriculturally developed with walnut trees. The site is currently developed with a residential dwelling located on the southeastern portion of the property, however, the majority of the site consists of graded land overgrown with thick vegetation. Remnants of old structures were observed on the site on the northwestern portion of the site to the south of Machado street and in the central portion of the site (former vehicle maintenance area).

Status: NO FURTHER ACTION
Program Type: SCHOOL EVALUATION
CalEnviroScreen Score: 60-65%
Summary Link: https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=33010016

Completed Activities

Title: Environmental Oversight Agreement
Title Link: https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=33010016&enforcement_id=6003751
Area Name:
Area Link:
Sub Area:
Sub Area Link:

Document Type: Environmental Oversight Agreement
Date Completed: 11/29/2000
Comments:

Title: Environmental Oversight Agreement
Title Link: https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=33010016&enforcement_id=6003750
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Environmental Oversight Agreement
Date Completed: 7/31/2000
Comments:

Title: Background Report - Phase I ESA Report
Title Link: https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=33010016&doc_id=60263062
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Other Report
Date Completed: 5/5/2000
Comments: Background report

Title: Preliminary Endangerment Assessment Report
Title Link: https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=33010016&doc_id=6003753
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Preliminary Endangerment Assessment Report
Date Completed: 8/17/2001
Comments:

Title: * Workplan
Title Link:
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: * Workplan
Date Completed: 11/3/2000
Comments:

Unplottable Summary

Total: 6 Unplottable sites

DB	Company Name/Site Name	Address	City	Zip	ERIS ID
CDL		VEHICLE STOP ON RIVERSIDE DR.	LAKE ELSINORE CA		820126404
HAZNET	CALTRANS D-8/EA08-1E5204	RTE 74 PM 8.3/11.9	LAKE ELSINORE CA	92530	827040843
HAZNET	CHIEF AUTO/AUTOZONE	308 RIVERSIDE DR	LAKE ELSINORE CA	925300000	826177806
HIST CHMIRS	STARVING STUDENTS	W/B SR 74	UNINC CA		826012768
HIST TANK	KEEN CAMP	RTE 74,PM 65.23	CA		865096445
HMIRS		ORTEGA HWY 74	LAKE ELSINORE CA		818304204

Unplottable Report

Site:
VEHICLE STOP ON RIVERSIDE DR. LAKE ELSINORE CA CDL

Clue: 1996-06-046
Date: 6/18/1996
County: RIVERSIDE
Lab Type: M
Lab Type Description: Mobile Lab - location where illegal drug lab equipment and materials were found in a vehicle or other mode of transport.

Site: ***CALTRANS D-8/EA08-1E5204***
RTE 74 PM 8.3/11.9 LAKE ELSINORE CA 92530 HAZNET

SIC Code:
NAICS Code:
EPA ID: CAC002746754
Create Date: 10/9/2013
Fac Act Ind: No
Inact Date: 1/8/2014
County Code: 33
County Name: Riverside
Mail Name: CALTRANS
Mailing Addr 1: 464 W 4TH ST FL 6
Mailing Addr 2: MS 1104
Owner Fax:
Mailing City: SAN BERNARDINO
Mailing State: CA
Mailing Zip: 924011400
Region Code: 4
Owner Name: CALTRANS
Owner Addr 1: 1120 N ST
Owner Addr 2: MS 31
Owner City: SACRAMENTO
Owner State: CA
Owner Zip: 95814
Owner Phone: 0000000000
Details DTSC HWTS: The Department of Toxic Substances Control (DTSC) makes available a Waste Code Matrix showing each Waste Code, its description, and annual amounts in its Hazardous Waste Tracking System: https://hwts.dtsc.ca.gov/search
DTSC Handler Profile url: https://hwts.dtsc.ca.gov/facility/CAC002746754

Site: ***CHIEF AUTO/AUTOZONE***
308 RIVERSIDE DR LAKE ELSINORE CA 925300000 HAZNET

SIC Code:
NAICS Code:
EPA ID: CAL000206961
Create Date: 4/6/1999
Fac Act Ind: No
Inact Date: 6/30/1999
County Code: 33
County Name: Riverside
Mail Name: FARLON WILLIAMS DEPT 8192
Mailing Addr 1: 123 SO FRONT ST
Mailing Addr 2:
Owner Fax:
Mailing City: MEMPHIS
Mailing State: TN
Mailing Zip: 381030000
Region Code: 4
Owner Name: AUTOZONE INC
Owner Addr 1: 123 SO FRONT ST
Owner Addr 2:
Owner City: MEMPHIS
Owner State: TN
Owner Zip: 381030000
Owner Phone: 9014957217
Details DTSC HWTS: The Department of Toxic Substances Control (DTSC) makes available a Waste Code Matrix showing each Waste Code, its description, and annual amounts in its Hazardous Waste Tracking System: https://hwts.dtsc.ca.gov/search
DTSC Handler Profile url: https://hwts.dtsc.ca.gov/facility/CAL000206961

Site: ***STARVING STUDENTS***
W/B SR 74 UNINC CA HIST CHMIRS

OES Control NO: 9010012
Release Factors: Collision/Overturn
Release Text:
Incident Date: 1/5/1990
Date Reported: 2/16/1990
Fatalities: 0

Equipm Involved:		***Other Injury:***	0
Action Taken Text:		***Other Decon:***	0
Chemicals:	DIESEL FUEL	***Other Fatal:***	0
Case Number:		***Vehicle:***	
HazMat Other:		***State:***	
HM Injury:	0	***CA DOT PUC ICC:***	
Decon:	0	***Company Name:***	STARVING STUDENTS
Agency Name:	CHP	***County:***	RIVERSIDE
HazMat Pers:			
Action Taken:	Investigate,Provide Public Info,Traffic Control		
More than three involved?:	2		

Site: ***KEEN CAMP***
RTE 74,PM 65.23 CA

HIST TANK

Owner Name:	CALIF DEPT OF TRANSPORTATION	***No of Containers:***	1
Owner Street:	1120 N STREET	***County:***	RIVERSIDE
Owner City:	SACRAMENTO	***Facility State:***	CA
Owner State:	CA	***Facility Zip:***	95814
Owner Zip:	95814		

Site:
ORTEGA HWY 74 LAKE ELSINORE CA

HMIRS

Incident County: RIVERSIDE

HMIR Incident Reports

Report No:	I-1994120524	***Fed DOT Agency Nm:***	
Report Type:	A hazardous material incident	***Fed DOT Report No:***	
Date of Incident:	1994-09-26	***Report Submit Src:***	Paper
Time of Incident:	1130	***Inc Multiple Rows:***	No
Haz Class Code:		***Inc Non US State:***	
Hazardous Class:	8	***Mode Transport:***	Highway
Commodity Short Nm:	CAUSTIC ALKALI LIQUIDS,	***Transport Phase:***	In Transit
Commodity Long Nm:	CAUSTIC ALKALI LIQUIDS, N.O.S.	***Incident Occrrnce:***	
Trade Name:	ALKYL ETHER AMINE	***Mat Ship Approval?:***	No
ID No:	UN1719	***Mat Ship Approv No:***	
Haz Waste Ind:	No	***Undecl Hazmat Ship?:***	No
Haz Waste EPA No:		***Packaging Type:***	Non-Bulk
HMIS Tox Inhalation?:	No	***Packing Group:***	
TIH Hazard Zone:		***Carrier Reporter:***	EPMAR CORP
Qty Released:	165	***CR Street Name:***	13210 E BARTON CIRCLE
Unit of Measure:	Liquid - Gallon	***CR City:***	SANTA FE SPRINGS
What Failed:	109; 161	***CR State:***	CA
What Failed Desc:	Closure (e.g., Cap, Top, or Plug); Weld or Seam	***CR Postal Code:***	90670
How Failed Code:	303;	***CR Non US State:***	
How Failed Desc:	Burst or Ruptured;	***CR Fed DOT ID:***	1035400
Failure Cause Code:	511; 537	***CR Hazmat Reg ID:***	
Failure Cause Desc:	Dropped; Vehicular Crash or Accident Damage	***CR Country:***	US
Ident. Markings:		***Shipper Name:***	EPMAR CORP
Cont1 Pkging Type:		***Shipper Street Name:***	13210 E BARTON CIRCLE
Cont1 Const Mat:		***Shipper City:***	SANTA FE SPRINGS
Cont1 Head Type:		***Shipper State:***	CA
Cont1 Pkg Capacity:	55	***Shipper Postal:***	90670
C1 Capacity UOM:	LGA	***Shipper Non US St:***	
Cont1 Pkg Amt:	0	***Shipper Country:***	US
C1 Pkg Amt UOM:		***Shipper Waybill:***	5582
Cont1 Pkg No:	12	***Ship Hazmat Reg ID:***	
C1 Pkg NO Failed:	10	***Origin City:***	
Cont1 Pkg Mnfctr:	WAYMIRE DRUM CO	***Origin State:***	
Cont1 Pkg Mnfct Dt:	0-00-00 00:00:00	***Origin Postal:***	
Cont1 Pkg Serial NO:		***Origin Non US St:***	
C1 Pkg Last Test Dt:	0-00-00 00:00:00	***Origin Country:***	US
C1 Test Const Mat:		***Destination City:***	TEMECULA

C1 Pkg Dsign Pres.:	0	***Destination State:***	CALIFORNIA
C1 Dsign Press UOM:		***Destination Postal:***	92590
C1 Pkg Shell Thick:	0	***Destination Non US:***	
C1 Shell Thick UOM:		***Destination Country:***	US
C1 Head Thickness:	0	***Cont2 Package Type:***	
C1 Head Thick UOM:		***Cont2 Const Mat:***	
C1 Pkg Srvc Pres.:	0	***Cont2 Pkg Capacity:***	0
C1 Srvc Press UOM:		***Cont2 Capacity UOM:***	
C1 Valve/Device Fail?:	No	***Cont2 Pkg Amount:***	0
C1 Device Type:		***Cont2 Pkg Amt UOM:***	
C1 Device Mnfctr:		***Cont2 Pkg No:***	0
C1 Device Model:		***Cont2 Pkg No Failed:***	0
NRC No:			

RAM Pkg Category:		***Haz NonHosp Public:***	0
RAM Pkg Cert.:	FALSE	***Haz NonHosp Old:***	
RAM Pkg Cert. NBR:		***Tot Haz Non Hosp Inj:***	
RAM Nuclide S:		***Total Hazmat Injuries:***	0
RAM Transport Index:		***Evacuation Indicator:***	No
RAM UOM:		***Public Evacuated:***	0
RAM Activity Rpted:	0	***Employees Evac:***	0
RAM UOM Rpted:		***Total Evacuated:***	0
RAM Activity:	0	***Total Evacuation Hrs:***	0
RAM Activity UOM:		***Major Artery Closed:***	No
RAM Mat Safety:		***Mjr Artery Hrs Closed:***	0
Spillage Result:	Yes	***Material Involved:***	Yes
Fire Result:	No	***Estimated Speed:***	25
Explosion Result:	No	***Weather Conditions:***	
Water Sewer Result:	No	***Vehicle Overturn:***	No
Gas Dispersion:	No	***Vehicle Left Roadway:***	No
Environment Damage:	Yes	***Passenger Aircraft:***	No
No Release Result:	No	***Cargo Baggage:***	
Fire EMS Report:	No	***Ship Non Transport:***	No
Fire EMS EMS Report:		***Ship Air First Flight:***	No
Police Report:	No	***Ship Air Subflight:***	No
Police Report No:		***Ship Init Transport:***	No
In House Cleanup:	No	***Ship Phase Transfer:***	No
Other Cleanup:	No	***Contact Name:***	CATHY RAMSAY
Damage > 500:	Yes	***Contact Title:***	OFFICE MGR
Material Loss:	19010	***Contact Business:***	
Carrier Damage:	4144	***Contact Street:***	
Property Damage:	0	***Contact City:***	
Response Cost:	0	***Contact State:***	
Remediation Cost:	48838	***Contact Postal:***	
Damage Old Form:	0	***Contact Non US St:***	
Total Damages Amt:	71992	***Contact Country:***	US
Hazmat Fatality:	No	***Inc. Report Prepared:***	
Haz Fatal Employees:	0	***HMIS Serious Incidnt:***	Yes
Haz Fatal Respndrs:	0	***HMIS Serious Fatality:***	No
Haz Fatal Gen Public:	0	***HMIS Serious Injury:***	No
Tot Hazmat Fatalities:	0	***HMIS Flight Plan:***	No
Non Hazmat Fatality:	No	***HMIS Serious Evacs:***	No
Non Hazmat Fatals:	0	***HMIS Major Artery:***	No
Hazmat Injury:	No	***HMIS Bulk Release:***	Yes
Haz Hospital Empl:	0	***HMIS Marine Pollutnt:***	No
Haz Hospital Resp:	0	***HMIS Radioactive:***	No
Haz Hosp Gen Public:	0	***HMIS Gen Pkg Type:***	DRUM METAL
Haz Hosp Old Form:	0	***HMIS Container Code:***	17H
Total Haz Hosp Inj:	0	***HMIS Container Desc:***	Steel STC* RHR*
Haz Non Hosp Empl:	0	***HMIS Bulk Incident:***	No
Haz Non Hosp Resp:	0	***Undeclared Shipment:***	No

Description of Events: COMPANY TRUCK HIT GUARD RAIL. PALLETS OF DRUMS WERE TIED DOWN, BUT WHIPLASH EFFECT AS DRIVER CORRECTED STEERING PROBABLY CAUSED DRUMS TO HIT AND BREAK GATES, FALL OFF TRUCK AND TUMBLE DOWN HILLSIDE WITH BARRELS BREAKING OPEN AND SPILLING CONTENTS. EPMAR WAS CALLED BY THE HAZ MAT TEAM. WE RESPONDED BY IMMEDIATELY HIRING A COMPANY FOR CLEANUP-CONSOLIDATED WASTE INDUSTRIES, INC., 10680 SILICON AVE., MONTCLAIR, CA 91763-4621. INCIDENT WAS CLEANED UP WITHIN ONE WEEK. WASTE REMOVAL ESTIMATED AT: NON RCRA HAZARDOUS WASTE--11,365 LBS. AND WASTE CORROSIVE LIQUIDS--1200 LBS. (SEE ENCLOSED MANIFEST). COMPANY TRUCK HAS BEEN OUTFITTED WITH METAL GATES INSTEAD OF WOOD TO PREVENT FURTHER OCCURANCES. SPILL WAS REPORTED TO THE NATIONAL RESPONSE CENTER.

Recommend Actions Taken:

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ERIS updates databases as set out in ASTM Standard E1527-13 and E1527-21, Section 8.1.8 Sources of Standard Source Information:

"Government information from nongovernmental sources may be considered current if the source updates the information at least every 90 days, or, for information that is updated less frequently than quarterly by the government agency, within 90 days of the date the government agency makes the information available to the public."

Standard Environmental Record Sources

Federal

Formerly Utilized Sites Remedial Action Program: DOE FUSRAP

The U.S. Department of Energy (DOE) established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from the Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations. The DOE Office of Legacy Management (LM) established long-term surveillance and maintenance (LTS&M) requirements for remediated FUSRAP sites. DOE evaluates the final site conditions of a remediated site on the basis of risk for different future uses. DOE then confirms that LTS&M requirements will maintain protectiveness.

Government Publication Date: Mar 4, 2017

National Priority List: NPL

Sites on the United States Environmental Protection Agency (EPA)'s National Priorities List of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program. The NPL, which EPA is required to update at least once a year, is based primarily on the score a site receives from EPA's Hazard Ranking System. A site must be on the NPL to receive money from the Superfund Trust Fund for remedial action. Sites are represented by boundaries where available in the EPA Superfund Site Boundaries maintained by the Shared Enterprise Geodata and Services (SEGS). Site boundaries represent the footprint of a whole site, the sum of all of the Operable Units and the current understanding of the full extent of contamination; for Federal Facility sites, the total site polygon may be the Facility boundary. Where there is no polygon boundary data available for a given site, the site is represented as a point.

Government Publication Date: Jul 26, 2022

National Priority List - Proposed: PROPOSED NPL

Sites proposed - by the EPA, the state agency, or concerned citizens - for addition to the NPL due to contamination by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment. Sites are represented by boundaries where available in the EPA Superfund Site Boundaries maintained by the Shared Enterprise Geodata and Services (SEGS). Site boundaries represent the footprint of a whole site, the sum of all of the Operable Units and the current understanding of the full extent of contamination; for Federal Facility sites, the total site polygon may be the Facility boundary. Where there is no polygon boundary data available for a given site, the site is represented as a point.

Government Publication Date: Jul 26, 2022

Deleted NPL: DELETED NPL

Sites deleted from the United States Environmental Protection Agency (EPA)'s National Priorities List. 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. Sites are represented by boundaries where available in the EPA Superfund Site Boundaries maintained by the Shared Enterprise Geodata and Services (SEGS). Site boundaries represent the footprint of a whole site, the sum of all of the Operable Units and the current understanding of the full extent of contamination; for Federal Facility sites, the total site polygon may be the Facility boundary. Where there is no polygon boundary data available for a given site, the site is represented as a point.

Government Publication Date: Jul 26, 2022

SEMS List 8R Active Site Inventory: SEMS

The U.S. Environmental Protection Agency's (EPA) Superfund Program has deployed the Superfund Enterprise Management System (SEMS), which integrates multiple legacy systems into a comprehensive tracking and reporting tool. This inventory contains active sites evaluated by the Superfund program that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The Active Site Inventory Report displays site and location information at active SEMS sites. An active site is one at which site assessment, removal, remedial, enforcement, cost recovery, or oversight activities are being planned or conducted. This data includes SEMS sites from the List 8R Active file as well as applicable sites from the SEMS GIS/REST file layer obtained from EPA's Facility Registry Service.

Government Publication Date: Nov 23, 2022

SEMS List 8R Archive Sites: SEMS ARCHIVE

The U.S. Environmental Protection Agency's (EPA) Superfund Enterprise Management System (SEMS) Archived Site Inventory displays site and location information at sites archived from SEMS. An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time. This data includes sites from the List 8R Archived site file.

Government Publication Date: Nov 23, 2022

Inventory of Open Dumps, June 1985: ODI

The Resource Conservation and Recovery Act (RCRA) provides for publication of an inventory of open dumps. The Act defines "open dumps" as facilities which do not comply with EPA's "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (40 CFR 257).

Government Publication Date: Jun 1985

Comprehensive Environmental Response, Compensation and Liability Information System - CERCLIS: CERCLIS

Superfund is a program administered by the United States Environmental Protection Agency (EPA) to locate, investigate, and clean up the worst hazardous waste sites throughout the United States. CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The EPA administers the Superfund program in cooperation with individual states and tribal governments; this database is made available by the EPA.

Government Publication Date: Oct 25, 2013

EPA Report on the Status of Open Dumps on Indian Lands: IODI

Public Law 103-399, The Indian Lands Open Dump Cleanup Act of 1994, enacted October 22, 1994, identified congressional concerns that solid waste open dump sites located on American Indian or Alaska Native (AI/AN) lands threaten the health and safety of residents of those lands and contiguous areas. The purpose of the Act is to identify the location of open dumps on Indian lands, assess the relative health and environment hazards posed by those sites, and provide financial and technical assistance to Indian tribal governments to close such dumps in compliance with Federal standards and regulations or standards promulgated by Indian Tribal governments or Alaska Native entities.

Government Publication Date: Dec 31, 1998

CERCLIS - No Further Remedial Action Planned: CERCLIS NFRAP

An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time. The Archive designation means 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 this site on the National Priorities List (NPL). This 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 a potential NPL site.

Government Publication Date: Oct 25, 2013

CERCLIS Liens: CERCLIS LIENS

A Federal Superfund lien exists at any property where EPA has incurred Superfund costs to address contamination ("Superfund site") and has provided notice of liability to the property owner. A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. This database is made available by the United States Environmental Protection Agency (EPA). This database was provided by the United States Environmental Protection Agency (EPA). Refer to SEMS LIEN as the current data source for Superfund Liens.

Government Publication Date: Jan 30, 2014

RCRA CORRACTS-Corrective Action: RCRA CORRACTS

RCRA Info 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. At these sites, the Corrective Action Program ensures that cleanups occur. EPA and state regulators work with facilities and communities to design remedies based on the contamination, geology, and anticipated use unique to each site.

Government Publication Date: Nov 7, 2022

RCRA non-CORRACTS TSD Facilities: RCRA TSD

RCRA Info 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. This database includes Non-Corrective Action sites listed as treatment, storage and/or disposal facilities of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Government Publication Date: Nov 7, 2022

RCRA Generator List: RCRA LQG

RCRA Info 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. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Large Quantity Generators (LQGs) generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.

Government Publication Date: Nov 7, 2022

RCRA Small Quantity Generators List: RCRA SQG

RCRA Info is the 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. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Small Quantity Generators (SQGs) generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month.

Government Publication Date: Nov 7, 2022

RCRA Very Small Quantity Generators List: RCRA VSQG

RCRA Info is the 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. A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Very Small Quantity Generators (VSQG) generate 100 kilograms or less per month of hazardous waste, or one kilogram or less per month of acutely hazardous waste. Additionally, VSQG may not accumulate more than 1,000 kilograms of hazardous waste at any time.

Government Publication Date: Nov 7, 2022

RCRA Non-Generators: RCRA NON GEN

RCRA Info 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. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Non-Generators do not presently generate hazardous waste.

Government Publication Date: Nov 7, 2022

RCRA Sites with Controls: RCRA CONTROLS

List of Resource Conservation and Recovery Act (RCRA) facilities with institutional controls in place. RCRA gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances.

Government Publication Date: Nov 7, 2022

Federal Engineering Controls-ECs: FED ENG

This list of Engineering controls (ECs) is provided by the United States Environmental Protection Agency (EPA). ECs encompass a variety of engineered and constructed physical barriers (e.g., soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property. The EC listing includes remedy component data from Superfund decision documents issued in fiscal years 1982-2020 for applicable sites on the final or deleted on the National Priorities List (NPL); and sites with a Superfund Alternative Approach (SAA) Agreement in place. The only sites included that are not on the NPL; proposed for NPL; or removed from proposed NPL, are those with an SAA Agreement in place.

Government Publication Date: Dec 22, 2022

Federal Institutional Controls- ICs: FED INST

This list of Institutional controls (ICs) is provided by the United States Environmental Protection Agency (EPA). ICs are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. Although it is EPA's expectation that treatment or engineering controls will be used to address principal threat wastes and that groundwater will be returned to its beneficial use whenever practicable, ICs play an important role in site remedies because they reduce exposure to contamination by limiting land or resource use and guide human behavior at a site. The IC listing includes remedy component data from Superfund decision documents issued in fiscal years 1982-2020 for applicable sites on the final or deleted on the National Priorities List (NPL); and sites with a Superfund Alternative Approach (SAA) Agreement in place. The only sites included that are not on the NPL; proposed for NPL; or removed from proposed NPL, are those with an SAA Agreement in place.

Government Publication Date: Dec 22, 2022

Land Use Control Information System: LUCIS

The LUCIS database is maintained by the U.S. Department of the Navy and contains information for former Base Realignment and Closure (BRAC) properties across the United States.

Government Publication Date: Sep 1, 2006

Institutional Control Boundaries at NPL sites: NPL IC

Boundaries of Institutional Control areas at sites on the United States Environmental Protection Agency (EPA)'s National Priorities List, or Proposed or Deleted, made available by the EPA's Shared Enterprise Geodata and Services (SEGS). United States Environmental Protection Agency (EPA)'s National Priorities List of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program. Institutional controls are non-engineered instruments such as administrative and legal controls that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy.

Government Publication Date: Jul 26, 2022

Emergency Response Notification System: ERNS 1982 TO 1986

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1982-1986

Emergency Response Notification System: ERNS 1987 TO 1989

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1987-1989

Emergency Response Notification System: ERNS

Database of oil and hazardous substances spill reports made available by the United States Coast Guard National Response Center (NRC). The NRC fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. These data contain initial incident data that has not been validated or investigated by a federal/state response agency.

Government Publication Date: Nov 6, 2022

The Assessment, Cleanup and Redevelopment Exchange System (ACRES) Brownfield Database: FED BROWNFIELDS

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 protects the environment, reduces blight, and takes development pressures off greenspaces and working lands. This data is provided by the United States Environmental Protection Agency (EPA) and includes Brownfield sites from the Cleanups in My Community (CIMC) web application.

Government Publication Date: Sep 13, 2022

FEMA Underground Storage Tank Listing: FEMA UST

The Federal Emergency Management Agency (FEMA) of the Department of Homeland Security maintains a list of FEMA owned underground storage tanks.

Government Publication Date: Dec 31, 2017

Facility Response Plan: FRP

List of facilities that have submitted Facility Response Plans (FRP) to EPA. Facilities that could reasonably be expected to cause "substantial harm" to the environment by discharging oil into or on navigable waters are required to prepare and submit Facility Response Plans (FRPs). Harm is determined based on total oil storage capacity, secondary containment and age of tanks, oil transfer activities, history of discharges, proximity to a public drinking water intake or sensitive environments.

Government Publication Date: Dec 31, 2021

Delisted Facility Response Plans: DELISTED FRP

Facilities that once appeared in - and have since been removed from - the list of facilities that have submitted Facility Response Plans (FRP) to EPA. Facilities that could reasonably be expected to cause "substantial harm" to the environment by discharging oil into or on navigable waters are required to prepare and submit Facility Response Plans (FRPs). Harm is determined based on total oil storage capacity, secondary containment and age of tanks, oil transfer activities, history of discharges, proximity to a public drinking water intake or sensitive environments.

Government Publication Date: Dec 31, 2021

Historical Gas Stations: HIST GAS STATIONS

This historic directory of service stations is provided by the Cities Service Company. The directory includes Cities Service filling stations that were located throughout the United States in 1930.

Government Publication Date: Jul 1, 1930

Petroleum Refineries: REFN

List of petroleum refineries from the U.S. Energy Information Administration (EIA) Refinery Capacity Report. Includes operating and idle petroleum refineries (including new refineries under construction) and refineries shut down during the previous year located in the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, and other U.S. possessions. Survey locations adjusted using public data.

Government Publication Date: Aug 30, 2022

Petroleum Product and Crude Oil Rail Terminals: BULK TERMINAL

List of petroleum product and crude oil rail terminals made available by the U.S. Energy Information Administration (EIA). Includes operable bulk petroleum product terminals located in the 50 States and the District of Columbia with a total bulk shell storage capacity of 50,000 barrels or more, and/or the ability to receive volumes from tanker, barge, or pipeline; also rail terminals handling the loading and unloading of crude oil that were active between 2017 and 2018. Petroleum product terminals comes from the EIA-815 Bulk Terminal and Blender Report, which includes working, shell in operation, and shell idle for several major product groupings. Survey locations adjusted using public data.

Government Publication Date: Jun 29, 2022

LIEN on Property: SEMS LIEN

The U.S. Environmental Protection Agency's (EPA) Superfund Enterprise Management System (SEMS) provides Lien details on applicable properties, such as the Superfund lien on property activity, the lien property information, and the parties associated with the lien.

Government Publication Date: Nov 23, 2022

Superfund Decision Documents: SUPERFUND ROD

This database contains a listing of decision documents for Superfund sites. Decision documents serve to provide the reasoning for the choice of (or) changes to a Superfund Site cleanup plan. The decision documents include Records of Decision (ROD), ROD Amendments, Explanations of Significant Differences (ESD), along with other associated memos and files. This information is maintained and made available by the US EPA (Environmental Protection Agency).

Government Publication Date: Sep 28, 2022

State

State Response Sites: RESPONSE

A list of identified confirmed release sites where the Department of Toxic Substances Control (DTSC) is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk. This database is state equivalent NPL.

Government Publication Date: Oct 17, 2022

EnviroStor Database: ENVIROSTOR

The EnviroStor Data Management System is made available by the Department of Toxic Substances Control (DTSC). Includes Corrective Action sites, Tiered Permit sites, Historical Sites and Evaluation/Investigation sites. This database is state equivalent CERCLIS.

Government Publication Date: Oct 17, 2022

Delisted State Response Sites: DELISTED ENVS

Sites removed from the list of State Response Sites made available by the EnviroStor Data Management System, Department of Toxic Substances Control (DTSC).

Government Publication Date: Oct 17, 2022

Solid Waste Information System (SWIS): SWF/LF

The Solid Waste Information System (SWIS) database made available by the Department of Resources Recycling and Recovery (CalRecycle) contains information on solid waste facilities, operations, and disposal sites throughout the State of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites.

Government Publication Date: Nov 7, 2022

Solid Waste Disposal Sites with Waste Constituents Above Hazardous Waste Levels: SWRCB SWF

This is a list of solid waste disposal sites identified by California State Water Resources Control Board with waste constituents above hazardous waste levels outside the waste management unit.

Government Publication Date: Sep 20, 2006

Waste Management Unit Database: WMUD

The Waste Management Unit Database System tracks and inventories waste management units. CCR Title 27 contains criteria stating that Waste Management Units are classified according to their ability to contain wastes. Containment shall be determined by geology, hydrology, topography, climatology, and other factors relating to the ability of the Unit to protect water quality. Water Code Section 13273.1 requires that operators submit a water quality solid waste assessment test (SWAT) report to address leak status. The WMUDS was last updated by the State Water Resources control board in 2000.

Government Publication Date: Jan 1, 2000

EnviroStor Hazardous Waste Facilities: HWP

A list of hazardous waste facilities including permitted, post-closure and historical facilities found in the Department of Toxic Substances Control (DTSC) EnviroStor database.

Government Publication Date: Oct 17, 2022

Sites Listed in the Solid Waste Assessment Test (SWAT) Program Report: SWAT

In a 1993 Memorandum of Understanding, the State Water Resources Control Board (SWRCB) agreed to submit a comprehensive report on the Solid Waste Assessment Test (SWAT) Program to the California Integrated Waste Management Board (CIWMB). This report summarizes the work completed to date on the SWAT Program, and addresses both the impacts that leakage from solid waste disposal sites (SWDS) may have upon waters of the State and the actions taken to address such leakage.

Government Publication Date: Dec 31, 1995

Construction and Demolition Debris Recyclers: C&D DEBRIS RECY

This listing of Construction and Demolition Debris Recyclers is maintained by the California Intergrated Waste Management Board-common C&D materials include lumber, drywall, metals, masonry (brick, concrete, etc.), carpet, plastic, pipe, rocks, dirt, paper, cardboard, or green waste related to land development.

Government Publication Date: Jun 20, 2018

Recycling Centers: RECYCLING

This list of Certified Recycling Centers that are operating under the state of California's Beverage Container Recycling Program is maintained by the California Department of Resources Recycling and Recovery.

Government Publication Date: Jan 12, 2023

Listing of Certified Processors: PROCESSORS

This list of Certified Processors that are operating under the state of California's Beverage Container Recycling Program is maintained by the California Department of Resources Recycling and Recovery.

Government Publication Date: Jan 12, 2023

Listing of Certified Dropoff, Collection, and Community Service Programs: CONTAINER RECY

This list of Certified Dropoff, Collection, and Community Service Programs (non-buyback) operating under the state of California's Beverage Container Recycling Program is maintained by the California Department of Resources Recycling and Recovery.

Government Publication Date: Oct 11, 2022

Land Disposal Sites: LDS

Land Disposal Sites in GeoTracker, the State Water Resources Control Board (SWRCB)'s data management system. The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units. Waste management units include waste piles, surface impoundments, and landfills.

Government Publication Date: Nov 16, 2022

Leaking Underground Fuel Tank Reports: LUST

List of Leaking Underground Storage Tanks within the Cleanup Sites data in GeoTracker database. GeoTracker is the State Water Resources Control Board's (SWRCB) data management system for managing sites that impact groundwater, especially those that require groundwater cleanup (Underground Storage Tanks, Department of Defense and Site Cleanup Program) as well as permitted facilities such as operating Underground Storage Tanks. The Leak Prevention Program that overlooks LUST sites is the SWRCB in California's Environmental Protection Agency.

Government Publication Date: Nov 16, 2022

Delisted Leaking Storage Tanks: DELISTED LST

List of Leaking Underground Storage Tanks (LUST) cleanup sites removed from GeoTracker, the State Water Resources Control Board (SWRCB)'s database system, as well as sites removed from the SWRCB's list of UST Case closures.

Government Publication Date: Nov 16, 2022

Permitted Underground Storage Tank (UST) in GeoTracker: UST

List of Permitted Underground Storage Tank (UST) sites made available by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency (EPA).

Government Publication Date: Oct 14, 2022

Proposed Closure of Underground Storage Tank Cases: UST CLOSURE

List of UST cases that are being considered for closure by either the California Environmental Protection Agency, State Water Resources Control Board or the Executive Director that have been posted for a 60-day public comment period.

Government Publication Date: May 5, 2021

Historical Hazardous Substance Storage Information Database: HHSS

The Historical Hazardous Substance Storage database contains information collected in the 1980s from facilities that stored hazardous substances. The information was originally collected on paper forms, was later transferred to microfiche, and recently indexed as a searchable database. When using this database, please be aware that it is based upon self-reported information submitted by facilities which has not been independently verified. It is unlikely that every facility responded to the survey and the database should not be expected to be a complete inventory of all facilities that were operating at that time. This database is maintained by the California State Water Resources Control Board's (SWRCB) Geotracker.

Government Publication Date: Aug 27, 2015

Statewide Environmental Evaluation and Planning System: UST SWEEPS

The Statewide Environmental Evaluation and Planning System (SWEEPS) is a historical listing of active and inactive underground storage tanks made available by the California State Water Resources Control Board (SWRCB).

Government Publication Date: Oct 1, 1994

Aboveground Storage Tanks: AST

A statewide list from 2009 of aboveground storage tanks (ASTs) made available by the Cal FIRE Office of the State Fire Marshal (OSFM). This list is no longer maintained or updated by the Cal FIRE OSFM.

Government Publication Date: Aug 31, 2009

SWRCB Historical Aboveground Storage Tanks: AST SWRCB

A list of aboveground storage tanks made available by the California State Water Resources Control Board (SWRCB). Effective January 1, 2008, the Certified Unified Program Agencies (CUPAs) are vested with the responsibility and authority to implement the Aboveground Petroleum Storage Act (APSA).

Government Publication Date: Dec 1, 2007

Oil and Gas Facility Tanks: TANK OIL GAS

Locations of oil and gas tanks that fall under the jurisdiction of the Geologic Energy Management Division of the California Department of Conservation (CalGEM) (CCR 1760). CalGEM was formerly the Division of Oil, Gas, and Geothermal Resources (DOGGR).

Government Publication Date: Oct 6, 2022

Delisted Storage Tanks: DELISTED TNK

This database contains a list of storage tank sites that were removed by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency (EPA) and the Cal FIRE Office of State Fire Marshal (OSFM).

Government Publication Date: Nov 15, 2022

California Environmental Reporting System (CERS) Tanks: CERS TANK

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs. The CalEPA oversees the statewide implementation of the Unified Program which applies regulatory standards to protect Californians from hazardous waste and materials.

Government Publication Date: Oct 7, 2022

Delisted California Environmental Reporting System (CERS) Tanks: DELISTED CTNK

This database contains a list of Aboveground Petroleum Storage and Underground Storage Tank sites that were removed from in the California Environmental Protection Agency (CalEPA) Regulated Site Portal.

Government Publication Date: Oct 7, 2022

Historical Hazardous Substance Storage Container Information - Facility Summary: HIST TANK

The State Water Resources Control Board maintained the Hazardous Substance Storage Containers listing and inventory in th 1980s. This facility summary lists historic tank sites where the following container types were present: farm motor vehicle fuel tanks; waste tanks; sumps; pits, ponds, lagoons, and others; and all other product tanks. This set, published in May 1988, lists facility and owner information, as well as the number of containers. This data is historic and will not be updated.

Government Publication Date: May 27, 1988

Site Mitigation and Brownfields Reuse Program Facility Sites with Land Use Restrictions: LUR

The Department of Toxic Substances Control (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 land use restrictions that are active. Some sites have multiple land use restrictions.

Government Publication Date: Oct 17, 2022

CALSITES Database: CALSITES

This historical database was maintained by the Department of Toxic Substance Control (DTSC) for more than a decade. CALSITES contains information on Brownfield properties with confirmed or potential hazardous contamination. In 2006, DTSC introduced EnviroStor as the latest Brownfields site database.

Government Publication Date: May 1, 2004

Hazardous Waste Management Program Facility Sites with Deed / Land Use Restrictions: HLUR

The Department of Toxic Substances Control (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.

Government Publication Date: Feb 18, 2021

Deed Restrictions and Land Use Restrictions: DEED

List of Deed Restrictions, Land Use Restrictions and Covenants in GeoTracker made available by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency. A deed restriction (land use covenant) may be required to facilitate the remediation of past environmental contamination and to protect human health and the environment by reducing the risk of exposure to residual hazardous materials.

Government Publication Date: Nov 16, 2022

Voluntary Cleanup Program: VCP

List of sites in the Voluntary Cleanup Program made available by the Department of Toxic Substances and Control (DTSC). The Voluntary Cleanup Program was designed to respond to lower priority sites. Under the Voluntary Cleanup Program, DTSC enters site-specific agreements with project proponents for DTSC oversight of site assessment, investigation, and/or removal or remediation activities, and the project proponents agree to pay DTSC's reasonable costs for those services.

Government Publication Date: Oct 17, 2022

GeoTracker Cleanup Program Sites: CLEANUP SITES

A list of Cleanup Program sites in the state of California made available by The State Water Resources Control Board (SWRCB) of the California Environmental Protection Agency (EPA). SWRCB tracks leaking underground storage tank cleanups as well as other water board cleanups.

Government Publication Date: Nov 16, 2022

Delisted Cleanup Program Sites: DELISTED CLEANUP

A list of Cleanup Program sites which were once included - and have since been removed from - the list of Cleanup Program Sites in GeoTracker. GeoTracker is the State Water Resource Control Boards' data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Government Publication Date: Nov 16, 2022

Delisted County Records: DELISTED COUNTY

Records removed from county or CUPA databases. Records may be removed from the county lists made available by the respective county departments because they are inactive, or because they have been deemed to be below reportable thresholds.

Government Publication Date: Nov 28, 2022

Tribal

Leaking Underground Storage Tanks on Tribal/Indian Lands: INDIAN LUST

This list of leaking underground storage tanks (LUSTs) on Tribal/Indian Lands in Region 9, which includes California, is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Nov 23, 2022

Underground Storage Tanks on Tribal/Indian Lands: INDIAN UST

This list of underground storage tanks (USTs) on Tribal/Indian Lands in Region 9, which includes California, is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Nov 23, 2022

Delisted Tribal Leaking Storage Tanks: DELISTED INDIAN LST

Leaking Underground Storage Tank (LUST) facilities which once appeared on - and have since been removed from - the Regional Tribal/Indian LUST lists made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Nov 23, 2022

Delisted Tribal Underground Storage Tanks: DELISTED INDIAN UST

Underground Storage Tank (UST) facilities which once appeared on - and have since been removed from - the Regional Tribal/Indian UST lists made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Nov 23, 2022

County

Riverside County - Local Oversight Program List: LOP RIVERSIDE

A list of Leaking Underground Storage Tank (LUST) facilities in Riverside County. This list is made available by Riverside County Department of Environmental Health. Environmental Cleanup Program provides oversight of assessments and cleanups at properties that have been, or may have been, contaminated with hazardous substances from LUSTs or releases associated with other commercial/industrial use.

Government Publication Date: Jul 5, 2022

Riverside County - Underground Storage Tanks List: UST RIVERSIDE

A list of registered Underground Storage Tank (UST) sites in Riverside County. This list is made available by Riverside County Department of Environmental Health. The Hazardous Materials Management Branch (HMMB) regulates and oversees the inspections of constructions, repairs, upgrades, system operation and removal of UST systems.

Government Publication Date: Jul 5, 2022

Additional Environmental Record Sources

Federal

Facility Registry Service/Facility Index: FINDS/FRS

The Facility Registry Service (FRS) is a centrally managed database that identifies facilities, sites, or places subject to environmental regulations or of environmental interest. FRS creates high-quality, accurate, and authoritative facility identification records through rigorous verification and management procedures that incorporate information from program national systems, state master facility records, and data collected from EPA's Central Data Exchange registrations and data management personnel. This list is made available by the Environmental Protection Agency (US EPA).

Government Publication Date: Nov 2, 2020

Toxics Release Inventory (TRI) Program: TRIS

The EPA's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of over 650 toxic chemicals from thousands of U. S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment. One of TRI's primary purposes is to inform communities about toxic chemical releases to the environment.

Government Publication Date: Aug 24, 2021

Perfluorinated Alkyl Substances (PFAS) Releases: PFAS TRI

List of Toxics Release Inventory (TRI) facilities at which the reported chemical is a Per- or polyfluorinated alkyl substance (PFAS) included in the Environmental Protection Agency (EPA)'s consolidated PFAS Master List of PFAS Substances. The EPA's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of over 650 toxic chemicals from thousands of U.S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment.

Government Publication Date: Aug 24, 2021

PFOA/PFOS Contaminated Sites: PFAS NPL

List of National Priorities List (NPL) and related Superfund Alternative Agreement (SAA) sites where PFOA or PFOS contaminants have been found in water and/or soil. The site listing is provided by the Federal Environmental Protection Agency (EPA).

Government Publication Date: Oct 4, 2022

Perfluorinated Alkyl Substances (PFAS) Water Quality: PFAS WATER

The Water Quality Portal (WQP) is a cooperative service sponsored by the United States Geological Survey (USGS), the Environmental Protection Agency (EPA), and the National Water Quality Monitoring Council (NWQMC). This listing includes records from the Water Quality Portal where the characteristic (environmental measurement) is in the Environmental Protection Agency (EPA)'s consolidated PFAS Master List of PFAS Substances.

Government Publication Date: Jul 20, 2020

SSEHRI PFAS Contamination Sites: PFAS SSEHRI

This PFAS Contamination Site Tracker database is compiled by the Social Science Environmental Health Research Institute (SSEHRI) at Northeastern University. According to the SSEHRI, the database records qualitative and quantitative data from each known site of PFAS contamination, including timeline of discovery, sources, levels, health impacts, community response, and government response. The goal of this database is to compile information and support public understanding of the rapidly unfolding issue of PFAS contamination. All data presented was extracted from government websites, news articles, or publicly available documents, and this is cited in the tracker. Disclaimer: The source conveys this database undergoes regular updates as new information becomes available, some sites may be missing and/or contain information that is incorrect or outdated, as well as their information represents all contamination sites SSEHRI is aware of, not all possible contamination sites. This data is not intended to be used for legal purposes. Limited location details are available with this data. Access the following for the most current informations https://pfasproject.com/pfas-contamination-site-tr acker/

Government Publication Date: Dec 12, 2019

National Response Center PFAS Spills: ERNS PFAS

National Response Center (NRC) calls from 1990 to the most recent complete calendar year where there is indication of Aqueous Film Forming Foam (AFFF) usage. NRC calls may reference AFFF usage in the "Material Involved" or "Incident Description" fields. Data made available by the US Environmental Protection Agency (EPA). Disclaimer: dataset may include initial or misidentified incident data not yet validated or investigated by a federal/state response agency.

Government Publication Date: Feb 23, 2022

Hazardous Materials Information Reporting System: HMIRS

US DOT - Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) Incidents Reports Database taken from Hazmat Intelligence Portal, U.S. Department of Transportation.

Government Publication Date: Sep 1, 2020

National Clandestine Drug Labs: NCDL

The U.S. Department of Justice ("the Department"), Drug Enforcement Administration (DEA), provides this data 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.

Government Publication Date: Aug 30, 2022

Toxic Substances Control Act: TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.
The CDR enables EPA to collect and publish information on the manufacturing, processing, and use of commercial chemical substances and mixtures (referred to hereafter as chemical substances) on the TSCA Chemical Substance Inventory (TSCA Inventory). This includes current information on chemical substance production volumes, manufacturing sites, and how the chemical substances are used. This information helps the Agency determine whether people or the environment are potentially exposed to reported chemical substances. EPA publishes submitted CDR data that is not Confidential Business Information (CBI).

Government Publication Date: Apr 11, 2019

Hist TSCA: HIST TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.
The 2006 IUR data summary report includes information about chemicals manufactured or imported in quantities of 25,000 pounds or more at a single site during calendar year 2005. In addition to the basic manufacturing information collected in previous reporting cycles, the 2006 cycle is the first time EPA collected information to characterize exposure during manufacturing, processing and use of organic chemicals. The 2006 cycle also is the first time manufacturers of inorganic chemicals were required to report basic manufacturing information.

Government Publication Date: Dec 31, 2006

FTTS Administrative Case Listing: FTTS ADMIN

An administrative case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

FTTS Inspection Case Listing: FTTS INSP

An inspection case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

Potentially Responsible Parties List: PRP

Early in the site cleanup process, the U.S. Environmental Protection Agency (EPA) conducts a search to find the Potentially Responsible Parties (PRPs). The EPA looks for evidence to determine liability by matching wastes found at the site with parties that may have contributed wastes to the site. This listing contains PRPs, Noticed Parties, at sites in the EPA's Superfund Enterprise Management System (SEMS).

Government Publication Date: Nov 23, 2022

State Coalition for Remediation of Drycleaners Listing: SCRD DRYCLEANER

The State Coalition for Remediation of Drycleaners (SCRD) was established in 1998, with support from the U.S. Environmental Protection Agency (EPA) Office of Superfund Remediation and Technology Innovation. Coalition members are states with mandated programs and funding for drycleaner site remediation. Current members are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin. Since 2017, the SCRD no longer maintains this data, refer to applicable state source data where available.

Government Publication Date: Nov 08, 2017

Integrated Compliance Information System (ICIS): ICIS

The U.S. Environmental Protection Agency's Enforcement and Compliance History Online system incorporates data from the Integrated Compliance Information System - National Pollutant Discharge Elimination System (ICIS-NPDES). ICIS-NPDES is an information management system maintained by the Office of Compliance to track permit compliance and enforcement status of facilities regulated by the NPDES under the Clean Water Act. This data includes permit, inspection, violation and enforcement action information for applicable ICIS records.

Government Publication Date: Oct 15, 2022

Drycleaner Facilities: FED DRYCLEANERS

A list of drycleaner facilities from Enforcement and Compliance History Online (ECHO) online search. The Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments.

Government Publication Date: Jun 25, 2022

Delisted Drycleaner Facilities: DELISTED FED DRY

List of sites removed from the list of Drycleaner Facilities (sites in the EPA's Integrated Compliance Information System (ICIS) with NAIC or SIC codes identifying the business as a drycleaner establishment).

Government Publication Date: Jun 25, 2022

Formerly Used Defense Sites: FUDS

Formerly Used Defense Sites (FUDS) are properties that were formerly owned by, leased to, or otherwise possessed by and under the jurisdiction of the Secretary of Defense prior to October 1986, where the Department of Defense (DOD) is responsible for an environmental restoration. The FUDS Annual Report to Congress (ARC) is published by the U.S. Army Corps of Engineers (USACE). This data is compiled from the USACE's Geospatial FUDS data layers and Homeland Infrastructure Foundation-Level Data (HIFLD) FUDS dataset.

Government Publication Date: Jul 12, 2022

Former Military Nike Missile Sites: FORMER NIKE

This information was taken from report DRXTH-AS-IA-83A016 (Historical Overview of the Nike Missile System, 12/1984) which was performed by Environmental Science and Engineering, Inc. for the U.S. Army Toxic and Hazardous Materials Agency Assessment Division. The Nike system was deployed between 1954 and the mid-1970's. Among the substances used or stored on Nike sites were liquid missile fuel (JP-4); starter fluids (UDKH, aniline, and furfuryl alcohol); oxidizer (IRFNA); hydrocarbons (motor oil, hydraulic fluid, diesel fuel, gasoline, heating oil); solvents (carbon tetrachloride, trichloroethylene, trichloroethane, stoddard solvent); and battery electrolyte. The quantities of material a disposed of and procedures for disposal are not documented in published reports. Virtually all information concerning the potential for contamination at Nike sites is confined to personnel who were assigned to Nike sites. During deactivation most hardware was shipped to depot-level supply points. There were reportedly instances where excess materials were disposed of on or near the site itself at closure. There was reportedly no routine site decontamination.

Government Publication Date: Dec 2, 1984

PHMSA Pipeline Safety Flagged Incidents: PIPELINE INCIDENT

A list of flagged pipeline incidents made available by the U.S. Department of Transportation (US DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA). PHMSA regulations require incident and accident reports for five different pipeline system types.

Government Publication Date: Mar 31, 2021

Material Licensing Tracking System (MLTS): MLTS

A list of sites that store radioactive material subject to the Nuclear Regulatory Commission (NRC) licensing requirements. This list is maintained by the NRC. As of September 2016, the NRC no longer releases location information for sites. Site locations were last received in July 2016.

Government Publication Date: May 11, 2021

Historic Material Licensing Tracking System (MLTS) sites: HIST MLTS

A historic list of sites that have inactive licenses and/or removed from the Material Licensing Tracking System (MLTS). In some cases, a site is removed from the MLTS when the state becomes an "Agreement State". An Agreement State is a State that has signed an agreement with the Nuclear Regulatory Commission (NRC) authorizing the State to regulate certain uses of radioactive materials within the State.

Government Publication Date: Jan 31, 2010

Mines Master Index File: MINES

The Master Index File (MIF) is provided by the United State Department of Labor, Mine Safety and Health Administration (MSHA). This file, which was originally created in the 1970's, contained many Mine-IDs that were invalid. MSHA removes invalid IDs from the MIF upon discovery. MSHA applicable data includes the following: all Coal and Metal/Non-Metal mines under MSHA's jurisdiction since 1/1/1970; mine addresses for all mines in the database except for Abandoned mines prior to 1998 from MSHA's legacy system (addresses may or may not correspond with the physical location of the mine itself); violations that have been assessed penalties as a result of MSHA inspections beginning on 1/1/2000; and violations issued as a result of MSHA inspections conducted beginning on 1/1/2000.

Government Publication Date: Aug 3, 2022

Surface Mining Control and Reclamation Act Sites: SMCRA

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by the Office of Surface Mining Reclamation and Enforcement (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 Abandoned Mine Land (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.

Government Publication Date: Aug 18, 2022

Mineral Resource Data System: MRDS

The Mineral Resource Data System (MRDS) is a collection of reports describing metallic and nonmetallic mineral resources throughout the world. Included are deposit name, location, commodity, deposit description, geologic characteristics, production, reserves, resources, and references. This database contains the records previously provided in the Mineral Resource Data System (MRDS) of USGS and the Mineral Availability System/Mineral Industry Locator System (MAS/MILS) originated in the U.S. Bureau of Mines, which is now part of USGS. The USGS has ceased systematic updates of the MRDS database with their focus more recently on deposits of critical minerals while providing a well-documented baseline of historical mine locations from USGS topographic maps.

Government Publication Date: Mar 15, 2016

DOE Legacy Management Sites: LM SITES

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) currently manages radioactive and chemical waste, environmental contamination, and hazardous material at over 100 sites across the U.S. The LM manages sites with diverse regulatory drivers (statutes or programs that direct cleanup and management requirements at DOE sites) or as part of internal DOE or congressionally-recognized programs, such as but not limited to: Formerly Utilized Sites Remedial Action Program (FUSRAP), Uranium Mill Tailings Radiation Control Act (UMTRCA Title I, Tile II), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), Decontamination and Decommissioning (D&D), Nuclear Waste Policy Act (NWPA). This site listing includes data exported from the DOE Office of LM's Geospatial Environmental Mapping System (GEMS). GEMS Data disclaimer: The DOE Office of LM makes no representation or warranty, expressed or implied, regarding the use, accuracy, availability, or completeness of the data presented herein.

Government Publication Date: Dec 1, 2022

Alternative Fueling Stations: ALT FUELS

This list of alternative fueling stations is sourced from the Alternative Fuels Data Center (AFDC). The U.S. Department of Energy's Office of Energy Efficiency & Renewable Energy launched the AFDC in 1991 as a repository for alternative fuel vehicle performance data, which provides a wealth of information and data on alternative and renewable fuels, advanced vehicles, fuel-saving strategies, and emerging transportation technologies. The data includes Biodiesel (B20 and above), Compressed Natural Gas (CNG), Electric, Ethanol (E85), Hydrogen, Liquefied Natural Gas (LNG), Propane (LPG) fuel type locations.

Government Publication Date: Oct 10, 2022

Superfunds Consent Decrees: CONSENT DECREES

This list of Superfund consent decrees is provided by the Department of Justice, Environment & Natural Resources Division (ENRD) through a Freedom of Information Act (FOIA) applicable file. This listing includes Consent Decrees for CERCLA or Superfund Sites filed and/or as proposed within the ENRD's Case Management System (CMS) since 2010. CMS may not reflect the latest developments in a case nor can the agency guarantee the accuracy of the data. ENRD Disclaimer: Congress excluded three discrete categories of law enforcement and national security records from the requirements of the FOIA; response is limited to those records that are subject to the requirements of the FOIA; however, this should not be taken as an indication that excluded records do, or do not, exist.

Government Publication Date: Jan 11, 2023

Air Facility System: AFS

This EPA retired Air Facility System (AFS) dataset contains emissions, compliance, and enforcement data on stationary sources of air pollution. Regulated sources cover a wide spectrum; from large industrial facilities to relatively small operations such as dry cleaners. AFS does not contain data on facilities that are solely asbestos demolition and/or renovation contractors, or landfills. ECHO Clean Air Act data from AFS are frozen and reflect data as of October 17, 2014; the EPA retired this system for Clean Air Act stationary sources and transitioned to ICIS-Air.

Government Publication Date: Oct 17, 2014

Registered Pesticide Establishments: SSTS

List of active EPA-registered foreign and domestic pesticide-producing and device-producing establishments based on data from the Section Seven Tracking System (SSTS). The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 7 requires that facilities producing pesticides, active ingredients, or devices be registered. The list of establishments is made available by the EPA.

Government Publication Date: Mar 30, 2022

Polychlorinated Biphenyl (PCB) Transformers: PCBT

Locations of Transformers Containing Polychlorinated Biphenyls (PCBs) registered with the United States Environmental Protection Agency. PCB transformer owners must register their transformer(s) with EPA. Although not required, PCB transformer owners who have removed and properly disposed of a registered PCB transformer may notify EPA to have their PCB transformer de-registered. Data made available by EPA.

Government Publication Date: Oct 15, 2019

Polychlorinated Biphenyl (PCB) Notifiers: PCB

Facilities included in the national list of facilities that have notified the United States Environmental Protection Agency (EPA) of Polychlorinated Biphenyl (PCB) activities. Any company or person storing, transporting or disposing of PCBs or conducting PCB research and development must notify the EPA and receive an identification number.

Government Publication Date: Jul 28, 2022

State

Dry Cleaning Facilities: DRYCLEANERS

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial, linen supply, commercial laundry, dry cleaning and pressing machines - Coin Operated Laundry and Dry Cleaning. This is provided by the Department of Toxic Substance Control.

Government Publication Date: Dec 20, 2021

Delisted Drycleaners: DELISTED DRYCLEANERS

Sites removed from the list of drycleaner related facilities that have EPA ID numbers, made available by the California Department of Toxic Substance Control.

Government Publication Date: Feb 28, 2020

Non-Toxic Dry Cleaning Incentive Program: DRYC GRANT

A list of grant recipients of the Non-Toxic Dry Cleaning Incentive Program made available by the California Air Resources Board (CARB). The program provides grants to eligible dry cleaning businesses to assist them in transitioning away from PERC machines to alternative non-toxic and non-smog forming technologies.

Government Publication Date: Feb 28, 2020

Per- and Polyfluoroalkyl Substances (PFAS): PFAS

List of FAA Part 139 Airports, Selected Landfills, and Chrome Plating Facilities from California Water Boards PFAS Investigations, as well as sites from the State Water Resources Control Board (SWRCB)'s GeoTracker at which one or more of the potential contaminants of concern are in the PFAS Master List of PFAS Substances made available by the Environmental Protection Agency (US EPA).

Government Publication Date: Feb 15, 2022

PFOA/PFOS Groundwater: PFAS GW

A list of water wells from the Groundwater Ambient Monitoring and Assessment Program (GAMA) Groundwater Information System with the groundwater chemical perfluorooctanoic acid (PFOA) (NL = 0.014 UG/L) or perfluorooctanoic sulfonate (PFOS) (NL = 0.013 UG/L). The GAMA Groundwater Information System search is made available by California Water Boards.

Government Publication Date: Nov 11, 2022

Hazardous Waste and Substances Site List - Site Cleanup: HWSS CLEANUP

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies and developers to comply with the California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites. This list is published by California Department of Toxic Substance Control.

Government Publication Date: May 20, 2021

Toxic Pit Cleanup Act Sites: TOXIC PITS

The Toxic Pits Cleanup Act (TPCA) list identifies sites suspected of containing hazardous substances where cleanup has not yet been completed. This list was maintained by the State Water Resources Control Board (SWRCB), is not longer maintained, and updates are not planned.

Government Publication Date: Jul 1, 1995

List of Hazardous Waste Facilities Subject to Corrective Action: DTSC HWF

This is a list of hazardous waste facilities identified in Health and Safety Code (HSC) § 25187.5. These facilities are those where Department of Toxic Substances Control (DTSC) has taken or contracted for corrective action because a facility owner/operator has failed to comply with a date for taking corrective action in an order issued under HSC § 25187, or because DTSC determined that immediate corrective action was necessary to abate an imminent or substantial endangerment.

Government Publication Date: Jul 18, 2016

EnviroStor Inspection, Compliance, and Enforcement: INSP COMP ENF

A list of permitted facilities with inspections and enforcements tracked in the Department of Toxic Substance Control (DTSC) EnviroStor.

Government Publication Date: Apr 29, 2021

School Property Evaluation Program Sites: SCH

A list of sites registered with The Department of Toxic Substances Control (DTSC) School Property Evaluation and Cleanup (SPEC) Division. SPEC is responsible for assessing, investigating and cleaning up proposed school sites. The Division ensures that selected properties are free of contamination or, if the properties were previously contaminated, that they have been cleaned up to a level that protects the students and staff who will occupy the new school.

Government Publication Date: Oct 17, 2022

California Hazardous Material Incident Report System (CHMIRS): CHMIRS

A list of reported hazardous material incidents, spills, and releases from the California Hazardous Material Incident Report System (CHMIRS). This list has been made available by the California Office of Emergency Services (OES).

Government Publication Date: Aug 15, 2022

Historical California Hazardous Material Incident Report System (CHMIRS): HIST CHMIRS

A list of reported hazardous material incidents, spills, and releases from the California Hazardous Material Incident Report System (CHMIRS) prior to 1993. This list has been made available by the California Office of Emergency Services (OES).

Government Publication Date: Jan 1, 1993

Handlers from Hazardous Waste Manifest Data: HAZNET

A list of handlers not otherwise classified as Treatment, Storage, Disposal facilities (TSDF) or generators from the facilities and manifests data made available by the California Department of Toxic Substances Control (DTSC) in their Hazardous Waste Tracking System (HWTS).

Government Publication Date: Oct 24, 2016

Generators from Hazardous Waste Manifest Data: HAZ GEN

List of handlers listed as having generated waste from the facilities and manifests data made available by the California Department of Toxic Substances Control (DTSC) in their Hazardous Waste Tracking System (HWTS).

Government Publication Date: Dec 31, 2017

TSDF from Hazardous Waste Manifest Data: HAZ TSD

List of Treatment, Storage, and Disposal Facilities (TSDFs) from the facilities and manifests data made available by the California Department of Toxic Substances Control (DTSC) in their Hazardous Waste Tracking System (HWTS).

Government Publication Date: Dec 31, 2017

Historical Hazardous Waste Manifest Data: HIST MANIFEST

A list of historic hazardous waste manifests received by the Department of Toxic Substances Control (DTSC) from year the 1980 to 1992. The volume of manifests is typically 900,000 - 1,000,000 annually, representing approximately 450,000 - 500,000 shipments.

Government Publication Date: Dec 31, 1992

DTSC Registered Hazardous Waste Transporters: HW TRANSPORT

The California Department of Toxic Substances Control (DTSC) maintains this list of Registered Hazardous Waste Transporters.

Government Publication Date: Dec 9, 2022

Registered Waste Tire Haulers: WASTE TIRE

This list of registered waste tire haulers is maintained by the California Department of Resources Recycling and Recovery.

Government Publication Date: Oct 11, 2022

California Medical Waste Management Program Facility List: MEDICAL WASTE

This list of Medical Waste Management Program Facilities is maintained by the California Department of Public Health. The Medical Waste Management Program (MWMP) regulates the generation, handling, storage, treatment, and disposal of medical waste by providing oversight for the implementation of the Medical Waste Management Act (MWMA). The MWMP permits and inspects all medical waste off-site treatment facilities, medical waste transporters, and medical waste transfer stations. This list contains transporters, treatment, and transfer facilities.

Government Publication Date: Oct 31, 2022

Historical Cortese List: HIST CORTESE

List of sites which were once included on the Cortese list. The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies and developers to comply with the California Environmental Quality Act requirements for providing information about the location of hazardous sites.

Government Publication Date: Nov 13, 2008

Cease and Desist Orders and Cleanup and Abatement Orders: CDO/CAO

The California Environment Protection Agency "Cortese List" of active Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO). This list contains many CDOs and CAOs that do NOT concern the discharge of wastes that are hazardous materials. Many of the listed orders concern, as examples, discharges of domestic sewage, food processing wastes, or sediment that do not contain hazardous materials, but the Water Boards' database does not distinguish between these types of orders.

Government Publication Date: Dec 6, 2021

California Environmental Reporting System (CERS) Hazardous Waste Sites: CERS HAZ

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the following regulatory programs: Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, RCRA LQ HW Generator. The CalEPA oversees the statewide implementation of the Unified Program which applies regulatory standards to protect Californians from hazardous waste and materials.

Government Publication Date: Oct 7, 2022

Delisted Environmental Reporting System (CERS) Hazardous Waste Sites: DELISTED HAZ

This database contains a list of sites that were removed from the California Environmental Protection Agency (CalEPA) in the following regulatory programs: Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, RCRA LQ HW Generator.

Government Publication Date: Nov 29, 2018

Sites in GeoTracker: GEOTRACKER

GeoTracker is the State Water Resource Control Boards' data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater. This is a list of sites in GeoTracker that aren't otherwise categorized as LUST, Land Disposal Sites (LDS), Cleanup Sites, or sites having Waste Discharge Requirements (WDR). This listing includes program types such as Underground Injection Control (UIC), Confined Animal Facilities (CAF), Irrigated Lands Regulatory Program, plans, and non-case information.

Government Publication Date: Nov 16, 2022

Mines Listing: MINE

This list includes mine site locations extracted from the Mines Online database, maintained by the California Department of Conservation. Mines Online (MOL) is an interactive web map designed with GIS features that provide information such as the mine name, mine status, commodity sold, location, and other mine specific data. Please note: Mine location information is provided to assist experts in determining the location of mine operators in accordance with California Civil Code section 1103.4 and reflects information reported by mine operators in annual reports provided under Public Resources Code section 2207. While the Division of Mine Reclamation (DMR) attempts to populate MOL with accurate location information, the DMR cannot guarantee the accuracy of operator reported location information.

Government Publication Date: Jun 23, 2022

Recorded Environmental Cleanup Liens: LIEN

The California Department of Toxic Substance Control (DTSC) maintains this list of liens placed upon real properties. A lien is utilized by the DTSC to obtain reimbursement from responsible parties for costs associated with the remediation of contaminated properties.

Government Publication Date: Aug 3, 2022

Waste Discharge Requirements: WASTE DISCHG

List of sites in California State Water Resources Control Board (SWRCB) Waste Discharge Requirements (WDRs) Program in California, made available by the SWRCB via GeoTracker. The WDR program regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Government Publication Date: Nov 16, 2022

Toxic Pollutant Emissions Facilities: EMISSIONS

A list of criteria and toxic pollutant emissions data for facilities in California made available by the California Environmental Protection Agency - Air Resources Board (ARB). Risk data may be based on previous inventory submittals. The toxics data are submitted to the ARB by the local air districts as requirement of the Air Toxics "Hot Spots" Program. This program requires emission inventory updates every four years.

Government Publication Date: Dec 31, 2020

Clandestine Drug Lab Sites: CDL

The Department of Toxic Substances Control (DTSC) maintains a listing of drug lab sites. DTSC is responsible for removal and disposal of hazardous substances discovered by law enforcement officials while investigating illegal/clandestine drug laboratories.

Government Publication Date: Jan 19, 2021

Tribal

No Tribal additional environmental record sources available for this State.

County

Riverside County - Hazardous Waste Generator Sites List: HWG RIVERSIDE

A list of Hazardous Waste Generator Sites in the County of Riverside. This list is made available by Riverside County Department of Environmental Health which has been designated as the CUPA for the County.

Government Publication Date: Jul 5, 2022

Riverside County - Disclosure Facility List: HZH RIVERSIDE

A list of facilities disclosed to Riverside County Department of Environmental Health (DEH). This list is made available by Riverside County DEH which has been designated as the CUPA for the County. A business is required to establish and submit a Business Plan if the facility handles hazardous material equal to or greater than 55 gallons, 500 pounds or 200 cubic feet at any time during the year.

Government Publication Date: Jul 5, 2022

Riverside County - Medical Waste Facilities: MED WST RIVERSIDE

This list of active and inactive medical waste facilities is maintained by the County of Riverside Department of Environmental Health.

Government Publication Date: Jan 12, 2023

Riverside County - California Accidental Release Prevention Program Sites: RMP RIVERSIDE

This list of Riverside County California Accidental Release Prevention Program sites is maintained by the County of Riverside Department of Environmental Health. AB 3777 was enacted in 1986 to minimize potential emergencies involving acutely hazardous materials by requiring facilities which handle these materials to submit Risk Management Prevention Plans. The Riverside County Department of Environmental Health Hazardous Materials Branch began implementation of this Program County-wide in January 1991. All cities within Riverside County are included in this list.

Government Publication Date: Jul 5, 2022

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

PSR
PHYSICAL SETTING REPORT

Property Information

Order Number:		23013100616p
Date Completed:		February 1, 2023
Project Number:		23-397410.1
Project Property:		32281 Riverside Drive 32281 Riverside Drive RIVERSIDE CA 92530
Coordinates:		
	Latitude:	33.67351
	Longitude:	-117.377733
	UTM Northing:	3726009.62161 Meters
	UTM Easting:	464966.13453 Meters
	UTM Zone:	UTM Zone 11S
	Elevation:	1,267.82 ft
	Slope Direction:	SE

Topographic Information....2
Hydrologic Information....4
Geologic Information....7
Soil Information....9
Wells and Additional Sources....15
Summary....16
Detail Report....19
Radon Information....47
Appendix....48
Liability Notice....50

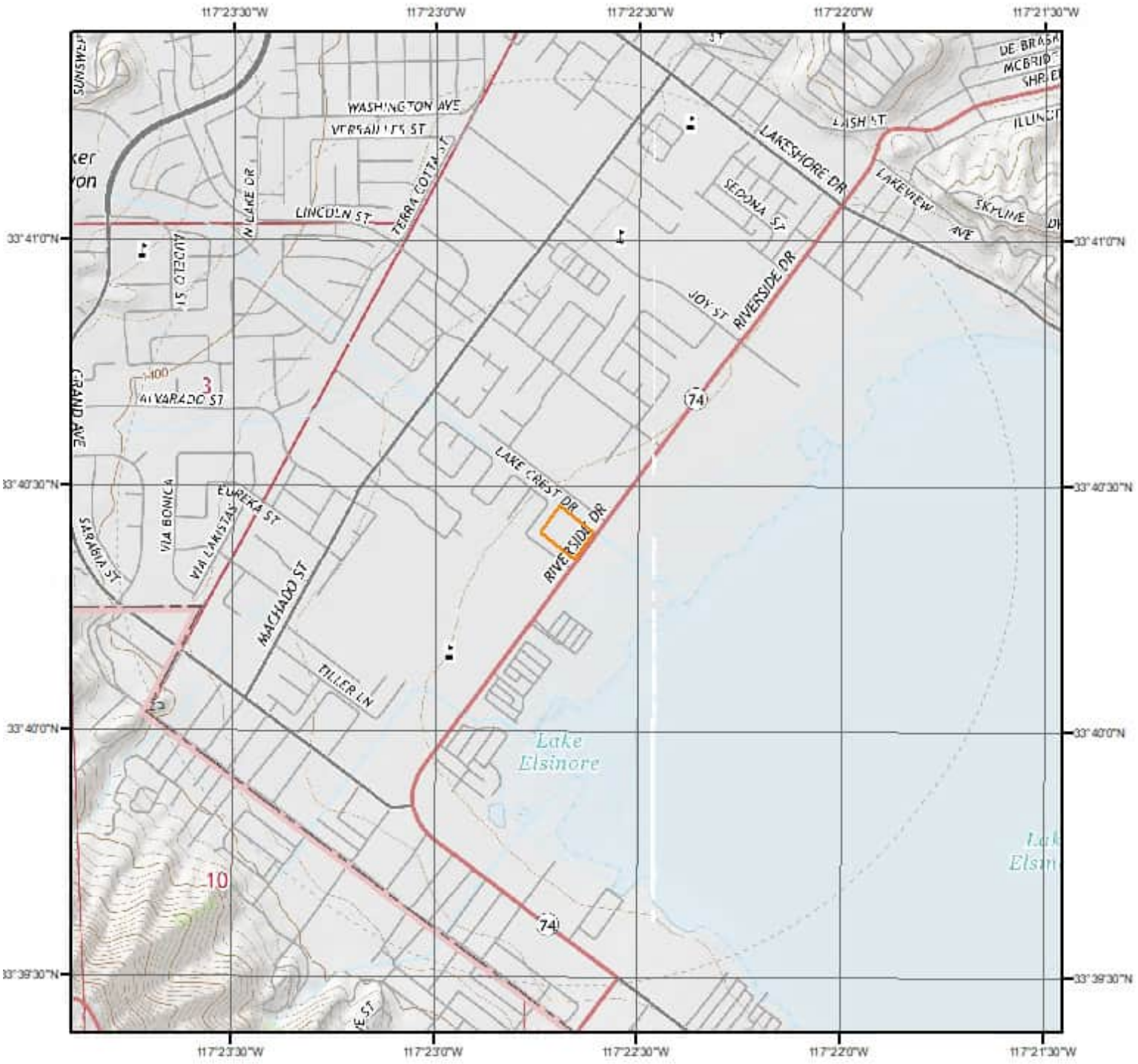
The ERIS ***Physical Setting Report - PSR*** provides comprehensive information about the physical setting around a site and includes a complete overview of topography and surface topology, in addition to hydrologic, geologic and soil characteristics. The location and detailed attributes of oil and gas wells, water wells, public water systems and radon are also included for review.

The compilation of both physical characteristics of a site and additional attribute data is useful in assessing the impact of migration of contaminants and subsequent impact on soils and groundwater.

Disclaimer

This Report does not provide a full environmental evaluation for the site or adjacent properties. Please see the terms and disclaimer at the end of the Report for greater detail.

Topographic Information



Current USGS Topo (2015)

Miles
0 0.2 0.4 0.8

N

Quadrangle(s): Alberhill,CA; Lake Elsinore,CA

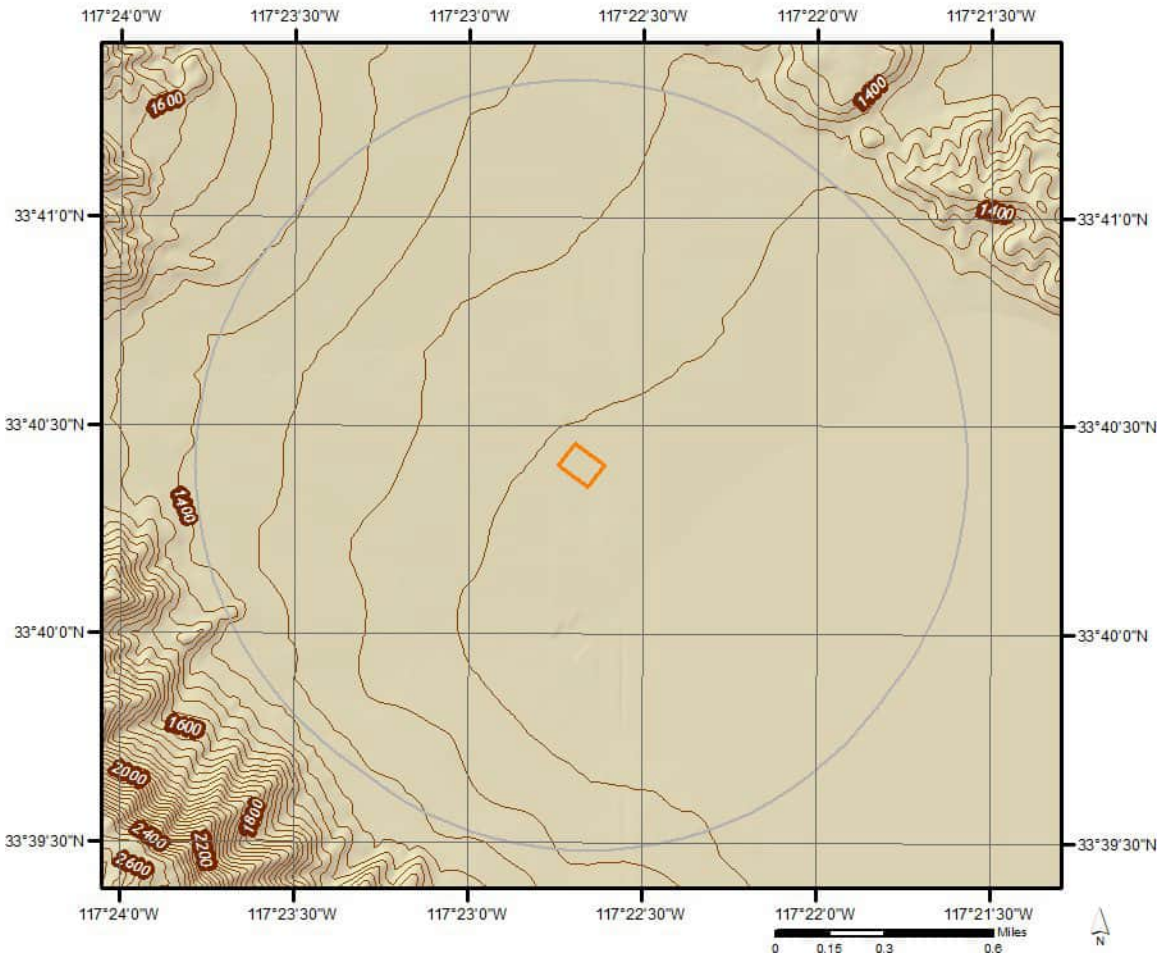
Source: USGS 7.5 Minute Topographic Map

Topographic Information

The previous topographic map(s) are created by seamlessly merging and cutting current USGS topographic data. Below are shaded relief map(s), derived from USGS elevation data to show surrounding topography in further detail.

Topographic information at project property:

Elevation:	1,267.82 ft
Slope Direction:	SE



Hydrologic Information



Wetland

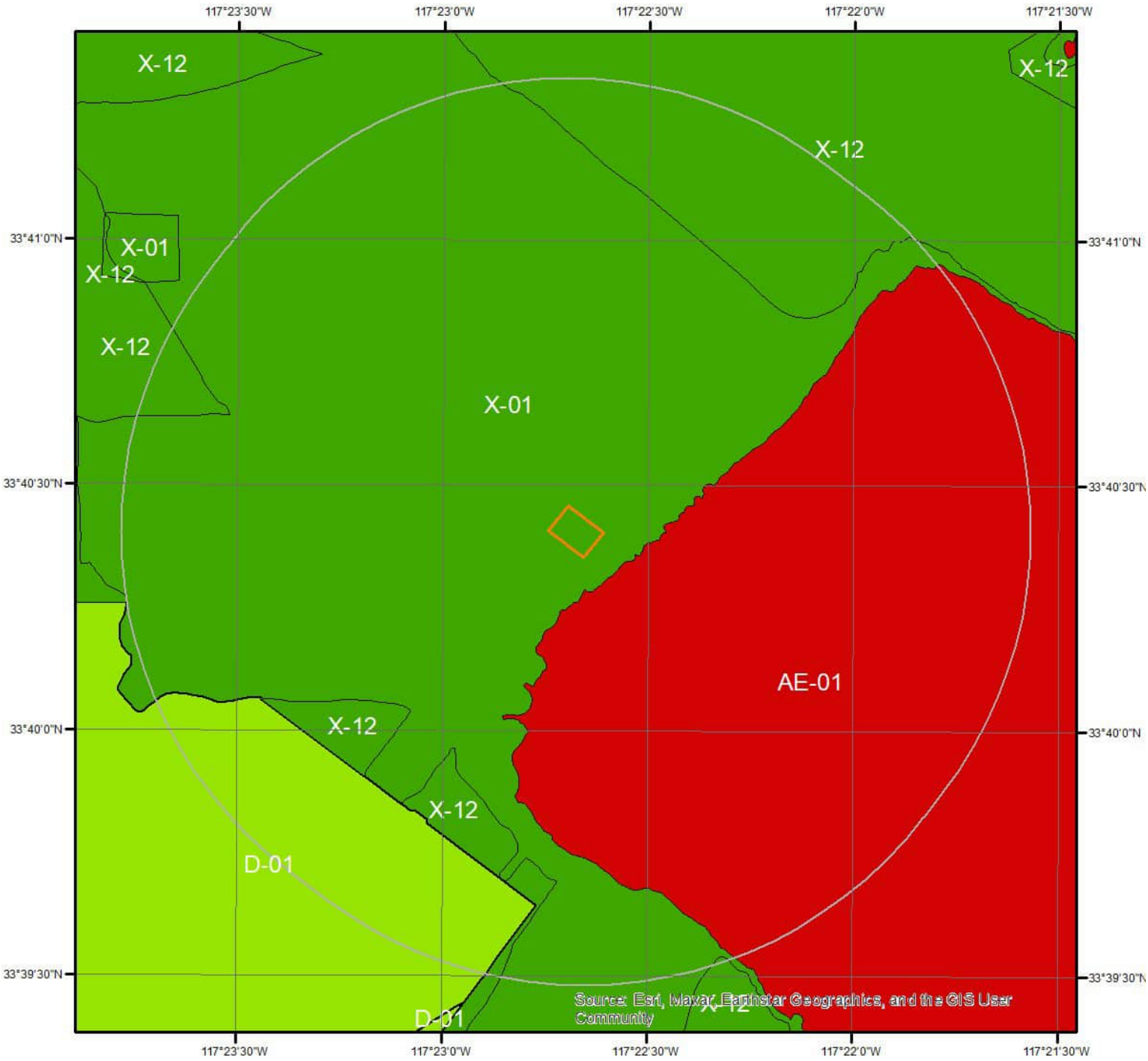
Miles
0 0.075 0.15 0.3
N

This map shows wetland existence using data from US Fish & Wildlife.
Data coverage is shown to the right. Gray indicates no data available in the area.

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

ERIS

Hydrologic Information

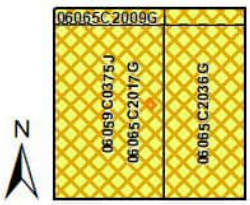


Flood Hazard Zones

Miles
0 0.2 0.4

This map shows FEMA flood hazard zones. FIRM panels are shown to the right, and blank indicates no data is available.

A	AO	X
A99	V	OPEN WATER
AE	VE	NOT POPULATED
AH	D	AREA NOT INCLUDED



Quadrangle(s): Alberhill,CA; Lake Elsinore,CA

ERIS

Hydrologic Information

The Wetland Type map shows wetland existence overlaid on an aerial imagery. The Flood Hazard Zones map shows FEMA flood hazard zones overlaid on an aerial imagery. Relevant FIRM panels and detailed zone information is provided below.
For detailed Zone descriptions please click the link: https://floodadvocate.com/fema-zone-definitions

Available FIRM Panels in area:	06059C0375J(effective:2009-12-03) 06065C2036G(effective:2008-08-28) 06065C2028G(effective:2008-08-28) 06065C2017G(effective:2008-08-28) 06065C2009G(effective:2008-08-28)

Flood Zone AE-01

Zone:	AE
Zone subtype:	

Flood Zone D-01

Zone:	D
Zone subtype:	

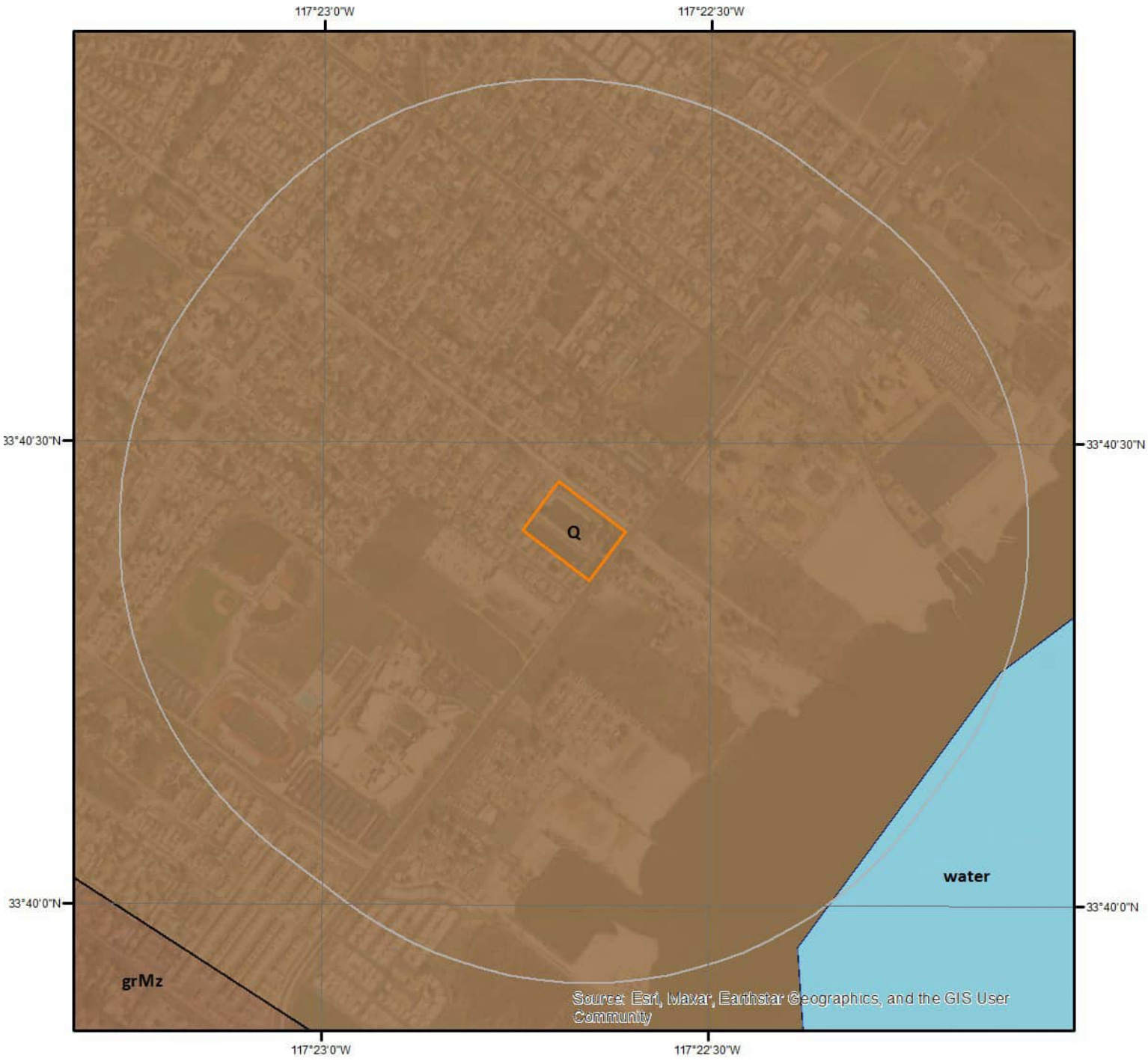
Flood Zone X-01

Zone:	X
Zone subtype:	0.2 PCT ANNUAL CHANCE FLOOD HAZARD

Flood Zone X-12

Zone:	X
Zone subtype:	AREA OF MINIMAL FLOOD HAZARD

Geologic Information



0 0.225 0.45 Miles

N

Geologic Units

This maps shows geologic units in the area. Please refer to the report for detailed descriptions.

ERIS

0 0.3 0.6 Miles

Geologic Information

The previous page shows USGS geology information. Detailed information about each unit is provided below.

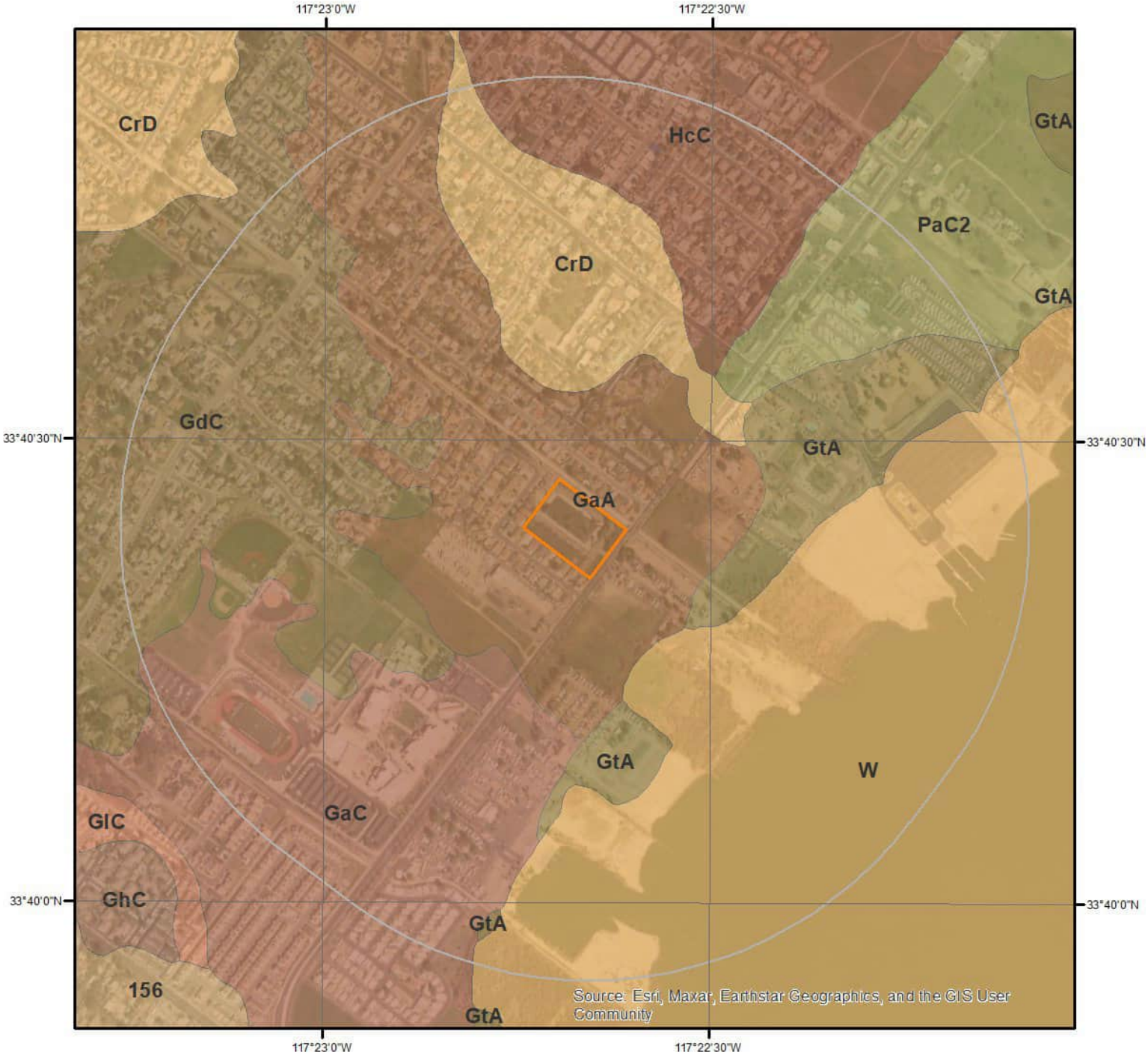
Geologic Unit Q

Unit Name:	Quaternary alluvium and marine deposits
Unit Age:	Pliocene to Holocene
Primary Rock Type:	alluvium
Secondary Rock Type:	terrace
Unit Description:	Alluvium, lake, playa, and terrace deposits; unconsolidated and semi-consolidated. Mostly nonmarine, but includes marine deposits near the coast.

Geologic Unit water

Unit Name:	water
Unit Age:	Holocene
Primary Rock Type:	water
Secondary Rock Type:	
Unit Description:	water

Soil Information



SSURGO Soils

0 0.2 0.4 Miles N

This maps shows SSURGO soil units around the target property. Please refer to the report for detailed soil descriptions.

ERIS

Soil Information

The previous page shows a soil map using SSURGO data from USDA Natural Resources Conservation Service. Detailed information about each unit is provided below.

Map Unit CrD (1.0%)

Map Unit Name:	Cortina cobbly sandy loam, 2 to 12 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Excessively drained
Hydrologic Group - Dominant:	A - Soils in this group have low runoff potential when thoroughly wet. Water is transmitted freely through the soil.

Major components are printed below

Cortina(85%)

horizon H1(0cm to 58cm)	Cobbly sandy loam
horizon H2(58cm to 97cm)	Stratified very cobbly loamy sand to very cobbly loam
horizon H3(97cm to 152cm)	Stratified very gravelly sand to very gravelly loamy sand

Component Description:

Minor map unit components are excluded from this report.

Map Unit: CrD - Cortina cobbly sandy loam, 2 to 12 percent slopes

Component: Cortina (85%)
The Cortina component makes up 85 percent of the map unit. Slopes are 2 to 12 percent. This component is on alluvial fans. The parent material consists of alluvium derived from metasedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is rarely flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R019XD035CA Sandy (1975) ecological site. Nonirrigated land capability classification is 4e. Irrigated land capability classification is 4e. This soil does not meet hydric criteria.

Component: Garretson (10%)
Generated brief soil descriptions are created for major soil components. The Garretson soil is a minor component.

Component: Arbuckle (5%)
Generated brief soil descriptions are created for major soil components. The Arbuckle soil is a minor component.

Map Unit GaA (3.01%)

Map Unit Name:	Garretson very fine sandy loam, 0 to 2 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	B - Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded.

Major components are printed below

Garretson(85%)

horizon H1(0cm to 25cm)	Very fine sandy loam
horizon H2(25cm to 152cm)	Loam

Component Description:

Minor map unit components are excluded from this report.

Map Unit: GaA - Garretson very fine sandy loam, 0 to 2 percent slopes

Soil Information

Component: Garretson (85%)
The Garretson component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on alluvial fans. The parent material consists of alluvium derived from metasedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R019XD029CA Loamy (1975) ecological site. Nonirrigated land capability classification is 3c. Irrigated land capability classification is 1 This soil does not meet hydric criteria.

Component: Arbuckle (5%)
Generated brief soil descriptions are created for major soil components. The Arbuckle soil is a minor component.

Component: Perkins (5%)
Generated brief soil descriptions are created for major soil components. The Perkins soil is a minor component.

Component: Cortina (5%)
Generated brief soil descriptions are created for major soil components. The Cortina soil is a minor component.

Map Unit GaC (3.51%)

Map Unit Name:	Garretson very fine sandy loam, 2 to 8 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	B - Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded.

Major components are printed below

Garretson(85%)

horizon H1(0cm to 25cm)	Very fine sandy loam
horizon H2(25cm to 152cm)	Loam

Component Description:

Minor map unit components are excluded from this report.

Map Unit: GaC - Garretson very fine sandy loam, 2 to 8 percent slopes

Component: Garretson (85%)
The Garretson component makes up 85 percent of the map unit. Slopes are 2 to 8 percent. This component is on alluvial fans. The parent material consists of alluvium derived from metasedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R019XD029CA Loamy (1975) ecological site. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria.

Component: Arbuckle (5%)
Generated brief soil descriptions are created for major soil components. The Arbuckle soil is a minor component.

Component: Perkins (5%)
Generated brief soil descriptions are created for major soil components. The Perkins soil is a minor component.

Component: Cortina (5%)
Generated brief soil descriptions are created for major soil components. The Cortina soil is a minor component.

Map Unit GdC (6.94%)

Map Unit Name:	Garretson gravelly very fine sandy loam, 2 to 8 percent slopes
Bedrock Depth - Min:	null

Soil Information

Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	B - Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded.

Major components are printed below

Garretson(85%)

horizon H1(0cm to 25cm)	Gravelly very fine sandy loam
horizon H2(25cm to 135cm)	Gravelly loam
horizon H3(135cm to 183cm)	Loam

Component Description:

Minor map unit components are excluded from this report.

Map Unit: GdC - Garretson gravelly very fine sandy loam, 2 to 8 percent slopes

Component: Garretson (85%)
The Garretson component makes up 85 percent of the map unit. Slopes are 2 to 8 percent. This component is on alluvial fans. The parent material consists of alluvium derived from metasedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R019XD029CA Loamy (1975) ecological site. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria.

Component: Cortina (5%)
Generated brief soil descriptions are created for major soil components. The Cortina soil is a minor component.

Component: Perkins (5%)
Generated brief soil descriptions are created for major soil components. The Perkins soil is a minor component.

Component: Arbuckle (5%)
Generated brief soil descriptions are created for major soil components. The Arbuckle soil is a minor component.

Map Unit GtA (0.88%)

Map Unit Name:	Grangeville fine sandy loam, drained, 0 to 2 percent sl opes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	0cm
Drainage Class - Dominant:	Moderately well drained
Hydrologic Group - Dominant:	A/D - These soils have low runoff potential when drained and high runoff potential when undrained.

Major components are printed below

Grangeville(85%)

horizon H1(0cm to 91cm)	Fine sandy loam
horizon H2(91cm to 163cm)	Sandy loam

Component Description:

Minor map unit components are excluded from this report.

Map Unit: GtA - Grangeville fine sandy loam, drained, 0 to 2 percent sl opes

Component: Grangeville (85%)
The Grangeville component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on alluvial fans. The parent material consists of alluvium derived from granite. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, December. Organic matter content in the surface horizon is about 4 percent. This component is in the R019XD070CA Sandy Basin ecological site. Nonirrigated land capability classification is 3c.

Soil Information

Irrigated land capability classification is 1 This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. There are no saline horizons within 30 inches of the soil surface.

Component: Dello (10%)
Generated brief soil descriptions are created for major soil components. The Dello soil is a minor component.

Component: Traver (4%)
Generated brief soil descriptions are created for major soil components. The Traver soil is a minor component.

Component: Unnamed (1%)
Generated brief soil descriptions are created for major soil components. The Unnamed soil is a minor component.

Map Unit HcC (9.66%)

Map Unit Name:	Hanford coarse sandy loam, 2 to 8 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	A - Soils in this group have low runoff potential when thoroughly wet. Water is transmitted freely through the soil.

Major components are printed below

Hanford(85%)

horizon H1(0cm to 20cm)	Coarse sandy loam
horizon H2(20cm to 102cm)	Fine sandy loam
horizon H3(102cm to 152cm)	Stratified loamy sand to coarse sandy loam

Component Description:

Minor map unit components are excluded from this report.

Map Unit: HcC - Hanford coarse sandy loam, 2 to 8 percent slopes

Component: Hanford (85%)
The Hanford component makes up 85 percent of the map unit. Slopes are 2 to 8 percent. This component is on alluvial fans, alluvial plains. The parent material consists of alluvium derived from granite. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R020XD012CA Sandy ecological site. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria.

Component: Greenfield (5%)
Generated brief soil descriptions are created for major soil components. The Greenfield soil is a minor component.

Component: Ramona (5%)
Generated brief soil descriptions are created for major soil components. The Ramona soil is a minor component.

Component: Tujunga (2%)
Generated brief soil descriptions are created for major soil components. The Tujunga soil is a minor component.

Component: Unnamed (2%)
Generated brief soil descriptions are created for major soil components. The Unnamed soil is a minor component.

Component: Unnamed (1%)
Generated brief soil descriptions are created for major soil components. The Unnamed soil is a minor component.

Map Unit PaC2 (1.78%)

Map Unit Name:	Pachappa fine sandy loam, 2 to 8 percent slopes, eroded

Soil Information

Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	B - Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded.

Major components are printed below

Pachappa(85%)

horizon H1(0cm to 51cm)	Fine sandy loam
horizon H2(51cm to 102cm)	Loam
horizon H3(102cm to 160cm)	Fine sandy loam

Component Description:

Minor map unit components are excluded from this report.

Map Unit: PaC2 - Pachappa fine sandy loam, 2 to 8 percent slopes, eroded

Component: Pachappa (85%)
The Pachappa component makes up 85 percent of the map unit. Slopes are 2 to 8 percent. This component is on alluvial fans. The parent material consists of alluvium derived from granite. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R019XD029CA Loamy (1975) ecological site. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. There are no saline horizons within 30 inches of the soil surface.

Component: Hanford (5%)
Generated brief soil descriptions are created for major soil components. The Hanford soil is a minor component.

Component: San Emigdio (5%)
Generated brief soil descriptions are created for major soil components. The San Emigdio soil is a minor component.

Component: Greenfield (5%)
Generated brief soil descriptions are created for major soil components. The Greenfield soil is a minor component.

Map Unit W (73.22%)

Map Unit Name:	Water

No more attributes available for this map unit

Component Description:

Minor map unit components are excluded from this report.

Map Unit: W - Water

Component: Water (100%)
Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Wells and Additional Sources



Wells & Additional Sources

N

0 0.15 0.3 0.6 Miles

- Sites with Higher Elevation
- Sites with Same Elevation
- Sites with Lower Elevation
- Sites with Unknown Elevation
- OGW Sites with Higher Elevation
- OGW Sites with Same Elevation
- OGW Sites with Lower Elevation
- OGW Sites with Unknown Elevation

ERIS

Wells and Additional Sources Summary

Federal Sources

Public Water Systems Violations and Enforcement Data

Map Key	ID	Distance (ft)	Direction
	No records found		

Safe Drinking Water Information System (SDWIS)

Map Key	ID	Distance (ft)	Direction
	No records found		

USGS National Water Information System

Map Key	Site Number	Distance (ft)	Direction
4	USGS-334037117224301	977.98	N
7	USGS-334000117230001	2190.03	NW

Wells from NWIS

Map Key	ID	Distance (ft)	Direction
	No records found		

State Sources

Oil and Gas Wells

Map Key	ID	Distance (ft)	Direction
	No records found		

Periodic Groundwater Level Measurement Locations

Map Key	Site Code	Distance (ft)	Direction
3	336769N1173783W001	985.33	N
8	336782N1173836W001	2272.98	NW
10	336780N1173680W001	3160.88	ENE
12	336823N1173852W001	3589.63	NNW
14	336829N1173668W001	4567.50	NE

Well Completion Reports

Map Key	WCR No	Distance (ft)	Direction
1	WCR2019-009127	68.66	E
2	WCR2019-009124	105.15	E
2	WCR2019-009125	105.15	E
5	WCR2020-016439	1358.90	SSW
6	WCR0117586	2039.60	NE

6	WCR1931-000344	2039.60	NE
6	WCR1931-000343	2039.60	NE
6	WCR1776-006925	2039.60	NE
6	WCR1776-009777	2039.60	NE
6	WCR1984-007319	2039.60	NE
6	WCR1776-009774	2039.60	NE
6	WCR1776-009775	2039.60	NE
6	WCR1981-008418	2039.60	NE
6	WCR1973-003616	2039.60	NE
6	WCR1776-009776	2039.60	NE
6	WCR1973-003615	2039.60	NE
6	WCR2001-013916	2039.60	NE
6	WCR1985-009824	2039.60	NE
6	WCR0192757	2039.60	NE
6	WCR1776-009778	2039.60	NE
9	WCR2019-017952	2662.94	SW
11	WCR1996-009127	3504.45	WNW
11	WCR2004-011379	3504.45	WNW
11	WCR1776-009780	3504.45	WNW
11	WCR1934-000159	3504.45	WNW
11	WCR1960-002159	3504.45	WNW
11	WCR1914-000097	3504.45	WNW
11	WCR1940-000208	3504.45	WNW
11	WCR1978-007140	3504.45	WNW
11	WCR1945-000498	3504.45	WNW
11	WCR1955-002448	3504.45	WNW
11	WCR1776-009779	3504.45	WNW
11	WCR0037055	3504.45	WNW
11	WCR2006-009546	3504.45	WNW
11	WCR1939-000231	3504.45	WNW
11	WCR1983-006071	3504.45	WNW
11	WCR1776-009781	3504.45	WNW
11	WCR2008-012010	3504.45	WNW
11	WCR1992-016063	3504.45	WNW
11	WCR1999-010829	3504.45	WNW
11	WCR1947-001248	3504.45	WNW
11	WCR1948-001116	3504.45	WNW
11	WCR1978-007139	3504.45	WNW
11	WCR1973-003391	3504.45	WNW
11	WCR1776-006926	3504.45	WNW
11	WCR2004-011377	3504.45	WNW
13	WCR1776-009783	3891.75	SSE
13	WCR1776-009784	3891.75	SSE
13	WCR1936-000257	3891.75	SSE
13	WCR1942-000397	3891.75	SSE
13	WCR1936-000312	3891.75	SSE
13	WCR1938-000195	3891.75	SSE
13	WCR1939-000252	3891.75	SSE
15	WCR0086198	4788.99	SW
15	WCR1941-000539	4788.99	SW
15	WCR0308898	4788.99	SW
15	WCR1942-000452	4788.99	SW
15	WCR2006-012767	4788.99	SW
15	WCR1950-002209	4788.99	SW
15	WCR1776-009782	4788.99	SW
15	WCR1994-012616	4788.99	SW
15	WCR0089840	4788.99	SW
15	WCR0230575	4788.99	SW
15	WCR1984-007442	4788.99	SW
15	WCR2008-009703	4788.99	SW
15	WCR2007-012032	4788.99	SW
15	WCR2010-009538	4788.99	SW
15	WCR0121373	4788.99	SW
15	WCR2004-011737	4788.99	SW
15	WCR2002-011939	4788.99	SW
15	WCR1776-004668	4788.99	SW

Wells and Additional Sources Summary

15	WCR1954-002407	4788.99	SW
15	WCR1942-000396	4788.99	SW
15	WCR1949-000916	4788.99	SW
15	WCR2006-012316	4788.99	SW
15	WCR2006-012765	4788.99	SW
15	WCR2006-012766	4788.99	SW
15	WCR2005-016565	4788.99	SW

Wells and Additional Sources Detail Report

USGS National Water Information System

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
4	N	0.19	977.98	1,292.63	FED USGS

Reporting Agency:	USGS California Water Science Center
Site Number:	USGS-334037117224301
Station Name:	006S005W02M004S
Site Type:	Well
Latitude:	33.67697220000000
Longitude:	-117.3786110000000
Date Drilled:	19840718
Well Depth:	960
Well Depth Unit:	ft
Well Hole Depth:	970
W Hole Depth Unit:	ft
Formation Type:	Cenozoic Erathem

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
7	NW	0.41	2,190.03	1,315.34	FED USGS

Reporting Agency:	USGS California Water Science Center
Site Number:	USGS-334000117230001
Station Name:	006S005W03H001S
Site Type:	Well
Latitude:	33.67816667000000
Longitude:	-117.3837778000000
Date Drilled:	19990826
Well Depth:	980
Well Depth Unit:	ft
Well Hole Depth:	1030
W Hole Depth Unit:	ft
Formation Type:	

Periodic Groundwater Level Measurement Locations

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
3	N	0.19	985.33	1,290.67	MONITOR WELLS

Station ID:	57303	Basin Region Code:	8
Site Code:	336769N1173783W001	Basin Region Desc:	North Lahontan
State Well No:	06S05W02M004S	Basin Region Actv:	Y
WCR No:		Basin Region Order:	8
Well Depth:	960	WLM Method:	
Well Use:	Public Supply	WLM Accuracy:	

Monitoring Program:	SGMA	GSE Accuracy:	2.5 ft.
RPE:	1280	GSE Method:	GPS
Basin ID:		County Name:	Riverside
Basin Code:	8-004.01	Latitude:	33.677
Basin Name:	Elsinore Valley	Longitude:	-117.378
Well Name:	Lincoln		
Well Type:	Single Well		
Ground Surface Elevation:	1280		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
8	NW	0.43	2,272.98	1,316.46	MONITOR WELLS

Station ID:	57306	Basin Region Code:	8
Site Code:	336782N1173836W001	Basin Region Desc:	North Lahontan
State Well No:	06S05W03H001S	Basin Region Actv:	Y
WCR No:		Basin Region Order:	8
Well Depth:	980	WLM Method:	
Well Use:	Public Supply	WLM Accuracy:	
Monitoring Program:	SGMA	GSE Accuracy:	2.5 ft.
RPE:	1310	GSE Method:	GPS
Basin ID:		County Name:	Riverside
Basin Code:	8-004.01	Latitude:	33.6783
Basin Name:	Elsinore Valley	Longitude:	-117.384
Well Name:	Machado		
Well Type:	Single Well		
Ground Surface Elevation:	1310		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
10	ENE	0.60	3,160.88	1,263.42	MONITOR WELLS

Station ID:	57337	Basin Region Code:	8
Site Code:	336780N1173680W001	Basin Region Desc:	North Lahontan
State Well No:	06S05W02G005S	Basin Region Actv:	Y
WCR No:		Basin Region Order:	8
Well Depth:	1000	WLM Method:	
Well Use:	Public Supply	WLM Accuracy:	
Monitoring Program:	SGMA	GSE Accuracy:	2.5 ft.
RPE:	1260	GSE Method:	GPS
Basin ID:		County Name:	Riverside
Basin Code:	8-004.01	Latitude:	33.678
Basin Name:	Elsinore Valley	Longitude:	-117.368
Well Name:	Joy Ave Well		
Well Type:	Single Well		
Ground Surface Elevation:	1260		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
12	NNW	0.68	3,589.63	1,352.63	MONITOR WELLS

Station ID:	57305	Basin Region Code:	8
Site Code:	336823N1173852W001	Basin Region Desc:	North Lahontan
State Well No:		Basin Region Actv:	Y
WCR No:		Basin Region Order:	8
Well Depth:	1000	WLM Method:	
Well Use:	Public Supply	WLM Accuracy:	
Monitoring Program:	SGMA	GSE Accuracy:	2.5 ft.
RPE:	1354.25	GSE Method:	GPS
Basin ID:		County Name:	Riverside
Basin Code:	8-004.01	Latitude:	33.6824
Basin Name:	Elsinore Valley	Longitude:	-117.385
Well Name:	Terra Cotta		
Well Type:	Single Well		
Ground Surface Elevation:	1354.25		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
14	NE	0.87	4,567.50	1,276.28	MONITOR WELLS

Station ID:	47942	Basin Region Code:	8
Site Code:	336829N1173668W001	Basin Region Desc:	North Lahontan
State Well No:	06S05W02A001S	Basin Region Actv:	Y
WCR No:		Basin Region Order:	8
Well Depth:	300	WLM Method:	
Well Use:	Observation	WLM Accuracy:	
Monitoring Program:	SGMA	GSE Accuracy:	2.5 ft.
RPE:	1277.28	GSE Method:	Digital Elevation Model
Basin ID:		County Name:	Riverside
Basin Code:	8-004.01	Latitude:	33.6829
Basin Name:	Elsinore Valley	Longitude:	-117.367
Well Name:	Wisconsin		
Well Type:	Single Well		
Ground Surface Elevation:	1276.7		

Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
1	E	0.01	68.66	1,268.66	WATER WELLS

WCR No:	WCR2019-009127	Decimal Lat(OSWCR):	33.67323
Decimal Latitude:	33.67323	Decim Long(OSWCR):	-117.37668
Decimal Longitude:	-117.37668		
Location:			
City:			
County:	Riverside		

Location(OSWCR):
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
2	E	0.02	105.15	1,269.04	WATER WELLS

WCR No: WCR2019-009124
Decimal Lat(OSWCR): 33.673455
Decimal Latitude: 33.673455
Decim Long(OSWCR): -117.376463
Decimal Longitude: -117.376463
Location:
City:
County: Riverside
Location(OSWCR):
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
2	E	0.02	105.15	1,269.60	WATER WELLS

WCR No: WCR2019-009125
Decimal Lat(OSWCR): 33.673455
Decimal Latitude: 33.673455
Decim Long(OSWCR): -117.376488
Decimal Longitude: -117.376488
Location:
City:
County: Riverside
Location(OSWCR):
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
5	SSW	0.26	1,358.90	1,265.70	WATER WELLS

WCR No: WCR2020-016439
Decimal Lat(OSWCR): 33.66939
Decimal Latitude: 33.66939
Decim Long(OSWCR): -117.3800304
Decimal Longitude: -117.3800304
Location: 0 SR-74 btw Le Harve/Lakeside HS Stadium
City: Lake Elsinore
County: Riverside
Location(OSWCR): 0 SR-74 btw Le Harve/Lakeside HS Stadium
City(OSWCR): Lake Elsinore

County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No: WCR0117586
Decimal Lat(OSWCR): 33.67735
Decimal Latitude: 33.67735
Decim Long(OSWCR): -117.37206
Decimal Longitude: -117.37206
Location:
City:
County: Riverside
Location(OSWCR):
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No: WCR1931-000344
Decimal Lat(OSWCR): 33.67735
Decimal Latitude: 33.67735
Decim Long(OSWCR): -117.37206
Decimal Longitude: -117.37206
Location:
City:
County: Riverside
Location(OSWCR):
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No: WCR1931-000343
Decimal Lat(OSWCR): 33.67735
Decimal Latitude: 33.67735
Decim Long(OSWCR): -117.37206
Decimal Longitude: -117.37206
Location:
City:
County: Riverside
Location(OSWCR):
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water

Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No:	WCR1776-006925	Decimal Lat(OSWCR):	33.67735
Decimal Latitude:	33.67735	Decim Long(OSWCR):	-117.37206
Decimal Longitude:	-117.37206		
Location:	RIVERSIDE DR, ST CHARLES, WALNUT DR		
City:			
County:	Riverside		
Location(OSWCR):	RIVERSIDE DR, ST CHARLES, WALNUT DR		
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No:	WCR1776-009777	Decimal Lat(OSWCR):	33.67735
Decimal Latitude:	33.67735	Decim Long(OSWCR):	-117.37206
Decimal Longitude:	-117.37206		
Location:			
City:			
County:	Riverside		
Location(OSWCR):			
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No:	WCR1984-007319	Decimal Lat(OSWCR):	33.67735
Decimal Latitude:	33.67735	Decim Long(OSWCR):	-117.37206
Decimal Longitude:	-117.37206		
Location:	Lincoln Street & Riverside Drive		
City:	Elsinore		
County:	Riverside		
Location(OSWCR):	Lincoln Street & Riverside Drive		
City(OSWCR):	Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Wells and Additional Sources Detail Report

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No:	WCR1776-009774	Decimal Lat(OSWCR):	33.67735
Decimal Latitude:	33.67735	Decim Long(OSWCR):	-117.37206
Decimal Longitude:	-117.37206		
Location:			
City:			
County:	Riverside		
Location(OSWCR):			
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No:	WCR1776-009775	Decimal Lat(OSWCR):	33.67735
Decimal Latitude:	33.67735	Decim Long(OSWCR):	-117.37206
Decimal Longitude:	-117.37206		
Location:	RIVERSIDE AVE, Highway 71		
City:			
County:	Riverside		
Location(OSWCR):	RIVERSIDE AVE, Highway 71		
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No:	WCR1981-008418	Decimal Lat(OSWCR):	33.67735
Decimal Latitude:	33.67735	Decim Long(OSWCR):	-117.37206
Decimal Longitude:	-117.37206		
Location:	RIVERSIDE DR, LAKESHORE DR, WALNUT DR		
City:			
County:	Riverside		
Location(OSWCR):	RIVERSIDE DR, LAKESHORE DR, WALNUT DR		
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No:	WCR1973-003616	Decimal Lat(OSWCR):	33.67735
Decimal Latitude:	33.67735	Decim Long(OSWCR):	-117.37206
Decimal Longitude:	-117.37206		
Location:	RIVERSIDE DR, ST CHARLES, FRASER DR, WAL		
City:			
County:	Riverside		
Location(OSWCR):	RIVERSIDE DR, ST CHARLES, FRASER DR, WAL		
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No:	WCR1776-009776	Decimal Lat(OSWCR):	33.67735
Decimal Latitude:	33.67735	Decim Long(OSWCR):	-117.37206
Decimal Longitude:	-117.37206		
Location:	RIVERSIDE DR, LINCOLN		
City:			
County:	Riverside		
Location(OSWCR):	RIVERSIDE DR, LINCOLN		
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No:	WCR1973-003615	Decimal Lat(OSWCR):	33.67735
Decimal Latitude:	33.67735	Decim Long(OSWCR):	-117.37206
Decimal Longitude:	-117.37206		
Location:	RIVERSIDE DR, ST CHARLES, FRASER DR, WAL		
City:			
County:	Riverside		
Location(OSWCR):	RIVERSIDE DR, ST CHARLES, FRASER DR, WAL		
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No:	WCR2001-013916	Decimal Lat(OSWCR):	33.67735
Decimal Latitude:	33.67735	Decim Long(OSWCR):	-117.37206
Decimal Longitude:	-117.37206		
Location:	Joy St S/O Riverside Dr		
City:	Lake Elsinore		
County:	Riverside		
Location(OSWCR):	Joy St S/O Riverside Dr		
City(OSWCR):	Lake Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No:	WCR1985-009824	Decimal Lat(OSWCR):	33.67735
Decimal Latitude:	33.67735	Decim Long(OSWCR):	-117.37206
Decimal Longitude:	-117.37206		
Location:	15050 LEGAYE		
City:	Lake Elsinore		
County:	Riverside		
Location(OSWCR):	15050 LEGAYE		
City(OSWCR):	Lake Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No:	WCR0192757	Decimal Lat(OSWCR):	33.67735
Decimal Latitude:	33.67735	Decim Long(OSWCR):	-117.37206
Decimal Longitude:	-117.37206		
Location:			
City:			
County:	Riverside		
Location(OSWCR):			
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	NE	0.39	2,039.60	1,277.60	WATER WELLS

WCR No:	WCR1776-009778	Decimal Lat(OSWCR):	33.67735

Decimal Latitude:	33.67735	Decim Long(OSWCR):	-117.37206
Decimal Longitude:	-117.37206		
Location:			
City:			
County:	Riverside		
Location(OSWCR):			
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
9	SW	0.50	2,662.94	1,281.70	WATER WELLS

WCR No:	WCR2019-017952	Decimal Lat(OSWCR):	33.667491
Decimal Latitude:	33.667491	Decim Long(OSWCR):	-117.384162
Decimal Longitude:	-117.384162		
Location:	Lakeside HS Stadium Way and Riverside Dr		
City:			
County:	Riverside		
Location(OSWCR):	Lakeside HS Stadium Way and Riverside Dr		
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No:	WCR1996-009127	Decimal Lat(OSWCR):	33.67728
Decimal Latitude:	33.67728	Decim Long(OSWCR):	-117.3896
Decimal Longitude:	-117.3896		
Location:	30356 AINSWORTH		
City:	Lake Elsinore		
County:	Riverside		
Location(OSWCR):	30356 AINSWORTH		
City(OSWCR):	Lake Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No:	WCR2004-011379	Decimal Lat(OSWCR):	33.67728
Decimal Latitude:	33.67728	Decim Long(OSWCR):	-117.3896
Decimal Longitude:	-117.3896		

Location: Alvarado St
City: Lake Elsinore
County: Riverside
Location(OSWCR): Alvarado St
City(OSWCR): Lake Elsinore
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No: WCR1776-009780
Decimal Lat(OSWCR): 33.67728
Decimal Latitude: 33.67728
Decim Long(OSWCR): -117.3896
Decimal Longitude: -117.3896
Location: MACHADO ST, GRAND AVE
City:
County: Riverside
Location(OSWCR): MACHADO ST, GRAND AVE
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No: WCR1934-000159
Decimal Lat(OSWCR): 33.67728
Decimal Latitude: 33.67728
Decim Long(OSWCR): -117.3896
Decimal Longitude: -117.3896
Location: GRAND AVE, MACHADO
City:
County: Riverside
Location(OSWCR): GRAND AVE, MACHADO
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No: WCR1960-002159
Decimal Lat(OSWCR): 33.67728
Decimal Latitude: 33.67728
Decim Long(OSWCR): -117.3896
Decimal Longitude: -117.3896
Location:
City:

County: Riverside
Location(OSWCR):
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No: WCR1914-000097
Decimal Lat(OSWCR): 33.67728
Decimal Latitude: 33.67728
Decim Long(OSWCR): -117.3896
Decimal Longitude: -117.3896
Location:
City:
County: Riverside
Location(OSWCR):
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No: WCR1940-000208
Decimal Lat(OSWCR): 33.67728
Decimal Latitude: 33.67728
Decim Long(OSWCR): -117.3896
Decimal Longitude: -117.3896
Location: MACHADO ST, CHRISTINA, DIANE, BARB
City:
County: Riverside
Location(OSWCR): MACHADO ST, CHRISTINA, DIANE, BARB
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No: WCR1978-007140
Decimal Lat(OSWCR): 33.67728
Decimal Latitude: 33.67728
Decim Long(OSWCR): -117.3896
Decimal Longitude: -117.3896
Location: ELSINORE HWY
City:
County: Riverside
Location(OSWCR): ELSINORE HWY

City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No: WCR1945-000498
Decimal Lat(OSWCR): 33.67728
Decimal Latitude: 33.67728
Decim Long(OSWCR): -117.3896
Decimal Longitude: -117.3896
Location:
City:
County: Riverside
Location(OSWCR):
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No: WCR1955-002448
Decimal Lat(OSWCR): 33.67728
Decimal Latitude: 33.67728
Decim Long(OSWCR): -117.3896
Decimal Longitude: -117.3896
Location:
City:
County: Riverside
Location(OSWCR):
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No: WCR1776-009779
Decimal Lat(OSWCR): 33.67728
Decimal Latitude: 33.67728
Decim Long(OSWCR): -117.3896
Decimal Longitude: -117.3896
Location: GRAND AVE, MACHADO ST
City:
County: Riverside
Location(OSWCR): GRAND AVE, MACHADO ST
City(OSWCR):
County(OSWCR): Riverside

Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No: WCR0037055
Decimal Lat(OSWCR): 33.67728
Decimal Latitude: 33.67728
Decim Long(OSWCR): -117.3896
Decimal Longitude: -117.3896
Location:
City:
County: Riverside
Location(OSWCR):
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No: WCR2006-009546
Decimal Lat(OSWCR): 33.67728
Decimal Latitude: 33.67728
Decim Long(OSWCR): -117.3896
Decimal Longitude: -117.3896
Location: 15030 Carson Road
City: Lake Elsinore
County: Riverside
Location(OSWCR): 15030 Carson Road
City(OSWCR): Lake Elsinore
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No: WCR1939-000231
Decimal Lat(OSWCR): 33.67728
Decimal Latitude: 33.67728
Decim Long(OSWCR): -117.3896
Decimal Longitude: -117.3896
Location: Grand Avenue
City:
County: Riverside
Location(OSWCR): Grand Avenue
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Wells and Additional Sources Detail Report

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No:	WCR1983-006071	Decimal Lat(OSWCR):	33.67728
Decimal Latitude:	33.67728	Decim Long(OSWCR):	-117.3896
Decimal Longitude:	-117.3896		
Location:	15040 Larson Road		
City:	Lake Elsinore		
County:	Riverside		
Location(OSWCR):	15040 Larson Road		
City(OSWCR):	Lake Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No:	WCR1776-009781	Decimal Lat(OSWCR):	33.67728
Decimal Latitude:	33.67728	Decim Long(OSWCR):	-117.3896
Decimal Longitude:	-117.3896		
Location:	MACHADO ST, LINCOLN ST		
City:	LUCERNE		
County:	Riverside		
Location(OSWCR):	MACHADO ST, LINCOLN ST		
City(OSWCR):	LUCERNE		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No:	WCR2008-012010	Decimal Lat(OSWCR):	33.67728
Decimal Latitude:	33.67728	Decim Long(OSWCR):	-117.3896
Decimal Longitude:	-117.3896		
Location:	Lincoln Street & Terra Cotta Street		
City:	Lake Elsinore		
County:	Riverside		
Location(OSWCR):	Lincoln Street & Terra Cotta Street		
City(OSWCR):	Lake Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No:	WCR1992-016063	Decimal Lat(OSWCR):	33.67728
Decimal Latitude:	33.67728	Decim Long(OSWCR):	-117.3896
Decimal Longitude:	-117.3896		
Location:	LINCOLN ST		
City:	Lake Elsinore		
County:	Riverside		
Location(OSWCR):	LINCOLN ST		
City(OSWCR):	Lake Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No:	WCR1999-010829	Decimal Lat(OSWCR):	33.67728
Decimal Latitude:	33.67728	Decim Long(OSWCR):	-117.3896
Decimal Longitude:	-117.3896		
Location:	Machado Ave-Tract 19402		
City:	Elsinore		
County:	Riverside		
Location(OSWCR):	Machado Ave-Tract 19402		
City(OSWCR):	Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No:	WCR1947-001248	Decimal Lat(OSWCR):	33.67728
Decimal Latitude:	33.67728	Decim Long(OSWCR):	-117.3896
Decimal Longitude:	-117.3896		
Location:	MACHADO ST, LINCOLN ST		
City:			
County:	Riverside		
Location(OSWCR):	MACHADO ST, LINCOLN ST		
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

Wells and Additional Sources Detail Report

WCR No:	WCR1948-001116	Decimal Lat(OSWCR):	33.67728
Decimal Latitude:	33.67728	Decim Long(OSWCR):	-117.3896
Decimal Longitude:	-117.3896		
Location:	LA LAGUNA		
City:			
County:	Riverside		
Location(OSWCR):	LA LAGUNA		
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No:	WCR1978-007139	Decimal Lat(OSWCR):	33.67728
Decimal Latitude:	33.67728	Decim Long(OSWCR):	-117.3896
Decimal Longitude:	-117.3896		
Location:	ELSINORE HWY		
City:			
County:	Riverside		
Location(OSWCR):	ELSINORE HWY		
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No:	WCR1973-003391	Decimal Lat(OSWCR):	33.67728
Decimal Latitude:	33.67728	Decim Long(OSWCR):	-117.3896
Decimal Longitude:	-117.3896		
Location:	GRAND AVE, MACHADO ST		
City:	Elsinore		
County:	Riverside		
Location(OSWCR):	GRAND AVE, MACHADO ST		
City(OSWCR):	Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No:	WCR1776-006926	Decimal Lat(OSWCR):	33.67728
Decimal Latitude:	33.67728	Decim Long(OSWCR):	-117.3896
Decimal Longitude:	-117.3896		
Location:	MACHADO ST, LINCOLN ST		
City:	Lucerne		
County:	San Bernardino		
Location(OSWCR):	MACHADO ST, LINCOLN ST		
City(OSWCR):	Lucerne		
County(OSWCR):	San Bernardino		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	WNW	0.66	3,504.45	1,352.78	WATER WELLS

WCR No:	WCR2004-011377	Decimal Lat(OSWCR):	33.67728
Decimal Latitude:	33.67728	Decim Long(OSWCR):	-117.3896
Decimal Longitude:	-117.3896		
Location:	Machado St		
City:	Lake Elsinore		
County:	Riverside		
Location(OSWCR):	Machado St		
City(OSWCR):	Lake Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
13	SSE	0.74	3,891.75	1,242.47	WATER WELLS

WCR No:	WCR1776-009783	Decimal Lat(OSWCR):	33.66314
Decimal Latitude:	33.66314	Decim Long(OSWCR):	-117.37146
Decimal Longitude:	-117.37146		
Location:			
City:	Elsinore		
County:	Riverside		
Location(OSWCR):			
City(OSWCR):	Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
13	SSE	0.74	3,891.75	1,242.47	WATER WELLS

WCR No:	WCR1776-009784	Decimal Lat(OSWCR):	33.66314
Decimal Latitude:	33.66314	Decim Long(OSWCR):	-117.37146

Decimal Longitude: -117.37146
Location:
City: Elsinore
County: Riverside
Location(OSWCR):
City(OSWCR): Elsinore
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
13	SSE	0.74	3,891.75	1,242.47	WATER WELLS

WCR No: WCR1936-000257
Decimal Lat(OSWCR): 33.66314
Decimal Latitude: 33.66314
Decim Long(OSWCR): -117.37146
Decimal Longitude: -117.37146
Location: HIWAY 74, GRAND
City: Elsinore
County: Riverside
Location(OSWCR): HIWAY 74, GRAND
City(OSWCR): Elsinore
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
13	SSE	0.74	3,891.75	1,242.47	WATER WELLS

WCR No: WCR1942-000397
Decimal Lat(OSWCR): 33.66314
Decimal Latitude: 33.66314
Decim Long(OSWCR): -117.37146
Decimal Longitude: -117.37146
Location: MACY, GRAND
City: Elsinore
County: Riverside
Location(OSWCR): MACY, GRAND
City(OSWCR): Elsinore
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
13	SSE	0.74	3,891.75	1,242.47	WATER WELLS

WCR No: WCR1936-000312
Decimal Lat(OSWCR): 33.66314
Decimal Latitude: 33.66314
Decim Long(OSWCR): -117.37146
Decimal Longitude: -117.37146
Location: HWY 74, GRAND, ELSINORE

City: Elsinore
County: Riverside
Location(OSWCR): HWY 74, GRAND, ELSINORE
City(OSWCR): Elsinore
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
13	SSE	0.74	3,891.75	1,242.47	WATER WELLS

WCR No: WCR1938-000195
Decimal Lat(OSWCR): 33.66314
Decimal Latitude: 33.66314
Decim Long(OSWCR): -117.37146
Decimal Longitude: -117.37146
Location:
City: Elsinore
County: Riverside
Location(OSWCR):
City(OSWCR): Elsinore
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
13	SSE	0.74	3,891.75	1,242.47	WATER WELLS

WCR No: WCR1939-000252
Decimal Lat(OSWCR): 33.66314
Decimal Latitude: 33.66314
Decim Long(OSWCR): -117.37146
Decimal Longitude: -117.37146
Location:
City: Elsinore
County: Riverside
Location(OSWCR):
City(OSWCR): Elsinore
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No: WCR0086198
Decimal Lat(OSWCR): 33.66322
Decimal Latitude: 33.66322
Decim Long(OSWCR): -117.38898
Decimal Longitude: -117.38898
Location:
City:
County: Riverside

Location(OSWCR):
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No: WCR1941-000539
Decimal Lat(OSWCR): 33.66322
Decimal Latitude: 33.66322
Decim Long(OSWCR): -117.38898
Decimal Longitude: -117.38898
Location: RIPPER RANCH
City: Elsinore
County: Riverside
Location(OSWCR): RIPPER RANCH
City(OSWCR): Elsinore
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No: WCR0308898
Decimal Lat(OSWCR): 33.66322
Decimal Latitude: 33.66322
Decim Long(OSWCR): -117.38898
Decimal Longitude: -117.38898
Location:
City:
County: Riverside
Location(OSWCR):
City(OSWCR):
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No: WCR1942-000452
Decimal Lat(OSWCR): 33.66322
Decimal Latitude: 33.66322
Decim Long(OSWCR): -117.38898
Decimal Longitude: -117.38898
Location: RIVERSIDE ST, GRAND AVE
City: Elsinore
County: Riverside
Location(OSWCR): RIVERSIDE ST, GRAND AVE
City(OSWCR): Elsinore

County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No: WCR2006-012767
Decimal Lat(OSWCR): 33.66322
Decimal Latitude: 33.66322
Decim Long(OSWCR): -117.38898
Decimal Longitude: -117.38898
Location: 15410 Grand Avenue
City: Lake Elsinore
County: Riverside
Location(OSWCR): 15410 Grand Avenue
City(OSWCR): Lake Elsinore
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No: WCR1950-002209
Decimal Lat(OSWCR): 33.66322
Decimal Latitude: 33.66322
Decim Long(OSWCR): -117.38898
Decimal Longitude: -117.38898
Location:
City: Elsinore
County: Riverside
Location(OSWCR):
City(OSWCR): Elsinore
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No: WCR1776-009782
Decimal Lat(OSWCR): 33.66322
Decimal Latitude: 33.66322
Decim Long(OSWCR): -117.38898
Decimal Longitude: -117.38898
Location: RIVERSIDE ST, GRAND AVE
City: Elsinore
County: Riverside
Location(OSWCR): RIVERSIDE ST, GRAND AVE
City(OSWCR): Elsinore
County(OSWCR): Riverside
Original Source: California Department of Water Resources - OSWCR(Well Numbers); California Department of Water

Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR1994-012616	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:	32993 MACHADO ST		
City:	Elsinore		
County:	Riverside		
Location(OSWCR):	32993 MACHADO ST		
City(OSWCR):	Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR0089840	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:			
City:			
County:	Riverside		
Location(OSWCR):			
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR0230575	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:			
City:			
County:	Riverside		
Location(OSWCR):			
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Wells and Additional Sources Detail Report

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR1984-007442	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:	MOUNTAIN VIEW AVE		
City:	Elsinore		
County:	Riverside		
Location(OSWCR):	MOUNTAIN VIEW AVE		
City(OSWCR):	Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR2008-009703	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:	Tiller Lane & Ulla Lane		
City:	Lake Elsinore		
County:	Riverside		
Location(OSWCR):	Tiller Lane & Ulla Lane		
City(OSWCR):	Lake Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR2007-012032	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:	Grand & Riverside Drive		
City:	Lake Elsinore		
County:	Riverside		
Location(OSWCR):	Grand & Riverside Drive		
City(OSWCR):	Lake Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR2010-009538	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:	32150 Ortega Highway		
City:	Lake Elsinore		
County:	Riverside		
Location(OSWCR):	32150 Ortega Highway		
City(OSWCR):	Lake Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR0121373	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:			
City:			
County:	Riverside		
Location(OSWCR):			
City(OSWCR):			
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR2004-011737	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:	33385 JAMIESON St		
City:	Elsinore		
County:	Riverside		
Location(OSWCR):	33385 JAMIESON St		
City(OSWCR):	Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR2002-011939	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:	33098 California Street		
City:	Elsinore		
County:	Riverside		
Location(OSWCR):	33098 California Street		
City(OSWCR):	Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR1776-004668	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:	GRANDE, LA ERUNA		
City:	Elsinore		
County:	Riverside		
Location(OSWCR):	GRANDE, LA ERUNA		
City(OSWCR):	Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR1954-002407	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:	RIVERSIDE DRIVE, LAGUNA RANCHO, GRAND AV		
City:	Elsinore		
County:	Riverside		
Location(OSWCR):	RIVERSIDE DRIVE, LAGUNA RANCHO, GRAND AV		
City(OSWCR):	Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR1942-000396	Decimal Lat(OSWCR):	33.66322

Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:	RIVERSIDE ST, GRAND AVE		
City:	Elsinore		
County:	Riverside		
Location(OSWCR):	RIVERSIDE ST, GRAND AVE		
City(OSWCR):	Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR1949-000916	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:	ROBINHOOD OAKS NO 2		
City:	Elsinore		
County:	Riverside		
Location(OSWCR):	ROBINHOOD OAKS NO 2		
City(OSWCR):	Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR2006-012316	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:	33291 Jamieson Street		
City:	Lake Elsinore		
County:	Riverside		
Location(OSWCR):	33291 Jamieson Street		
City(OSWCR):	Lake Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR2006-012765	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		

Wells and Additional Sources Detail Report

Location:	Grand & Riverside Drive
City:	Lake Elsinore
County:	Riverside
Location(OSWCR):	Grand & Riverside Drive
City(OSWCR):	Lake Elsinore
County(OSWCR):	Riverside
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR2006-012766	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:	15410 Grand Avenue		
City:	Lake Elsinore		
County:	Riverside		
Location(OSWCR):	15410 Grand Avenue		
City(OSWCR):	Lake Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SW	0.91	4,788.99	1,343.33	WATER WELLS

WCR No:	WCR2005-016565	Decimal Lat(OSWCR):	33.66322
Decimal Latitude:	33.66322	Decim Long(OSWCR):	-117.38898
Decimal Longitude:	-117.38898		
Location:	15410 Grand Avenue		
City:	Lake Elsinore		
County:	Riverside		
Location(OSWCR):	15410 Grand Avenue		
City(OSWCR):	Lake Elsinore		
County(OSWCR):	Riverside		
Original Source:	California Department of Water Resources - OSWCR(Well Numbers); California Department of Water Resources - Well Completion Reports		

Radon Information

This section lists any relevant radon information found for the target property.

Federal EPA Radon Zone for *RIVERSIDE* County: **2**

Zone 1: Counties with predicted average indoor radon screening levels greater than 4 pCi/L
Zone 2: Counties with predicted average indoor radon screening levels from 2 to 4 pCi/L
Zone 3: Counties with predicted average indoor radon screening levels less than 2 pCi/L

Federal Area Radon Information for *RIVERSIDE* County

No Measures/Homes:	24
Geometric Mean:	0.3
Arithmetic Mean:	0.3
Median:	0.5
Standard Deviation:	0.8
Maximum:	1.7
% >4 pCi/L:	0
% >20 pCi/L:	0
Notes on Data Table:	TABLE 1. Screening indoor radon data from the EPA/State Residential Radon Survey of California conducted during 1989-90. Data represent 2-7 day charcoal canister measurements from the lowest level of each home tested.

Appendix

Federal Sources

FEMA National Flood Hazard Layer — **FEMA FLOOD**

The National Flood Hazard Layer (NFHL) data incorporates Flood Insurance Rate Map (FIRM) databases published by the Federal Emergency Management Agency (FEMA), and any Letters Of Map Revision (LOMRs) that have been issued against those databases since their publication date. The FIRM Database is the digital, geospatial version of the flood hazard information shown on the published paper FIRMs. The FIRM Database depicts flood risk information and supporting data used to develop the risk data. The FIRM Database is derived from Flood Insurance Studies (FISs), previously published FIRMs, flood hazard analyses performed in support of the FISs and FIRMs, and new mapping data, where available.

Indoor Radon Data — **INDOOR RADON**

Indoor radon measurements tracked by the Environmental Protection Agency(EPA) and the State Residential Radon Survey.

Public Water Systems Violations and Enforcement Data — **PWSV**

List of drinking water violations and enforcement actions from the Safe Drinking Water Information System (SDWIS) made available by the Drinking Water Protection Division of the US EPA's Office of Groundwater and Drinking Water. Enforcement sensitive actions are not included in the data released by the EPA. Address information provided in SWDIS may correspond either with the physical location of the water system, or with a contact address.

Radon Zone Level — **RADON ZONE**

Areas showing the level of Radon Zones (level 1, 2 or 3) by county. This data is maintained by the Environmental Protection Agency (EPA).

Safe Drinking Water Information System (SDWIS) — **SDWIS**

The Safe Drinking Water Information System (SDWIS) contains information about public water systems as reported to US Environmental Protection Agency (EPA) by the states. Addresses may correspond with the location of the water system, or with a contact address.

Soil Survey Geographic database — **SSURGO**

The Soil Survey Geographic database (SSURGO) contains information about soil as collected by the National Cooperative Soil Survey at the Natural Resources Conservation Service (NRCS). Soil maps outline areas called map units. The map units are linked to soil properties in a database. Each map unit may contain one to three major components and some minor components.

U.S. Fish & Wildlife Service Wetland Data — **US WETLAND**

The U.S. Fish & Wildlife Service Wetland layer represents the approximate location and type of wetlands and deepwater habitats in the United States.

USGS Current Topo — **US TOPO**

US Topo topographic maps are produced by the National Geospatial Program of the U.S. Geological Survey (USGS). The project was launched in late 2009, and the term "US Topo" refers specifically to quadrangle topographic maps published in 2009 and later.

USGS Geology — **US GEOLOGY**

Seamless maps depicting geological information provided by the United States Geological Survey (USGS).

USGS National Water Information System — **FED USGS**

The U.S. Geological Survey (USGS)'s National Water Information System (NWIS) is the nation's principal repository of water resources data. This database includes comprehensive information of well-construction details, time-series data for gage height, streamflow, groundwater level, and precipitation and water use data.

Wells from NWIS — **FED USGS**

The U.S. Geological Survey's National Water Information System (NWIS) is the nation's principal repository of water resources data. The NWIS includes comprehensive information of well-construction details, time-series data for gage height, streamflow, groundwater level, and precipitation and water use data. This NWIW dataset contains select Site Types from the overall NWIS Sites data, limited to the following Group Site Types only: Groundwater Group Site Types: Well, Collector or Ranney type well, Hyporheic-zone well,

Interconnected Wells, Multiple wells; Spring Group Site Type: Spring; and Other Group Site Types: Aggregate groundwater use, Cistern.

State Sources

Oil and Gas Wells **OGW**

A list of Oil and Gas well locations. This is provided by California's Department of Conservation Division of Oil, Gas and Geothermal Resources.

Periodic Groundwater Level Measurement Locations **MONITOR WELLS**

Locations of groundwater level monitoring wells in the Department of Water Resources (DWR)'s Periodic Groundwater Levels dataset. The DWR Periodic Groundwater Levels dataset contains seasonal and long-term groundwater level measurements collected by the Department of Water Resources and cooperating agencies.

Well Completion Reports **WATER WELLS**

List of wells from the Well Completion Reports data made available by the California Department of Water Resources' (DWR) Online System for Well Completion Reports (OSWCR). Please note that the majority of well completion reports have been spatially registered to the center of the 1x1 mile Public Land Survey System section that the well is located in.

Liability Notice

Reliance on information in Report: The Physical Setting Report (PSR) DOES NOT replace a full Phase I Environmental Site Assessment but is solely intended to be used as a review of environmental databases and physical characteristics for the site or adjacent properties.

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APPENDIX D: QUALIFICATIONS/INSURANCE

PARTNER

Amanda Plagge, EP
Senior Project Scientist

Education
B.S. Environmental Science, University of Redlands

Registrations
Certified Asbestos Building Inspector

Training
Asbestos Building Inspector Refresher Course

Highlights
Over 5 years' experience in the environmental services industry conducting:
Phase I Environmental Site Assessments
Transaction Screen Assessments
Environmental Desktop Reports
Asbestos building inspections
Radon testing

Experience Summary
Mrs. Plagge is currently a Senior Project Scientist and her responsibilities include thorough site assessment and technical report writing in line with the American Society of Testing and Materials (ASTM) standard and US Environmental Protection Agency's All Appropriate Inquiry (AAI) as well as customized client formats. Her knowledge and ability to manage multiple services associated with real estate due diligence allows Mrs. Plagge to provide her clients with comprehensive information and identification of risks in order to make sound financial investments. Mrs. Plagge has niche experience with industrial sites, brownfield sites, and agricultural land (specifically vineyards) throughout all of California. In addition, Mrs. Plagge performs limited asbestos surveys, lead-based paint surveys, lead-in-water sampling, and radon testing as required per scope of work.

At a previous firm, Mrs. Plagge was responsible for environmental due diligence activities both locally and nationwide with emphasis on environmental site assessments related to property transactions, and due diligence audits. Mrs. Plagge's experience includes multi-family properties, retail shopping centers, hotels and resorts, office buildings, auto repair facilities, light industrial facilities, manufacturing facilities, and vacant land. Mrs. Plagge is Freddie Mac and Fannie Mae ESA qualified.

Project Experience
Mrs. Plagge has conducted over 700 ESAs throughout California and the US over the course of her career. The following select projects summarize her experience and due diligence background:

Environmental Assessment, California, Various Lenders and Clients, Freddie Mac, Fannie Mae and private investors and brokers. Mrs. Plagge has performed hundreds of environmental assessments services related to multi-family real estate transfers and property development throughout California, many of which have included the collection of suspect ACM samples, and radon testing. She has also reviewed and summarized third-party reports, asbestos and lead surveys, and subsurface investigations.

Environmental Assessment, Auto Fueling Facilities, Pennsylvania (Confidential Client). Mrs. Plagge performed fourteen environmental site assessments of operating vehicle fueling and repair stations, located in Pennsylvania. In addition, Mrs. Plagge was responsible for review and summary of third-party reports and underground storage tank removals and other subsurface investigations.

Environmental Assessment, Car Wash Facilities, Northern California, (Confidential Client). Mrs. Plagge performed eight environmental site assessments of operating car wash facilities located within several Northern California Counties including Santa Clara and Sacramento. In addition, Ms. Noland was responsible for review and summary of third-party reports, underground storage tank removals and other subsurface investigations.

Environmental Assessment, Vineyards, Northern California, (Confidential Client). Mrs. Plagge performed three environmental site assessments of vineyards located within in Sonoma County. In addition, Mrs. Plagge was responsible for review and summary of third-party reports, underground storage tank removals and other subsurface investigations.

Environmental Assessment, Retail/Multi-Family Development, Northern California, (Confidential Client). Mrs. Plagge performed an environmental site assessment for a -acre development in Emeryville, CA. In addition, Mrs. Plagge was responsible for review and summary of third-party reports, underground storage tank removals and other subsurface investigations.

Environmental Assessment, Light Industrial Portfolio, Southern California (Confidential Client). Mrs. Plagge performed environmental site assessments of four light industrial properties located within a corporate office park in Carlsbad, California. The properties included office buildings in addition to semiconductor manufacturing facilities. In addition, Mrs. Plagge was responsible for review and summary of third-party reports, asbestos and lead surveys, underground storage tank removals and other subsurface investigations.

Environmental Assessment, Medical Facilities, Southern California, (Confidential Client). Mrs. Plagge performed environmental site assessments for three medical facilities within Los Angeles County. In addition, Mrs. Plagge was responsible for review and summary of third-party reports, underground storage tank removals and other subsurface investigations.

Environmental Assessment, Industrial Truck Repair Facilities, Central to Northern California, (Confidential Client). Mrs. Plagge performed environmental site assessments of five operating diesel truck repair facilities located within various Central and Northern California Counties. In addition, Mrs. Plagge was responsible for review and summary of third-party reports, underground storage tank removals and other subsurface investigations.

Publications

Bohart Ranch, Colorado State Land Board, August 2013. A publication describing the naturally functioning flora and fauna in part of the Chino Basin Conservation Area, adaptive land management practices maintained by the Colorado State Land Board, as well as updated data and reports of several long running

research projects continued at Bohart Ranch for various flora and fauna [ornate box turtles (Terrapene ornate) and black-tailed prairie dog (Cynomys ludovicianus)].

Invasive Species Removal Management Plan for The Redlands Conservancy Conservation Easement on the San Timoteo Creek, December 2013. This management plan provides a comprehensive document of background information from which the Redlands Conservancy and partner agencies can work together to address the problem of invasive and nonnative plant species. Other than providing information, the goal of this plan has been to identify and associate actions that need to be administered to reduce the harmful ecological impacts of the invasive plant species (Arundo donax, ailanthus altissima, tamarix ramosissima, nicotiana glauca, brassica spp., etc.) on the property.

Contact

Aplagge@partneresi.com

PARTNER

Elizabeth Shule
Senior Project Manager

Education

Knox College, Galesburg, IL
B.A., Environmental Studies, *Phi Beta Kappa*

Registrations

Environmental Professional (EP)

Training

Current OSHA 40-hour HAZWOPER Certification
OSHA 8-hour HAZWOPER Annual Refresher
Radio Frequency Health and Safety Training

Highlights

9 years in the Environmental Assessment and Consulting Industry
Phase I Environmental Site Assessments
Phase II Subsurface Investigations
National Environmental Policy Act
Management of Asbestos and Lead Paint Inspections and Abatements

Experience Summary

Ms. Shule is an experienced and knowledgeable Senior Project Manager for Partner Engineering and Science, Inc. (Partner) in St. Louis, Missouri. She has experience completing due diligence assessments in accordance with the needs and requirements of varied number of reporting standards, including ASTM standards, EPA's All Appropriate Inquiry (AAI), and customized client formats.

Ms. Shule has nine years of experience in the environmental assessment and consulting industry. She has prepared and managed National Environmental Policy Act (NEPA) projects for the telecommunications industry across the United States. Ms. Shule has helped various clients facilitate the Section 106/environmental review process to ensure compliance with Federal Communications Commission (FCC) NEPA requirements, including completion of Environmental Assessments (EAs) and Memorandums of Agreement (MOA). Further, Ms. Shule has managed additional aspects of telecommunications regulatory compliance, including asbestos and lead paint surveys and asbestos, lead paint, and mold abatements.

Ms. Shule has completed and managed numerous Phase I Environmental Site Assessments (ESAs) for a diverse variety of properties and purposes across the United States. These properties have included telecommunication facilities, industrial facilities, agricultural tracts, gas stations, retail facilities, proposed solar and wind farms, and multi-family residential properties. Ms. Shule has assisted in serving a wide variety of clients, including lending institutions, investment management firms, telecommunication carriers, and telecommunication tower owners.

Project Experience

Telecommunications

Phase I Environmental Site Assessments, Multiple Locations, Continental United States and Hawaii - Ms. Shule has completed and reviewed Phase I ESAs for a variety of proposed and existing communication facilities at undeveloped locations, towers, compound expansions, and building colocations in urban areas.

Phase I Environmental Site Assessment, Tower Replacement, Western Missouri - In support of a proposed tower replacement project located at a petroleum pipeline terminal and bulk fueling facility, Ms. Shule completed a Phase I ESA. The property was found to have a long history of pipeline terminal and fueling activities, with reported releases of up to 3,500 barrels of petroleum product. A Phase II Subsurface Investigation was conducted concurrently with the Phase I ESA.

Bulk Small Cell Node Installation at University of Colorado Boulder, Boulder, Colorado - Ms. Shule was responsible for staffing projects, reviewing reports and ensuring timely delivery of Phase I ESA and NEPA reports associated with the bulk installation of small cell nodes throughout the University of Colorado Boulder campus. This included extensive coordination with the Colorado State Historic Preservation Office for nodes proposed within a historic district located on campus.

FCC NEPA Compliance, Multiple Locations, Continental United States and Hawaii - Ms. Shule conducted all aspects of NEPA compliance in accordance with FCC regulations for telecommunication towers from cradle to grave including proposal writing, staffing projects, client and subcontractor liaison, report writing and reviews. Additionally, Ms. Shule has successfully completed EAs and MOAs to address adverse impacts to historic properties.

Asbestos Abatement, Multiple Locations, Continental United States - Ms. Shule has managed asbestos abatement projects for telecommunications clients. This work involved procuring qualified abatement and sampling/oversight contractors. Ms. Shule was responsible for close and frequent communication between all stakeholders to ensure successful completion of the abatement.

Asbestos and Lead-Containing Paint Abatement, San Bruno Mountain, California - Ms. Shule managed an asbestos and lead-containing paint abatement project for five telecommunication equipment buildings associated with separate towers located on San Bruno Mountain. This work involved coordination with others conducting work at the buildings, managing contractors, and ensuring completion of the specific scope of work for each building.

Phase II Subsurface Investigations, Multiple Locations, Continental United States - As part of a due diligence team, Ms. Shule was responsible for proposal writing, staffing projects, client liaison, reviewing reports, and ensuring timely delivery of Phase II Subsurface Investigations associated with telecommunication sites.

Commercial

Proposed Wind Farm, Adair and Schuyler Counties, Missouri - As part of a due diligence team, Ms. Shule completed a Phase I ESA on a proposed wind farm totaling approximately 45,766 acres and located on over 400 parcels of land spanning two counties. This assessment included review of 185 proposed wind turbine/met tower locations and two proposed substation sites.

Former Manufacturing Plant, Evansville, Indiana - Ms. Shule completed a Phase I ESA at a 52.82-acre former manufacturing plant with current industrial tenants. The property was found to have a long history of industrial use and an Environmental Restrictive Covenant recorded on the property title. After obtaining and reviewing a significant quantity of historical environmental documentation, Ms. Shule prepared a concise summary of historical subsurface investigations and corrective actions.

Space Center Portfolio, Western Missouri - As part of a 17-site due diligence portfolio, Ms. Shule conducted Phase I ESAs on two multi-tenant facilities located in former quarries, each over one million square feet in size. Both properties leased space to industrial and governmental tenants.

Travel Center Gas Station and Semi-Truck Repair, Troy, Illinois - Ms. Shule completed a Phase I ESA on a truck stop/travel center in Troy, Illinois featuring eight underground storage tanks (USTs), one out of service heating oil UST, 11 fuel islands, convenience store, semi-truck repair shop, and restaurant. The property was found to have a long history of gas station and semi-truck repair with current tanks over 25 years old and poor housekeeping practices in the repair shop were observed onsite. After obtaining and reviewing a significant quantity of historical environmental documentation, Ms. Shule prepared a concise summary of historical subsurface investigations and corrective actions.

Affiliations

Missouri Kansas Wireless Association
Illinois Wireless Association

Contact

eshule@partneresi.com

PARTNER

Michael Cunneen
Principal-Director of Telecom Services

Education

B.A. Business Administration: Emphasis in Management Information Systems, California State University, Fullerton

Highlights

20+ years in the Wireless Telecommunication Industry
Extensive knowledge of Telecom FCC NEPA due diligence
Phase I/II Environmental Site Assessments
Hazmat Services
Telecom A&E, Site Acquisition Services and Construction

Experience Summary

Mr. Michael Cunneen has over 20 years of experience in the environmental industry. He has significant experience in due diligence assessments for a variety of property types and the needs and requirements of a varied number of reporting standards, including ASTM standards, EPA's All Appropriate Inquiry (AAI), and customized client formats.

Specifically, Mr. Cunneen has performed Phase I Environmental Site Assessments, Environmental Transaction Screens, Phase II Subsurface Investigations, Lead Based Paint and Asbestos Containing Material surveys (LBP/ACM), Abatement, and has helped clients facilitate the environmental review process to ensure compliance with Federal Communications Commission (FCC) requirements under the National Environmental Policy Act (NEPA). Environmental reviews include analysis of historic properties, wetlands, endangered species habitat, floodplains, and other areas of environmental concern and the possible impacts of telecommunications installations on these sensitive areas. Mr. Cunneen has completed thousands of NEPA assessments for a wide range of properties and for various telecommunications clients throughout the United States.

Mr. Cunneen has conducted environmental due diligence assessments for a wide range of properties throughout the United States. These assessments have been performed to evaluate site conditions, potential off-site liabilities, environmental control systems, and site remediation costs in order to advise prospective buyers, operators, and owners of potential and existing environmental concerns. Mr. Cunneen's site assessment experience includes: agricultural properties, golf courses, automobile fueling and repair facilities, telecommunications sites, shopping centers with dry cleaning facilities, rural and undeveloped land, commercial properties, multifamily properties, and industrial properties. Mr. Cunneen has provided environmental due diligence services to key financial clients.

Additionally, Mr. Cunneen has managed Telecom Site Acquisition, A&E, and Construction projects throughout various U.S markets for Carriers, Tower Developers and Turfing Contractors. Responsibilities also include evaluation of staff; developing new skills and improving existing skills within the staff; scheduling of personnel; maintaining quality control practices consistent with company goals; and participate in development of protocols and practices to serve national clients of the firm.

Project Experience

Wireless Developer, 5G National Network Deployment Buildout - Managed a national A&E team that provided Survey, Utility Locates, Traffic Control and Geotech on hundreds of Right-of-Way projects throughout the United States.

Wireless Carrier, 5G & 4G National Network Deployment Buildout - Organized and led a team of environmental professionals and NEPA specialists to conduct hundreds of wireless projects in the U.S. Services included Phase I and II Environmental Site Assessments, LBP/ACM surveys, abatement, and FCC NEPA compliance evaluation reports. Mr. Cunneen worked closely with tribal leaders and archaeologists in completing the Section 106 process. His team completed Flood Plain Environmental Assessments, Memorandum of Agreements, Biological Assessments, Focus Surveys and Architectural Historian Evaluations as part of the NEPA Consultation Process.

Tower Developer, National Network Deployment Buildout - Directed and completed Phase I and II Environmental Site Assessments, LBP/ACM surveys, abatement, hazardous fuel removal, generator decommissioning, and FCC NEPA compliance evaluation reports on thousands of wireless projects for various markets throughout the U.S including Puerto Rico.

Wireless Carrier, Los Angeles Network Deployment Buildout - Mr. Cunneen provided client focus, project management, technical peer review of report work products and opinions for Phase I and II Environmental Site Assessments, LBP/ACM surveys, abatement, Geotechnical and FCC NEPA compliance evaluation reports on over 800 wireless projects for the Carrier's Los Angeles Expansion Market.

Turfing Contractor, California/ Virginia, Maryland Markets for Small Cell Deployment - Managed a team of certified Asbestos and Lead Inspectors that conducted LBP/ACM Surveys, and abatement services on multiple commercial properties for Small Cell and Distributed Antenna Systems.

Wireless Carrier, San Diego, Las Vegas, Portland, Chicago Network Deployment Buildout - Mr. Cunneen directed and completed Phase I and II Environmental Site Assessments, LBP/ACM surveys, asbestos abatement, and FCC NEPA compliance evaluation reports on over 500 wireless projects for the various markets throughout the U.S.

Wireless Carrier, 2G-3G Southwestern U.S. Network Deployment Buildout - Mr. Cunneen provided project management and completed Phase I and II Environmental Site Assessments, LBP/ACM surveys, abatement, Geotechnical, and FCC NEPA compliance evaluation reports on thousands of wireless projects for direct Carrier work and under contract with various developers and Architectural and Engineering firms throughout the Southwestern United States, including sites in California, Nevada and Arizona.

Affiliations

California Wireless Association

Contact

mcunneen@partneresi.com

Appendix F2 – Phase II Environmental Site Assessment

PARTNER
Engineering and Science, Inc.

More Than Just Assessments.
Solutions.

ADDITIONAL INVESTIGATION REPORT

32281 Riverside Drive

32281 Riverside Drive
Lake Elsinore, California 92530

Report Date

May 11, 2023

Partner Project No.

23-397410.3

Prepared for:

WJK Development Co.
28392 Airoso Street
Rancho Mission Viejo, California 92694



Building Science



Environmental Consulting



Construction & Development



Energy & Sustainability

PARTNER

May 11, 2023

Grant Keene
WJK Development Co.
28392 Airoso Street
Rancho Mission Viejo, California 92694

Subject: Additional Investigation Report
32281 Riverside Drive
Lake Elsinore, California 92530
Partner Project No. 23-397410.3

Dear Mr. Keene:

Partner Engineering and Science, Inc. (Partner) is pleased to provide the results of the assessment performed at the above-referenced property. The following report describes the field activities, methods, and findings of the Additional Investigation conducted at the above-referenced property.

This assessment was performed consistent with acceptable industry standards. The independent conclusions represent Partner's best professional judgment based upon existing conditions and the information and data available to us during the course of this assignment.

We appreciate the opportunity to provide these services. If you have any questions concerning this report, or if we can assist you in any other matter, please contact Mike Cunneen at 310-439-3438.

Sincerely,

Partner Engineering and Science, Inc.

Sean Hanrahan
Project Scientist

Brian T. Godbois
Senior Project Manager

Mike Cunneen
National Client Manager

Joe Mangine, P.G.
Senior Project Manager

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The following report Tables, Figures, and Appendices are attached at the end of this report.

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1. Summary of Investigation Scope
2. Soil Gas Sample VOCs Laboratory Results

FIGURES
1. Site Vicinity Map
2. Topographic Map
3. Sample Location Map

APPENDICES
A. Boring Logs
B. Laboratory Analytical Reports

1.0 INTRODUCTION

1.1 Purpose

The purpose of the investigation was to further evaluate the known impacts of chlorinated solvents to soil gas and/or soil as a consequence of a release or releases from former on-site operations. WJK Development Co. provided project authorization of Partner Proposal Number P23-397410.3.

1.2 Limitations

This report presents a summary of work conducted by Partner. The work includes observations of site conditions encountered and the analytical results provided by an independent third-party laboratory of samples collected during the course of the project. The number and location of samples were selected to provide the required information. It cannot be assumed that the limited available data are representative of subsurface conditions in areas not sampled.

Conclusions and/or recommendations are based on the observations, laboratory analyses, and the governing regulations. Conclusions and/or recommendations beyond those stated and reported herein should not be inferred from this document.

Partner warrants that the environmental consulting services contained herein were accomplished in accordance with generally accepted practices in the environmental engineering, geology, and hydrogeology fields that existed at the time and location of work. No other warranties are implied or expressed.

1.3 User Reliance

Partner was engaged by WJK Development Co. (the Addressee), or their authorized representative, to perform this investigation. The engagement agreement specifically states the scope and purpose of the investigation, as well as the contractual obligations and limitations of both parties. This report and the information therein, are for the exclusive use of the Addressee. This report has no other purpose and may not be relied upon, or used, by any other person or entity without the written consent of Partner. Third parties that obtain this report, or the information therein, shall have no rights of recourse or recovery against Partner, its officers, employees, vendors, successors or assigns. Any such unauthorized user shall be responsible to protect, indemnify and hold Partner, the Addressee and their respective officers, employees, vendors, successors and assigns harmless from any and all claims, damages, losses, liabilities, expenses (including reasonable attorneys' fees) and costs attributable to such use. Unauthorized use of this report shall constitute acceptance of, and commitment to, these responsibilities, which shall be irrevocable and shall apply regardless of the cause of action or legal theory pled or asserted.

This report has been completed under specific Terms and Conditions relating to scope, relying parties, limitations of liability, indemnification, dispute resolution, and other factors relevant to any reliance on this report. Any parties relying on this report do so having accepted Partner's standard Terms and Conditions, a copy of which can be found at http://www.partneresi.com/terms-and-conditions.php.

2.0 SITE BACKGROUND

2.1 Site Description

The subject property consists of one parcel of land comprising 4.95 acres located on the northwest side of Riverside Drive within a mixed residential, commercial, and undeveloped area of Lake Elsinore, Riverside County, California. The subject property is currently vacant land with remnants of foundations associated with the former on-site structures located on the central and south portions of the property. In addition, the subject property is overgrown with natural vegetation throughout the site and former courtyard, asphalt-paved parking areas in poor condition as well as chain link/concrete masonry fencing along the property perimeter. No on-site operations are currently conducted; however, Partner understands that the site is planned for residential redevelopment.

The subject property is bound by residential properties to the northwest and southwest, residential properties to the northeast across the canal, and commercial properties across Riverside Drive to the southeast. Refer to Figure 1 for a site vicinity map showing site features and surrounding properties.

2.2 Site History

Partner completed a *Phase I Environmental Site Assessment Report* (Phase I) for the subject property, dated February 21, 2023, on behalf of WJK Development Co. and RSI Equity. According to the Phase I, the subject property was formerly developed with agricultural land (row crops and/or orchards) from at least 1938 to 1954. By 1962, the site was redeveloped with a resort complete with 40 guest rooms, courtyard, swimming pool and shed-like structure on the southern corner of the property. This development was later razed in 2004; however, the foundation and paved surface parking lots were left in place.

The following recognized environmental conditions (RECs) were identified in the Phase I:

- According to the Phase I, the subject property was developed with a resort from *circa* 1962 until 2004. This development was formerly occupied by "The Grove" from at least 1984 to 1986 and "Lakeside Health Resort" from at least 1986 to 1992. Upon further investigation, an LA Times article dated May 22, 1988, reported the former on-site developments were utilized as a retreat for officials of the laundry workers union as early as the late-1950s. According to the reviewed city directories, dry cleaning services were conducted on site from at least 1974 to 1977. In addition to commercial laundry facilities for the cleaning of sheets and towels for guest rooms, resorts and/or hotels sometimes provide dry cleaning services as a hospitality amenity. Dry cleaning operations typically use chlorinated solvents, particularly tetrachloroethylene (PCE), during the dry cleaning process. These solvents, even when properly stored and disposed, can be released from these facilities in small, frequent releases through floor drains, cracked concrete, and sewer systems. Chlorinated solvents are highly mobile chemicals that can easily accumulate in soil and migrate to groundwater beneath a facility.

  No permits to operate dry cleaning machines were identified for the subject property address with the South Coast Air Quality Management District (SCAQMD). Furthermore, no regulatory database listings were identified for the possible dry cleaning services conducted on site including hazardous waste generation and removal of chlorinated solvents, releases or contamination events. Nevertheless, this facility operated prior to the promulgation of the Resource Conservation and Recovery Act (RCRA) in 1980 (with amendments for small quantity generators in 1984), the legislation that regulates the

handling and disposal of hazardous materials and wastes. Furthermore, the SCAQMD was not founded until 1976. As such, this facility operated virtually unregulated while at the subject property. Partner attempted to obtain any additional information regarding subsurface conditions at the subject property; however, none was available. Based on the type of chemicals associated with dry cleaning services and lack of regulatory oversight at the time of operation, the former on-site dry cleaning services represents a REC.

- The subject property was historically used for agricultural purposes. There is a potential that agricultural chemicals, such as pesticides, herbicides and fertilizers, were used on site, and that the subject property has been impacted by the use of such agricultural chemicals. Due to the planned redevelopment of the subject property for residential and/or commercial use, this potential is considered a REC.

Partner completed a *Phase II Subsurface Investigation Report* (Phase II) for the subject property dated April 3, 2023, to evaluate the potential impact of chlorinated solvents, pesticides, chlorinated herbicides, arsenic, and/or lead to soil gas and/or soil as a consequence of a release or releases from former on-site operations. The scope of the Phase II included the advancement of eight borings. Eight soil samples were analyzed for chlorinated solvents, pesticides, chlorinated herbicides, arsenic, and lead; and eight soil gas samples were analyzed for chlorinated solvents.

Subsurface lithology encountered in the upper 5 feet below ground surface (bgs) consisted of silty sand (SM).

None of the analyzed soil samples contained chlorinated solvents, pesticides, chlorinated herbicides, arsenic, and/or lead at concentrations exceeding regulatory guidelines and/or background concentrations.

PCE was detected in one soil gas sample (B7-SG5) at a concentration exceeding the residential screening level but below the commercial/industrial screening level. None of the remaining chlorinated solvents were detected in the soil gas samples.

Based on the results of the Phase II, subsurface soil gas appears to be impacted by PCE in the southwest portion of the subject property near boring B7. Partner recommended additional investigation to further evaluate the potential vapor intrusion concern for the future subject property occupants. Additionally, Partner recommended that a Soil Management Plan be utilized for site redevelopment to protect workers from potential subsurface impacts associated with the PCE impacts to soil gas.

2.3 Geology and Hydrogeology

Review of the United States Geological Survey (USGS) *Alberhill, California* Quadrangle topographic map indicates the subject property is situated approximately 1,267 feet above mean sea level, and the local topography is sloping gently to the southeast. Refer to Figure 2 for a topographic map of the site vicinity.

The subject property is situated within the Peninsular Ranges Geomorphic Province of the State of California. This province is characterized by a series of ranges that are separated by longitudinal valleys, trending northwest to southeast, subparallel to faults branching from the San Andreas Fault. The trend of topography is similar to the Coast Ranges, but the geology is more like the Sierra Nevada, with granitic rock intruding the older metamorphic rocks. The Peninsular Ranges extend into Lower California and are bound on the east by the Colorado Desert. The Los Angeles Basin and the island group (Santa Catalina, Santa Barbara,

and the distinctly terraced San Clemente and San Nicolas islands), together with the surrounding continental shelf (cut by deep submarine fault troughs) are included in this province.

Based on borings advanced during this investigation, the underlying subsurface consists predominantly of dark brown, damp, fine to medium grained silty sand (SM) from the ground surface to approximately 25 feet bgs. Refer to Appendix A for boring logs from this investigation.

Groundwater was not encountered during this investigation and was not a part of the scope of work. According to the State Water Resources Control Board (SWRCB) Geotracker Website, a nearby Leaking Underground Storage Tank (LUST) at 16830 West Lakeshore Drive in the Lake Elsinore, which is approximately 1.1 miles north-northeast of the subject property and is overseen by the Santa Ana Regional Water Quality Control Board (SARWQCB) as Case Number 083300483T. The site maintains 18 groundwater monitoring wells in the area. The most recent monitoring data available on the GeoTracker Website was for March 22, 2010, with depth to groundwater ranging from 34.30 to 54.92 feet bgs with an inferred direction of flow to the southeast.

3.0 FIELD ACTIVITIES

The Additional Investigation scope included the advancement of four borings (B7A through B7D) to collect representative soil and/or soil gas samples. Refer to Table 1 for a summary of the borings, sampling schedule, and laboratory analyses for this investigation and for the previous investigation.

3.1 Preparatory Activities

Prior to the initiation of fieldwork, Partner completed the following activities.

3.1.1 Utility Clearance

Partner delineated the work area with white spray paint and notified Underground Service Alert (USA) to clear public utility lines as required by law at least two business days prior to drilling activities. USA issued ticket number B230660979-00B for the project.

In addition, Partner subcontracted with SAFESCANN on April 19, 2023, to clear boring locations of utilities. SAFESCANN systematically free-traversed each proposed boring location with a Radiodetection model RD8000 electromagnetic induction (EM) equipment unit with line-tracing capabilities, and a GSSI model SIR-4000 ground penetrating radar (GPR) unit. The data was interpreted in real time for evidence of utility lines and/or other subsurface features of potential concern. Based on the findings of the GPR survey, no subsurface utilities were identified within the proposed boring locations.

3.1.2 Health and Safety Plan

Partner prepared a site-specific Health and Safety Plan, which was reviewed with on-site personnel involved in the project prior to the commencement of drilling activities.

3.2 Drilling Equipment

On April 19, 2023, Partner subcontracted with Kehoe Testing & Engineering (Kehoe) (State of California Water Well Drilling Contractor License Number 786163) to provide and operate drilling equipment. Kehoe, under the direction of Partner, advanced borings B7A through B7D with a truck-mounted Geoprobe Model 7800 direct push rig. Sampling equipment was decontaminated between sample intervals and boring locations to prevent cross-contamination.

3.3 Sample Locations

Borings B7A through B7D were advanced to the north, northwest, southeast, and northeast of former boring B7, respectively.

Refer to Figure 3 for a map indicating sample locations.

3.4 Soil Sampling

Borings B7A through B7D were located in unimproved areas. Borings B7A through B7D were advanced to a terminal depth of 25 feet bgs.

Soil samples were collected using a 2-foot long by 1.5-inch diameter sampler with a 2-foot long acetate liner and sampling point. The sampler was advanced by the direct-push drill rig using 4-foot by 1.25-inch diameter hollow rods with the inner rods in place. At approximately 1 foot above the desired sampling

depth, an inner rod was removed and the sampler was advanced to the desired sampling depth to allow undisturbed soil to enter the sampling liner. The sampler was retrieved from the subsurface and the soil-filled liner was removed.

Each acetate liner was cut using a pipe-cutter. Samples were collected from the lower half of the liner using a disposable plastic syringe and retained in two sodium bisulfate-preserved and one methanol-preserved volatile organics analysis (VOA) vials in accordance with United States Environmental Protection Agency (EPA) Method 5035 sampling protocol. The remainder of the lower half of the liner was capped on either end with Teflon tape and plastic caps. The capped liners and VOA vials were labeled for identification and stored in an iced cooler. The soil in the upper half of the liner was visually inspected for discoloration, monitored for odors, classified in accordance with the Unified Soil Classification System, placed in a sealable plastic bag, and field-screened with a photoionization detector (PID). None of the samples exhibited discoloration or an odor and none of the PID readings suggested the presence of elevated volatile organics concentrations.

Soil samples were collected from each boring at 5, 10, 15, 20, and 25 feet bgs.

3.5 Soil Gas Sampling

Soil Gas Probe Construction

Soil gas probes screened at 5, 15, and 25 feet bgs were constructed within the boreholes upon completion of soil sampling. Boreholes were backfilled with dry, granular bentonite to approximately 6 inches below the desired sampling depth. A new section of ¼-inch diameter Nylaflow tubing with a new ¼-inch diameter polypropylene filter at the terminal end was inserted into the borehole to the desired sampling depth. One-inch diameter polyvinyl chloride (PVC) casing was used as a guide for the tubing to ensure that the desired sampling depth was achieved. Sand was poured into the boring annulus to form an approximately 1-foot long sand pack around the polypropylene filter, at which time the PVC piping was withdrawn. Approximately 1 foot of dry, granular bentonite was placed atop the sand pack and the remainder of the borehole was backfilled with hydrated bentonite to the next desired sampling depth where a soil gas probe was similarly constructed. Upon installation of the shallowest probe, the remainder of the borehole was backfilled with hydrated bentonite to the ground surface to form a seal. The sampling end of the tubing was fitted with a valve and the probe was labeled for identification.

Soil Gas Sampling Methodology

Soil gas samples were collected in general accordance with the July 2015 Department of Toxic Substances Control (DTSC) and Los Angeles Regional Water Quality Control Board (LARWQCB) "Advisory – Active Soil Gas Investigations."

A & R Laboratories, Inc. (A&R), the mobile laboratory on-site [California Department of Public Health (CDPH) Environmental Laboratory Accreditation Program (ELAP) certificate number 2790], was calibrated at the beginning of the day prior to the first analysis. Each probe was allowed to equilibrate for at least two hours after installation prior to sampling with vapor-tight glass syringes. Three probe volumes were purged each location prior to sampling. A Method Blank was analyzed, and no contaminants were detected, indicating that the soil gas probe materials and laboratory equipment were free from contaminants. One sample was

also collected in duplicate to assess the accuracy of the laboratory analysis. The duplicate sample was within an acceptable margin of error.

A tracer gas mixture of isopropanol was placed around each probe at the ground surface while sampling to detect ambient air intrusion. The tracer gas was not detected in the samples, indicating that the integrity of the bentonite seal was maintained. In addition, recovery of surrogate compounds included with each analysis was within acceptable limits, indicating that the sampling containers and analysis equipment did not leak.

Soil gas samples were collected from each boring at 5, 15, and 25 feet bgs.

3.6 Post-Sampling Activities

Probes were removed from the subsurface and the boreholes were backfilled with hydrated bentonite chips following sampling activities.

No significant amounts of derived wastes were generated during this investigation.

4.0 DATA ANALYSIS

4.1 Laboratory Analysis

Partner collected 20 soil samples on April 19, 2023, which were transported in an iced cooler under chain-of-custody protocol to A&R, for analysis. Based on field-screening results, visual observations, and/or olfactory observations, three soil samples per boring (12 soil samples total) were analyzed for chlorinated solvents [specifically, PCE; trichloroethene (TCE); 1,1-dichloroethene (DCE); trans-1,2-DCE; cis-1,2-DCE; and vinyl chloride] via EPA Method 8260B. The remaining soil samples were placed on hold at the laboratory.

A&R, the on-site mobile laboratory collected 12 soil gas samples and one duplicate sample on April 19, 2023, which were immediately loaded on to the gas chromatography mass spectrometer (GCMS) for chlorinated solvent analysis.

Laboratory analytical results are included in Appendix B and discussed below.

4.2 Regulatory Agency Comparison Criteria

Department of Toxic Substances Control Regional Screening Levels

Regional Screening Levels (RSLs) are generic, risk-based chemical concentrations developed by the EPA for use in initial screening-level evaluations. RSLs combine human health toxicity values with standard exposure factors to estimate contaminant concentrations that are considered to be health protective of human exposures over a lifetime through direct-contact exposure pathways (e.g., via inhalation and/or ingestion of and/or dermal contact with impacted soil and/or indoor air). RSLs are not legally enforceable standards, but rather are considered guidelines to evaluate if potential risks associated with encountered chemical impacts may warrant further evaluation.

The DTSC Office of Human and Ecological Risk (HERO) developed California-Modified RSLs based on a review of 1) RSL concentrations, and 2) recent toxicity values.

While soil gas detections are not immediately comparable to the indoor air quality guidelines within the RSLs, the DTSC issued a recommended default attenuation factor of 0.03 for sub-slab soil gas and near-source exterior soil gas in the June 2015 document *Office of Solid Waste and Emergency Response (OSWER) Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*. With the subsurface contaminant concentrations and default attenuation factors, the associated contaminant concentrations in soil gas can be estimated as Calculated Residential and Commercial/Industrial Soil Gas Screening Levels (SGSLs).

4.3 Soil Sample Data Analysis

None of the analyzed soil samples contained chlorinated solvents at concentrations exceeding laboratory detection levels which were below applicable screening levels.

Based on the findings, the soil samples placed on hold at the laboratory were not analyzed.

4.4 Soil Gas Sample Data Analysis

One of the analyzed soil gas samples (B7C-SG15) contained PCE at a concentration of 30 micrograms per cubic meter (µg/m^3), which exceeds the residential screening level of 15 µg/m^3. None of the remaining soil

gas samples contained chlorinated solvents at concentrations above laboratory reporting limits (RLs) which were below applicable SGSLs. Refer to Table 2 for a summary of the soil gas sample chlorinated solvents laboratory analysis results.

4.5 Discussion

None of the analyzed soil samples contained chlorinated solvents at concentrations exceeding laboratory detection levels which were below applicable screening levels.

One of the analyzed soil gas samples (B7C-SG15) contained PCE at a concentration of 30 µg/m^3 at a depth of 15 feet bgs, which exceeds the residential screening level of 15 µg/m^3. However, the soil gas samples above and below the hotspot at 5 and 25 feet bgs were non-detect for PCE and the detected PCE in soil gas appears to be limited in extent. Based on the limited extent of PCE impacts in soil gas, adverse impacts to the future subject property occupants appears unlikely and a vapor barrier or additional engineering controls for the proposed residential development does not appear warranted at this time. Furthermore, based on the lack of PCE detections in soil and the proposed grading in the vicinity of the PCE detections to a depth of 5 feet bgs, it is likely that PCE concentrations will decrease in the vicinity of the previous impacts. Based on the results of the Additional Investigation, there does not appear to be an environmental or human health concern for the proposed residential development.

5.0 SUMMARY AND CONCLUSIONS

Partner conducted an Additional Investigation at the subject property to further evaluate the known impacts of chlorinated solvents to soil gas and/or soil as a consequence of a release or releases from former on-site operations. The scope of the Additional Investigation included the advancement of four borings to collect representative soil and/or soil gas samples. Twelve soil samples and 13 soil gas samples were analyzed for chlorinated solvents.

Subsurface lithology encountered in the upper 25 feet bgs consisted predominantly of dark brown, damp, fine to medium grained silty sand (SM). Groundwater was not encountered.

None of the analyzed soil samples contained chlorinated solvents at concentrations exceeding laboratory detection levels which were below applicable screening levels.

One of the analyzed soil gas samples (B7C-SG15) contained PCE at a concentration of 30 µg/m^3 at a depth of 15 feet bgs, which exceeds the residential screening level of 15 µg/m^3. However, the soil gas samples above and below the hotspot at 5 and 25 feet bgs were non-detect for PCE and the detected PCE in soil gas appears to be limited in extent. Based on the limited extent of PCE impacts in soil gas, adverse impacts to the future subject property occupants appears unlikely and a vapor barrier or additional engineering controls for the proposed residential development does not appear warranted. Furthermore, based on the lack of PCE detections in soil and the proposed grading in the vicinity of the PCE detections to a depth of 5 feet bgs, it is likely that PCE concentrations will decrease in the vicinity of the previous impacts. Based on the results of the Additional Investigation, there does not appear to be an environmental or human health concern for the proposed residential development.

Partner recommends no further investigation at this time; however, Partner recommends that a Soil Management Plan be utilized for site redevelopment to protect workers from potential subsurface impacts associated with the limited PCE impacts to soil gas.

TABLES

Table 1: Summary of Investigation Scope
32281 Riverside Drive
Lake Elsinore, California 92530
Partner Project Number 23-397410.3
April 19, 2023

Boring Identification	REC/Issue	Date Sampled	Location	Terminal Depth (feet bgs)	Matrix Sampled	Sampling Depths* (feet bgs)	Target Analytes
B1	Former on-site dry cleaning operations and historical agricultural use	3/16/2023	East portion of subject property	5	Soil Gas	5	Chlorinated Solvents
					Soil	**2**, 5	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead
B2		3/16/2023	Northeast portion of subject property	5	Soil Gas	5	Chlorinated Solvents
					Soil	2, **5**	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead
B3		3/16/2023	East-central portion of subject property	5	Soil Gas	5	Chlorinated Solvents
					Soil	**2**, 5	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead
B4		3/16/2023	North portion of subject property	5	Soil Gas	5	Chlorinated Solvents
					Soil	2, **5**	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead
B5		3/16/2023	West-central portion of subject property	5	Soil Gas	5	Chlorinated Solvents
					Soil	**2**, 5	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead
B6		3/16/2023	West portion of subject property	5	Soil Gas	5	Chlorinated Solvents
					Soil	2, **5**	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead
B7		3/16/2023	Southwest portion of subject property	5	Soil Gas	5	Chlorinated Solvents
					Soil	**2**, 5	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead
B8		3/16/2023	South portion of subject property	5	Soil Gas	5	Chlorinated Solvents
					Soil	**2**, 5	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead
B7A	Known Soil Gas Impacts	4/19/2023	North of B7	25	Soil Gas	5, 15, 25	Chlorinated Solvents
					Soil	5, 10, 15, 20, 25	Chlorinated Solvents
B7B		4/19/2023	Northwest of B7	25	Soil Gas	5, 15, 25	Chlorinated Solvents
					Soil	5, 10, 15, 20, 25	Chlorinated Solvents
B7C		4/19/2023	Southeast of B7	25	Soil Gas	5, 15, 25	Chlorinated Solvents
					Soil	5, 10, 15, 20, 25	Chlorinated Solvents
B7D		4/19/2023	Northeast of B7	25	Soil Gas	5, 15, 25	Chlorinated Solvents
					Soil	5, 10, 15, 20, 25	Chlorinated Solvents

Notes:

*Depths in **bold** analyzed for chlorinated solvents [specifically, tetrachloroethene (PCE); trichloroethene (TCE); 1,1-dichloroethene (DCE); trans-1,2-DCE; cis-1,2-DCE; and vinyl chloride] via United States Environmental Protection Agency (EPA) Method 8260B, for pesticides via EPA Method 8081A, for chlorinated herbicides via EPA Method 8151A, and for arsenic and lead via EPA Method 6010B. Underlined depths analyzed for chlorinated solvents via EPA Method TO-15 or 8260B.

REC = recognized environmental condition

bgs = below ground surface

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Table 2: Soil Gas Sample Chlorinated Solvent Laboratory Results
32281 Riverside Drive
Lake Elsinore, California 92530
Partner Project Number 23-397410.3
April 19, 2023

EPA Method	Chlorinated Solvents via 8260B		
Units	($\mu g/m^3$)		
Sample Identification	Date Sampled	PCE	Other Chlorinated Solvents
B1-SG5	3/16/2023	< 2	ND
B2-SG5	3/16/2023	< 2	ND
B3-SG5	3/16/2023	< 2	ND
B4-SG5	3/16/2023	< 2	ND
B5-SG5	3/16/2023	< 2	ND
B6-SG5	3/16/2023	< 2	ND
B7-SG5	3/16/2023	**26**	ND
B8-SG5	3/16/2023	< 2	ND
B7A-SG5	4/19/2023	< 13	ND
B7A-SG15	4/19/2023	< 13	ND
B7A-SG25	4/19/2023	< 13	ND
B7B-SG5	4/19/2023	< 13	ND
B7B-SG15	4/19/2023	< 13	ND
B7B-SG25	4/19/2023	< 13	ND
B7C-SG5	4/19/2023	< 13	ND
B7C-SG15	4/19/2023	**30**	ND
B7C-SG25	4/19/2023	< 13	ND
B7C-SG25-DUP	4/19/2023	< 13	ND
B7D-SG5	4/19/2023	< 13	ND
B7D-SG15	4/19/2023	< 13	ND
B7D-SG25	4/19/2023	< 13	ND
Residential SGSL^		**15**	**Varies**
Commercial/Industrial SGSL^		**67**	**Varies**

Notes:
^Calculated soil gas screening levels (SGSLs) for soil gas concentrations were derived by dividing the June 2020 (revised May 2022) Department of Toxic Substances Control (DTSC) or May 2023 United States Environmental Protection Agency (EPA) Regional Screening Level (RSL) for each compound using the more conservative 2015 attenuation factor of 0.03 regardless of depth. DTSC RSLs are provided in the June 2020 (revised May 2022) DTSC Human and Ecological Risk Office (HERO) Human Health Risk Assessment (HHRA) Note 3. Where DTSC RSLs were not available, EPA RSLs were utilized.
$\mu g/m^3$ = micrograms per cubic meter
PCE = tetrachloroethene
< = not detected above indicated laboratory Reporting Limit (RL)
ND = not detected above laboratory RLs
Values in **bold** exceed laboratory RLs
Yellow highlighted values exceed residential regulatory guideline

PARTNER

FIGURES



PARTNER

2154 Torrance Boulevard, Suite 200
Torrance, California 90501

Project Number: 23-397410.3

N

Legend

Subject Property

Site Vicinity Map

Figure	Prepared By	Date
1	S. Hanrahan	May 2023

32281 Riverside Drive
Lake Elsinore, California 92530



PARTNER

2154 Torrance Boulevard, Suite 200
Torrance, California 90501

Project Number: 23-397410.3

N

USGS *Alberhill, California*
Quadrangle Version: 1997

Topographic Map

Figure	Prepared By	Date
2	S. Hanrahan	May 2023

32281 Riverside Drive
Lake Elsinore, California 92530



PARTNER

2154 Torrance Boulevard, Suite 200
Torrance, California 90501

Project Number: 23-397410.3

N

Legend

Subject Property

Boring Location

Sample Location Map

Figure	Prepared By	Date
3	S. Hanrahan	May 2023

32281 Riverside Drive
Lake Elsinore, California 92530

APPENDIX A: BORING LOGS

Boring Identification:	B7A			Page 1 of 1	
Boring Location:	North of B7			PARTNER	
Site Address:	32281 Riverside Drive			2154 Torrance Boulevard	
	Lake Elsinore, California 92530			Torrance, California 90504	
Project Number:	23-397410.3			Date Started:	4/19/2023
Drill Rig Type:	Track mounted Geoprobe Model 6600			Date Completed:	4/19/2023
Sampling Equipment:	VOAs, SUMMAs			Depth to Groundwater (feet bgs):	NA
Borehole Diameter:	1.5"			Field Technician:	S. Hanrahan

Depth	Sample	PID	USCS	Description	Notes
1					
2					
3					
4					
5	B7A-5	0.0	SM	Brown, damp, fine to medium grained silty sand	Soil Gas Probe Installed
6					
7					
8					
9					
10	B7A-10	0.0	SM	Brown, damp, fine to medium to coarse grained silty sand	
11					
12					
13					
14					
15	B7A-15	0.0	SM	Light brown, damp, medium grained to coarse grained silty sands	Soil gas probe installed
16					
17					
18					
19					
20	B7A-20	0.0	SM	Light brown, damp, medium to coarse grained silty sands	
21					
22					
23					
24					
25	B7A-25	0.0	SM	Light brown, moist, fine to medium grained silty sands	Soil gas probe installed
26					Boring terminated at 25 feet bgs, backfilled with hydrated bentonite chips and capped with surrounding material

Boring Identification:	B7B			Page 1 of 1	
Boring Location:	Northwest of B7			PARTNER	
Site Address:	32281 Riverside Drive			2154 Torrance Boulevard	
	Lake Elsinore, California 92530			Torrance, California 90504	
Project Number:	23-397410.3			Date Started:	4/19/2023
Drill Rig Type:	Track mounted Geoprobe Model 6600			Date Completed:	4/19/2023
Sampling Equipment:	VOAs, SUMMAs			Depth to Groundwater (feet bgs):	NA
Borehole Diameter:	1.5"			Field Technician:	S. Hanrahan

Depth	Sample	PID	USCS	Description	Notes
1					
2					
3					
4					
5	B7B-5	0.0	SM	Brown, damp, fine to medium grained silty sand	Soil Gas Probe Installed
6					
7					
8					
9					
10	B7B-10	0.0	SM	Brown, damp, fine to medium to coarse grained silty sand	
11					
12					
13					
14					
15	B7B-15	0.0	SM	Light brown, damp, medium grained to coarse grained silty sands	Soil gas probe installed
16					
17					
18					
19					
20	B7B-20	0.0	SM	Light brown, damp, medium to coarse grained silty sands	
21					
22					
23					
24					
25	B7B-25	0.0	SM	Light brown, moist, fine to medium grained silty sands	Soil gas probe installed
26					Boring terminated at 25 feet bgs, backfilled with hydrated bentonite chips and capped with surrounding material

Boring Identification:	B7C			Page 1 of 1	
Boring Location:	Southeast of B7			PARTNER	
Site Address:	32281 Riverside Drive			2154 Torrance Boulevard	
	Lake Elsinore, California 92530			Torrance, California 90504	
Project Number:	23-397410.3			Date Started:	4/19/2023
Drill Rig Type:	Track mounted Geoprobe Model 6600			Date Completed:	4/19/2023
Sampling Equipment:	VOAs, SUMMAs			Depth to Groundwater (feet bgs):	NA
Borehole Diameter:	1.5"			Field Technician:	S. Hanrahan

Depth	Sample	PID	USCS	Description	Notes
1					
2					
3					
4					
5	B7C-5	0.0	SM	Brown, damp, fine to medium grained silty sand	Soil Gas Probe Installed
6					
7					
8					
9					
10	B7C-10	0.0	SM	Brown, damp, fine to medium to coarse grained silty sand	
11					
12					
13					
14					
15	B7C-15	0.0	SM	Light brown, damp, medium grained to coarse grained silty sands	Soil gas probe installed
16					
17					
18					
19					
20	B7C-20	0.0	SM	Light brown, damp, medium to coarse grained silty sands	
21					
22					
23					
24					
25	B7C-25	0.0	SM	Light brown, moist, fine to medium grained silty sands	Soil gas probe installed
26					Boring terminated at 25 feet bgs, backfilled with hydrated bentonite chips and capped with surrounding material

Boring Identification:	B7D	Page 1 of 1
Boring Location:	Northeast of B7	PARTNER
Site Address:	32281 Riverside Drive Lake Elsinore, California 92530	2154 Torrance Boulevard Torrance, California 90504
Project Number:	23-397410.3	Date Started: 4/19/2023
Drill Rig Type:	Track mounted Geoprobe Model 6600	Date Completed: 4/19/2023
Sampling Equipment:	VOAs, SUMMAs	Depth to Groundwater (feet bgs): NA
Borehole Diameter:	1.5"	Field Technician: S. Hanrahan

Depth	Sample	PID	USCS	Description	Notes
1					
2					
3					
4					
5	B7D-5	0.0	SM	Brown, damp, fine to medium grained silty sand	Soil Gas Probe Installed
6					
7					
8					
9					
10	B7D-10	0.0	SM	Brown, damp, fine to medium to coarse grained silty sand	
11					
12					
13					
14					
15	B7D-15	0.0	SM	Light brown, damp, medium grained to coarse grained silty sands	Soil gas probe installed
16					
17					
18					
19					
20	B7D-20	0.0	SM	Light brown, damp, medium to coarse grained silty sands	
21					
22					
23					
24					
25	B7D-25	0.0	SM	Light brown, moist, fine to medium grained silty sands	Soil gas probe installed
26					Boring terminated at 25 feet bgs, backfilled with hydrated bentonite chips and capped with surrounding material

APPENDIX B: LABORATORY ANALYTICAL REPORTS

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CASE NARRATIVE

Authorized Signature Name / Title (print)	Ken Zheng, President
Signature / Date	Ken Zheng, President 04/25/2023 14:42:49
Laboratory Job No. (Certificate of Analysis No.)	2304-00190
Project Name / No.	32281 RIVERSIDE DR. 397410.3
Dates Sampled (from/to)	04/19/23 To 04/19/23
Dates Received (from/to)	04/19/23 To 04/19/23
Dates Reported (from/to)	04/25/23 To 4/25/2023
Chains of Custody Received	Yes

Comments:

Subcontracting

Organic Analyses

No analyses sub-contracted

Sample Condition(s)

All samples intact

Positive Results (Organic Compounds)

None

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CERTIFICATE OF ANALYSIS

2304-00190

PARTNER ENGINEERING & SCIENCE
BRIAN GODBOIS
2154 TORRANCE BLVD.
SUITE 200
TORRANCE, CA 90501

Project: 32281 RIVERSIDE DR.

Date Reported	04/25/23
Date Received	04/19/23
Invoice No.	97952
Cust #	P122
Permit Number	
Customer P.O.	397410.3

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 001 **B7A-5**					Date & Time Sampled:		04/19/23 @	9:55
Sample Matrix: **Soil**								
[VOCs by GCMS]								
Closed System P&T VOC Soil	Complete			EPA 5035	1.0		04/20/23	IG
1,1-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
cis-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
trans-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Tetrachloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Trichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Vinyl Chloride	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
[VOC Surrogates]								
Dibromofluoromethane	130		%REC	EPA 8260B		70-130	04/20/23	IG
Toluene-D8	88		%REC	EPA 8260B		70-130	04/20/23	IG
Bromofluorobenzene	94		%REC	EPA 8260B		70-130	04/20/23	IG
Sample: 002 **B7A-10**					Date & Time Sampled:		04/19/23 @	10:00
Sample Matrix: **Soil**								
[VOCs by GCMS]								
Closed System P&T VOC Soil	Complete			EPA 5035	1.0		04/20/23	IG
1,1-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
cis-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
trans-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Tetrachloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Trichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Vinyl Chloride	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
[VOC Surrogates]								
Dibromofluoromethane	130		%REC	EPA 8260B		70-130	04/20/23	IG
Toluene-D8	94		%REC	EPA 8260B		70-130	04/20/23	IG
Bromofluorobenzene	99		%REC	EPA 8260B		70-130	04/20/23	IG
Sample: 003 **B7A-15**					Date & Time Sampled:		04/19/23 @	10:05
Sample Matrix: **Soil**								
[VOCs by GCMS]								
Closed System P&T VOC Soil	Complete			EPA 5035	1.0		04/20/23	IG
1,1-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG

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CERTIFICATE OF ANALYSIS

2304-00190

PARTNER ENGINEERING & SCIENCE
BRIAN GODBOIS
2154 TORRANCE BLVD.
SUITE 200
TORRANCE, CA 90501

Project: 32281 RIVERSIDE DR.

Date Reported	04/25/23
Date Received	04/19/23
Invoice No.	97952
Cust #	P122
Permit Number	
Customer P.O.	397410.3

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 003 **B7A-15**					Date & Time Sampled:		04/19/23 @	10:05
Sample Matrix: **Soil**								
.....continued								
cis-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
trans-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Tetrachloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Trichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Vinyl Chloride	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
[VOC Surrogates]								
Dibromofluoromethane	130		%REC	EPA 8260B		70-130	04/20/23	IG
Toluene-D8	93		%REC	EPA 8260B		70-130	04/20/23	IG
Bromofluorobenzene	100		%REC	EPA 8260B		70-130	04/20/23	IG
Sample: 004 **B7B-5**					Date & Time Sampled:		04/19/23 @	13:15
Sample Matrix: **Soil**								
[VOCs by GCMS]								
Closed System P&T VOC Soil	Complete			EPA 5035	1.0		04/20/23	IG
1,1-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
cis-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
trans-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Tetrachloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Trichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Vinyl Chloride	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
[VOC Surrogates]								
Dibromofluoromethane	130		%REC	EPA 8260B		70-130	04/20/23	IG
Toluene-D8	93		%REC	EPA 8260B		70-130	04/20/23	IG
Bromofluorobenzene	93		%REC	EPA 8260B		70-130	04/20/23	IG
Sample: 005 **B7B-10**					Date & Time Sampled:		04/19/23 @	13:20
Sample Matrix: **Soil**								
[VOCs by GCMS]								
Closed System P&T VOC Soil	Complete			EPA 5035	1.0		04/20/23	IG
1,1-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
cis-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
trans-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG

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PARTNER ENGINEERING & SCIENCE
BRIAN GODBOIS
2154 TORRANCE BLVD.
SUITE 200
TORRANCE, CA 90501

Project: 32281 RIVERSIDE DR.

Date Reported	04/25/23
Date Received	04/19/23
Invoice No.	97952
Cust #	P122
Permit Number	
Customer P.O.	397410.3

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 005 **B7B-10**					Date & Time Sampled:		04/19/23 @	13:20
Sample Matrix: **Soil**								
.....continued								
Tetrachloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Trichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Vinyl Chloride	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
[VOC Surrogates]								
Dibromofluoromethane	130		%REC	EPA 8260B		70-130	04/20/23	IG
Toluene-D8	91		%REC	EPA 8260B		70-130	04/20/23	IG
Bromofluorobenzene	100		%REC	EPA 8260B		70-130	04/20/23	IG
Sample: 006 **B7B-20**					Date & Time Sampled:		04/19/23 @	13:35
Sample Matrix: **Soil**								
[VOCs by GCMS]								
Closed System P&T VOC Soil	Complete			EPA 5035	1.0		04/20/23	IG
1,1-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
cis-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
trans-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Tetrachloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Trichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Vinyl Chloride	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
[VOC Surrogates]								
Dibromofluoromethane	120		%REC	EPA 8260B		70-130	04/20/23	IG
Toluene-D8	95		%REC	EPA 8260B		70-130	04/20/23	IG
Bromofluorobenzene	110		%REC	EPA 8260B		70-130	04/20/23	IG
Sample: 007 **B7C-5**					Date & Time Sampled:		04/19/23 @	14:00
Sample Matrix: **Soil**								
[VOCs by GCMS]								
Closed System P&T VOC Soil	Complete			EPA 5035	1.0		04/20/23	IG
1,1-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
cis-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
trans-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Tetrachloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Trichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG

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TORRANCE, CA 90501

Project: 32281 RIVERSIDE DR.

Date Reported	04/25/23
Date Received	04/19/23
Invoice No.	97952
Cust #	P122
Permit Number	
Customer P.O.	397410.3

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 007 **B7C-5**					Date & Time Sampled:		04/19/23 @	14:00
Sample Matrix: **Soil**								
.....continued								
Vinyl Chloride	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
[VOC Surrogates]								
Dibromofluoromethane	120		%REC	EPA 8260B		70-130	04/20/23	IG
Toluene-D8	93		%REC	EPA 8260B		70-130	04/20/23	IG
Bromofluorobenzene	100		%REC	EPA 8260B		70-130	04/20/23	IG
Sample: 008 **B7C-10**					Date & Time Sampled:		04/19/23 @	14:05
Sample Matrix: **Soil**								
[VOCs by GCMS]								
Closed System P&T VOC Soil	Complete			EPA 5035	1.0		04/20/23	IG
1,1-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
cis-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
trans-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Tetrachloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Trichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Vinyl Chloride	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
[VOC Surrogates]								
Dibromofluoromethane	130		%REC	EPA 8260B		70-130	04/20/23	IG
Toluene-D8	88		%REC	EPA 8260B		70-130	04/20/23	IG
Bromofluorobenzene	98		%REC	EPA 8260B		70-130	04/20/23	IG
Sample: 009 **B7C-15**					Date & Time Sampled:		04/19/23 @	14:30
Sample Matrix: **Soil**								
[VOCs by GCMS]								
Closed System P&T VOC Soil	Complete			EPA 5035	1.0		04/20/23	IG
1,1-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
cis-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
trans-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Tetrachloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Trichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Vinyl Chloride	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
[VOC Surrogates]								

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CERTIFICATE OF ANALYSIS

2304-00190

PARTNER ENGINEERING & SCIENCE
BRIAN GODBOIS
2154 TORRANCE BLVD.
SUITE 200
TORRANCE, CA 90501

Project: 32281 RIVERSIDE DR.

Date Reported	04/25/23
Date Received	04/19/23
Invoice No.	97952
Cust #	P122
Permit Number	
Customer P.O.	397410.3

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 009 **B7C-15**					Date & Time Sampled:		04/19/23 @	14:30
Sample Matrix: **Soil**								
.....continued								
Dibromofluoromethane	130		%REC	EPA 8260B		70-130	04/20/23	IG
Toluene-D8	93		%REC	EPA 8260B		70-130	04/20/23	IG
Bromofluorobenzene	110		%REC	EPA 8260B		70-130	04/20/23	IG
Sample: 010 **B7D-5**					Date & Time Sampled:		04/19/23 @	12:30
Sample Matrix: **Soil**								
[VOCs by GCMS]								
Closed System P&T VOC Soil	Complete			EPA 5035	1.0		04/20/23	IG
1,1-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
cis-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
trans-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Tetrachloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Trichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Vinyl Chloride	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
[VOC Surrogates]								
Dibromofluoromethane	130		%REC	EPA 8260B		70-130	04/20/23	IG
Toluene-D8	91		%REC	EPA 8260B		70-130	04/20/23	IG
Bromofluorobenzene	100		%REC	EPA 8260B		70-130	04/20/23	IG
Sample: 011 **B7D-15**					Date & Time Sampled:		04/19/23 @	12:40
Sample Matrix: **Soil**								
[VOCs by GCMS]								
Closed System P&T VOC Soil	Complete			EPA 5035	1.0		04/20/23	IG
1,1-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
cis-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
trans-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Tetrachloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Trichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Vinyl Chloride	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
[VOC Surrogates]								
Dibromofluoromethane	130		%REC	EPA 8260B		70-130	04/20/23	IG
Toluene-D8	91		%REC	EPA 8260B		70-130	04/20/23	IG

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CERTIFICATE OF ANALYSIS

2304-00190

PARTNER ENGINEERING & SCIENCE
BRIAN GODBOIS
2154 TORRANCE BLVD.
SUITE 200
TORRANCE, CA 90501

Project: 32281 RIVERSIDE DR.

Date Reported	04/25/23
Date Received	04/19/23
Invoice No.	97952
Cust #	P122
Permit Number	
Customer P.O.	397410.3

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 011 **B7D-15** Sample Matrix: **Soil**					Date & Time Sampled:		04/19/23 @	12:40
.....continued								
Bromofluorobenzene	110		%REC	EPA 8260B		70-130	04/20/23	IG
Sample: 012 **B7D-25** Sample Matrix: **Soil**					Date & Time Sampled:		04/19/23 @	12:50
[VOCs by GCMS]								
Closed System P&T VOC Soil	Complete			EPA 5035	1.0		04/20/23	IG
1,1-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
cis-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
trans-1,2-Dichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Tetrachloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Trichloroethene	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
Vinyl Chloride	<0.0050		mg/Kg	EPA 8260B	1.0	0.0050	04/20/23	IG
[VOC Surrogates]								
Dibromofluoromethane	130		%REC	EPA 8260B		70-130	04/20/23	IG
Toluene-D8	83		%REC	EPA 8260B		70-130	04/20/23	IG
Bromofluorobenzene	97		%REC	EPA 8260B		70-130	04/20/23	IG

Respectfully Submitted: Ken Zheng

Ken Zheng - Lab Director

QUALIFIERS

B = Detected in the associated Method Blank at a concentration above the routine RL.
B1 = BOD dilution water is over specifications . The reported result may be biased high.
D = Surrogate recoveries are not calculated due to sample dilution.
E = Estimated value; Value exceeds calibration level of instrument.
H = Analyte was prepared and/or analyzed outside of the analytical method holding time
I = Matrix Interference.
J = Analyte concentration detected between RL and MDL.
Q = One or more quality control criteria did not meet specifications. See Comments for further explanation.
S = Customer provided specification limit exceeded.

ABBREVIATIONS

DF = Dilution Factor
RL = Reporting Limit, Adjusted by DF
MDL = Method Detection Limit, Adjusted by DF
Qual = Qualifier
Tech = Technician

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QUALITY CONTROL DATA REPORT

PARTNER ENGINEERING & SCIENCE
TORRANCE, CA 90501

2304-00190

Date Reported	**04/25/2023**
Date Received	**04/19/2023**
Date Sampled	**04/19/2023**
Invoice No.	**97952**
Customer #	**P122**
Customer P.O.	**397410.3**

Project: 32281 RIVERSIDE DR.

Method # **EPA 8260B**

QC Reference # 109090 **Date Analyzed:** 4/20/2023 **Technician:** IG

Samples 001 002 003 004 005 006 007 008 009 010 011 012

Results

	LCS %REC	SPIKE %REC	SPIKE %DUP	SPIKE %RPD	BLKSRR%REC
1,1-Dichloroethene	97	82	91	9	
Bromofluorobenzene					100
Dibromofluoromethane					120
Toluene-D8					94
Trichloroethene	95	92	89	3	

Control Ranges

LCS %REC	SPIKE %REC	SPIKE %RPD	BLKSRR%REC
50 - 150	50 - 150	0 - 30	
			50 - 150
			50 - 150
			50 - 150
50 - 150	50 - 150	0 - 30	

No method blank results were above reporting limit

Respectfully Submitted: Ken Zheng

Ken Zheng - President

ARL

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Tel: 951-779-0310 / 909-781-6335 Fax: 951-779-0344
E-mail: office@arlaboratories.com

CHAIN OF CUSTODY

A & R Work Order #: 2304-190

Client Name: Partner ESI
E-mail: BGodbois + SHanrahan@Partneresi.com
Address: 2154 TORRANCE BLVD., STE. 200. TORRANCE. CA
Report Attention: BRIAN G
Phone # / Fax #: 206.204.4636
Sampled By: S. Hanrahan
Project No./ Name: 397410.3
Project Site: 32281 Riverside Dr

☑ Chilled ☒ Intact ☐ Seal

Turn Around Time Requested: ☐ Rush 8 12 24 48 Hours ☒ Normal

Lab # (Lab use)	Client Sample ID	Sample Collection Date	Sample Collection Time	Matrix Type	Sample Preserve	No., type* & size of container	EPA8260B (VOCs & Oxygenates)	EPA8260B(BTEX & Oxygenates)	8260B / 8015 (Gasoline)	8015 (Diesel)	EPA8081A (Organochlorine Pesticides)	EPA 8082 (PCBs)	EPA 8015M (Carbon Chain C4-C40)	EPA 6010B/7000 (CAM 17 Metals)	Micro: Plate Cnt., Coliform, E-Coli	8260B chlorinated Solvents	Remarks
1	BZA-5	4/19/23	0955	Soil	IC	3 Tom/sleeve										X	
2	BZA-10		1000													X	
3	BZA-15		1005													X	
	BZA-20		1010														HOLD
	BZA-25		1015														HOLD
4	BZB-5		1315													X	
5	BZB-10		1320													X	
	BZB-15		1325														HOLD
6	BZB-20		1335													X	
	BZB-25		1350														HOLD
7	BZC-5		1460													X	
8	BZC-10		1405													X	
9	BZC-15		1430													X	
	BZC-20		1435														HOLD
	BZC-25	"	1440	"	"	"											HOLD

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
[signature]	Partner	4/19/23	~~1435~~ 1495	[signature]	A&R	4/19/23	14:55
Relinquished By	Company	Date	Time	Received By	Company	Date	Time

Note: Samples are discarded 30 days after results are reported unless other arrangements are made.

Matrix Code: DW=Drinking Water; GW=Ground Water; WW=Waste Water; SD=Solid Waste; SL=Sludge; SS=Soil/Sediment; AR=Air; PP=Pure Product

Preservative Code: IC=Ice; HC=HCl; HN=HNO_3; SH=NaOH; ST=$Na_2S_2O_3$; HS=H_2SO_4

* Sample Container Types: T=Tedlar Air Bag; G=Glass Container; ST= Steel Tube; B= Brass Tube; P=Plastic Bottle; V=VOA Vial; E= EnCore

ARL

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Tel: 951-779-0310 / 909-781-6335 Fax: 951-779-0344
E-mail: office@arlaboratories.com

CHAIN OF CUSTODY

A & R Work Order #: 2304-190

Client Name
E-mail: See Page 1
Address
Report Attention | Phone # / Fax: # | Sampled By

☒ Chilled ☒ Intact ☐ Seal

Project No./ Name: 397410.3
Project Site

Analyses Requested

Turn Around Time Requested
☐ Rush 8 12 24 48 Hours
☒ Normal

Lab # (Lab use)	Client Sample ID	Sample Collection Date	Sample Collection Time	Matrix Type	Sample Preserve	No., type* & size of container	EPA8260B (VOCs & Oxygenates)	EPA8260B(BTEX & Oxygenates)	8260B / 8015 (Gasoline)	8015 (Diesel)	EPA8081A (Organochlorine Pesticides)	EPA 8082 (PCBs)	EPA 8015M (Carbon Chain C4-C40)	EPA 6010B/7000 (CAM 17 Metals)	Micro: Plate Cnt., Coliform, E-Coli	8260B chlorinated Solvents						Remarks
10	B7₀-5	4/19/23	1230	Soil	IC	3 VOA/sleeve										X						
	B7₀-10		1235																			HOLD
11	B7₀-15		1240													X						
	B7₀-20		1245																			HOLD
12	B7-0-25		1250													X						

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
[signature]	Partner	4/19/23	1455	[signature]	A&R	4/19/23	1455
Relinquished By	Company	Date	Time	Received By	Company	Date	Time

Note: Samples are discarded 30 days after results are reported unless other arrangements are made.

Matrix Code: DW=Drinking Water; GW=Ground Water; WW=Waste Water; SD=Solid Waste; SL=Sludge; SS=Soil/Sediment; AR=Air; PP=Pure Product

Preservative Code: IC=Ice; HC=HCl; HN=HNO_3; SH=NaOH; ST=$Na_2S_2O_3$; HS=H_2SO_4

* Sample Container Types: T=Tedlar Air Bag; G=Glass Container; ST= Steel Tube; B= Brass Tube; P=Plastic Bottle; V=VOA Vial; E= EnCore

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CASE NARRATIVE

Authorized Signature Name / Title (print)	Ken Zheng, President
Signature / Date	Ken Zheng, President 04/21/2023 17:00:13
Laboratory Job No. (Certificate of Analysis No.)	2304-00165
Project Name / No.	32281 Riverside Dr., Lake Elsinore, CA 92530 23-397410.2
Dates Sampled (from/to)	04/19/23 To 04/19/23
Dates Received (from/to)	04/19/23 To 04/19/23
Dates Reported (from/to)	04/21/23 To 4/21/2023
Chains of Custody Received	Yes

Comments:

Subcontracting

Organic Analyses

No analyses sub-contracted

Other Analyses

No analyses sub-contracted

Sample Condition(s)

All samples intact

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CERTIFICATE OF ANALYSIS

2304-00165

PARTNER ENGINEERING & SCIENCE
BRIAN GODBOIS
2154 TORRANCE BLVD.
SUITE 200
TORRANCE, CA 90501

Project: 32281 Riverside Dr., Lake Elsinore, CA 92530

Date Reported	04/21/23
Date Received	04/19/23
Invoice No.	97924
Cust #	P122
Permit Number	
Customer P.O.	23-397410.2

Sample: 001 **B7A-SG5** Date & Time Sampled: 04/19/23 @ 12:28
Sample Matrix: **Air**
Purge Volume Sampled: **3**

Analysis	Result	MDL	RL	Units	Result	MDL	RL	Units	Qual	DF	Method	Date	Tech
[VOCs by GCMS]													
1,1-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
cis-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
trans-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Tetrachloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Trichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Vinyl Chloride	<0.0003	0.000312	0.0065	µg/L	<0.3	0.3	7	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Vapor Sampling Tracer]													
Isopropanol (IPA)	<0.0650	0.065	0.13	µg/L	<65.0	65.0	130	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Surrogates]													
Dibromofluoromethane	126		70-130	%REC							EPA 8260B	04/19/23	IG
Toluene-D8	91		70-130	%REC							EPA 8260B	04/19/23	IG
Bromofluorobenzene	101		70-130	%REC							EPA 8260B	04/19/23	IG

Sample: 002 **B7A-SG15** Date & Time Sampled: 04/19/23 @ 12:56
Sample Matrix: **Air**
Purge Volume Sampled: **3**

Analysis	Result	MDL	RL	Units	Result	MDL	RL	Units	Qual	DF	Method	Date	Tech
[VOCs by GCMS]													
1,1-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
cis-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
trans-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Tetrachloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Trichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Vinyl Chloride	<0.0003	0.000312	0.0065	µg/L	<0.3	0.3	7	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Vapor Sampling Tracer]													
Isopropanol (IPA)	<0.0650	0.065	0.13	µg/L	<65.0	65.0	130	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Surrogates]													
Dibromofluoromethane	119		70-130	%REC							EPA 8260B	04/19/23	IG
Toluene-D8	70		70-130	%REC							EPA 8260B	04/19/23	IG
Bromofluorobenzene	90		70-130	%REC							EPA 8260B	04/19/23	IG

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CERTIFICATE OF ANALYSIS

2304-00165

PARTNER ENGINEERING & SCIENCE
BRIAN GODBOIS
2154 TORRANCE BLVD.
SUITE 200
TORRANCE, CA 90501

Project: 32281 Riverside Dr., Lake Elsinore, CA 92530

Date Reported	04/21/23
Date Received	04/19/23
Invoice No.	97924
Cust #	P122
Permit Number	
Customer P.O.	23-397410.2

Sample: 003 **B7A-SG25** Date & Time Sampled: 04/19/23 @ 13:25
Sample Matrix: **Air**
Purge Volume Sampled: **3**

Analysis	Result	MDL	RL	Units	Result	MDL	RL	Units	Qual	DF	Method	Date	Tech
[VOCs by GCMS]													
1,1-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
cis-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
trans-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Tetrachloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Trichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Vinyl Chloride	<0.0003	0.000312	0.0065	µg/L	<0.3	0.3	7	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Vapor Sampling Tracer]													
Isopropanol (IPA)	<0.0650	0.065	0.13	µg/L	<65.0	65.0	130	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Surrogates]													
Dibromofluoromethane	115		70-130	%REC							EPA 8260B	04/19/23	IG
Toluene-D8	94		70-130	%REC							EPA 8260B	04/19/23	IG
Bromofluorobenzene	95		70-130	%REC							EPA 8260B	04/19/23	IG

Sample: 004 **B7B-SG5** Date & Time Sampled: 04/19/23 @ 13:50
Sample Matrix: **Air**
Purge Volume Sampled: **3**

Analysis	Result	MDL	RL	Units	Result	MDL	RL	Units	Qual	DF	Method	Date	Tech
[VOCs by GCMS]													
1,1-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
cis-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
trans-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Tetrachloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Trichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Vinyl Chloride	<0.0003	0.000312	0.0065	µg/L	<0.3	0.3	7	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Vapor Sampling Tracer]													
Isopropanol (IPA)	<0.0650	0.065	0.13	µg/L	<65.0	65.0	130	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Surrogates]													
Dibromofluoromethane	114		70-130	%REC							EPA 8260B	04/19/23	IG
Toluene-D8	97		70-130	%REC							EPA 8260B	04/19/23	IG
Bromofluorobenzene	89		70-130	%REC							EPA 8260B	04/19/23	IG

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CERTIFICATE OF ANALYSIS

2304-00165

PARTNER ENGINEERING & SCIENCE
BRIAN GODBOIS
2154 TORRANCE BLVD.
SUITE 200
TORRANCE, CA 90501

Project: 32281 Riverside Dr., Lake Elsinore, CA 92530

Date Reported	04/21/23
Date Received	04/19/23
Invoice No.	97924
Cust #	P122
Permit Number	
Customer P.O.	23-397410.2

Analysis	Result	MDL	RL	Units	Result	MDL	RL	Units	Qual	DF	Method	Date	Tech
Sample: 005 **B7B-SG15**													
Sample Matrix: **Air**													
Purge Volume Sampled: **3**													
[VOCs by GCMS]													
1,1-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
cis-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
trans-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Tetrachloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Trichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Vinyl Chloride	<0.0003	0.000312	0.0065	µg/L	<0.3	0.3	7	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Vapor Sampling Tracer]													
Isopropanol (IPA)	<0.0650	0.065	0.13	µg/L	<65.0	65.0	130	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Surrogates]													
Dibromofluoromethane	118		70-130	%REC							EPA 8260B	04/19/23	IG
Toluene-D8	97		70-130	%REC							EPA 8260B	04/19/23	IG
Bromofluorobenzene	88		70-130	%REC							EPA 8260B	04/19/23	IG
Sample: 006 **B7B-SG25**													
Sample Matrix: **Air**													
Purge Volume Sampled: **3**													
[VOCs by GCMS]													
1,1-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
cis-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
trans-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Tetrachloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Trichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Vinyl Chloride	<0.0003	0.000312	0.0065	µg/L	<0.3	0.3	7	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Vapor Sampling Tracer]													
Isopropanol (IPA)	<0.0650	0.065	0.13	µg/L	<65.0	65.0	130	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Surrogates]													
Dibromofluoromethane	112		70-130	%REC							EPA 8260B	04/19/23	IG
Toluene-D8	96		70-130	%REC							EPA 8260B	04/19/23	IG
Bromofluorobenzene	89		70-130	%REC							EPA 8260B	04/19/23	IG

Date & Time Sampled: 04/19/23 @ 14:15

Date & Time Sampled: 04/19/23 @ 14:40

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CERTIFICATE OF ANALYSIS

2304-00165

PARTNER ENGINEERING & SCIENCE
BRIAN GODBOIS
2154 TORRANCE BLVD.
SUITE 200
TORRANCE, CA 90501

Project: 32281 Riverside Dr., Lake Elsinore, CA 92530

Date Reported	04/21/23
Date Received	04/19/23
Invoice No.	97924
Cust #	P122
Permit Number	
Customer P.O.	23-397410.2

Analysis	Result	MDL	RL	Units	Result	MDL	RL	Units	Qual	DF	Method	Date	Tech
Sample: 007 **B7C-SG5**													
Sample Matrix: **Air**													
Purge Volume Sampled: **3**													
[VOCs by GCMS]													
1,1-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
cis-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
trans-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Tetrachloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Trichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Vinyl Chloride	<0.0003	0.000312	0.0065	µg/L	<0.3	0.3	7	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Vapor Sampling Tracer]													
Isopropanol (IPA)	<0.0650	0.065	0.13	µg/L	<65.0	65.0	130	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Surrogates]													
Dibromofluoromethane	115		70-130	%REC							EPA 8260B	04/19/23	IG
Toluene-D8	96		70-130	%REC							EPA 8260B	04/19/23	IG
Bromofluorobenzene	89		70-130	%REC							EPA 8260B	04/19/23	IG
Sample: 008 **B7C-SG15**													
Sample Matrix: **Air**													
Purge Volume Sampled: **3**													
[VOCs by GCMS]													
1,1-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
cis-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
trans-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Tetrachloroethene	**0.030**	0.0065	0.013	µg/L	**30**	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Trichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Vinyl Chloride	<0.0003	0.000312	0.0065	µg/L	<0.3	0.3	7	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Vapor Sampling Tracer]													
Isopropanol (IPA)	<0.0650	0.065	0.13	µg/L	<65.0	65.0	130	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Surrogates]													
Dibromofluoromethane	115		70-130	%REC							EPA 8260B	04/19/23	IG
Toluene-D8	98		70-130	%REC							EPA 8260B	04/19/23	IG
Bromofluorobenzene	87		70-130	%REC							EPA 8260B	04/19/23	IG

Date & Time Sampled: 04/19/23 @ 15:05

Date & Time Sampled: 04/19/23 @ 15:33

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CERTIFICATE OF ANALYSIS

2304-00165

PARTNER ENGINEERING & SCIENCE
BRIAN GODBOIS
2154 TORRANCE BLVD.
SUITE 200
TORRANCE, CA 90501

Project: 32281 Riverside Dr., Lake Elsinore, CA 92530

Date Reported	04/21/23
Date Received	04/19/23
Invoice No.	97924
Cust #	P122
Permit Number	
Customer P.O.	23-397410.2

Analysis	Result	MDL	RL	Units	Result	MDL	RL	Units	Qual	DF	Method	Date	Tech
Sample: 009 **B7C-SG25**													
Sample Matrix: **Air**													
Purge Volume Sampled: **3**													
[VOCs by GCMS]													
1,1-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
cis-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
trans-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Tetrachloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Trichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Vinyl Chloride	<0.0003	0.000312	0.0065	µg/L	<0.3	0.3	7	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Vapor Sampling Tracer]													
Isopropanol (IPA)	<0.0650	0.065	0.13	µg/L	<65.0	65.0	130	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Surrogates]													
Dibromofluoromethane	116		70-130	%REC							EPA 8260B	04/19/23	IG
Toluene-D8	98		70-130	%REC							EPA 8260B	04/19/23	IG
Bromofluorobenzene	90		70-130	%REC							EPA 8260B	04/19/23	IG
Sample: 010 **B7C-SG25-DUP**													
Sample Matrix: **Air**													
Purge Volume Sampled: **3**													
[VOCs by GCMS]													
1,1-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
cis-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
trans-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Tetrachloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Trichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Vinyl Chloride	<0.0003	0.000312	0.0065	µg/L	<0.3	0.3	7	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Vapor Sampling Tracer]													
Isopropanol (IPA)	<0.0650	0.065	0.13	µg/L	<65.0	65.0	130	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Surrogates]													
Dibromofluoromethane	122		70-130	%REC							EPA 8260B	04/19/23	IG
Toluene-D8	100		70-130	%REC							EPA 8260B	04/19/23	IG
Bromofluorobenzene	90		70-130	%REC							EPA 8260B	04/19/23	IG

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CERTIFICATE OF ANALYSIS

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PARTNER ENGINEERING & SCIENCE
BRIAN GODBOIS
2154 TORRANCE BLVD.
SUITE 200
TORRANCE, CA 90501

Project: 32281 Riverside Dr., Lake Elsinore, CA 92530

Date Reported	04/21/23
Date Received	04/19/23
Invoice No.	97924
Cust #	P122
Permit Number	
Customer P.O.	23-397410.2

Analysis	Result	MDL	RL	Units	Result	MDL	RL	Units	Qual	DF	Method	Date	Tech
Sample: 011 **B7D-SG5**									Date & Time Sampled:		04/19/23 @ 17:06		
Sample Matrix: **Air**													
Purge Volume Sampled: **3**													
[VOCs by GCMS]													
1,1-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
cis-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
trans-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Tetrachloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Trichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Vinyl Chloride	<0.0003	0.000312	0.0065	µg/L	<0.3	0.3	7	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Vapor Sampling Tracer]													
Isopropanol (IPA)	<0.0650	0.065	0.13	µg/L	<65.0	65.0	130	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Surrogates]													
Dibromofluoromethane	125		70-130	%REC							EPA 8260B	04/19/23	IG
Toluene-D8	109		70-130	%REC							EPA 8260B	04/19/23	IG
Bromofluorobenzene	110		70-130	%REC							EPA 8260B	04/19/23	IG
Sample: 012 **B7D-SG15**									Date & Time Sampled:		04/19/23 @ 17:39		
Sample Matrix: **Air**													
Purge Volume Sampled: **3**													
[VOCs by GCMS]													
1,1-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
cis-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
trans-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Tetrachloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Trichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Vinyl Chloride	<0.0003	0.000312	0.0065	µg/L	<0.3	0.3	7	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Vapor Sampling Tracer]													
Isopropanol (IPA)	<0.0650	0.065	0.13	µg/L	<65.0	65.0	130	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Surrogates]													
Dibromofluoromethane	116		70-130	%REC							EPA 8260B	04/19/23	IG
Toluene-D8	99		70-130	%REC							EPA 8260B	04/19/23	IG
Bromofluorobenzene	92		70-130	%REC							EPA 8260B	04/19/23	IG

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TORRANCE, CA 90501

Project: 32281 Riverside Dr., Lake Elsinore, CA 92530

Date Reported	04/21/23
Date Received	04/19/23
Invoice No.	97924
Cust #	P122
Permit Number	
Customer P.O.	23-397410.2

Sample: 013 **B7D-SG25** Date & Time Sampled: 04/19/23 @ 18:16
Sample Matrix: **Air**
Purge Volume Sampled: **3**

Analysis	Result	MDL	RL	Units	Result	MDL	RL	Units	Qual	DF	Method	Date	Tech
[VOCs by GCMS]													
1,1-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
cis-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
trans-1,2-Dichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Tetrachloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Trichloroethene	<0.0065	0.0065	0.013	µg/L	<6.5	6.5	13	µg/m3		0.13	EPA 8260B	04/19/23	IG
Vinyl Chloride	<0.0003	0.000312	0.0065	µg/L	<0.3	0.3	7	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Vapor Sampling Tracer]													
Isopropanol (IPA)	<0.0650	0.065	0.13	µg/L	<65.0	65.0	130	µg/m3		0.13	EPA 8260B	04/19/23	IG
[VOC Surrogates]													
Dibromofluoromethane	116		70-130	%REC							EPA 8260B	04/19/23	IG
Toluene-D8	97		70-130	%REC							EPA 8260B	04/19/23	IG
Bromofluorobenzene	92		70-130	%REC							EPA 8260B	04/19/23	IG

Respectfully Submitted: Ken Zheng

Ken Zheng - President

QUALIFIERS

B = Detected in the associated Method Blank at a concentration above the routine RL
B1= BOD blank is over specifications . The reported result may be biased high.
D = Surrogate recoveries are not calculated due to sample dilution
E = Estimated value
H = Analyte was prepared and/or analyzed outside of the analytical method holding time
I = Matrix Interference
J = Analyte concentration detected between RL and MDL

ABBREVIATIONS

DF = Dilution Factor
RL = Reporting Limit
MDL = Method Detection Limit
Qual = Qualifier
Tech = Technician

The data and information on this, and other accompanying documents, represent only the sample(s) analyzed and is rendered upon condition that it is not to be reproduced, wholly or in part, for advertising or other purposes without approval from the laboratory.
USDA-EPA-NIOSH Testing Food Sanitation Consulting Chemical and Microbiological Analyses and Research

A & R Laboratories, Inc.

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QUALITY CONTROL DATA REPORT

PARTNER ENGINEERING & SCIENCE
TORRANCE, CA 90501

2304-00165

Date Reported	**04/21/2023**
Date Received	**04/19/2023**
Date Sampled	**04/19/2023**
Invoice No.	**97924**
Customer #	**P122**
Customer P.O.	**23-397410.2**

Project: 32281 Riverside Dr., Lake Elsinore, CA 92530

Method # **EPA 8260B**
QC Reference # 109025 **Date Analyzed:** 4/19/2023 **Technician:** IG
Samples 001 002 003 004 005 006 007 008 009 010 011 012 013

Results

	LCS %REC	LCS %DUP	LCS %RPD	BLKSRR%REC
1,1-Dichloroethene	83	75	15.2	
Bromofluorobenzene				89
Dibromofluoromethane				114
Toluene-D8				89
Trichloroethene	95	85	11.2	

Control Ranges

LCS %REC	LCS %RPD	BLKSRR%REC
70 - 130	0 - 25	
		50 - 150
		50 - 150
		50 - 150
70 - 130	0 - 25	

No method blank results were above reporting limit

Respectfully Submitted: Ken Zheng

Ken Zheng - President

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E-mail: office@arlaboratories.com

CHAIN OF CUSTODY

A & R Work Order #: 2304-165

Page 1 of 1

Client Name: Partner ENG. + SCIENCE
E-mail: BGodbois + SHanrahan@Partnereng.com
Address: 2154 TORRANCE BLVD., STE. 200, TORRANCE, CA
Report Attention: BRIAN G
Phone # 206-204-4636
Fax: #
Sampled By: IG
Project No./ Name:
Project Site: 32281 Riverside Drive, Lake Elsinore, CA 92530

☐ Chilled ☒ Intact ☐ Seal

Turn Around Time Requested: ☐ Rush 8 12 24 48 Hours ☐ Normal mobile

Lab # (Lab use)	Client Sample ID	Sample Collection Date	Sample Collection Time	Matrix Type	Sample Preserve	No., type* & size of container	EPA8260B (VOCs & Oxygenates) ← chlorinated solvents	EPA8260B(BTEX & Oxygenates)	8260B / 8015 (Gasoline)	8015 (Diesel)	EPA8081A (Organochlorine Pesticides)	EPA 8082 (PCBs)	EPA 8015M (Carbon Chain C4-C40)	EPA 6010B/7000 (CAM 17 Metals)	Micro: Plate Cnt., Coliform, E-Coli	Remarks
1	B7A-SG 5	4/19/23	12:28	AIR		250 mL G	X									3X purge volume
2	B7A-SG 15		12:56													
3	B7A-SG 25		13:25													
4	B7B-SG 5		13:50													
5	B7B-SG 15		14:15													
6	B7B-SG25		14:40													
7	B7C-SG 5		15:05													
8	B7C-SG 15		15:33													
9	B7C-SG25		16:01													
10	B7C-SG25-DUP		16:01													
11	B7D-SG 5		17:06													
12	B7D-SG 15		17:39													
13	B7D-SG25		18:16													

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
[signature]	Partner	4/19/23	1452	Isabella Dalla	A&R	4/19/23	18:45
Relinquished By	Company	Date	Time	Received By	Company	Date	Time

Note: Samples are discarded 30 days after results are reported unless other arrangements are made.

Matrix Code: DW=Drinking Water; GW=Ground Water; WW=Waste Water; SD=Solid Waste; SL=Sludge; SS=Soil/Sediment; AR=Air; PP=Pure Product

Preservative Code: IC=Ice; HC=HCl; HN=HNO_3; SH=NaOH; ST=$Na_2S_2O_3$; HS=H_2SO_4

* Sample Container Types: T=Tedlar Air Bag; G=Glass Container; ST= Steel Tube; B= Brass Tube; P=Plastic Bottle; V=VOA Vial; E= EnCore

PARTNER

PHASE II SUBSURFACE INVESTIGATION REPORT

32281 Riverside Drive
Lake Elsinore, California 92530

April 3, 2023
Partner Project Number: 23-397410.2

Prepared for:

WJK Development Co.
28392 Airoso Street
Rancho Mission Viejo, California 92694



Engineers who understand your business

PARTNER

April 3, 2023

Grant Keene
WJK Development Co.
28392 Airoso Street
Rancho Mission Viejo, California 92694

Subject: Phase II Subsurface Investigation Report
32281 Riverside Drive
Lake Elsinore, California 92530
Partner Project Number: 23-397410.2

Dear Mr. Keene:

Partner Engineering and Science, Inc. (Partner) is pleased to provide the results of the assessment performed at the above-referenced property. The following report describes the field activities, methods, and findings of the Phase II Subsurface Investigation conducted at the above-referenced property.

This assessment was performed consistent with acceptable industry standards. The independent conclusions represent Partner's best professional judgment based upon existing conditions and the information and data available to us during the course of this assignment.

We appreciate the opportunity to provide these services. If you have any questions concerning this report, or if we can assist you in any other matter, please contact Mike Cunneen at 310-439-3438.

Sincerely,

Partner Engineering and Science, Inc.

Sean Hanrahan
Project Scientist

Brian T. Godbois
Senior Project Manager

Mike Cunneen
National Client Manager

Joe Mangine, P.G.
Senior Project Manager

PROFESSIONAL GEOLOGIST JOSEPH C. MANGINE No. 8423 STATE OF CALIFORNIA

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B. Laboratory Analytical Reports

1.0 INTRODUCTION

1.1 Purpose

The purpose of the investigation was to evaluate the potential impact chlorinated solvents [specifically, tetrachloroethene (PCE); trichloroethene (TCE); 1,1-dichloroethene (DCE); trans-1,2-DCE; cis-1,2-DCE and vinyl chloride], pesticides, chlorinated herbicides, arsenic, and/or lead to soil gas and/or soil as a consequence of a release or releases from former on-site operations. WJK Development Co. provided project authorization of Partner Proposal Number P23-397410.2.

1.2 Limitations

This report presents a summary of work conducted by Partner. The work includes observations of site conditions encountered and the analytical results provided by an independent third-party laboratory of samples collected during the course of the project. The number and location of samples were selected to provide the required information. It cannot be assumed that the limited available data are representative of subsurface conditions in areas not sampled.

Conclusions and/or recommendations are based on the observations, laboratory analyses, and the governing regulations. Conclusions and/or recommendations beyond those stated and reported herein should not be inferred from this document.

Partner warrants that the environmental consulting services contained herein were accomplished in accordance with generally accepted practices in the environmental engineering, geology, and hydrogeology fields that existed at the time and location of work. No other warranties are implied or expressed.

1.3 User Reliance

Partner was engaged by WJK Development Co. (the Addressee), or their authorized representative, to perform this investigation. The engagement agreement specifically states the scope and purpose of the investigation, as well as the contractual obligations and limitations of both parties. This report and the information therein, are for the exclusive use of the Addressee. This report has no other purpose and may not be relied upon, or used, by any other person or entity without the written consent of Partner. Third parties that obtain this report, or the information therein, shall have no rights of recourse or recovery against Partner, its officers, employees, vendors, successors or assigns. Any such unauthorized user shall be responsible to protect, indemnify and hold Partner, the Addressee and their respective officers, employees, vendors, successors and assigns harmless from any and all claims, damages, losses, liabilities, expenses (including reasonable attorneys' fees) and costs attributable to such use. Unauthorized use of this report shall constitute acceptance of, and commitment to, these responsibilities, which shall be irrevocable and shall apply regardless of the cause of action or legal theory pled or asserted.

This report has been completed under specific Terms and Conditions relating to scope, relying parties, limitations of liability, indemnification, dispute resolution, and other factors relevant to any reliance on this report. Any parties relying on this report do so having accepted Partner's standard Terms and Conditions, a copy of which can be found at http://www.partneresi.com/terms-and-conditions.php.

2.0 SITE BACKGROUND

2.1 Site Description

The subject property consists of one parcel of land comprising 4.95 acres located on northwest side of Riverside Drive within a residential and commercial area of Riverside, Riverside County, California. The subject property is currently vacant land overgrown with natural vegetation with remnants of foundations associated with the former on-site structures located on the central and south portions of the property . In addition, the subject property is improved with chain link/concrete masonry fencing along the property perimeter.

The subject property is bound by residential properties to the northwest and southwest, residential properties to the northeast across the canal, commercial properties across Riverside Drive to the southeast. Refer to Figure 1 for a site vicinity map showing site features and surrounding properties.

2.2 Site History

Partner completed a *Phase I Environmental Site Assessment Report* (Phase I) for the subject property, dated February 21, 2023, on behalf of WJK Development Co. and RSI Equity. According to the Phase I, the subject property was formerly developed with agricultural land (row crops and/or orchards) from at least 1938 to 1954. By 1962, the site was redeveloped with a resort complete with 40 guest rooms, courtyard, swimming pool and shed-like structure on the southern corner of the property. This development was later razed in 2004; however, the foundation and paved surface parking lots were left in place.

The following recognized environmental conditions (RECs) were identified in the Phase I:

- According to the Phase I, the subject property was developed with a resort from *circa* 1962 until 2004. This development was formerly occupied by "The Grove" from at least 1984 to 1986 and "Lakeside Health Resort" from at least 1986 to 1992. Upon further investigation, an LA Times article dated May 22, 1988, reported the former on-site developments were utilized as a retreat for officials of the laundry workers union as early as the late-1950s. According to the reviewed city directories, dry cleaning services were conducted on site from at least 1974 to 1977. In addition to commercial laundry facilities for the cleaning of sheets and towels for guest rooms, resorts and/or hotels sometimes provide dry cleaning services as a hospitality amenity. Dry cleaning operations typically use chlorinated solvents, particularly tetrachloroethylene (PCE), during the dry cleaning process. These solvents, even when properly stored and disposed, can be released from these facilities in small, frequent releases through floor drains, cracked concrete, and sewer systems. Chlorinated solvents are highly mobile chemicals that can easily accumulate in soil and migrate to groundwater beneath a facility.

  No permits to operate dry cleaning machines were identified for the subject property address with the South Coast Air Quality Management District (SCAQMD). Furthermore, no regulatory database listings were identified for the possible dry cleaning services conducted on site including hazardous waste generation and removal of chlorinated solvents, releases or contamination events. Nevertheless, this facility operated prior to the promulgation of the Resource Conservation and Recovery Act (RCRA) in 1980 (with amendments for small quantity generators in 1984), the legislation that regulates the handling and disposal of hazardous materials and wastes. Furthermore, the SCAQMD was not founded

until 1976. As such, this facility operated virtually unregulated while at the subject property. Partner attempted to obtain any additional information regarding subsurface conditions at the subject property; however, none was available. Based on the type of chemicals associated with dry cleaning services and lack of regulatory oversight at the time of operation, the former on-site dry cleaning services represents a REC.

- The subject property was historically used for agricultural purposes. There is a potential that agricultural chemicals, such as pesticides, herbicides and fertilizers, were used on site, and that the subject property has been impacted by the use of such agricultural chemicals. Due to the planned redevelopment of the subject property for residential and/or commercial use, this potential is considered a REC.

2.3 Geology and Hydrogeology

Review of the United States Geological Survey (USGS) *Alberhill, California* Quadrangle topographic map indicates the subject property is situated approximately 1,267 feet above mean sea level, and the local topography is sloping gently to the southeast. Refer to Figure 2 for a topographic map of the site vicinity.

The subject property is situated within the Peninsular Ranges Geomorphic Province of the State of California. This province is characterized by a series of ranges that are separated by longitudinal valleys, trending northwest to southeast, subparallel to faults branching from the San Andreas Fault. The trend of topography is similar to the Coast Ranges, but the geology is more like the Sierra Nevada, with granitic rock intruding the older metamorphic rocks. The Peninsular Ranges extend into Lower California and are bound on the east by the Colorado Desert. The Los Angeles Basin and the island group (Santa Catalina, Santa Barbara, and the distinctly terraced San Clemente and San Nicolas islands), together with the surrounding continental shelf (cut by deep submarine fault troughs) are included in this province.

Based on borings advanced during this investigation, the underlying subsurface consists predominantly of dark brown, damp, fine to medium grained silty sand (SM) from the ground surface to approximately 5 feet below ground surface (bgs). Refer to Appendix A for boring logs from this investigation.

Groundwater was not encountered during this investigation and was not a part of the scope of work. According to the State Water Resources Control Board (SWRCB) Geotracker Website, a nearby Leaking Underground Storage Tank (LUST) at 16830 West Lakeshore Drive in the Lake Elsinore, which is approximately 1.1 miles north-northeast of the subject property and is overseen by the Santa Ana Regional Water Quality Control Board (SARWQCB) as Case Number 083300483T. The site maintains 18 groundwater monitoring wells in the area. The most recent monitoring data available on the GeoTracker Website was for March 22, 2010, with depth to groundwater ranging from 34.30 to 54.92 feet bgs with an inferred direction of flow to the southeast.

3.0 FIELD ACTIVITIES

The Phase II Subsurface Investigation scope included the advancement of eight borings (B1 through B8) to collect representative soil and/or soil gas samples. Refer to Table 1 for a summary of the borings, sampling schedule, and laboratory analyses for this investigation.

3.1 Preparatory Activities

Prior to the initiation of fieldwork, Partner completed the following activities.

3.1.1 Utility Clearance

Partner delineated the work area with white spray paint and notified Underground Service Alert (USA) to clear public utility lines as required by law at least two business days prior to drilling activities. USA issued ticket number B230660979-00B for the project.

In addition, Partner subcontracted with SAFESCANN on March 16, 2023, to clear boring locations of utilities. SAFESCANN systematically free-traversed each proposed boring location with a Radiodetection model RD8000 electromagnetic induction (EM) equipment unit with line-tracing capabilities, and a GSSI model SIR-4000 ground penetrating radar (GPR) unit. The data was interpreted in real time for evidence of utility lines and/or other subsurface features of potential concern. Based on the findings of the GPR survey, no subsurface utilities were identified within the proposed boring locations.

3.1.2 Health and Safety Plan

Partner prepared a site-specific Health and Safety Plan, which was reviewed with on-site personnel involved in the project prior to the commencement of drilling activities.

3.2 Drilling Equipment

On March 16, 2023, Partner subcontracted with Kehoe Testing & Engineering (Kehoe) (State of California Water Well Drilling Contractor License Number 786163) to provide and operate drilling equipment. Kehoe, under the direction of Partner, advanced borings B1 through B8 with a truck-mounted Geoprobe Model 7800 direct push rig. Sampling equipment was decontaminated between sample intervals and boring locations to prevent cross-contamination.

3.3 Sample Locations

Borings B1 through B8 were advanced in the east, northeast, east-central, north, west-central, west, southwest, and south portions of the subject property, respectively.

Refer to Figure 3 for a map indicating sample locations.

3.4 Soil Sampling

Borings B1, B2, and B4 were overlain by asphalt, which was penetrated using a punch bit attachment advanced by the direct-push drill rig. Borings B3 and B5 through B8 were located in unimproved areas. Borings B1 through B8 were advanced to a terminal depth of 5 feet bgs.

Soil samples were collected using a 2-foot long by 1.5-inch diameter sampler with a 2-foot long acetate liner and sampling point. The sampler was advanced by the direct-push drill rig using 4-foot by 1.25-inch

diameter hollow rods with the inner rods in place. At approximately 1 foot above the desired sampling depth, an inner rod was removed and the sampler was advanced to the desired sampling depth to allow undisturbed soil to enter the sampling liner. The sampler was retrieved from the subsurface and the soil-filled liner was removed.

Each acetate liner was cut using a pipe-cutter. Samples were collected from the lower half of the liner using a disposable plastic syringe and retained in two sodium bisulfate-preserved and one methanol-preserved volatile organics analysis (VOA) vials in accordance with United States Environmental Protection Agency (EPA) Method 5035 sampling protocol. The remainder of the lower half of the liner was capped on either end with Teflon tape and plastic caps. The capped liners and VOA vials were labeled for identification and stored in an iced cooler. The soil in the upper half of the liner was visually inspected for discoloration, monitored for odors, classified in accordance with the Unified Soil Classification System, placed in a sealable plastic bag, and field-screened with a photoionization detector (PID). None of the samples exhibited discoloration or an odor and none of the PID readings suggested the presence of elevated volatile organics concentrations.

Soil samples were collected from each boring at 2 and 5 feet bgs.

3.5 Soil Gas Sampling

Soil Gas Probe Construction

Soil gas probes screened at 5 feet bgs were constructed within the boreholes upon completion of soil sampling. Boreholes were backfilled with dry, granular bentonite to approximately 6 inches below the desired sampling depth. A new section of ¼-inch diameter Nylaflow tubing with a new ¼-inch diameter polypropylene filter at the terminal end was inserted into the borehole to the desired sampling depth. One-inch diameter polyvinyl chloride (PVC) casing was used as a guide for the tubing to ensure that the desired sampling depth was achieved. Sand was poured into the boring annulus to form an approximately 1-foot long sand pack around the polypropylene filter, at which time the PVC piping was withdrawn. Approximately 1 foot of dry, granular bentonite was placed atop the sand pack and the remainder of the borehole was backfilled with hydrated bentonite to the ground surface to form a seal. The sampling end of the tubing was fitted with a valve and the probe was labeled for identification.

Soil Gas Sampling Methodology

Soil gas samples were collected in general accordance with the July 2015 Department of Toxic Substances Control (DTSC) and Los Angeles Regional Water Quality Control Board (LARWQCB) "Advisory – Active Soil Gas Investigations."

Soil gas samples were collected using 1-liter, stainless-steel, cylindrical SUMMA canisters. The sampling containers were provided by Enthalpy Analytical (Enthalpy) a state-certified laboratory (California Department of Public Health Environmental Laboratory Accreditation Program certificate number 1338) in Orange, California, which subjected each canister to a rigorous cleaning process using a combination of dilution, heat, and high vacuum. After cleaning, the canisters were batch certified to be free of target contaminants to a specified reporting limit via gas chromatography/mass spectroscopy prior to delivery.

Partner received the SUMMA canisters evacuated to approximately minus 30 inches of mercury. The SUMMA canisters were fitted with stainless-steel flow controllers, which Enthalpy calibrated to maintain constant flow (approximately 0.1 liter per minute) for approximately 5 to 10 minutes of sampling time.

Each probe was allowed to equilibrate for a minimum of two hours after installation prior to sampling. After equilibration, the sample tubing and sampler screen were purged of ambient air using plastic syringe. A tracer gas 1,1-diflouroethane (1,1-DFA) was placed around each probe at the ground surface while sampling to detect ambient air intrusion. The tracer gas was not detected in any sample, indicating that the integrity of the bentonite seal was maintained. Once the sampling tubing was purged of ambient air, the sampling end of the tubing was fitted to the sampling canister and the port valve was opened, causing air to enter the sample container due to the pressure differential. Partner closed the valves after the canister was evacuated to approximately minus 1 to 2 inches of mercury, with pertinent data (e.g., time, canister vacuum) recorded at the start and end of sampling.

Soil gas samples were collected from each boring at 5 feet bgs.

3.6 Post-Sampling Activities

Probes were removed from the subsurface and the boreholes were backfilled with hydrated bentonite chips following sampling activities. Boreholes advanced in improved areas were capped with asphalt patch to match existing ground cover after being backfilled.

No significant amounts of derived wastes were generated during this investigation.

4.0 DATA ANALYSIS

4.1 Laboratory Analysis

Partner collected 16 soil samples and eight soil gas samples on March 16, 2023, which were transported in an iced cooler (soil samples) or at ambient temperature (soil gas samples) under chain-of-custody protocol to Enthalpy for analysis. Based on field-screening results, visual observations, and/or olfactory observations, one soil sample per boring (eight soil samples total) was analyzed for chlorinated solvents via EPA Method 8260B, for pesticides via EPA Method 8081A, for chlorinated herbicides via EPA Method 8051A, and for arsenic and lead via EPA Method 6010B. Each soil gas sample (eight soil gas samples total) was analyzed for chlorinated solvents via EPA Method TO-15. The remaining soil samples were placed on hold at the laboratory.

Laboratory analytical results are included in Appendix B and discussed below.

4.2 Regulatory Agency Comparison Criteria

Department of Toxic Substances Control Regional Screening Levels

Regional Screening Levels (RSLs) are generic, risk-based chemical concentrations developed by the EPA for use in initial screening-level evaluations. RSLs combine human health toxicity values with standard exposure factors to estimate contaminant concentrations that are considered to be health protective of human exposures over a lifetime through direct-contact exposure pathways (e.g., via inhalation and/or ingestion of and/or dermal contact with impacted soil and/or indoor air). RSLs are not legally enforceable standards, but rather are considered guidelines to evaluate if potential risks associated with encountered chemical impacts may warrant further evaluation.

The DTSC Office of Human and Ecological Risk (HERO) developed California-Modified RSLs based on a review of 1) RSL concentrations, and 2) recent toxicity values.

While soil gas detections are not immediately comparable to the indoor air quality guidelines within the RSLs, the DTSC issued a recommended default attenuation factor of 0.03 for sub-slab soil gas and near-source exterior soil gas in the June 2015 document *Office of Solid Waste and Emergency Response (OSWER) Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*. With the subsurface contaminant concentrations and default attenuation factors, the associated contaminant concentrations in soil gas can be estimated as Calculated Residential and Commercial/Industrial Soil Gas Screening Levels (SGSLs).

4.3 Soil Sample Data Analysis

None of the analyzed soil samples contained detectable concentrations of chlorinated solvents or chlorinated herbicides above laboratory reporting limits (RLs) and laboratory RLs were below the applicable RSLs.

Arsenic and lead were detected in each of the analyzed soil samples at concentrations above the laboratory RLs.

Arsenic was detected in each of the analyzed soil samples at concentrations exceeding the residential and commercial/industrial RSLs. It should be noted that the residential and commercial/industrial RSLs are well

below typical background concentration for typical California soils (12 milligrams per kilogram) as based on the DTSC March 2008 report *Determination of a Southern California Regional Background Arsenic Concentration in Soil*. None of the detected concentrations of arsenic exceeded the typical background concentration and the detected impacts are expected to be naturally occurring. The detected concentrations of lead were below applicable RSLs and/or background concentrations.

4,4'-Dichlorodiphenyldichloroethylene (DDE) and 4,4'-dichlorodiphenyltrichloroethance (DDT) were detected in one or more of the analyzed soil samples at concentrations above the laboratory RLs but below the applicable RSLs. None of the remaining pesticides were detected in the analyzed soil samples at concentrations above laboratory RLs, and the RLs were below applicable RSLs.

Refer to Tables 2 and 3 for a summary of the soil sample arsenic and lead, and pesticides laboratory analysis results, respectively.

4.4 Soil Gas Sample Data Analysis

PCE was detected in soil gas sample B7-SG5 at a concentration of 26 micrograms per cubic meter (µg/m³), exceeding the residential SGSL of 15.3 µg/m³ but below the commercial/industrial SGSL of 67 µg/m³. No other chlorinated solvents were detected in analyzed soil gas samples at concentrations above the laboratory RLs and laboratory RLs were below the SGSLs.

Refer to Table 4 for a summary of the soil gas sample chlorinated solvents laboratory analysis results.

4.5 Discussion

None of the analyzed soil samples contained chlorinated solvents, pesticides, chlorinated herbicides, arsenic, and/or lead at concentrations exceeding regulatory guidelines and/or background concentrations.

PCE was detected in one soil gas sample (B7-SG5) at a concentration exceeding the residential SGSL but below the commercial/industrial SGSL. None of the remaining chlorinated solvents were detected in the analyzed soil gas samples at concentrations above laboratory RLs and the RLs were below applicable SGSLs.

Based on the Subsurface Investigation, subsurface soil gas appears to be impacted by PCE in the southwest portion of the subject property near B7.

5.0 SUMMARY AND CONCLUSIONS

Partner conducted a Phase II Subsurface Investigation at the subject property to evaluate the potential impact chlorinated solvents, pesticides, chlorinated herbicides, arsenic, and/or lead to soil gas and/or soil as a consequence of a release or releases from former on-site operations. The scope of the Phase II Subsurface Investigation included the advancement of eight borings. Eight soil samples were analyzed for chlorinated solvents, pesticides, chlorinated herbicides, arsenic, and lead; and eight soil gas samples were analyzed for chlorinated solvents.

Subsurface lithology encountered in the upper 5 feet bgs consisted of silty sand (SM).

None of the analyzed soil samples contained chlorinated solvents, pesticides, chlorinated herbicides, arsenic, and/or lead at concentrations exceeding regulatory guidelines and/or background concentrations.

PCE was detected in one soil gas sample (B7-SG5) at a concentration exceeding the residential SGSL but below the commercial/industrial SGSL.

Based on the analytical data, subsurface soil gas appears to be impacted by PCE in the southwest portion of the subject property near B7. Partner recommends additional investigation once site grading for the proposed residential development has been completed to evaluate the potential vapor intrusion concern to future subject property occupants. Additionally, Partner recommends that a Soil Management Plan be utilized for site redevelopment to protect workers from potential subsurface impacts associated with the PCE impacts to soil gas.

TABLES

Table 1: Summary of Investigation Scope
32281 Riverside Drive
Lake Elsinore, California 92530
Partner Project Number 23-397410.2
March 16, 2023

Boring Identification	REC/Issue	Location	Terminal Depth (feet bgs)	Matrix Sampled	Sampling Depths* (feet bgs)	Target Analytes
B1	Former on-site dry cleaning operations and historical agricultural use	East portion of subject property	5	Soil Gas	5	Chlorinated Solvents
				Soil	**2**, 5	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead
B2		Northeast portion of subject property	5	Soil Gas	5	Chlorinated Solvents
				Soil	2, **5**	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead
B3		East-central portion of subject property	5	Soil Gas	5	Chlorinated Solvents
				Soil	**2**, 5	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead
B4		North portion of subject property	5	Soil Gas	5	Chlorinated Solvents
				Soil	2, **5**	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead
B5		West-central portion of subject property	5	Soil Gas	5	Chlorinated Solvents
				Soil	**2**, 5	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead
B6		West portion of subject property	5	Soil Gas	5	Chlorinated Solvents
				Soil	2, **5**	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead
B7		Southwest portion of subject property	5	Soil Gas	5	Chlorinated Solvents
				Soil	**2**, 5	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead
B8		South portion of subject property	5	Soil Gas	5	Chlorinated Solvents
				Soil	**2**, 5	Chlorinated Solvents, Pesticides, Chlorinated Herbicides, Arsenic, Lead

Notes:

*Depths in **bold** analyzed for chlorinated solvents [specifically, tetrachloroethene (PCE); trichloroethene (TCE); 1,1-dichloroethene (DCE); trans-1,2-DCE; cis-1,2-DCE; and vinyl chloride] via United States Environmental Protection Agency (EPA) Method 8260B, for pesticides via EPA Method 8081A, for chlorinated herbicides via EPA Method 8151A, and for arsenic and lead via EPA Method 6010B. Underlined depths analyzed for chlorinated solvents via EPA Method TO-15.

REC = recognized environmental condition

bgs = below ground surface

PARTNER

Table 2: Soil Sample Arsenic and Lead Laboratory Results (mg/kg)
32281 Riverside Drive
Lake Elsinore, California 92530
Partner Project Number 23-397410.2
March 16, 2023

EPA Method	Arsenic and Lead via 6010B										
Element	Residential Soil RSL	Commercial / Industrial Soil RSL	Background Concentrations*	B1-2	B2-5	B3-2	B4-5	B5-2	B6-5	B7-2	B8-2
Arsenic (As)	**0.11**	**0.36**	**12****	**9.1**	**9.1**	**12**	**12**	**9.9**	**10**	**7.8**	**6.2**
Lead (Pb)	**80**	**500**	**10.1 - 37.7**	**2.7**	**3.5**	**1.6**	**3.1**	**3.3**	**3.0**	**7.4**	**1.8**

Notes:

*From Kearney Foundation of Soil Science March 1996 report *Background Concentrations of Trace and Major Elements in California Soils.* Background concentrations of metals are considered to be within one standard deviation from the mean metal concentrations determined by the study. Concentrations indicated in milligrams per kilogram (mg/kg).

**From Department of Toxic Substance Control (DTSC) March 2008 report *Determination of a Southern California Regional Background Arsenic Concentration in Soil* .

RSL = June 2020 (revised May 2022) DTSC Regional Screening Levels (RSLs). If DTSC RSLs do not exist, November 2022 United States Environmental Protection Agency (EPA) RSLs were utilized.

Values in **bold** exceed laboratory RLs

Orange highlighted values exceed residential and commercial/industrial regulatory guidelines

PARTNER

Table 3: Pesticides Laboratory Results
32281 Riverside Drive
Lake Elsinore, California 92530
Partner Project Number 23-397410.2
March 16, 2023

EPA Method	Pesticides via 8081A									
Units	(µg/kg)									
Analyte	Residential Soil RSL	Commercial/ Industrial Soil RSL	B1-2	B2-5	B3-2	B4-5	B5-2	B6-5	B7-2	B8-2
4,4'-DDE	**2,000**	**9,300**	<5.0	**11**	<5.0	<5.0	<5.0	<5.0	**63**	<5.0
4,4'-DDT	**1,900**	**8,500**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**17 #**	<5.0
Other Pesticides	**Varies**	**Varies**	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

EPA = United States Environmental Protection Agency

µg/kg = micrograms per kilogram

RSL = June 2020 (revised May 2022) Department of Toxic Substances Control (DTSC) Regional Screening Levels (RSLs). If DTSC RSLs do not exist, November 2022 EPA RSLs were utilized

DDE = Dichlorodiphenyldichloroethylene

DDT = Dichlorodiphenyltrichloroethane

< = not detected above indicated laboratory Reporting Limit (RL)

= CCV drift outside limits; average CCV drift within limits per method requirements

ND = not detected above laboratory RLs

Values in **bold** exceed laboratory RLs

PARTNER

Table 4: Soil Gas Sample Chlorinated Solvents Laboratory Results
32281 Riverside Drive
Lake Elsinore, California 92530
Partner Project Number 23-397410.2
March 16, 2023

EPA Method	Chlorinated Solvents via TO-15									
Units	($\mu g/m^3$)									
Analyte	Residential SGSL^	Commercial/ Industrial SGSL^	B1-SG5	B2-SG5	B3-SG5	B4-SG5	B5-SG5	B6-SG5	B7-SG5	B8-SG5
PCE	**15**	**67**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	**26**	<2.0
Other Chlorinated Solvents	**Varies**	**Varies**	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

^Calculated soil gas screening levels (SGSLs) for soil gas concentrations were derived by dividing the June 2020 (revised May 2022) Department of Toxic Substances Control (DTSC) or November 2022 United States Environmental Protection Agency (EPA) Regional Screening Level (RSL) for each compound using the more conservative 2015 attenuation factor of 0.03 regardless of depth. DTSC RSLs are provided in the June 2020 (revised May 2022) DTSC Human and Ecological Risk Office (HERO) Human Health Risk Assessment (HHRA) Note 3. Where DTSC RSLs were not available, EPA RSLs were utilized.

EPA = United States Environmental Protection Agency

$\mu g/m^3$ = micrograms per cubic meter

PCE = tetrachloroethene

< = not detected above indicated laboratory Reporting Limit (RL)

ND = not detected above laboratory RLs

Values in **bold** exceed laboratory RLs

Yellow highlighted value exceeds residential regulatory guideline

PARTNER

FIGURES

PARTNER



PARTNER
2154 Torrance Boulevard, Suite 200
Torrance, California 90501

Project Number: 23-397410.2

N

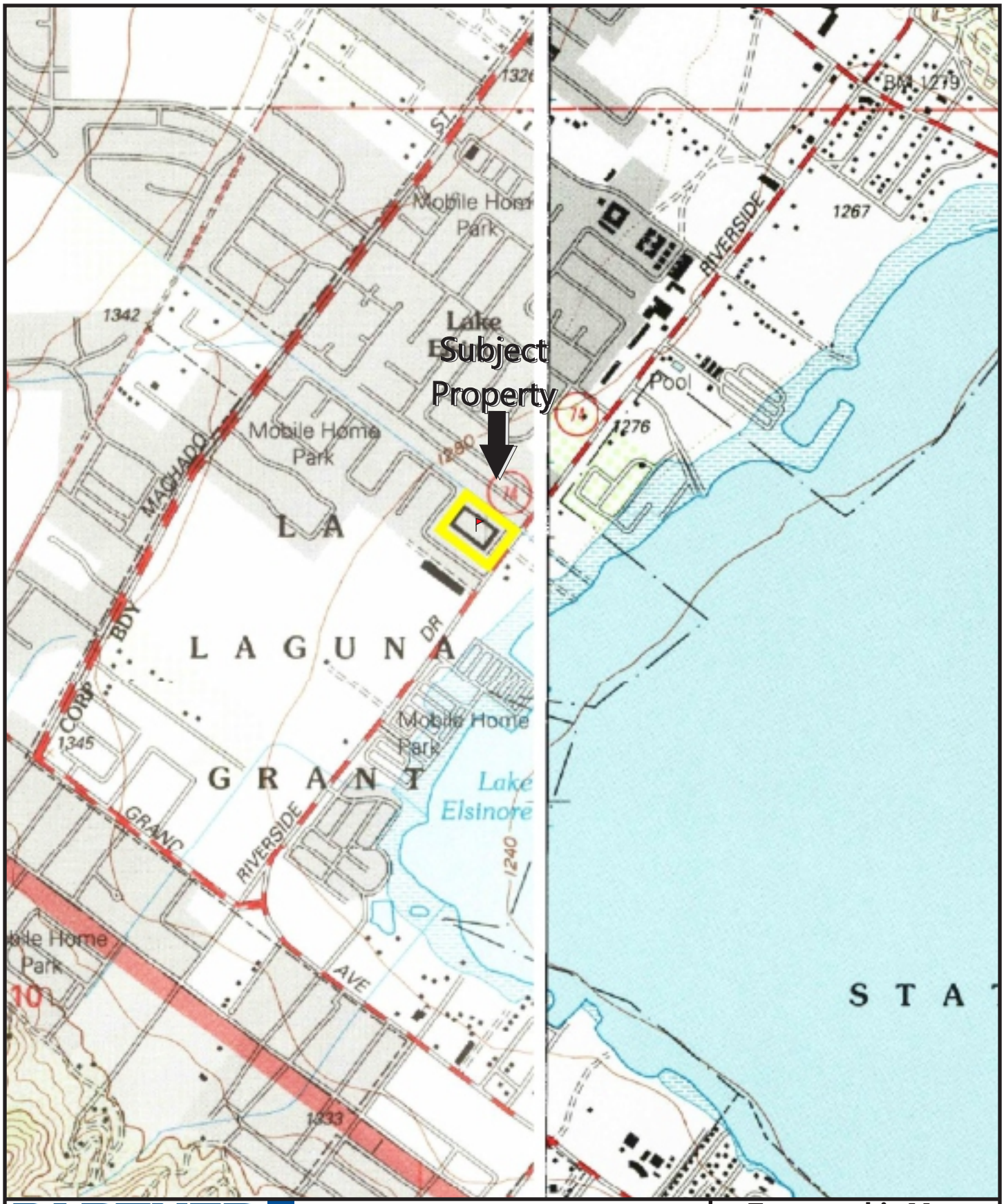
Legend

Subject Property

Site Vicinity Map

Figure	Prepared By	Date
1	S. Hanrahan	April 2023

32281 Riverside Drive
Lake Elsinore, California 92530



PARTNER
2154 Torrance Boulevard, Suite 200
Torrance, California 90501
Project Number: 23-397410.2

N

USGS *Alberhill, California*
Quadrangle Version: 1997

Topographic Map

Figure	Prepared By	Date
2	S. Hanrahan	April 2023

32281 Riverside Drive
Lake Elsinore, California 92530



PARTNER

2154 Torrance Boulevard, Suite 200
Torrance, California 90501

Project Number: 23-397410.2

N

Legend

Subject Property

Boring Location

Sample Location Map

Figure	Prepared By	Date
3	S. Hanrahan	April 2023

32281 Riverside Drive
Lake Elsinore, California 92530

APPENDIX A: BORING LOGS

PARTNER

Boring Identification:	B1		Page 1 of 1
Boring Location:	East portion of subject property	PARTNER	
Site Address:	32281 Riverside Drive	2154 Torrance Boulevard	
	Lake Elsinore, California 92530	Torrance, California 90504	
Project Number:	23-397410.2	Date Started:	3/16/2023
Drill Rig Type:	Truck Mounted Geoprobe Model 5700	Date Completed:	3/16/2023
Sampling Equipment:	VOAs, SUMMAs	Depth to Groundwater (feet bgs):	NA
Borehole Diameter:	1.5"	Field Technician:	S. Hanrahan

Depth	Sample	PID	USCS	Description	Notes
1					Asphalt at surface
2	B1-2	0.0	SM	Dark brown, damp, fine to medium grained silty sand	
3					
4					
5	B1-5	0.0	SM	Dark brown, damp, fine to medium grained silty sand	Soil gas probe installed
6					Boring terminated at 5 feet bgs, backfilled with hydrated bentonite chips and capped with asphalt upon completion
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Boring Identification:	B2			Page 1 of 1	
Boring Location:	Northeast portion of subject property			PARTNER	
Site Address:	32281 Riverside Drive Lake Elsinore, California 92530			2154 Torrance Boulevard Torrance, California 90504	
Project Number:	23-397410.2			Date Started:	3/16/2023
Drill Rig Type:	Truck Mounted Geoprobe Model 5700			Date Completed:	3/16/2023
Sampling Equipment:	VOAs, SUMMAs			Depth to Groundwater (feet bgs):	NA
Borehole Diameter:	1.5"			Field Technician:	S. Hanrahan

Depth	Sample	PID	USCS	Description	Notes
1					Asphalt at surface
2	B2-2	0.0	SM	Dark brown, damp, fine to medium grained silty sand	
3					
4					
5	B2-5	0.0	SM	Dark brown, damp, fine to medium grained silty sand	Soil gas probe installed
6					Boring terminated at 5 feet bgs, backfilled with hydrated bentonite chips and capped with asphalt upon completion
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Boring Identification:	B3		Page 1 of 1
Boring Location:	East-central portion of subject property	PARTNER	
Site Address:	32281 Riverside Drive Lake Elsinore, California 92530	2154 Torrance Boulevard Torrance, California 90504	
Project Number:	23-397410.2	Date Started:	3/16/2023
Drill Rig Type:	Truck Mounted Geoprobe Model 5700	Date Completed:	3/16/2023
Sampling Equipment:	VOAs, SUMMAs	Depth to Groundwater (feet bgs):	NA
Borehole Diameter:	1.5"	Field Technician:	S. Hanrahan

Depth	Sample	PID	USCS	Description	Notes
1					Unpaved at surface
2	B3-2	0.0	SM	Dark brown, damp, fine to medium grained silty sand	
3					
4					
5	B3-5	0.0	SM	Dark brown, damp, fine to medium grained silty sand	Soil gas probe installed
6					Boring terminated at 5 feet bgs, backfilled with hydrated bentonite chips and capped with surrounding material upon completion
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Boring Identification:	B4	Page 1 of 1	
Boring Location:	North portion of subject property	PARTNER	
Site Address:	32281 Riverside Drive	2154 Torrance Boulevard	
	Lake Elsinore, California 92530	Torrance, California 90504	
Project Number:	23-397410.2	Date Started:	3/16/2023
Drill Rig Type:	Truck Mounted Geoprobe Model 5700	Date Completed:	3/16/2023
Sampling Equipment:	VOAs, SUMMAs	Depth to Groundwater (feet bgs):	NA
Borehole Diameter:	1.5"	Field Technician:	S. Hanrahan

Depth	Sample	PID	USCS	Description	Notes
1					Asphalt at surface
2	B4-2	0.0	SM	Dark brown, damp, fine to medium grained silty sand	
3					
4					
5	B4-5	0.0	SM	Dark brown, damp, fine to medium grained silty sand	Soil gas probe installed
6					Boring terminated at 5 feet bgs, backfilled with hydrated bentonite chips and capped with asphalt upon completion
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Boring Identification:	B5			Page 1 of 1	
Boring Location:	West-central portion of subject property			PARTNER	
Site Address:	32281 Riverside Drive Lake Elsinore, California 92530			2154 Torrance Boulevard Torrance, California 90504	
Project Number:	23-397410.2			Date Started:	3/16/2023
Drill Rig Type:	Truck Mounted Geoprobe Model 5700			Date Completed:	3/16/2023
Sampling Equipment:	VOAs, SUMMAs			Depth to Groundwater (feet bgs):	NA
Borehole Diameter:	1.5"			Field Technician:	S. Hanrahan

Depth	Sample	PID	USCS	Description	Notes
1					Unpaved at surface
2	B5-2	0.0	SM	Dark brown, damp, fine to medium grained silty sand	
3					
4					
5	B5-5	0.0	SM	Dark brown, damp, fine to medium grained silty sand	Soil gas probe installed
6					Boring terminated at 5 feet bgs, backfilled with hydrated bentonite chips and capped with surrounding material upon completion
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Boring Identification:	B6			Page 1 of 1	
Boring Location:	West portion of subject property			PARTNER	
Site Address:	32281 Riverside Drive			2154 Torrance Boulevard	
	Lake Elsinore, California 92530			Torrance, California 90504	
Project Number:	23-397410.2			Date Started:	3/16/2023
Drill Rig Type:	Truck Mounted Geoprobe Model 5700			Date Completed:	3/16/2023
Sampling Equipment:	VOAs, SUMMAs			Depth to Groundwater (feet bgs):	NA
Borehole Diameter:	1.5"			Field Technician:	S. Hanrahan

Depth	Sample	PID	USCS	Description	Notes
1					Unpaved at surface
2	B6-2	0.0	SM	Dark brown, damp, fine to medium grained silty sand	
3					
4					
5	B6-5	0.0	SM	Dark brown, damp, fine to medium grained silty sand	Soil gas probe installed
6					Boring terminated at 5 feet bgs, backfilled with hydrated bentonite chips and capped with surrounding material upon completion
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Boring Identification:	B7			Page 1 of 1	
Boring Location:	Southwest portion of subject property			PARTNER	
Site Address:	32281 Riverside Drive			2154 Torrance Boulevard	
	Lake Elsinore, California 92530			Torrance, California 90504	
Project Number:	23-397410.2			Date Started:	3/16/2023
Drill Rig Type:	Truck Mounted Geoprobe Model 5700			Date Completed:	3/16/2023
Sampling Equipment:	VOAs, SUMMAs			Depth to Groundwater (feet bgs):	NA
Borehole Diameter:	1.5"			Field Technician:	S. Hanrahan

Depth	Sample	PID	USCS	Description	Notes
1					Unpaved at surface
2	B7-2	0.0	SM	Dark brown, damp, fine to medium grained silty sand	
3					
4					
5	B7-5	0.0	SM	Dark brown, damp, fine to medium grained silty sand	Soil gas probe installed
6					Boring terminated at 5 feet bgs, backfilled with hydrated bentonite chips and capped with surrounding material upon completion
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Boring Identification:	B8			Page 1 of 1	
Boring Location:	South portion of subject property			PARTNER	
Site Address:	32281 Riverside Drive			2154 Torrance Boulevard	
	Lake Elsinore, California 92530			Torrance, California 90504	
Project Number:	23-397410.2			Date Started:	3/16/2023
Drill Rig Type:	Truck Mounted Geoprobe Model 5700			Date Completed:	3/16/2023
Sampling Equipment:	VOAs, SUMMAs			Depth to Groundwater (feet bgs):	NA
Borehole Diameter:	1.5"			Field Technician:	S. Hanrahan

Depth	Sample	PID	USCS	Description	Notes
1					Unpaved at surface
2	B8-2	0.0	SM	Dark brown, damp, fine to medium grained silty sand	
3					
4					
5	B8-5	0.0	SM	Dark brown, damp, fine to medium grained silty sand	Soil gas probe installed
6					Boring terminated at 5 feet bgs, backfilled with hydrated bentonite chips and capped with surrounding material upon completion
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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18					
19					
20					
21					
22					
23					
24					
25					

APPENDIX B: LABORATORY ANALYTICAL REPORTS

PARTNER

Enthalpy Analytical
931 West Barkley Ave
Orange, CA 92868
(714) 771-6900

enthalpy.com

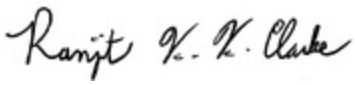
Lab Job Number: 481996
Report Level: II
Report Date: 03/31/2023

Analytical Report *prepared for:*

Brian Godbois
Partner Engineering & Science
2154 Torrance Blvd.
Suite 200
Torrance, CA 90501

Location: 32281 Riverside Dr.

Authorized for release by:



Ranjit K Clarke, Client Services Manager
(714) 771-9906
Ranjit.Clarke@enthalpy.com

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the above signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

CA ELAP# 1338, NELAP# 4038, SCAQMD LAP# 18LA0518, LACSD ID# 10105

ENTHALPY ANALYTICAL

Sample Summary

Brian Godbois
Partner Engineering & Science
2154 Torrance Blvd.
Suite 200
Torrance, CA 90501

Lab Job #: 481996
Location: 32281 Riverside Dr.
Date Received: 03/22/23

Sample ID	Lab ID	Collected	Matrix
B1-2	481996-001	03/16/23 09:30	Soil
B1-5	481996-002	03/16/23 09:35	Soil
B2-2	481996-003	03/16/23 09:50	Soil
B2-5	481996-004	03/16/23 09:55	Soil
B3-2	481996-005	03/16/23 10:10	Soil
B3-5	481996-006	03/16/23 10:15	Soil
B4-2	481996-007	03/16/23 10:25	Soil
B4-5	481996-008	03/16/23 10:30	Soil
B5-2	481996-009	03/16/23 10:40	Soil
B5-5	481996-010	03/16/23 10:45	Soil
B6-2	481996-011	03/16/23 12:10	Soil
B6-5	481996-012	03/16/23 12:15	Soil
B7-2	481996-013	03/16/23 12:20	Soil
B7-5	481996-014	03/16/23 12:25	Soil
B8-2	481996-015	03/16/23 12:35	Soil
B8-5	481996-016	03/16/23 12:40	Soil

ENTHALPY ANALYTICAL

Case Narrative

Partner Engineering & Science	Lab Job Number: 481996
2154 Torrance Blvd.	Location: 32281 Riverside Dr.
Suite 200	Date Received: 03/22/23
Torrance, CA 90501	
Brian Godbois	

This data package contains sample and QC results for eight soil samples, requested for the above referenced project on 03/22/23. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

Pesticides (EPA 8081A):
No analytical problems were encountered.

Metals (EPA 6010B):
No analytical problems were encountered.

8151A Chlorinated Herbicides (EPA 8151A):
No analytical problems were encountered.

ENTHALPY ANALYTICAL

Chain of Custody Record

Lab No: 481996 (lab use)

Page: 1 of 2

Turn Around Time (rush by advanced notice only)

Standard:	X	5 Day:		3 Day:	
2 Day:		1 Day:		Custom TAT:	

Enthalpy Analytical - Orange

931 W. Barkley Avenue, Orange, CA 92868

Phone 714-771-6900

Matrix: A = Air, W = Water, SeaW = Sea Water, DW = Drinking Water, WP = Wipe, S = Soil, O = Oil, M = Other matrices (solid), L = Other matrices (aqueous)

Preservatives:
1 = $Na_2S_2O_3$ 2 = HCl 3 = HNO_3
4 = H_2SO_4 5 = NaOH 6 = Other

Sample Receipt Temp: (lab use only)

CUSTOMER INFORMATION		PROJECT INFORMATION	
Company:	Partner ESI	Quote #:	
Report To:	S. Hanrahan / B. Godbois	Proj. Name:	32281 Riverside Dr
Email:	SHanrahan@Partneresi.com	Proj. #:	397410.2
Address:	BGodbois@Partneresi.com	P.O. #:	
		Address:	
Phone:		Global ID:	
Fax:		Sampled By:	S. Hanrahan

	Sample ID	Sampling Date	Sampling Time	Matrix	Container No.	Pres.	Analysis Request: 8260 Chlorinated Solvents	Analysis Request: 6010 Arsenic & Lead	Test Instructions / Comments
1	B1-2	3/16/23	0930	Soil			X	X	Analyze for chlorinated solvents PCE; TCE; cis-1,2-DCE; trans-1,2-DCE; 1,1-DCE vinyl chloride
2	B1-5		0935						
3	B2-2		0950						
4	B2-5		0955				X	X	
5	B3-2		1010				X	X	
6	B3-5		1015						
7	B4-2		1025						
8	B4-5		1030				X	X	
9	B5-2		1040				X	X	
10	B5-5		1045						

	Signature	Print Name	Company / Title	Date / Time
1 Relinquished By:		Sean Hanrahan	Partner ESI	3/22/23 1236
1 Received By:		Alex Cota	EA SD	3/22/23 12:36
2 Relinquished By:		Alex Cota	EA OC	3/22/23 17:15
2 Received By:		Angelica Sandoval	EA	3/22/23 1735
3 Relinquished By:				
3 Received By:				

ENTHALPY ANALYTICAL

Chain of Custody Record

Lab No: 481996 (Lab use)

Page: 2 of 2

Turn Around Time (rush by advanced notice only)

Standard:	X	5 Day:		3 Day:	
2 Day:		1 Day:		Custom TAT:	

Enthalpy Analytical - Orange

931 W. Barkley Avenue, Orange, CA 92868

Phone 714-771-6900

Matrix: A = Air, W = Water, SeaW = Sea Water, DW = Drinking Water, WP = Wipe, S = Soil, O = Oil, M = Other matrices (solid), L = Other matrices (aqueous)

Preservatives: 1 = $Na_2S_2O_3$ 2 = HCl 3 = HNO_3 4 = H_2SO_4 5 = NaOH 6 = Other

Sample Receipt Temp: (lab use only)

CUSTOMER INFORMATION		PROJECT INFORMATION	
Company:		Quote #:	
Report To:		Proj. Name:	32281 Riverside Dr
Email:	See Page 1	Proj. #:	397410.2
Address:		P.O. #:	
		Address:	
Phone:		Global ID:	
Fax:		Sampled By:	

	Sample ID	Sampling Date	Sampling Time	Matrix	Container No.	Pres.	Analysis Request: 8260 Chlorinated Solvents	Analysis Request: 6010 Arsenic + Lead	Test Instructions / Comments
1	B6-2	1210	3/16/23	Soil					See Page 1
2	B6-5	1215	"	"			X	X	
3	B7-2	1220					X	X	
4	B7-5	1225							
5	B8-2	1235					X	X	
6	B8-5	1240							
7									
8									
9									
10									

1-1/2.5

	Signature	Print Name	Company / Title	Date / Time
1 Relinquished By:		Sean Hamilton	Partner EST	3/22/23 1237
1 Received By:		Alex Costa	EAO	3/22/23 12:36
2 Relinquished By:		Alex Costa	EAOC	3/24/23 17:35
2 Received By:		Annalesa Summers	EA	5/22/23 1733
3 Relinquished By:				
3 Received By:				

ENTHALPY ANALYTICAL

SAMPLE ACCEPTANCE CHECKLIST

Section 1

Client: Partner ESI

Project: 32281 Riverside Dr

Date Received: 3/22/23

Sampler's Name Present: ☑ Yes ☐ No

Section 2

Sample(s) received in a cooler? ☑ Yes, How many? 1 ☐ No (skip section 2)

Sample Temp (°C) (No Cooler): _____

Sample Temp (°C), One from each cooler: #1: 2.5 #2: _____ #3: _____ #4: _____

(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)

Shipping Information: _____

Section 3

Was the cooler packed with: ☑ Ice ☐ Ice Packs ☐ Bubble Wrap ☐ Styrofoam ☐ Paper ☐ None ☐ Other _____

Cooler Temp (°C): #1: 1.1 #2: _____ #3: _____ #4: _____

Section 4	YES	NO	N/A
Was a COC received?	✔		
Are sample IDs present?	✔		
Are sampling dates & times present?	✔		
Is a relinquished signature present?	✔		
Are the tests required clearly indicated on the COC?	✔		
Are custody seals present?		✔	
If custody seals are present, were they intact?			✔
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)	✔		
Did all samples arrive intact? If no, indicate in Section 4 below.	✔		
Did all bottle labels agree with COC? (ID, dates and times)	✔		
Were the samples collected in the correct containers for the required tests?	✔		
Are the containers labeled with the correct preservatives?	✔		
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✔
Was a sufficient amount of sample submitted for the requested tests?	✔		

Section 5 Explanations/Comments

Section 6

For discrepancies, how was the Project Manager notified? ☐ Verbal PM Initials: _____ Date/Time _____

☐ Email (email sent to/on): _____ / _____

Project Manager's response:

Completed By: _____ Date: 3/22/23

ENTHALPY ANALYTICAL

Analysis Results for 481996

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Lab Job #: 481996
Location: 32281 Riverside Dr.
Date Received: 03/22/23

Sample ID: B1-2 **Lab ID: 481996-001** **Collected: 03/16/23 09:30**
Matrix: Soil

481996-001 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B										
Arsenic	**9.1**		mg/Kg	0.97	0.46	0.97	310401	03/24/23	03/28/23	THP
Lead	**2.7**		mg/Kg	0.97	0.14	0.97	310401	03/24/23	03/24/23	THP
Method: EPA 8081A Prep Method: EPA 3546										
alpha-BHC	ND		ug/Kg	4.9	1.2	0.98	310647	03/28/23	03/29/23	MES
beta-BHC	ND		ug/Kg	4.9	1.7	0.98	310647	03/28/23	03/29/23	MES
gamma-BHC	ND		ug/Kg	4.9	1.0	0.98	310647	03/28/23	03/29/23	MES
delta-BHC	ND		ug/Kg	4.9	1.3	0.98	310647	03/28/23	03/29/23	MES
Heptachlor	ND		ug/Kg	4.9	1.5	0.98	310647	03/28/23	03/29/23	MES
Aldrin	ND		ug/Kg	4.9	1.3	0.98	310647	03/28/23	03/29/23	MES
Heptachlor epoxide	ND		ug/Kg	4.9	1.8	0.98	310647	03/28/23	03/29/23	MES
Endosulfan I	ND		ug/Kg	4.9	1.4	0.98	310647	03/28/23	03/29/23	MES
Dieldrin	ND		ug/Kg	4.9	1.4	0.98	310647	03/28/23	03/29/23	MES
4,4'-DDE	ND		ug/Kg	4.9	1.4	0.98	310647	03/28/23	03/29/23	MES
Endrin	ND		ug/Kg	4.9	1.5	0.98	310647	03/28/23	03/29/23	MES
Endosulfan II	ND		ug/Kg	4.9	1.5	0.98	310647	03/28/23	03/29/23	MES
Endosulfan sulfate	ND		ug/Kg	4.9	1.6	0.98	310647	03/28/23	03/29/23	MES
4,4'-DDD	ND		ug/Kg	4.9	1.1	0.98	310647	03/28/23	03/29/23	MES
Endrin aldehyde	ND		ug/Kg	4.9	1.7	0.98	310647	03/28/23	03/29/23	MES
Endrin ketone	ND		ug/Kg	4.9	1.4	0.98	310647	03/28/23	03/29/23	MES
4,4'-DDT	ND		ug/Kg	4.9	1.4	0.98	310647	03/28/23	03/29/23	MES
Methoxychlor	ND		ug/Kg	9.8	5.0	0.98	310647	03/28/23	03/29/23	MES
Toxaphene	ND		ug/Kg	98	15	0.98	310647	03/28/23	03/29/23	MES
Chlordane (Technical)	ND		ug/Kg	49	11	0.98	310647	03/28/23	03/29/23	MES
Surrogates				**Limits**						
TCMX	62%		%REC	23-120		0.98	310647	03/28/23	03/29/23	MES
Decachlorobiphenyl	56%		%REC	24-120		0.98	310647	03/28/23	03/29/23	MES
Method: EPA 8260B Prep Method: EPA 5035										
Vinyl Chloride	ND		ug/Kg	5.9	1.2	1.2	310383	03/24/23	03/24/23	HMN
1,1-Dichloroethene	ND		ug/Kg	5.9	1.2	1.2	310383	03/24/23	03/24/23	HMN
trans-1,2-Dichloroethene	ND		ug/Kg	5.9	1.2	1.2	310383	03/24/23	03/24/23	HMN
cis-1,2-Dichloroethene	ND		ug/Kg	5.9	1.4	1.2	310383	03/24/23	03/24/23	HMN
Trichloroethene	ND		ug/Kg	5.9	1.2	1.2	310383	03/24/23	03/24/23	HMN

Results for any subcontracted analyses are not included in this section.

Analysis Results for 481996

481996-001 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Tetrachloroethene	ND		ug/Kg	5.9	2.2	1.2	310383	03/24/23	03/24/23	HMN
Surrogates				**Limits**						
Dibromofluoromethane	100%		%REC	70-145	7.2	1.2	310383	03/24/23	03/24/23	HMN
1,2-Dichloroethane-d4	109%		%REC	70-145	9.0	1.2	310383	03/24/23	03/24/23	HMN
Toluene-d8	99%		%REC	70-145	1.5	1.2	310383	03/24/23	03/24/23	HMN
Bromofluorobenzene	99%		%REC	70-145	3.0	1.2	310383	03/24/23	03/24/23	HMN

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 481996

Sample ID: B2-5	Lab ID: 481996-004	Collected: 03/16/23 09:55
	Matrix: Soil	

481996-004 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B										
Arsenic	**9.1**		mg/Kg	0.96	0.45	0.96	310401	03/24/23	03/28/23	THP
Lead	**3.5**		mg/Kg	0.96	0.14	0.96	310401	03/24/23	03/24/23	THP
Method: EPA 8081A Prep Method: EPA 3546										
alpha-BHC	ND		ug/Kg	5.1	1.2	1	310647	03/28/23	03/29/23	MES
beta-BHC	ND		ug/Kg	5.1	1.7	1	310647	03/28/23	03/29/23	MES
gamma-BHC	ND		ug/Kg	5.1	1.1	1	310647	03/28/23	03/29/23	MES
delta-BHC	ND		ug/Kg	5.1	1.4	1	310647	03/28/23	03/29/23	MES
Heptachlor	ND		ug/Kg	5.1	1.5	1	310647	03/28/23	03/29/23	MES
Aldrin	ND		ug/Kg	5.1	1.3	1	310647	03/28/23	03/29/23	MES
Heptachlor epoxide	ND		ug/Kg	5.1	1.8	1	310647	03/28/23	03/29/23	MES
Endosulfan I	ND		ug/Kg	5.1	1.4	1	310647	03/28/23	03/29/23	MES
Dieldrin	ND		ug/Kg	5.1	1.4	1	310647	03/28/23	03/29/23	MES
4,4'-DDE	**11**		ug/Kg	5.1	1.5	1	310647	03/28/23	03/29/23	MES
Endrin	ND		ug/Kg	5.1	1.6	1	310647	03/28/23	03/29/23	MES
Endosulfan II	ND		ug/Kg	5.1	1.6	1	310647	03/28/23	03/29/23	MES
Endosulfan sulfate	ND		ug/Kg	5.1	1.6	1	310647	03/28/23	03/29/23	MES
4,4'-DDD	ND		ug/Kg	5.1	1.1	1	310647	03/28/23	03/29/23	MES
Endrin aldehyde	ND		ug/Kg	5.1	1.7	1	310647	03/28/23	03/29/23	MES
Endrin ketone	ND		ug/Kg	5.1	1.4	1	310647	03/28/23	03/29/23	MES
4,4'-DDT	ND		ug/Kg	5.1	1.5	1	310647	03/28/23	03/29/23	MES
Methoxychlor	ND		ug/Kg	10	5.1	1	310647	03/28/23	03/29/23	MES
Toxaphene	ND		ug/Kg	100	15	1	310647	03/28/23	03/29/23	MES
Chlordane (Technical)	ND		ug/Kg	51	11	1	310647	03/28/23	03/29/23	MES
Surrogates				**Limits**						
TCMX	71%		%REC	23-120		1	310647	03/28/23	03/29/23	MES
Decachlorobiphenyl	67%		%REC	24-120		1	310647	03/28/23	03/29/23	MES
Method: EPA 8260B Prep Method: EPA 5035										
Vinyl Chloride	ND		ug/Kg	4.2	0.8	0.83	310383	03/24/23	03/24/23	HMN
1,1-Dichloroethene	ND		ug/Kg	4.2	0.8	0.83	310383	03/24/23	03/24/23	HMN
trans-1,2-Dichloroethene	ND		ug/Kg	4.2	0.8	0.83	310383	03/24/23	03/24/23	HMN
cis-1,2-Dichloroethene	ND		ug/Kg	4.2	1.0	0.83	310383	03/24/23	03/24/23	HMN
Trichloroethene	ND		ug/Kg	4.2	0.8	0.83	310383	03/24/23	03/24/23	HMN
Tetrachloroethene	ND		ug/Kg	4.2	1.5	0.83	310383	03/24/23	03/24/23	HMN
Surrogates				**Limits**						
Dibromofluoromethane	102%		%REC	70-145	5.1	0.83	310383	03/24/23	03/24/23	HMN
1,2-Dichloroethane-d4	110%		%REC	70-145	6.4	0.83	310383	03/24/23	03/24/23	HMN
Toluene-d8	99%		%REC	70-145	1.0	0.83	310383	03/24/23	03/24/23	HMN
Bromofluorobenzene	98%		%REC	70-145	2.1	0.83	310383	03/24/23	03/24/23	HMN

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 481996

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 481996

Sample ID: B3-2	Lab ID: 481996-005	Collected: 03/16/23 10:10
	Matrix: Soil	

481996-005 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B										
Arsenic	**12**		mg/Kg	0.96	0.45	0.96	310401	03/24/23	03/28/23	THP
Lead	**1.6**		mg/Kg	0.96	0.14	0.96	310401	03/24/23	03/24/23	THP
Method: EPA 8081A Prep Method: EPA 3546										
alpha-BHC	ND		ug/Kg	5.0	1.2	1	310647	03/28/23	03/29/23	MES
beta-BHC	ND		ug/Kg	5.0	1.7	1	310647	03/28/23	03/29/23	MES
gamma-BHC	ND		ug/Kg	5.0	1.0	1	310647	03/28/23	03/29/23	MES
delta-BHC	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
Heptachlor	ND		ug/Kg	5.0	1.5	1	310647	03/28/23	03/29/23	MES
Aldrin	ND		ug/Kg	5.0	1.3	1	310647	03/28/23	03/29/23	MES
Heptachlor epoxide	ND		ug/Kg	5.0	1.8	1	310647	03/28/23	03/29/23	MES
Endosulfan I	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
Dieldrin	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
4,4'-DDE	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
Endrin	ND		ug/Kg	5.0	1.6	1	310647	03/28/23	03/29/23	MES
Endosulfan II	ND		ug/Kg	5.0	1.6	1	310647	03/28/23	03/29/23	MES
Endosulfan sulfate	ND		ug/Kg	5.0	1.6	1	310647	03/28/23	03/29/23	MES
4,4'-DDD	ND		ug/Kg	5.0	1.1	1	310647	03/28/23	03/29/23	MES
Endrin aldehyde	ND		ug/Kg	5.0	1.7	1	310647	03/28/23	03/29/23	MES
Endrin ketone	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
4,4'-DDT	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
Methoxychlor	ND		ug/Kg	10	5.1	1	310647	03/28/23	03/29/23	MES
Toxaphene	ND		ug/Kg	100	15	1	310647	03/28/23	03/29/23	MES
Chlordane (Technical)	ND		ug/Kg	50	11	1	310647	03/28/23	03/29/23	MES
Surrogates				**Limits**						
TCMX	72%		%REC	23-120		1	310647	03/28/23	03/29/23	MES
Decachlorobiphenyl	62%		%REC	24-120		1	310647	03/28/23	03/29/23	MES
Method: EPA 8260B Prep Method: EPA 5035										
Vinyl Chloride	ND		ug/Kg	3.8	0.8	0.76	310383	03/24/23	03/24/23	HMN
1,1-Dichloroethene	ND		ug/Kg	3.8	0.8	0.76	310383	03/24/23	03/24/23	HMN
trans-1,2-Dichloroethene	ND		ug/Kg	3.8	0.8	0.76	310383	03/24/23	03/24/23	HMN
cis-1,2-Dichloroethene	ND		ug/Kg	3.8	0.9	0.76	310383	03/24/23	03/24/23	HMN
Trichloroethene	ND		ug/Kg	3.8	0.8	0.76	310383	03/24/23	03/24/23	HMN
Tetrachloroethene	ND		ug/Kg	3.8	1.4	0.76	310383	03/24/23	03/24/23	HMN
Surrogates				**Limits**						
Dibromofluoromethane	101%		%REC	70-145	4.6	0.76	310383	03/24/23	03/24/23	HMN
1,2-Dichloroethane-d4	110%		%REC	70-145	5.8	0.76	310383	03/24/23	03/24/23	HMN
Toluene-d8	98%		%REC	70-145	0.9	0.76	310383	03/24/23	03/24/23	HMN
Bromofluorobenzene	99%		%REC	70-145	1.9	0.76	310383	03/24/23	03/24/23	HMN

Results for any subcontracted analyses are not included in this section.

Analysis Results for 481996

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 481996

Sample ID: B4-5	Lab ID: 481996-008	Collected: 03/16/23 10:30
	Matrix: Soil	

481996-008 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B										
Arsenic	**12**		mg/Kg	0.95	0.45	0.95	310401	03/24/23	03/28/23	THP
Lead	**3.1**		mg/Kg	0.95	0.14	0.95	310401	03/24/23	03/24/23	THP
Method: EPA 8081A Prep Method: EPA 3546										
alpha-BHC	ND		ug/Kg	4.9	1.2	0.98	310647	03/28/23	03/29/23	MES
beta-BHC	ND		ug/Kg	4.9	1.6	0.98	310647	03/28/23	03/29/23	MES
gamma-BHC	ND		ug/Kg	4.9	1.0	0.98	310647	03/28/23	03/29/23	MES
delta-BHC	ND		ug/Kg	4.9	1.3	0.98	310647	03/28/23	03/29/23	MES
Heptachlor	ND		ug/Kg	4.9	1.5	0.98	310647	03/28/23	03/29/23	MES
Aldrin	ND		ug/Kg	4.9	1.3	0.98	310647	03/28/23	03/29/23	MES
Heptachlor epoxide	ND		ug/Kg	4.9	1.8	0.98	310647	03/28/23	03/29/23	MES
Endosulfan I	ND		ug/Kg	4.9	1.4	0.98	310647	03/28/23	03/29/23	MES
Dieldrin	ND		ug/Kg	4.9	1.4	0.98	310647	03/28/23	03/29/23	MES
4,4'-DDE	ND		ug/Kg	4.9	1.4	0.98	310647	03/28/23	03/29/23	MES
Endrin	ND		ug/Kg	4.9	1.5	0.98	310647	03/28/23	03/29/23	MES
Endosulfan II	ND		ug/Kg	4.9	1.5	0.98	310647	03/28/23	03/29/23	MES
Endosulfan sulfate	ND		ug/Kg	4.9	1.6	0.98	310647	03/28/23	03/29/23	MES
4,4'-DDD	ND		ug/Kg	4.9	1.1	0.98	310647	03/28/23	03/29/23	MES
Endrin aldehyde	ND		ug/Kg	4.9	1.7	0.98	310647	03/28/23	03/29/23	MES
Endrin ketone	ND		ug/Kg	4.9	1.4	0.98	310647	03/28/23	03/29/23	MES
4,4'-DDT	ND		ug/Kg	4.9	1.4	0.98	310647	03/28/23	03/29/23	MES
Methoxychlor	ND		ug/Kg	9.8	5.0	0.98	310647	03/28/23	03/29/23	MES
Toxaphene	ND		ug/Kg	98	14	0.98	310647	03/28/23	03/29/23	MES
Chlordane (Technical)	ND		ug/Kg	49	11	0.98	310647	03/28/23	03/29/23	MES
Surrogates				**Limits**						
TCMX	51%		%REC	23-120		0.98	310647	03/28/23	03/29/23	MES
Decachlorobiphenyl	45%		%REC	24-120		0.98	310647	03/28/23	03/29/23	MES
Method: EPA 8260B Prep Method: EPA 5035										
Vinyl Chloride	ND		ug/Kg	3.9	0.8	0.77	310383	03/24/23	03/24/23	HMN
1,1-Dichloroethene	ND		ug/Kg	3.9	0.8	0.77	310383	03/24/23	03/24/23	HMN
trans-1,2-Dichloroethene	ND		ug/Kg	3.9	0.8	0.77	310383	03/24/23	03/24/23	HMN
cis-1,2-Dichloroethene	ND		ug/Kg	3.9	0.9	0.77	310383	03/24/23	03/24/23	HMN
Trichloroethene	ND		ug/Kg	3.9	0.8	0.77	310383	03/24/23	03/24/23	HMN
Tetrachloroethene	ND		ug/Kg	3.9	1.4	0.77	310383	03/24/23	03/24/23	HMN
Surrogates				**Limits**						
Dibromofluoromethane	103%		%REC	70-145	4.7	0.77	310383	03/24/23	03/24/23	HMN
1,2-Dichloroethane-d4	112%		%REC	70-145	5.9	0.77	310383	03/24/23	03/24/23	HMN
Toluene-d8	98%		%REC	70-145	1.0	0.77	310383	03/24/23	03/24/23	HMN
Bromofluorobenzene	97%		%REC	70-145	2.0	0.77	310383	03/24/23	03/24/23	HMN

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 481996

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 481996

Sample ID: B5-2	Lab ID: 481996-009	Collected: 03/16/23 10:40
	Matrix: Soil	

481996-009 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B										
Arsenic	**9.9**		mg/Kg	0.97	0.46	0.97	310401	03/24/23	03/28/23	THP
Lead	**3.3**		mg/Kg	0.97	0.14	0.97	310401	03/24/23	03/24/23	THP
Method: EPA 8081A Prep Method: EPA 3546										
alpha-BHC	ND		ug/Kg	5.0	1.2	1	310647	03/28/23	03/29/23	MES
beta-BHC	ND		ug/Kg	5.0	1.7	1	310647	03/28/23	03/29/23	MES
gamma-BHC	ND		ug/Kg	5.0	1.0	1	310647	03/28/23	03/29/23	MES
delta-BHC	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
Heptachlor	ND		ug/Kg	5.0	1.5	1	310647	03/28/23	03/29/23	MES
Aldrin	ND		ug/Kg	5.0	1.3	1	310647	03/28/23	03/29/23	MES
Heptachlor epoxide	ND		ug/Kg	5.0	1.8	1	310647	03/28/23	03/29/23	MES
Endosulfan I	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
Dieldrin	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
4,4'-DDE	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
Endrin	ND		ug/Kg	5.0	1.6	1	310647	03/28/23	03/29/23	MES
Endosulfan II	ND		ug/Kg	5.0	1.6	1	310647	03/28/23	03/29/23	MES
Endosulfan sulfate	ND		ug/Kg	5.0	1.6	1	310647	03/28/23	03/29/23	MES
4,4'-DDD	ND		ug/Kg	5.0	1.1	1	310647	03/28/23	03/29/23	MES
Endrin aldehyde	ND		ug/Kg	5.0	1.7	1	310647	03/28/23	03/29/23	MES
Endrin ketone	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
4,4'-DDT	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
Methoxychlor	ND		ug/Kg	10	5.1	1	310647	03/28/23	03/29/23	MES
Toxaphene	ND		ug/Kg	100	15	1	310647	03/28/23	03/29/23	MES
Chlordane (Technical)	ND		ug/Kg	50	11	1	310647	03/28/23	03/29/23	MES
Surrogates				**Limits**						
TCMX	74%		%REC	23-120		1	310647	03/28/23	03/29/23	MES
Decachlorobiphenyl	64%		%REC	24-120		1	310647	03/28/23	03/29/23	MES
Method: EPA 8260B Prep Method: EPA 5035										
Vinyl Chloride	ND		ug/Kg	3.6	0.7	0.72	310383	03/24/23	03/24/23	HMN
1,1-Dichloroethene	ND		ug/Kg	3.6	0.7	0.72	310383	03/24/23	03/24/23	HMN
trans-1,2-Dichloroethene	ND		ug/Kg	3.6	0.7	0.72	310383	03/24/23	03/24/23	HMN
cis-1,2-Dichloroethene	ND		ug/Kg	3.6	0.9	0.72	310383	03/24/23	03/24/23	HMN
Trichloroethene	ND		ug/Kg	3.6	0.7	0.72	310383	03/24/23	03/24/23	HMN
Tetrachloroethene	ND		ug/Kg	3.6	1.3	0.72	310383	03/24/23	03/24/23	HMN
Surrogates				**Limits**						
Dibromofluoromethane	101%		%REC	70-145	4.4	0.72	310383	03/24/23	03/24/23	HMN
1,2-Dichloroethane-d4	110%		%REC	70-145	5.5	0.72	310383	03/24/23	03/24/23	HMN
Toluene-d8	98%		%REC	70-145	0.9	0.72	310383	03/24/23	03/24/23	HMN
Bromofluorobenzene	97%		%REC	70-145	1.9	0.72	310383	03/24/23	03/24/23	HMN

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Analysis Results for 481996

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Analysis Results for 481996

Sample ID: B6-5	Lab ID: 481996-012	Collected: 03/16/23 12:15
	Matrix: Soil	

481996-012 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B										
Arsenic	**10**		mg/Kg	0.95	0.45	0.95	310401	03/24/23	03/28/23	THP
Lead	**3.0**		mg/Kg	0.95	0.14	0.95	310401	03/24/23	03/24/23	THP
Method: EPA 8081A Prep Method: EPA 3546										
alpha-BHC	ND		ug/Kg	4.9	1.2	0.98	310647	03/28/23	03/29/23	MES
beta-BHC	ND		ug/Kg	4.9	1.6	0.98	310647	03/28/23	03/29/23	MES
gamma-BHC	ND		ug/Kg	4.9	1.0	0.98	310647	03/28/23	03/29/23	MES
delta-BHC	ND		ug/Kg	4.9	1.3	0.98	310647	03/28/23	03/29/23	MES
Heptachlor	ND		ug/Kg	4.9	1.5	0.98	310647	03/28/23	03/29/23	MES
Aldrin	ND		ug/Kg	4.9	1.3	0.98	310647	03/28/23	03/29/23	MES
Heptachlor epoxide	ND		ug/Kg	4.9	1.8	0.98	310647	03/28/23	03/29/23	MES
Endosulfan I	ND		ug/Kg	4.9	1.4	0.98	310647	03/28/23	03/29/23	MES
Dieldrin	ND		ug/Kg	4.9	1.4	0.98	310647	03/28/23	03/29/23	MES
4,4'-DDE	ND		ug/Kg	4.9	1.4	0.98	310647	03/28/23	03/29/23	MES
Endrin	ND		ug/Kg	4.9	1.5	0.98	310647	03/28/23	03/29/23	MES
Endosulfan II	ND		ug/Kg	4.9	1.5	0.98	310647	03/28/23	03/29/23	MES
Endosulfan sulfate	ND		ug/Kg	4.9	1.6	0.98	310647	03/28/23	03/29/23	MES
4,4'-DDD	ND		ug/Kg	4.9	1.1	0.98	310647	03/28/23	03/29/23	MES
Endrin aldehyde	ND		ug/Kg	4.9	1.7	0.98	310647	03/28/23	03/29/23	MES
Endrin ketone	ND		ug/Kg	4.9	1.4	0.98	310647	03/28/23	03/29/23	MES
4,4'-DDT	ND		ug/Kg	4.9	1.4	0.98	310647	03/28/23	03/29/23	MES
Methoxychlor	ND		ug/Kg	9.8	5.0	0.98	310647	03/28/23	03/29/23	MES
Toxaphene	ND		ug/Kg	98	14	0.98	310647	03/28/23	03/29/23	MES
Chlordane (Technical)	ND		ug/Kg	49	11	0.98	310647	03/28/23	03/29/23	MES
Surrogates				**Limits**						
TCMX	69%		%REC	23-120		0.98	310647	03/28/23	03/29/23	MES
Decachlorobiphenyl	57%		%REC	24-120		0.98	310647	03/28/23	03/29/23	MES
Method: EPA 8260B Prep Method: EPA 5035										
Vinyl Chloride	ND		ug/Kg	4.1	0.8	0.83	310383	03/24/23	03/24/23	HMN
1,1-Dichloroethene	ND		ug/Kg	4.1	0.8	0.83	310383	03/24/23	03/24/23	HMN
trans-1,2-Dichloroethene	ND		ug/Kg	4.1	0.8	0.83	310383	03/24/23	03/24/23	HMN
cis-1,2-Dichloroethene	ND		ug/Kg	4.1	1.0	0.83	310383	03/24/23	03/24/23	HMN
Trichloroethene	ND		ug/Kg	4.1	0.8	0.83	310383	03/24/23	03/24/23	HMN
Tetrachloroethene	ND		ug/Kg	4.1	1.5	0.83	310383	03/24/23	03/24/23	HMN
Surrogates				**Limits**						
Dibromofluoromethane	104%		%REC	70-145	5.1	0.83	310383	03/24/23	03/24/23	HMN
1,2-Dichloroethane-d4	110%		%REC	70-145	6.4	0.83	310383	03/24/23	03/24/23	HMN
Toluene-d8	98%		%REC	70-145	1.0	0.83	310383	03/24/23	03/24/23	HMN
Bromofluorobenzene	97%		%REC	70-145	2.1	0.83	310383	03/24/23	03/24/23	HMN

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 481996

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 481996

Sample ID: B7-2	Lab ID: 481996-013	Collected: 03/16/23 12:20
	Matrix: Soil	

481996-013 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B										
Arsenic	**7.8**		mg/Kg	0.96	0.45	0.96	310401	03/24/23	03/28/23	THP
Lead	**7.4**		mg/Kg	0.96	0.14	0.96	310401	03/24/23	03/24/23	THP
Method: EPA 8081A Prep Method: EPA 3546										
alpha-BHC	ND		ug/Kg	5.0	1.2	0.99	310647	03/28/23	03/29/23	MES
beta-BHC	ND		ug/Kg	5.0	1.7	0.99	310647	03/28/23	03/29/23	MES
gamma-BHC	ND		ug/Kg	5.0	1.0	0.99	310647	03/28/23	03/29/23	MES
delta-BHC	ND		ug/Kg	5.0	1.3	0.99	310647	03/28/23	03/29/23	MES
Heptachlor	ND		ug/Kg	5.0	1.5	0.99	310647	03/28/23	03/29/23	MES
Aldrin	ND		ug/Kg	5.0	1.3	0.99	310647	03/28/23	03/29/23	MES
Heptachlor epoxide	ND		ug/Kg	5.0	1.8	0.99	310647	03/28/23	03/29/23	MES
Endosulfan I	ND		ug/Kg	5.0	1.4	0.99	310647	03/28/23	03/29/23	MES
Dieldrin	ND		ug/Kg	5.0	1.4	0.99	310647	03/28/23	03/29/23	MES
4,4'-DDE	**63**		ug/Kg	5.0	1.4	0.99	310647	03/28/23	03/29/23	MES
Endrin	ND		ug/Kg	5.0	1.6	0.99	310647	03/28/23	03/29/23	MES
Endosulfan II	ND		ug/Kg	5.0	1.6	0.99	310647	03/28/23	03/29/23	MES
Endosulfan sulfate	ND		ug/Kg	5.0	1.6	0.99	310647	03/28/23	03/29/23	MES
4,4'-DDD	ND		ug/Kg	5.0	1.1	0.99	310647	03/28/23	03/29/23	MES
Endrin aldehyde	ND		ug/Kg	5.0	1.7	0.99	310647	03/28/23	03/29/23	MES
Endrin ketone	ND		ug/Kg	5.0	1.4	0.99	310647	03/28/23	03/29/23	MES
4,4'-DDT	**17**	#	ug/Kg	5.0	1.4	0.99	310647	03/28/23	03/29/23	MES
Methoxychlor	ND		ug/Kg	9.9	5.0	0.99	310647	03/28/23	03/29/23	MES
Toxaphene	ND		ug/Kg	99	15	0.99	310647	03/28/23	03/29/23	MES
Chlordane (Technical)	ND		ug/Kg	50	11	0.99	310647	03/28/23	03/29/23	MES
Surrogates				**Limits**						
TCMX	69%		%REC	23-120		0.99	310647	03/28/23	03/29/23	MES
Decachlorobiphenyl	54%		%REC	24-120		0.99	310647	03/28/23	03/29/23	MES
Method: EPA 8260B Prep Method: EPA 5035										
Vinyl Chloride	ND		ug/Kg	3.9	0.8	0.78	310383	03/24/23	03/24/23	HMN
1,1-Dichloroethene	ND		ug/Kg	3.9	0.8	0.78	310383	03/24/23	03/24/23	HMN
trans-1,2-Dichloroethene	ND		ug/Kg	3.9	0.8	0.78	310383	03/24/23	03/24/23	HMN
cis-1,2-Dichloroethene	ND		ug/Kg	3.9	0.9	0.78	310383	03/24/23	03/24/23	HMN
Trichloroethene	ND		ug/Kg	3.9	0.8	0.78	310383	03/24/23	03/24/23	HMN
Tetrachloroethene	ND		ug/Kg	3.9	1.5	0.78	310383	03/24/23	03/24/23	HMN
Surrogates				**Limits**						
Dibromofluoromethane	101%		%REC	70-145	4.8	0.78	310383	03/24/23	03/24/23	HMN
1,2-Dichloroethane-d4	108%		%REC	70-145	6.0	0.78	310383	03/24/23	03/24/23	HMN
Toluene-d8	99%		%REC	70-145	1.0	0.78	310383	03/24/23	03/24/23	HMN
Bromofluorobenzene	101%		%REC	70-145	2.0	0.78	310383	03/24/23	03/24/23	HMN

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Analysis Results for 481996

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Analysis Results for 481996

Sample ID: B8-2	Lab ID: 481996-015	Collected: 03/16/23 12:35
	Matrix: Soil	

481996-015 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B										
Arsenic	**6.2**		mg/Kg	0.95	0.45	0.95	310401	03/24/23	03/28/23	THP
Lead	**1.8**		mg/Kg	0.95	0.14	0.95	310401	03/24/23	03/24/23	THP
Method: EPA 8081A Prep Method: EPA 3546										
alpha-BHC	ND		ug/Kg	5.0	1.2	1	310647	03/28/23	03/29/23	MES
beta-BHC	ND		ug/Kg	5.0	1.7	1	310647	03/28/23	03/29/23	MES
gamma-BHC	ND		ug/Kg	5.0	1.0	1	310647	03/28/23	03/29/23	MES
delta-BHC	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
Heptachlor	ND		ug/Kg	5.0	1.5	1	310647	03/28/23	03/29/23	MES
Aldrin	ND		ug/Kg	5.0	1.3	1	310647	03/28/23	03/29/23	MES
Heptachlor epoxide	ND		ug/Kg	5.0	1.8	1	310647	03/28/23	03/29/23	MES
Endosulfan I	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
Dieldrin	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
4,4'-DDE	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
Endrin	ND		ug/Kg	5.0	1.6	1	310647	03/28/23	03/29/23	MES
Endosulfan II	ND		ug/Kg	5.0	1.6	1	310647	03/28/23	03/29/23	MES
Endosulfan sulfate	ND		ug/Kg	5.0	1.6	1	310647	03/28/23	03/29/23	MES
4,4'-DDD	ND		ug/Kg	5.0	1.1	1	310647	03/28/23	03/29/23	MES
Endrin aldehyde	ND		ug/Kg	5.0	1.7	1	310647	03/28/23	03/29/23	MES
Endrin ketone	ND		ug/Kg	5.0	1.4	1	310647	03/28/23	03/29/23	MES
4,4'-DDT	ND		ug/Kg	5.0	1.5	1	310647	03/28/23	03/29/23	MES
Methoxychlor	ND		ug/Kg	10	5.1	1	310647	03/28/23	03/29/23	MES
Toxaphene	ND		ug/Kg	100	15	1	310647	03/28/23	03/29/23	MES
Chlordane (Technical)	ND		ug/Kg	50	11	1	310647	03/28/23	03/29/23	MES
Surrogates				**Limits**						
TCMX	63%		%REC	23-120		1	310647	03/28/23	03/29/23	MES
Decachlorobiphenyl	51%		%REC	24-120		1	310647	03/28/23	03/29/23	MES
Method: EPA 8260B Prep Method: EPA 5035										
Vinyl Chloride	ND		ug/Kg	4.1	0.8	0.83	310383	03/24/23	03/24/23	HMN
1,1-Dichloroethene	ND		ug/Kg	4.1	0.8	0.83	310383	03/24/23	03/24/23	HMN
trans-1,2-Dichloroethene	ND		ug/Kg	4.1	0.8	0.83	310383	03/24/23	03/24/23	HMN
cis-1,2-Dichloroethene	ND		ug/Kg	4.1	1.0	0.83	310383	03/24/23	03/24/23	HMN
Trichloroethene	ND		ug/Kg	4.1	0.8	0.83	310383	03/24/23	03/24/23	HMN
Tetrachloroethene	ND		ug/Kg	4.1	1.5	0.83	310383	03/24/23	03/24/23	HMN
Surrogates				**Limits**						
Dibromofluoromethane	102%		%REC	70-145	5.1	0.83	310383	03/24/23	03/24/23	HMN
1,2-Dichloroethane-d4	108%		%REC	70-145	6.3	0.83	310383	03/24/23	03/24/23	HMN
Toluene-d8	97%		%REC	70-145	1.0	0.83	310383	03/24/23	03/24/23	HMN
Bromofluorobenzene	98%		%REC	70-145	2.1	0.83	310383	03/24/23	03/24/23	HMN

Results for any subcontracted analyses are not included in this section.

Analysis Results for 481996

#	CCV drift outside limits; average CCV drift within limits per method requirements
ND	Not Detected

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Batch QC

Type: Blank	**Lab ID:** QC1054049	**Batch:** 310401
Matrix: Soil	**Method:** EPA 6010B	**Prep Method:** EPA 3050B

QC1054049 Analyte	Result	Qual	Units	RL	MDL	Prepared	Analyzed
Arsenic	ND		mg/Kg	1.0	0.47	03/24/23	03/28/23
Lead	ND		mg/Kg	1.0	0.14	03/24/23	03/24/23

Type: Lab Control Sample	**Lab ID:** QC1054050	**Batch:** 310401
Matrix: Soil	**Method:** EPA 6010B	**Prep Method:** EPA 3050B

QC1054050 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
Arsenic	97.70	100.0	mg/Kg	98%		80-120
Lead	105.0	100.0	mg/Kg	105%		80-120

Type: Matrix Spike	**Lab ID:** QC1054051	**Batch:** 310401
Matrix (Source ID): Soil (481920-001)	**Method:** EPA 6010B	**Prep Method:** EPA 3050B

QC1054051 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	DF
Arsenic	93.43	3.935	96.15	mg/Kg	93%		75-125	0.96
Lead	111.0	8.699	96.15	mg/Kg	106%		75-125	0.96

Type: Matrix Spike Duplicate	**Lab ID:** QC1054052	**Batch:** 310401
Matrix (Source ID): Soil (481920-001)	**Method:** EPA 6010B	**Prep Method:** EPA 3050B

QC1054052 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	RPD	RPD Lim	DF
Arsenic	96.02	3.935	95.24	mg/Kg	97%		75-125	4	35	0.95
Lead	108.7	8.699	95.24	mg/Kg	105%		75-125	1	20	0.95

ENTHALPY ANALYTICAL

Batch QC

Type: Blank	**Lab ID: QC1055044**	**Batch: 310647**
Matrix: Soil	**Method: EPA 8081A**	**Prep Method: EPA 3546**

QC1055044 Analyte	Result	Qual	Units	RL	MDL	Prepared	Analyzed
alpha-BHC	ND		ug/Kg	5.0	1.2	03/28/23	03/29/23
beta-BHC	ND		ug/Kg	5.0	1.7	03/28/23	03/29/23
gamma-BHC	ND		ug/Kg	5.0	1.0	03/28/23	03/29/23
delta-BHC	ND		ug/Kg	5.0	1.4	03/28/23	03/29/23
Heptachlor	ND		ug/Kg	5.0	1.5	03/28/23	03/29/23
Aldrin	ND		ug/Kg	5.0	1.3	03/28/23	03/29/23
Heptachlor epoxide	ND		ug/Kg	5.0	1.8	03/28/23	03/29/23
Endosulfan I	ND		ug/Kg	5.0	1.4	03/28/23	03/29/23
Dieldrin	ND		ug/Kg	5.0	1.4	03/28/23	03/29/23
4,4'-DDE	ND		ug/Kg	5.0	1.4	03/28/23	03/29/23
Endrin	ND		ug/Kg	5.0	1.6	03/28/23	03/29/23
Endosulfan II	ND		ug/Kg	5.0	1.6	03/28/23	03/29/23
Endosulfan sulfate	ND		ug/Kg	5.0	1.6	03/28/23	03/29/23
4,4'-DDD	ND		ug/Kg	5.0	1.1	03/28/23	03/29/23
Endrin aldehyde	ND		ug/Kg	5.0	1.7	03/28/23	03/29/23
Endrin ketone	ND		ug/Kg	5.0	1.4	03/28/23	03/29/23
4,4'-DDT	ND		ug/Kg	5.0	1.4	03/28/23	03/29/23
Methoxychlor	ND		ug/Kg	10	5.1	03/28/23	03/29/23
Toxaphene	ND		ug/Kg	100	15	03/28/23	03/29/23
Chlordane (Technical)	ND		ug/Kg	50	11	03/28/23	03/29/23
Surrogates				**Limits**			
TCMX	77%		%REC	23-120		03/28/23	03/29/23
Decachlorobiphenyl	68%		%REC	24-120		03/28/23	03/29/23

ENTHALPY ANALYTICAL

Batch QC

Type: Lab Control Sample	**Lab ID: QC1055045**	**Batch: 310647**
Matrix: Soil	**Method: EPA 8081A**	**Prep Method: EPA 3546**

QC1055045 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
alpha-BHC	39.63	49.90	ug/Kg	79%		22-129
beta-BHC	40.39	49.90	ug/Kg	81%		28-125
gamma-BHC	39.73	49.90	ug/Kg	80%		22-128
delta-BHC	39.84	49.90	ug/Kg	80%		24-131
Heptachlor	38.02	49.90	ug/Kg	76%		18-124
Aldrin	33.77	49.90	ug/Kg	68%		23-120
Heptachlor epoxide	39.36	49.90	ug/Kg	79%		26-120
Endosulfan I	40.24	49.90	ug/Kg	81%		25-126
Dieldrin	37.29	49.90	ug/Kg	75%		23-124
4,4'-DDE	38.49	49.90	ug/Kg	77%		28-121
Endrin	41.19	49.90	ug/Kg	83%		25-127
Endosulfan II	37.67	49.90	ug/Kg	75%		29-121
Endosulfan sulfate	34.62	49.90	ug/Kg	69%	#	30-121
4,4'-DDD	38.93	49.90	ug/Kg	78%		26-120
Endrin aldehyde	20.11	49.90	ug/Kg	40%	#	10-120
Endrin ketone	34.96	49.90	ug/Kg	70%	#	28-125
4,4'-DDT	33.52	49.90	ug/Kg	67%	#	22-125
Methoxychlor	32.80	49.90	ug/Kg	66%	#	28-130
Surrogates						
TCMX	35.99	49.90	ug/Kg	72%		23-120
Decachlorobiphenyl	31.26	49.90	ug/Kg	63%		24-120

ENTHALPY ANALYTICAL

Batch QC

Type:	**Matrix Spike**	**Lab ID:**	**QC1055046**	**Batch:**	**310647**
Matrix (Source ID):	**Soil (481996-001)**	**Method:**	**EPA 8081A**	**Prep Method:**	**EPA 3546**

QC1055046 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	DF
alpha-BHC	27.43	ND	49.50	ug/Kg	55%		46-120	0.99
beta-BHC	28.04	ND	49.50	ug/Kg	57%		41-120	0.99
gamma-BHC	26.53	ND	49.50	ug/Kg	54%		41-120	0.99
delta-BHC	26.41	ND	49.50	ug/Kg	53%		38-123	0.99
Heptachlor	26.60	ND	49.50	ug/Kg	54%		39-120	0.99
Aldrin	25.42	ND	49.50	ug/Kg	51%		34-120	0.99
Heptachlor epoxide	27.28	ND	49.50	ug/Kg	55%		43-120	0.99
Endosulfan I	26.78	ND	49.50	ug/Kg	54%		45-120	0.99
Dieldrin	25.82	ND	49.50	ug/Kg	52%		45-120	0.99
4,4'-DDE	26.63	ND	49.50	ug/Kg	54%		34-120	0.99
Endrin	28.44	ND	49.50	ug/Kg	57%		40-120	0.99
Endosulfan II	25.83	ND	49.50	ug/Kg	52%		41-120	0.99
Endosulfan sulfate	20.68	ND	49.50	ug/Kg	42%	#	42-120	0.99
4,4'-DDD	26.77	ND	49.50	ug/Kg	54%		41-120	0.99
Endrin aldehyde	15.31	ND	49.50	ug/Kg	31%	#	30-120	0.99
Endrin ketone	23.04	ND	49.50	ug/Kg	47%	#	45-120	0.99
4,4'-DDT	23.30	ND	49.50	ug/Kg	47%	#	35-127	0.99
Methoxychlor	22.47	ND	49.50	ug/Kg	45%	#	42-136	0.99
Surrogates								
TCMX	27.15		49.50	ug/Kg	55%		23-120	0.99
Decachlorobiphenyl	22.07		49.50	ug/Kg	45%		24-120	0.99

ENTHALPY ANALYTICAL

Batch QC

Type:	**Matrix Spike Duplicate**	**Lab ID:**	**QC1055047**	**Batch:**	**310647**
Matrix (Source ID):	**Soil (481996-001)**	**Method:**	**EPA 8081A**	**Prep Method:**	**EPA 3546**

QC1055047 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	RPD	RPD Lim	DF
alpha-BHC	31.59	ND	49.31	ug/Kg	64%		46-120	14	30	0.99
beta-BHC	34.18	ND	49.31	ug/Kg	69%		41-120	20	30	0.99
gamma-BHC	31.13	ND	49.31	ug/Kg	63%		41-120	16	30	0.99
delta-BHC	30.92	ND	49.31	ug/Kg	63%		38-123	16	30	0.99
Heptachlor	30.10	ND	49.31	ug/Kg	61%		39-120	13	30	0.99
Aldrin	30.10	ND	49.31	ug/Kg	61%		34-120	17	30	0.99
Heptachlor epoxide	31.97	ND	49.31	ug/Kg	65%		43-120	16	30	0.99
Endosulfan I	32.37	ND	49.31	ug/Kg	66%		45-120	19	30	0.99
Dieldrin	30.80	ND	49.31	ug/Kg	62%		45-120	18	30	0.99
4,4'-DDE	31.26	ND	49.31	ug/Kg	63%		34-120	16	30	0.99
Endrin	33.34	ND	49.31	ug/Kg	68%		40-120	16	30	0.99
Endosulfan II	30.60	ND	49.31	ug/Kg	62%		41-120	17	30	0.99
Endosulfan sulfate	26.19	ND	49.31	ug/Kg	53%	#	42-120	24	30	0.99
4,4'-DDD	31.92	ND	49.31	ug/Kg	65%		41-120	18	30	0.99
Endrin aldehyde	20.22	ND	49.31	ug/Kg	41%	#	30-120	28	30	0.99
Endrin ketone	27.67	ND	49.31	ug/Kg	56%	#	45-120	19	30	0.99
4,4'-DDT	28.03	ND	49.31	ug/Kg	57%	#	35-127	19	30	0.99
Methoxychlor	26.81	ND	49.31	ug/Kg	54%	#	42-136	18	30	0.99
Surrogates										
TCMX	30.23		49.31	ug/Kg	61%		23-120			0.99
Decachlorobiphenyl	25.80		49.31	ug/Kg	52%		24-120			0.99

Type:	**Lab Control Sample**	**Lab ID:**	**QC1053974**	**Batch:**	**310383**
Matrix:	**Soil**	**Method:**	**EPA 8260B**	**Prep Method:**	**EPA 5035**

QC1053974 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
1,1-Dichloroethene	49.80	50.00	ug/Kg	100%		70-131
Trichloroethene	50.29	50.00	ug/Kg	101%		70-130
Chlorobenzene	51.14	50.00	ug/Kg	102%		70-130
Surrogates						
Dibromofluoromethane	49.93	50.00	ug/Kg	100%		70-130
1,2-Dichloroethane-d4	48.44	50.00	ug/Kg	97%		70-145
Toluene-d8	50.46	50.00	ug/Kg	101%		70-145
Bromofluorobenzene	51.38	50.00	ug/Kg	103%		70-145

ENTHALPY ANALYTICAL

Batch QC

Type: Lab Control Sample Duplicate	Lab ID: QC1053975	Batch: 310383
Matrix: Soil	Method: EPA 8260B	Prep Method: EPA 5035

QC1053975 Analyte	Result	Spiked	Units	Recovery	Qual	Limits	RPD	RPD Lim
1,1-Dichloroethene	49.24	50.00	ug/Kg	98%		70-131	1	33
Trichloroethene	49.05	50.00	ug/Kg	98%		70-130	3	30
Chlorobenzene	49.35	50.00	ug/Kg	99%		70-130	4	30
Surrogates								
Dibromofluoromethane	49.77	50.00	ug/Kg	100%		70-130		
1,2-Dichloroethane-d4	50.29	50.00	ug/Kg	101%		70-145		
Toluene-d8	50.50	50.00	ug/Kg	101%		70-145		
Bromofluorobenzene	50.81	50.00	ug/Kg	102%		70-145		

Type: Blank	Lab ID: QC1053978	Batch: 310383
Matrix: Soil	Method: EPA 8260B	Prep Method: EPA 5035

QC1053978 Analyte	Result	Qual	Units	RL	MDL	Prepared	Analyzed
Vinyl Chloride	ND		ug/Kg	5.0	1.0	03/24/23	03/24/23
1,1-Dichloroethene	ND		ug/Kg	5.0	1.0	03/24/23	03/24/23
trans-1,2-Dichloroethene	ND		ug/Kg	5.0	1.0	03/24/23	03/24/23
cis-1,2-Dichloroethene	ND		ug/Kg	5.0	1.2	03/24/23	03/24/23
Trichloroethene	ND		ug/Kg	5.0	1.0	03/24/23	03/24/23
Tetrachloroethene	ND		ug/Kg	5.0	1.9	03/24/23	03/24/23
Surrogates				**Limits**			
Dibromofluoromethane	99%		%REC	70-130	6.1	03/24/23	03/24/23
1,2-Dichloroethane-d4	102%		%REC	70-145	7.7	03/24/23	03/24/23
Toluene-d8	100%		%REC	70-145	1.2	03/24/23	03/24/23
Bromofluorobenzene	99%		%REC	70-145	2.6	03/24/23	03/24/23

Type: Blank	Lab ID: QC1053979	Batch: 310383
Matrix: Soil	Method: EPA 8260B	Prep Method: EPA 5035

QC1053979 Analyte	Result	Qual	Units	RL	MDL	Prepared	Analyzed
Vinyl Chloride	ND		ug/Kg	250	80	03/24/23	03/24/23
1,1-Dichloroethene	ND		ug/Kg	250	50	03/24/23	03/24/23
trans-1,2-Dichloroethene	ND		ug/Kg	250	55	03/24/23	03/24/23
cis-1,2-Dichloroethene	ND		ug/Kg	250	55	03/24/23	03/24/23
Trichloroethene	ND		ug/Kg	250	58	03/24/23	03/24/23
Tetrachloroethene	ND		ug/Kg	250	47	03/24/23	03/24/23
Surrogates				**Limits**			
Dibromofluoromethane	98%		%REC	70-130		03/24/23	03/24/23
1,2-Dichloroethane-d4	100%		%REC	70-145		03/24/23	03/24/23
Toluene-d8	97%		%REC	70-145		03/24/23	03/24/23
Bromofluorobenzene	97%		%REC	70-145		03/24/23	03/24/23

Batch QC

#	CCV drift outside limits; average CCV drift within limits per method requirements
ND	Not Detected

Laboratory Job Number 481996

Subcontracted Products

McCampbell Analytical, Inc.

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 2303L08

Report Created for: Enthalpy Analytical

931 West Barkley Avenue
Orange, CA 92868

Project Contact: Ranjit Clarke
Project P.O.:
Project: EO-481996

Project Received: 03/29/2023

Analytical Report reviewed & approved for release on 03/31/2023 by:

Jena Alfaro
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in a case narrative.

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Glossary of Terms & Qualifier Definitions

Client: Enthalpy Analytical **WorkOrder:** 2303L08

Project: EO-481996

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CPT	Consumer Product Testing not NELAP Accredited
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LQL	Lowest Quantitation Level
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit [1]
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting limit [2]
RPD	Relative Percent Difference
RRT	Relative Retention Time
RSD	Relative Standard Deviation
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure

[1] MDL is the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results. Definition and Procedure for the Determination of the Method Detection Limit, Revision 2, 40CFR, Part 136, Appendix B, EPA 821-R-16-006, December 2016.

[2] RL is the lowest level that can be reliably determined within specified limits of precision and accuracy during routine laboratory operating conditions. (The RL cannot be lower than the lowest calibration standard used in the initial calibration of the instrument and must be greater than the MDL.)

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Glossary of Terms & Qualifier Definitions

Client: Enthalpy Analytical **WorkOrder:** 2303L08

Project: EO-481996

TEQ	Toxicity Equivalents
TZA	TimeZone Net Adjustment for sample collected outside of MAI's UTC.
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Analytical Qualifiers

a3	Sample diluted due to high organic content interfering with quantitative/or qualitative analysis.

Quality Control Qualifiers

F2	LCS/LCSD recovery and/or RPD/RSD is out of acceptance criteria.

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Analytical Report

Client:	Enthalpy Analytical	**WorkOrder:**	2303L08
Date Received:	03/29/2023 10:19	**Extraction Method:**	SW8151A
Date Prepared:	03/30/2023	**Analytical Method:**	SW8151A
Project:	EO-481996	**Unit:**	mg/kg

Chlorinated Herbicides by GC-ECD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B1-2	2303L08-001A	Soil	03/16/2023 09:30	GC15A 03302322.D	266615

Analytes	Result	MDL	RL	DF	Date Analyzed
Acifluorfen	ND	0.048	0.10	10	03/30/2023 23:22
Bentazon	ND	0.033	0.10	10	03/30/2023 23:22
Chloramben	ND	0.056	0.10	10	03/30/2023 23:22
2,4-D (Dichlorophenoxyacetic acid)	ND	0.046	0.10	10	03/30/2023 23:22
2,4-DB	ND	0.045	0.10	10	03/30/2023 23:22
Dalapon	ND	0.069	0.10	10	03/30/2023 23:22
DCPA (mono & diacid)	ND	0.043	0.10	10	03/30/2023 23:22
Dicamba	ND	0.035	0.10	10	03/30/2023 23:22
3,5-Dichlorobenzoic Acid	ND	0.038	0.10	10	03/30/2023 23:22
Dichloroprop	ND	0.036	0.10	10	03/30/2023 23:22
Dinoseb (DNBP)	ND	0.036	0.10	10	03/30/2023 23:22
MCPA	ND	4.8	10	10	03/30/2023 23:22
MCPP	ND	3.6	10	10	03/30/2023 23:22
4-Nitrophenol	ND	0.071	0.10	10	03/30/2023 23:22
Pentachlorophenol (PCP)	ND	0.028	0.10	10	03/30/2023 23:22
Picloram	ND	0.043	0.10	10	03/30/2023 23:22
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.030	0.10	10	03/30/2023 23:22
2,4,5-TP (Silvex)	ND	0.027	0.10	10	03/30/2023 23:22

Surrogates	REC (%)	Limits	
DCAA	95	60-140	03/30/2023 23:22

Analyst(s): DP Analytical Comments: a3

(Cont.)

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Analytical Report

Client:	Enthalpy Analytical	**WorkOrder:**	2303L08
Date Received:	03/29/2023 10:19	**Extraction Method:**	SW8151A
Date Prepared:	03/30/2023	**Analytical Method:**	SW8151A
Project:	EO-481996	**Unit:**	mg/kg

Chlorinated Herbicides by GC-ECD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B2-5	2303L08-002A	Soil	03/16/2023 09:55	GC15A 03302325.D	266615

Analytes	Result	MDL	RL	DF	Date Analyzed
Acifluorfen	ND	0.0048	0.010	1	03/31/2023 00:37
Bentazon	ND	0.0033	0.010	1	03/31/2023 00:37
Chloramben	ND	0.0056	0.010	1	03/31/2023 00:37
2,4-D (Dichlorophenoxyacetic acid)	ND	0.0046	0.010	1	03/31/2023 00:37
2,4-DB	ND	0.0045	0.010	1	03/31/2023 00:37
Dalapon	ND	0.0069	0.010	1	03/31/2023 00:37
DCPA (mono & diacid)	ND	0.0043	0.010	1	03/31/2023 00:37
Dicamba	ND	0.0035	0.010	1	03/31/2023 00:37
3,5-Dichlorobenzoic Acid	ND	0.0038	0.010	1	03/31/2023 00:37
Dichloroprop	ND	0.0036	0.010	1	03/31/2023 00:37
Dinoseb (DNBP)	ND	0.0036	0.010	1	03/31/2023 00:37
MCPA	ND	0.48	1.0	1	03/31/2023 00:37
MCPP	ND	0.36	1.0	1	03/31/2023 00:37
4-Nitrophenol	ND	0.0071	0.010	1	03/31/2023 00:37
Pentachlorophenol (PCP)	ND	0.0028	0.010	1	03/31/2023 00:37
Picloram	ND	0.0043	0.010	1	03/31/2023 00:37
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.0030	0.010	1	03/31/2023 00:37
2,4,5-TP (Silvex)	ND	0.0027	0.010	1	03/31/2023 00:37

Surrogates	REC (%)	Limits	
DCAA	94	60-140	03/31/2023 00:37

Analyst(s): DP

(Cont.)

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Analytical Report

Client:	Enthalpy Analytical	**WorkOrder:**	2303L08
Date Received:	03/29/2023 10:19	**Extraction Method:**	SW8151A
Date Prepared:	03/30/2023	**Analytical Method:**	SW8151A
Project:	EO-481996	**Unit:**	mg/kg

Chlorinated Herbicides by GC-ECD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B3-2	2303L08-003A	Soil	03/16/2023 10:10	GC15A 03302326.D	266615

Analytes	Result	MDL	RL	DF	Date Analyzed
Acifluorfen	ND	0.048	0.10	10	03/31/2023 01:02
Bentazon	ND	0.033	0.10	10	03/31/2023 01:02
Chloramben	ND	0.056	0.10	10	03/31/2023 01:02
2,4-D (Dichlorophenoxyacetic acid)	ND	0.046	0.10	10	03/31/2023 01:02
2,4-DB	ND	0.045	0.10	10	03/31/2023 01:02
Dalapon	ND	0.069	0.10	10	03/31/2023 01:02
DCPA (mono & diacid)	ND	0.043	0.10	10	03/31/2023 01:02
Dicamba	ND	0.035	0.10	10	03/31/2023 01:02
3,5-Dichlorobenzoic Acid	ND	0.038	0.10	10	03/31/2023 01:02
Dichloroprop	ND	0.036	0.10	10	03/31/2023 01:02
Dinoseb (DNBP)	ND	0.036	0.10	10	03/31/2023 01:02
MCPA	ND	4.8	10	10	03/31/2023 01:02
MCPP	ND	3.6	10	10	03/31/2023 01:02
4-Nitrophenol	ND	0.071	0.10	10	03/31/2023 01:02
Pentachlorophenol (PCP)	ND	0.028	0.10	10	03/31/2023 01:02
Picloram	ND	0.043	0.10	10	03/31/2023 01:02
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.030	0.10	10	03/31/2023 01:02
2,4,5-TP (Silvex)	ND	0.027	0.10	10	03/31/2023 01:02

Surrogates	REC (%)	Limits	
DCAA	96	60-140	03/31/2023 01:02

Analyst(s): DP Analytical Comments: a3

(Cont.)

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Analytical Report

Client:	Enthalpy Analytical	**WorkOrder:**	2303L08
Date Received:	03/29/2023 10:19	**Extraction Method:**	SW8151A
Date Prepared:	03/30/2023	**Analytical Method:**	SW8151A
Project:	EO-481996	**Unit:**	mg/kg

Chlorinated Herbicides by GC-ECD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B4-5	2303L08-004A	Soil	03/16/2023 10:30	GC15A 03302327.D	266615

Analytes	Result	MDL	RL	DF	Date Analyzed
Acifluorfen	ND	0.0048	0.010	1	03/31/2023 01:27
Bentazon	ND	0.0033	0.010	1	03/31/2023 01:27
Chloramben	ND	0.0056	0.010	1	03/31/2023 01:27
2,4-D (Dichlorophenoxyacetic acid)	ND	0.0046	0.010	1	03/31/2023 01:27
2,4-DB	ND	0.0045	0.010	1	03/31/2023 01:27
Dalapon	ND	0.0069	0.010	1	03/31/2023 01:27
DCPA (mono & diacid)	ND	0.0043	0.010	1	03/31/2023 01:27
Dicamba	ND	0.0035	0.010	1	03/31/2023 01:27
3,5-Dichlorobenzoic Acid	ND	0.0038	0.010	1	03/31/2023 01:27
Dichloroprop	ND	0.0036	0.010	1	03/31/2023 01:27
Dinoseb (DNBP)	ND	0.0036	0.010	1	03/31/2023 01:27
MCPA	ND	0.48	1.0	1	03/31/2023 01:27
MCPP	ND	0.36	1.0	1	03/31/2023 01:27
4-Nitrophenol	ND	0.0071	0.010	1	03/31/2023 01:27
Pentachlorophenol (PCP)	ND	0.0028	0.010	1	03/31/2023 01:27
Picloram	ND	0.0043	0.010	1	03/31/2023 01:27
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.0030	0.010	1	03/31/2023 01:27
2,4,5-TP (Silvex)	ND	0.0027	0.010	1	03/31/2023 01:27

Surrogates	REC (%)	Limits	
DCAA	97	60-140	03/31/2023 01:27

Analyst(s): DP

(Cont.)

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Analytical Report

Client:	Enthalpy Analytical	**WorkOrder:**	2303L08
Date Received:	03/29/2023 10:19	**Extraction Method:**	SW8151A
Date Prepared:	03/30/2023	**Analytical Method:**	SW8151A
Project:	EO-481996	**Unit:**	mg/kg

Chlorinated Herbicides by GC-ECD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B5-2	2303L08-005A	Soil	03/16/2023 10:40	GC15A 03302328.D	266615

Analytes	Result	MDL	RL	DF	Date Analyzed
Acifluorfen	ND	0.048	0.10	10	03/31/2023 01:52
Bentazon	ND	0.033	0.10	10	03/31/2023 01:52
Chloramben	ND	0.056	0.10	10	03/31/2023 01:52
2,4-D (Dichlorophenoxyacetic acid)	ND	0.046	0.10	10	03/31/2023 01:52
2,4-DB	ND	0.045	0.10	10	03/31/2023 01:52
Dalapon	ND	0.069	0.10	10	03/31/2023 01:52
DCPA (mono & diacid)	ND	0.043	0.10	10	03/31/2023 01:52
Dicamba	ND	0.035	0.10	10	03/31/2023 01:52
3,5-Dichlorobenzoic Acid	ND	0.038	0.10	10	03/31/2023 01:52
Dichloroprop	ND	0.036	0.10	10	03/31/2023 01:52
Dinoseb (DNBP)	ND	0.036	0.10	10	03/31/2023 01:52
MCPA	ND	4.8	10	10	03/31/2023 01:52
MCPP	ND	3.6	10	10	03/31/2023 01:52
4-Nitrophenol	ND	0.071	0.10	10	03/31/2023 01:52
Pentachlorophenol (PCP)	ND	0.028	0.10	10	03/31/2023 01:52
Picloram	ND	0.043	0.10	10	03/31/2023 01:52
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.030	0.10	10	03/31/2023 01:52
2,4,5-TP (Silvex)	ND	0.027	0.10	10	03/31/2023 01:52

Surrogates	REC (%)	Limits	
DCAA	91	60-140	03/31/2023 01:52

Analyst(s): DP Analytical Comments: a3

(Cont.)

CA ELAP 1644 • NELAP 4033ORELAP

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1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	Enthalpy Analytical	**WorkOrder:**	2303L08
Date Received:	03/29/2023 10:19	**Extraction Method:**	SW8151A
Date Prepared:	03/30/2023	**Analytical Method:**	SW8151A
Project:	EO-481996	**Unit:**	mg/kg

Chlorinated Herbicides by GC-ECD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B6-5	2303L08-006A	Soil	03/16/2023 12:15	GC15A 03302329.D	266615

Analytes	Result	MDL	RL	DF	Date Analyzed
Acifluorfen	ND	0.0048	0.010	1	03/31/2023 02:17
Bentazon	ND	0.0033	0.010	1	03/31/2023 02:17
Chloramben	ND	0.0056	0.010	1	03/31/2023 02:17
2,4-D (Dichlorophenoxyacetic acid)	ND	0.0046	0.010	1	03/31/2023 02:17
2,4-DB	ND	0.0045	0.010	1	03/31/2023 02:17
Dalapon	ND	0.0069	0.010	1	03/31/2023 02:17
DCPA (mono & diacid)	ND	0.0043	0.010	1	03/31/2023 02:17
Dicamba	ND	0.0035	0.010	1	03/31/2023 02:17
3,5-Dichlorobenzoic Acid	ND	0.0038	0.010	1	03/31/2023 02:17
Dichloroprop	ND	0.0036	0.010	1	03/31/2023 02:17
Dinoseb (DNBP)	ND	0.0036	0.010	1	03/31/2023 02:17
MCPA	ND	0.48	1.0	1	03/31/2023 02:17
MCPP	ND	0.36	1.0	1	03/31/2023 02:17
4-Nitrophenol	ND	0.0071	0.010	1	03/31/2023 02:17
Pentachlorophenol (PCP)	ND	0.0028	0.010	1	03/31/2023 02:17
Picloram	ND	0.0043	0.010	1	03/31/2023 02:17
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.0030	0.010	1	03/31/2023 02:17
2,4,5-TP (Silvex)	ND	0.0027	0.010	1	03/31/2023 02:17

Surrogates	REC (%)	Limits	
DCAA	97	60-140	03/31/2023 02:17

Analyst(s): DP

(Cont.)

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Analytical Report

Client:	Enthalpy Analytical	**WorkOrder:**	2303L08
Date Received:	03/29/2023 10:19	**Extraction Method:**	SW8151A
Date Prepared:	03/30/2023	**Analytical Method:**	SW8151A
Project:	EO-481996	**Unit:**	mg/kg

Chlorinated Herbicides by GC-ECD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B7-2	2303L08-007A	Soil	03/16/2023 12:20	GC15A 03302330.D	266615

Analytes	Result	MDL	RL	DF	Date Analyzed
Acifluorfen	ND	0.048	0.10	10	03/31/2023 02:42
Bentazon	ND	0.033	0.10	10	03/31/2023 02:42
Chloramben	ND	0.056	0.10	10	03/31/2023 02:42
2,4-D (Dichlorophenoxyacetic acid)	ND	0.046	0.10	10	03/31/2023 02:42
2,4-DB	ND	0.045	0.10	10	03/31/2023 02:42
Dalapon	ND	0.069	0.10	10	03/31/2023 02:42
DCPA (mono & diacid)	ND	0.043	0.10	10	03/31/2023 02:42
Dicamba	ND	0.035	0.10	10	03/31/2023 02:42
3,5-Dichlorobenzoic Acid	ND	0.038	0.10	10	03/31/2023 02:42
Dichloroprop	ND	0.036	0.10	10	03/31/2023 02:42
Dinoseb (DNBP)	ND	0.036	0.10	10	03/31/2023 02:42
MCPA	ND	4.8	10	10	03/31/2023 02:42
MCPP	ND	3.6	10	10	03/31/2023 02:42
4-Nitrophenol	ND	0.071	0.10	10	03/31/2023 02:42
Pentachlorophenol (PCP)	ND	0.028	0.10	10	03/31/2023 02:42
Picloram	ND	0.043	0.10	10	03/31/2023 02:42
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.030	0.10	10	03/31/2023 02:42
2,4,5-TP (Silvex)	ND	0.027	0.10	10	03/31/2023 02:42

Surrogates	REC (%)	Limits	
DCAA	92	60-140	03/31/2023 02:42

Analyst(s): DP Analytical Comments: a3

(Cont.)

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	Enthalpy Analytical	**WorkOrder:**	2303L08
Date Received:	03/29/2023 10:19	**Extraction Method:**	SW8151A
Date Prepared:	03/30/2023	**Analytical Method:**	SW8151A
Project:	EO-481996	**Unit:**	mg/kg

Chlorinated Herbicides by GC-ECD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B8-2	2303L08-008A	Soil	03/16/2023 12:35	GC15A 03302331.D	266615

Analytes	Result	MDL	RL	DF	Date Analyzed
Acifluorfen	ND	0.0048	0.010	1	03/31/2023 03:07
Bentazon	ND	0.0033	0.010	1	03/31/2023 03:07
Chloramben	ND	0.0056	0.010	1	03/31/2023 03:07
2,4-D (Dichlorophenoxyacetic acid)	ND	0.0046	0.010	1	03/31/2023 03:07
2,4-DB	ND	0.0045	0.010	1	03/31/2023 03:07
Dalapon	ND	0.0069	0.010	1	03/31/2023 03:07
DCPA (mono & diacid)	ND	0.0043	0.010	1	03/31/2023 03:07
Dicamba	ND	0.0035	0.010	1	03/31/2023 03:07
3,5-Dichlorobenzoic Acid	ND	0.0038	0.010	1	03/31/2023 03:07
Dichloroprop	ND	0.0036	0.010	1	03/31/2023 03:07
Dinoseb (DNBP)	ND	0.0036	0.010	1	03/31/2023 03:07
MCPA	ND	0.48	1.0	1	03/31/2023 03:07
MCPP	ND	0.36	1.0	1	03/31/2023 03:07
4-Nitrophenol	ND	0.0071	0.010	1	03/31/2023 03:07
Pentachlorophenol (PCP)	ND	0.0028	0.010	1	03/31/2023 03:07
Picloram	ND	0.0043	0.010	1	03/31/2023 03:07
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.0030	0.010	1	03/31/2023 03:07
2,4,5-TP (Silvex)	ND	0.0027	0.010	1	03/31/2023 03:07

Surrogates	REC (%)	Limits	
DCAA	97	60-140	03/31/2023 03:07

Analyst(s): DP

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Quality Control Report

Client:	Enthalpy Analytical	**WorkOrder:**	2303L08
Date Prepared:	03/30/2023	**BatchID:**	266615
Date Analyzed:	03/30/2023 - 03/31/2023	**Extraction Method:**	SW8151A
Instrument:	GC15A	**Analytical Method:**	SW8151A
Matrix:	Soil	**Unit:**	mg/kg
Project:	EO-481996	**Sample ID:**	MB/LCS/LCSD-266615 2303L08-001AMS/MSD

QC Summary Report for SW8151A

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Acifluorfen	ND	0.0048	0.010	-	-	-
Bentazon	ND	0.0033	0.010	-	-	-
Chloramben	ND	0.0056	0.010	-	-	-
2,4-D (Dichlorophenoxyacetic acid)	ND	0.0046	0.010	-	-	-
2,4-DB	ND	0.0045	0.010	-	-	-
Dalapon	ND	0.0069	0.010	-	-	-
DCPA (mono & diacid)	ND	0.0043	0.010	-	-	-
Dicamba	ND	0.0035	0.010	-	-	-
3,5-Dichlorobenzoic Acid	ND	0.0038	0.010	-	-	-
Dichloroprop	ND	0.0036	0.010	-	-	-
Dinoseb (DNBP)	ND	0.0036	0.010	-	-	-
MCPA	ND	0.48	1.0	-	-	-
MCPP	ND	0.36	1.0	-	-	-
4-Nitrophenol	ND	0.0071	0.010	-	-	-
Pentachlorophenol (PCP)	ND	0.0028	0.010	-	-	-
Picloram	ND	0.0043	0.010	-	-	-
2,4,5-T (Trichlorophenoxy acetic acid)	ND	0.0030	0.010	-	-	-
2,4,5-TP (Silvex)	ND	0.0027	0.010	-	-	-
Surrogate Recovery						
DCAA	0.10			0.1	103	77-116

(Cont.)

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Quality Control Report

Client:	Enthalpy Analytical	**WorkOrder:**	2303L08
Date Prepared:	03/30/2023	**BatchID:**	266615
Date Analyzed:	03/30/2023 - 03/31/2023	**Extraction Method:**	SW8151A
Instrument:	GC15A	**Analytical Method:**	SW8151A
Matrix:	Soil	**Unit:**	mg/kg
Project:	EO-481996	**Sample ID:**	MB/LCS/LCSD-266615 2303L08-001AMS/MSD

QC Summary Report for SW8151A

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acifluorfen	0.084	0.078	0.10	84	78	31-145	8.09	30
Bentazon	0.11	0.10	0.10	108	101	60-140	6.14	30
Chloramben	0.11	0.10	0.10	107	101	60-140	6.37	30
2,4-D (Dichlorophenoxyacetic acid)	0.080	0.076	0.10	80	76	72-121	5.17	30
2,4-DB	0.085	0.086	0.10	85	86	69-134	0.441	30
Dalapon	0.095	0.089	0.10	95	89	73-117	6.06	30
DCPA (mono & diacid)	0.082	0.077	0.10	82	77	60-140	5.13	30
Dicamba	0.089	0.084	0.10	89	84	71-121	6.13	30
3,5-Dichlorobenzoic Acid	0.091	0.084	0.10	91	84	60-140	7.36	30
Dichloroprop	0.089	0.083	0.10	89	83	60-140	6.62	30
Dinoseb (DNBP)	0.084	0.082	0.10	84	82	60-140	3.00	30
MCPA	8.9	9.1	10	89	91	60-140	2.48	30
MCPP	9.1	8.4	10	91	84	60-140	8.52	30
4-Nitrophenol	0.17	0.15	0.10	170,F2	151,F2	60-140	11.5	30
Pentachlorophenol (PCP)	0.081	0.074	0.10	81	74	68-135	8.30	30
Picloram	0.083	0.077	0.10	83	77	60-140	7.67	30
2,4,5-T (Trichlorophenoxy acetic acid)	0.089	0.084	0.10	89	84	60-140	5.46	30
2,4,5-TP (Silvex)	0.088	0.084	0.10	88	84	70-130	4.39	30
Surrogate Recovery								
DCAA	0.11	0.10	0.10	107	100	77-116	6.66	30

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acifluorfen	10	0.088	0.093	0.10	ND<0.10	88	93	60-140	5.88	30
Bentazon	10	0.13	0.14	0.10	ND<0.10	131	139	60-140	5.94	30
Chloramben	10	0.12	0.12	0.10	ND<0.10	118	124	60-140	4.93	30
2,4-D (Dichlorophenoxyacetic acid)	10	0.093	0.098	0.10	ND<0.10	93	98	56-156	4.74	30
2,4-DB	10	0.079	0.078	0.10	ND<0.10	79	78	45-164	0.391	30
Dalapon	10	NR	NR	0.10	ND<0.10	NR	NR	54-142	NR	30
DCPA (mono & diacid)	10	0.090	0.093	0.10	ND<0.10	90	93	60-140	3.63	30
Dicamba	10	0.094	0.096	0.10	ND<0.10	94	96	65-131	2.41	30
3,5-Dichlorobenzoic Acid	10	0.096	0.099	0.10	ND<0.10	96	99	60-140	2.80	30
Dichloroprop	10	0.093	0.097	0.10	ND<0.10	93	97	60-140	3.35	30
Dinoseb (DNBP)	10	0.076	0.080	0.10	ND<0.10	76	80	60-140	4.92	30
MCPA	10	13	14	10	ND<10	127	139	60-140	8.96	30
MCPP	10	9.8	9.3	10	ND<10	98	93	60-140	5.78	30

(Cont.)

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Quality Control Report

Client:	Enthalpy Analytical	**WorkOrder:**	2303L08
Date Prepared:	03/30/2023	**BatchID:**	266615
Date Analyzed:	03/30/2023 - 03/31/2023	**Extraction Method:**	SW8151A
Instrument:	GC15A	**Analytical Method:**	SW8151A
Matrix:	Soil	**Unit:**	mg/kg
Project:	EO-481996	**Sample ID:**	MB/LCS/LCSD-266615 2303L08-001AMS/MSD

QC Summary Report for SW8151A

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
4-Nitrophenol	10	0.093	0.094	0.10	ND<0.10	93	94	60-140	1.26	30
Pentachlorophenol (PCP)	10	0.067	0.070	0.10	ND<0.10	67	70	60-140	3.88	30
Picloram	10	0.093	0.098	0.10	ND<0.10	93	98	60-140	5.35	30
2,4,5-T (Trichlorophenoxy acetic acid)	10	0.084	0.089	0.10	ND<0.10	84	89	60-140	5.27	30
2,4,5-TP (Silvex)	10	0.097	0.10	0.10	ND<0.10	97	103	61-131	5.53	30
Surrogate Recovery										
DCAA	10	0.096	0.099	0.10		96	99	63-121	2.59	20

McCampbell Analytical, Inc.
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(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 2303L08 **ClientCode: ENO** **QuoteID: 223972**

☐ WaterTrax ☐ CLIP ☐ EDF ☑ EQuIS ☑ Dry-Weight ☑ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag
☑ Detection Summary ☑ Excel [A1_w/QC_noMDL (Hist)]

Report to:
Ranjit Clarke
Enthalpy Analytical
931 West Barkley Avenue
Orange, CA 92868
(657) 581-4710 FAX:
Email: Ranjit.Clarke@enthalpy.com; incomingrepo
cc/3rd Party:
PO:
Project: EO-481996

Bill to:
Accounts Payable/Enthalpy SoCal
Montrose Environmental Group
PO Box 842165
Boston, MA 02284-2165
003EL_ap@montrose-env.com

Requested TAT: **2 days;**

Date Received: **03/29/2023**
Date Logged: **03/29/2023**

Lab ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2303L08-001	B1-2	Soil	3/16/2023 09:30	☐	A	A										
2303L08-002	B2-5	Soil	3/16/2023 09:55	☐	A	A										
2303L08-003	B3-2	Soil	3/16/2023 10:10	☐	A	A										
2303L08-004	B4-5	Soil	3/16/2023 10:30	☐	A	A										
2303L08-005	B5-2	Soil	3/16/2023 10:40	☐	A	A										
2303L08-006	B6-5	Soil	3/16/2023 12:15	☐	A	A										
2303L08-007	B7-2	Soil	3/16/2023 12:20	☐	A	A										
2303L08-008	B8-2	Soil	3/16/2023 12:35	☐	A	A										

Test Legend:

1	8151_S	2	PRDisposal Fee	3		4	
5		6		7		8	
9		10		11		12	

Project Manager: Yen Cao

Prepared by: Adrianna Cardoza

Comments:

NOTE: Soil samples are discarded 60 days after receipt unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: ENTHALPY ANALYTICAL
Client Contact: Ranjit Clarke
Contact's Email: Ranjit.Clarke@enthalpy.com; incomingreports@enthalpy.com

Project: EO-481996
Comments:

Work Order: 2303L08
QC Level: LEVEL 2
Date Logged: 3/29/2023

☐ WaterTrax ☐ CLIP ☐ EDF ☑ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag

LabID	ClientSampID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	U**	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	Sub Out
001A	B1-2	Soil	SW8151A (Chlorinated Herbicides)	1	4OZ GJ, Unpres	☐	☐	☐	3/16/2023 9:30	2 days	3/31/2023		☐	☐
002A	B2-5	Soil	SW8151A (Chlorinated Herbicides)	1	4OZ GJ, Unpres	☐	☐	☐	3/16/2023 9:55	2 days	3/31/2023		☐	☐
003A	B3-2	Soil	SW8151A (Chlorinated Herbicides)	1	4OZ GJ, Unpres	☐	☐	☐	3/16/2023 10:10	2 days	3/31/2023		☐	☐
004A	B4-5	Soil	SW8151A (Chlorinated Herbicides)	1	4OZ GJ, Unpres	☐	☐	☐	3/16/2023 10:30	2 days	3/31/2023		☐	☐
005A	B5-2	Soil	SW8151A (Chlorinated Herbicides)	1	4OZ GJ, Unpres	☐	☐	☐	3/16/2023 10:40	2 days	3/31/2023		☐	☐
006A	B6-5	Soil	SW8151A (Chlorinated Herbicides)	1	4OZ GJ, Unpres	☐	☐	☐	3/16/2023 12:15	2 days	3/31/2023		☐	☐
007A	B7-2	Soil	SW8151A (Chlorinated Herbicides)	1	4OZ GJ, Unpres	☐	☐	☐	3/16/2023 12:20	2 days	3/31/2023		☐	☐
008A	B8-2	Soil	SW8151A (Chlorinated Herbicides)	1	4OZ GJ, Unpres	☐	☐	☐	3/16/2023 12:35	2 days	3/31/2023		☐	☐

NOTES: * STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- Organic extracts are held for 40 days before disposal; Inorganic extract are held for 30 days.

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

U = An unpreserved container was received for a method that suggests a preservation in order to extend hold time for analysis.**

2303L08

ENTHALPY ANALYTICAL

Enthalpy Analytical - Orange
Orange, CA 92868
(714) 771-6900 / Fax: (510) 486-0532

Subcontract Laboratory:
McCampbell Analytical, Inc.
1534 Willow Pass Rd.
Pittsburg, CA 94565
ATTN: Quote ID: 223972
PO #: Required, to be sent via email

RUSH!

Enthalpy Order: EO-481996
PM: Ranjit K Clarke
Email: Ranjit.Clarke@enthalpy.com
CC: incomingreports@enthalpy.com
Phone: (714) 771-9906

Results Due: 03/31/23
Report Level: II
Report To: MDL
EDDs: Standard Excel EDD

Notes:

Sample ID	Collected	Lab ID	# Cont.	Matrix	Analysis Requested	Comment
B1-2	16-MAR-2023 09:30	481996-001	1	Soil	EPA 8151A Chlorinated Herbicides	
B2-5	16-MAR-2023 09:55	481996-004	1	Soil	EPA 8151A Chlorinated Herbicides	
B3-2	16-MAR-2023 10:10	481996-005	1	Soil	EPA 8151A Chlorinated Herbicides	
B4-5	16-MAR-2023 10:30	481996-008	1	Soil	EPA 8151A Chlorinated Herbicides	
B5-2	16-MAR-2023 10:40	481996-009	1	Soil	EPA 8151A Chlorinated Herbicides	
B6-5	16-MAR-2023 12:15	481996-012	1	Soil	EPA 8151A Chlorinated Herbicides	
B7-2	16-MAR-2023 12:20	481996-013	1	Soil	EPA 8151A Chlorinated Herbicides	
B8-2	16-MAR-2023 12:35	481996-015	1	Soil	EPA 8151A Chlorinated Herbicides	

Notes:	Relinquished By:	Received By:
	Date: 3/28/23 1610	Date: 3-29-23 1019
	Date:	Date:
	Date:	Date:

2.9wt

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"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	Enthalpy Analytical	Date and Time Received:	3/29/2023 10:19
Project:	EO-481996	Date Logged:	3/29/2023
		Received by:	Adrianna Cardoza
WorkOrder №:	2303L08 Matrix: Soil	Logged by:	Adrianna Cardoza
Carrier:	Golden State Overnight		

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐	
Chain of custody signed when relinquished and received?	Yes	☑	No	☐	
Chain of custody agrees with sample labels?	Yes	☑	No	☐	
Sample IDs noted by Client on COC?	Yes	☑	No	☐	
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐	
Sampler's name noted on COC?	Yes	☑	No	☐	
COC agrees with Quote?	Yes	☑	No	☐	NA ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☑	No	☐	NA ☐
Custody seals intact on sample bottles?	Yes	☑	No	☐	NA ☐
Shipping container/cooler in good condition?	Yes	☑	No	☐	
Samples in proper containers/bottles?	Yes	☑	No	☐	
Sample containers intact?	Yes	☑	No	☐	
Sufficient sample volume for indicated test?	Yes	☑	No	☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA ☐
Samples Received on Ice?	Yes	☑	No	☐	
(Ice Type: WET ICE)					
Sample/Temp Blank temperature	Temp: 2.9°C				NA ☐
ZHS conditional analyses: VOA meets zero headspace requirement (VOCs, TPHg/BTEX, RSK)?	Yes	☐	No	☐	NA ☑
Sample labels checked for correct preservation?	Yes	☑	No	☐	
pH acceptable upon receipt (Metal: <2; Nitrate 353.2/4500NO3: <2; 522: <4; 218.7: >8)?	Yes	☐	No	☐	NA ☑
UCMR Samples:					
pH tested and acceptable upon receipt (200.7: ≤2; 533: 6 - 8; 537.1: 6 - 8)?	Yes	☐	No	☐	NA ☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L) [not applicable to 200.7]?	Yes	☐	No	☐	NA ☑

Comments:

Enthalpy Analytical
931 West Barkley Ave
Orange, CA 92868
(714) 771-6900

enthalpy.com

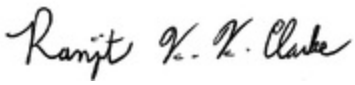
Lab Job Number: 481993
Report Level: II
Report Date: 04/03/2023

Analytical Report *prepared for:*

Brian Godbois
Partner Engineering & Science
2154 Torrance Blvd.
Suite 200
Torrance, CA 90501

Location: 32281 Riverside Dr. - Revised Report

Authorized for release by:



Ranjit K Clarke, Client Services Manager
(714) 771-9906
Ranjit.Clarke@enthalpy.com

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the above signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

CA ELAP# 1338, NELAP# 4038, SCAQMD LAP# 18LA0518, LACSD ID# 10105

ENTHALPY ANALYTICAL

Sample Summary

Brian Godbois
Partner Engineering & Science
2154 Torrance Blvd.
Suite 200
Torrance, CA 90501

Lab Job #: 481993
Location: 32281 Riverside Dr. - Revised Report
Date Received: 03/22/23

Sample ID	Lab ID	Collected	Matrix
B1-SG5	481993-001	03/16/23 14:00	Air
B2-SG5	481993-002	03/16/23 14:05	Air
B3-SG5	481993-003	03/16/23 14:10	Air
B4-SG5	481993-004	03/16/23 14:23	Air
B5-SG5	481993-005	03/16/23 14:30	Air
B6-SG5	481993-006	03/16/23 14:49	Air
B7-SG5	481993-007	03/16/23 14:56	Air
B8-SG5	481993-008	03/16/23 15:00	Air

931 W. Barkley Ave., Orange, CA 92868
Phone: (714) 771-6900 Fax: (714) 538-1209

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Air Chain of Custody Record

Lab Job No. 481993

Page 1 of 1

CUSTOMER INFORMATION		PROJECT INFORMATION		PO Number:
Company:	Partner ESI	Name:	32281 Riverside Dr	
Report To:	S. Hanrahan / B. Godbois	Number:	397410.2	Lab Quote Number:
Email:	SHanrahan@Partneresi.com	Address:		
Address:	BGodbois@Partneresi.com			
		Global ID:		
Phone:	Fax:	Sampled By:	S. Hanrahan	

Special Instructions: Analyze for chlorinated solvents PCE; TCE; cis-1,2-DCE; trans-1,2-DCE 1,1-DCE and vinyl chloride

Analysis Request: TO-15

Required Turnaround Time: Standard ☒; 5 Day ☐; 3 Day ☐; 2 Day ☐; 1 Day ☐; Custom TAT

	Sample ID	Air Type (I) Indoor (A) Ambient (SV) Soil Vapor	Equipment Information: Canister ID	Canister Size (6L or 1L)	Flow Controller ID	Start Sampling Information: Date	Time	Canister Pressure (in. Hg)	Stop Sampling Information: Date	Time	Canister Pressure (in. Hg)	TO-15	Comments
1	B1-SGS	SV	10290	1L	171	3/16/23	1350	-28	3/16/23	1400	-2	X	
2	B2-SGS		10488		181		1355	-28		1405		X	
3	B3-SGS		10239		168		1400	-30		1410		X	
4	B4-SGS		10060		812		1414	-30+		1423		X	
5	B5-SGS		10122		173		1420	-30		1430		X	
6	B6-SGS		10509		172		1441	-30		1449		X	
7	B7-SGS		10163		159		1446	-28		1456		X	
8	B8-SGS		10505		179		1450	-28		1500		X	
9													
10													

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE / TIME
RELINQUISHED BY:		Sean Hanrahan	Partner ESI	1215 3/22/23
RECEIVED BY:		Kirsten Cole	EAS	3/22/23 1215
RELINQUISHED BY:		Kirsten Cole	EAOC	3/22/23 1735
RECEIVED BY:		Annaleya Guillen	EA	3/22/23 1735
RELINQUISHED BY:				
RECEIVED BY:				

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SAMPLE ACCEPTANCE CHECKLIST

Section 1

Client: Partner ESI Project: 32281 Riverside Dr

Date Received: 3/22/23 Sampler's Name Present: ☑ Yes ☐ No

Section 2

Sample(s) received in a cooler? ☐ Yes, How many? _____ ☑ No (skip section 2) Sample Temp (°C) (No Cooler): ambient

Sample Temp (°C), One from each cooler: #1: _____ #2: _____ #3: _____ #4: _____

(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)

Shipping Information: _____

Section 3

Was the cooler packed with: ☐ Ice ☐ Ice Packs ☐ Bubble Wrap ☐ Styrofoam ☐ Paper ☐ None ☐ Other _____

Cooler Temp (°C): #1: _____ #2: _____ #3: _____ #4: _____

Section 4	YES	NO	N/A
Was a COC received?	✔		
Are sample IDs present?	✔		
Are sampling dates & times present?	✔		
Is a relinquished signature present?	✔		
Are the tests required clearly indicated on the COC?	✔		
Are custody seals present?		✔	
If custody seals are present, were they intact?			✔
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)			✔
Did all samples arrive intact? If no, indicate in Section 4 below.	✔		
Did all bottle labels agree with COC? (ID, dates and times)	✔		
Were the samples collected in the correct containers for the required tests?	✔		
Are the containers labeled with the correct preservatives?			✔
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✔
Was a sufficient amount of sample submitted for the requested tests?	✔		

Section 5 Explanations/Comments

Section 6

For discrepancies, how was the Project Manager notified? ☐ Verbal PM Initials: _____ Date/Time _____

☐ Email (email sent to/on): _____ / _____

Project Manager's response:

Completed By: _____ Date: 3/22/23

ENTHALPY ANALYTICAL

Analysis Results for 481993

Brian Godbois
Partner Engineering & Science
2154 Torrance Blvd.
Suite 200
Torrance, CA 90501

Lab Job #: 481993
Location: 32281 Riverside Dr. - Revised Report
Date Received: 03/22/23

Sample ID: B1-SG5 **Lab ID: 481993-001** **Collected: 03/16/23 14:00**
Matrix: Air

481993-001 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA TO-15 Prep Method: METHOD									
1,1-Difluoroethane	ND		ug/m3	4.1	1.5	310202	03/23/23 06:31	03/23/23 06:31	DJL
Vinyl Chloride	ND		ug/m3	0.77	1.5	310202	03/23/23 06:31	03/23/23 06:31	DJL
1,1-Dichloroethene	ND		ug/m3	1.2	1.5	310202	03/23/23 06:31	03/23/23 06:31	DJL
trans-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310202	03/23/23 06:31	03/23/23 06:31	DJL
cis-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310202	03/23/23 06:31	03/23/23 06:31	DJL
Trichloroethene	ND		ug/m3	1.6	1.5	310202	03/23/23 06:31	03/23/23 06:31	DJL
Tetrachloroethene	ND		ug/m3	2.0	1.5	310202	03/23/23 06:31	03/23/23 06:31	DJL
Surrogates				**Limits**					
Bromofluorobenzene	107%		%REC	60-140	1.5	310202	03/23/23 06:31	03/23/23 06:31	DJL

Sample ID: B2-SG5 **Lab ID: 481993-002** **Collected: 03/16/23 14:05**
Matrix: Air

481993-002 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA TO-15 Prep Method: METHOD									
1,1-Difluoroethane	ND		ug/m3	4.1	1.5	310202	03/23/23 07:23	03/23/23 07:23	DJL
Vinyl Chloride	ND		ug/m3	0.77	1.5	310202	03/23/23 07:23	03/23/23 07:23	DJL
1,1-Dichloroethene	ND		ug/m3	1.2	1.5	310202	03/23/23 07:23	03/23/23 07:23	DJL
trans-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310202	03/23/23 07:23	03/23/23 07:23	DJL
cis-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310202	03/23/23 07:23	03/23/23 07:23	DJL
Trichloroethene	ND		ug/m3	1.6	1.5	310202	03/23/23 07:23	03/23/23 07:23	DJL
Tetrachloroethene	ND		ug/m3	2.0	1.5	310202	03/23/23 07:23	03/23/23 07:23	DJL
Surrogates				**Limits**					
Bromofluorobenzene	107%		%REC	60-140	1.5	310202	03/23/23 07:23	03/23/23 07:23	DJL

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Analysis Results for 481993

Sample ID: B3-SG5	Lab ID: 481993-003	Collected: 03/16/23 14:10
	Matrix: Air	

481993-003 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA TO-15 Prep Method: METHOD									
1,1-Difluoroethane	ND		ug/m3	4.1	1.5	310289	03/23/23 11:21	03/23/23 11:21	DJL
Vinyl Chloride	ND		ug/m3	0.77	1.5	310289	03/23/23 11:21	03/23/23 11:21	DJL
1,1-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 11:21	03/23/23 11:21	DJL
trans-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 11:21	03/23/23 11:21	DJL
cis-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 11:21	03/23/23 11:21	DJL
Trichloroethene	ND		ug/m3	1.6	1.5	310289	03/23/23 11:21	03/23/23 11:21	DJL
Tetrachloroethene	ND		ug/m3	2.0	1.5	310289	03/23/23 11:21	03/23/23 11:21	DJL
Surrogates				**Limits**					
Bromofluorobenzene	100%		%REC	60-140	1.5	310289	03/23/23 11:21	03/23/23 11:21	DJL

Sample ID: B4-SG5	Lab ID: 481993-004	Collected: 03/16/23 14:23
	Matrix: Air	

481993-004 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA TO-15 Prep Method: METHOD									
1,1-Difluoroethane	ND		ug/m3	4.1	1.5	310289	03/23/23 11:54	03/23/23 11:54	DJL
Vinyl Chloride	ND		ug/m3	0.77	1.5	310289	03/23/23 11:54	03/23/23 11:54	DJL
1,1-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 11:54	03/23/23 11:54	DJL
trans-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 11:54	03/23/23 11:54	DJL
cis-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 11:54	03/23/23 11:54	DJL
Trichloroethene	ND		ug/m3	1.6	1.5	310289	03/23/23 11:54	03/23/23 11:54	DJL
Tetrachloroethene	ND		ug/m3	2.0	1.5	310289	03/23/23 11:54	03/23/23 11:54	DJL
Surrogates				**Limits**					
Bromofluorobenzene	101%		%REC	60-140	1.5	310289	03/23/23 11:54	03/23/23 11:54	DJL

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Analysis Results for 481993

Sample ID: B5-SG5	Lab ID: 481993-005	Collected: 03/16/23 14:30
	Matrix: Air	

481993-005 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA TO-15 Prep Method: METHOD									
1,1-Difluoroethane	ND		ug/m3	4.1	1.5	310289	03/23/23 12:26	03/23/23 12:26	DJL
Vinyl Chloride	ND		ug/m3	0.77	1.5	310289	03/23/23 12:26	03/23/23 12:26	DJL
1,1-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 12:26	03/23/23 12:26	DJL
trans-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 12:26	03/23/23 12:26	DJL
cis-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 12:26	03/23/23 12:26	DJL
Trichloroethene	ND		ug/m3	1.6	1.5	310289	03/23/23 12:26	03/23/23 12:26	DJL
Tetrachloroethene	ND		ug/m3	2.0	1.5	310289	03/23/23 12:26	03/23/23 12:26	DJL
Surrogates				**Limits**					
Bromofluorobenzene	100%		%REC	60-140	1.5	310289	03/23/23 12:26	03/23/23 12:26	DJL

Sample ID: B6-SG5	Lab ID: 481993-006	Collected: 03/16/23 14:49
	Matrix: Air	

481993-006 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA TO-15 Prep Method: METHOD									
1,1-Difluoroethane	ND		ug/m3	4.1	1.5	310289	03/23/23 19:48	03/23/23 19:48	MBC
Vinyl Chloride	ND		ug/m3	0.77	1.5	310289	03/23/23 19:48	03/23/23 19:48	MBC
1,1-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 19:48	03/23/23 19:48	MBC
trans-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 19:48	03/23/23 19:48	MBC
cis-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 19:48	03/23/23 19:48	MBC
Trichloroethene	ND		ug/m3	1.6	1.5	310289	03/23/23 19:48	03/23/23 19:48	MBC
Tetrachloroethene	ND		ug/m3	2.0	1.5	310289	03/23/23 19:48	03/23/23 19:48	MBC
Surrogates				**Limits**					
Bromofluorobenzene	100%		%REC	60-140	1.5	310289	03/23/23 19:48	03/23/23 19:48	MBC

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Analysis Results for 481993

Sample ID: B7-SG5	Lab ID: 481993-007	Collected: 03/16/23 14:56
	Matrix: Air	

481993-007 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA TO-15 Prep Method: METHOD									
1,1-Difluoroethane	ND		ug/m3	4.1	1.5	310289	03/23/23 20:20	03/23/23 20:20	MBC
Vinyl Chloride	ND		ug/m3	0.77	1.5	310289	03/23/23 20:20	03/23/23 20:20	MBC
1,1-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 20:20	03/23/23 20:20	MBC
trans-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 20:20	03/23/23 20:20	MBC
cis-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 20:20	03/23/23 20:20	MBC
Trichloroethene	ND		ug/m3	1.6	1.5	310289	03/23/23 20:20	03/23/23 20:20	MBC
Tetrachloroethene	**26**		ug/m3	2.0	1.5	310289	03/23/23 20:20	03/23/23 20:20	MBC
Surrogates				**Limits**					
Bromofluorobenzene	101%		%REC	60-140	1.5	310289	03/23/23 20:20	03/23/23 20:20	MBC

Sample ID: B8-SG5	Lab ID: 481993-008	Collected: 03/16/23 15:00
	Matrix: Air	

481993-008 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA TO-15 Prep Method: METHOD									
1,1-Difluoroethane	ND		ug/m3	4.1	1.5	310289	03/23/23 20:52	03/23/23 20:52	MBC
Vinyl Chloride	ND		ug/m3	0.77	1.5	310289	03/23/23 20:52	03/23/23 20:52	MBC
1,1-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 20:52	03/23/23 20:52	MBC
trans-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 20:52	03/23/23 20:52	MBC
cis-1,2-Dichloroethene	ND		ug/m3	1.2	1.5	310289	03/23/23 20:52	03/23/23 20:52	MBC
Trichloroethene	ND		ug/m3	1.6	1.5	310289	03/23/23 20:52	03/23/23 20:52	MBC
Tetrachloroethene	ND		ug/m3	2.0	1.5	310289	03/23/23 20:52	03/23/23 20:52	MBC
Surrogates				**Limits**					
Bromofluorobenzene	99%		%REC	60-140	1.5	310289	03/23/23 20:52	03/23/23 20:52	MBC

ND Not Detected

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Batch QC

Type: Lab Control Sample	**Lab ID:** QC1053426	**Batch:** 310202
Matrix: Air	**Method:** EPA TO-15	**Prep Method:** METHOD

QC1053426 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
1,1-Difluoroethane	10.46	10.00	ppbv	105%		70-130
Vinyl Chloride	9.519	10.00	ppbv	95%		70-130
1,1-Dichloroethene	9.778	10.00	ppbv	98%		70-130
trans-1,2-Dichloroethene	9.800	10.00	ppbv	98%		70-130
cis-1,2-Dichloroethene	9.772	10.00	ppbv	98%		70-130
Trichloroethene	9.519	10.00	ppbv	95%		70-130
Tetrachloroethene	9.529	10.00	ppbv	95%		70-130
Surrogates						
Bromofluorobenzene	10.13	10.00	ppbv	101%		60-140

Type: Lab Control Sample Duplicate	**Lab ID:** QC1053427	**Batch:** 310202
Matrix: Air	**Method:** EPA TO-15	**Prep Method:** METHOD

QC1053427 Analyte	Result	Spiked	Units	Recovery	Qual	Limits	RPD	RPD Lim
1,1-Difluoroethane	10.58	10.00	ppbv	106%		70-130	1	25
Vinyl Chloride	9.577	10.00	ppbv	96%		70-130	1	25
1,1-Dichloroethene	9.815	10.00	ppbv	98%		70-130	0	25
trans-1,2-Dichloroethene	9.835	10.00	ppbv	98%		70-130	0	25
cis-1,2-Dichloroethene	9.852	10.00	ppbv	99%		70-130	1	25
Trichloroethene	9.551	10.00	ppbv	96%		70-130	0	25
Tetrachloroethene	9.571	10.00	ppbv	96%		70-130	0	25
Surrogates								
Bromofluorobenzene	10.14	10.00	ppbv	101%		60-140		

Type: Blank	**Lab ID:** QC1053428	**Batch:** 310202
Matrix: Air	**Method:** EPA TO-15	**Prep Method:** METHOD

QC1053428 Analyte	Result	Qual	Units	RL	Prepared	Analyzed
1,1-Difluoroethane	ND		ppbv	1.0	03/22/23 11:27	03/22/23 11:27
Vinyl Chloride	ND		ppbv	0.20	03/22/23 11:27	03/22/23 11:27
1,1-Dichloroethene	ND		ppbv	0.20	03/22/23 11:27	03/22/23 11:27
trans-1,2-Dichloroethene	ND		ppbv	0.20	03/22/23 11:27	03/22/23 11:27
cis-1,2-Dichloroethene	ND		ppbv	0.20	03/22/23 11:27	03/22/23 11:27
Trichloroethene	ND		ppbv	0.20	03/22/23 11:27	03/22/23 11:27
Tetrachloroethene	ND		ppbv	0.20	03/22/23 11:27	03/22/23 11:27
Surrogates				**Limits**		
Bromofluorobenzene	102%		%REC	60-140	03/22/23 11:27	03/22/23 11:27

ENTHALPY ANALYTICAL

Batch QC

Type: Lab Control Sample	**Lab ID:** QC1053696	**Batch:** 310289
Matrix: Air	**Method:** EPA TO-15	**Prep Method:** METHOD

QC1053696 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
1,1-Difluoroethane	10.27	10.00	ppbv	103%		70-130
Vinyl Chloride	9.531	10.00	ppbv	95%		70-130
1,1-Dichloroethene	10.06	10.00	ppbv	101%		70-130
trans-1,2-Dichloroethene	9.953	10.00	ppbv	100%		70-130
cis-1,2-Dichloroethene	9.843	10.00	ppbv	98%		70-130
Trichloroethene	9.419	10.00	ppbv	94%		70-130
Tetrachloroethene	9.850	10.00	ppbv	99%		70-130
Surrogates						
Bromofluorobenzene	10.15	10.00	ppbv	101%		60-140

Type: Lab Control Sample Duplicate	**Lab ID:** QC1053697	**Batch:** 310289
Matrix: Air	**Method:** EPA TO-15	**Prep Method:** METHOD

QC1053697 Analyte	Result	Spiked	Units	Recovery	Qual	Limits	RPD	RPD Lim
1,1-Difluoroethane	10.13	10.00	ppbv	101%		70-130	1	25
Vinyl Chloride	9.428	10.00	ppbv	94%		70-130	1	25
1,1-Dichloroethene	9.898	10.00	ppbv	99%		70-130	2	25
trans-1,2-Dichloroethene	9.867	10.00	ppbv	99%		70-130	1	25
cis-1,2-Dichloroethene	9.826	10.00	ppbv	98%		70-130	0	25
Trichloroethene	9.520	10.00	ppbv	95%		70-130	1	25
Tetrachloroethene	9.867	10.00	ppbv	99%		70-130	0	25
Surrogates								
Bromofluorobenzene	10.10	10.00	ppbv	101%		60-140		

Type: Blank	**Lab ID:** QC1053698	**Batch:** 310289
Matrix: Air	**Method:** EPA TO-15	**Prep Method:** METHOD

QC1053698 Analyte	Result	Qual	Units	RL	Prepared	Analyzed
1,1-Difluoroethane	ND		ppbv	1.0	03/23/23 10:43	03/23/23 10:43
Vinyl Chloride	ND		ppbv	0.20	03/23/23 10:43	03/23/23 10:43
1,1-Dichloroethene	ND		ppbv	0.20	03/23/23 10:43	03/23/23 10:43
trans-1,2-Dichloroethene	ND		ppbv	0.20	03/23/23 10:43	03/23/23 10:43
cis-1,2-Dichloroethene	ND		ppbv	0.20	03/23/23 10:43	03/23/23 10:43
Trichloroethene	ND		ppbv	0.20	03/23/23 10:43	03/23/23 10:43
Tetrachloroethene	ND		ppbv	0.20	03/23/23 10:43	03/23/23 10:43
Surrogates				**Limits**		
Bromofluorobenzene	87%		%REC	60-140	03/23/23 10:43	03/23/23 10:43

ND Not Detected

Appendix F3 – Additional Investigation Report

PARTNER
Engineering and Science, Inc.

May 3, 2023

Grant Keene
WJK Development Co.
28392 Airoso Street
Rancho Mission Viejo, California 92694

Subject: **Additional Investigation Results Summary Memo**
32281 Riverside Drive
Lake Elsinore, California 92530
Partner Project Number 23-397410.3

Dear Mr. Keene:

Partner Engineering and Science, Inc. (Partner) is pleased to submit this results summary for the Additional Investigation conducted at the above-referenced property.

Project History

Partner completed a *Phase I Environmental Site Assessment Report* (Phase I) for the subject property, dated February 21, 2023, on behalf of WJK Development Co. and RSI Equity. Based on the information reviewed and the site reconnaissance, the subject property consists of one parcel of land comprising 4.95 acres located on the northwest side of Riverside Drive within a residential, commercial, and undeveloped area of Lake Elsinore, Riverside County, California. The subject property is currently vacant land with remnants of foundations associated with the former on-site structures located on the central and south portions of the property. In addition, the subject property is overgrown with natural vegetation throughout the site and former courtyard, asphalt-paved parking areas in poor condition as well as chain link/concrete masonry fencing along the property perimeter. No on-site operations are currently conducted; however, the site is planned for redevelopment.

According to available historical sources, the subject property was formerly developed with agricultural land (row crops and/or orchards) from at least 1938 to 1954. By 1962, the site was redeveloped with a resort complete with forty guest rooms, courtyard, swimming pool and shed-like structure on the southern corner of the property. This development was later razed in 2004; however, the foundation and paved surface parking lots were left in place.

The following recognized environmental conditions (RECs) were identified in the Phase I:

- According to reviewed historical documentation, the subject property was developed with a resort from *circa* 1962 until 2004. This development was formerly occupied by "The Grove" from at least 1984 to 1986 and "Lakeside Health Resort" from at least 1986 to 1992. Upon further investigation, an LA Times article dated May 22, 1988, reported the former on-site developments were utilized as a retreat for officials of the laundry workers union as early as the late-1950's. According to the reviewed city directories, dry cleaning services were conducted on site from at least 1974 to 1977. In addition to commercial laundry facilities for the cleaning of sheets and towels for guest rooms, resorts and/or

hotels sometimes provide dry cleaning services as a hospitality amenity. Dry cleaning operations typically use chlorinated solvents, particularly tetrachloroethylene (PCE), during the dry cleaning process. These solvents, even when properly stored and disposed, can be released from these facilities in small, frequent releases through floor drains, cracked concrete, and sewer systems. Chlorinated solvents are highly mobile chemicals that can easily accumulate in soil and migrate to groundwater beneath a facility.

No permits to operate dry cleaning machines were identified for the subject property address with the South Coast Air Quality Management District (SCAQMD). Furthermore, no regulatory database listings were identified for the possible dry cleaning services conducted on site including hazardous waste generation and removal of chlorinated solvents, releases or contamination events. Nevertheless, this facility operated prior to the promulgation of the Resource Conservation and Recovery Act (RCRA) in 1980 (with amendments for small quantity generators in 1984), the legislation that regulates the handling and disposal of hazardous materials and wastes. Furthermore, the SCAQMD was not founded until 1976. As such, this facility operated virtually unregulated while at the subject property. Partner attempted to obtain any additional information regarding subsurface conditions at the subject property; however, none was available. Based on the type of chemicals associated with dry cleaning services and lack of regulatory oversight at the time of operation, the former on-site dry cleaning services represents a REC.

- The subject property was historically used for agricultural purposes. There is a potential that agricultural chemicals, such as pesticides, herbicides and fertilizers, were used on site, and that the subject property has been impacted by the use of such agricultural chemicals. Due to the planned redevelopment of the subject property for residential and/or commercial use, this potential is considered an REC.

Partner completed a *Phase II Subsurface Investigation Report* (Phase II) for the subject property dated April 3, 2023, to evaluate the potential impact chlorinated solvents, pesticides, chlorinated herbicides, arsenic, and/or lead to soil gas and/or soil as a consequence of a release or releases from former on-site operations. The scope of the Phase II included the advancement of eight borings. Eight soil samples were analyzed for chlorinated solvents, pesticides, chlorinated herbicides, arsenic, and lead; and eight soil gas samples were analyzed for chlorinated solvents.

Subsurface lithology encountered in the upper 5 feet below ground surface (bgs) consisted of silty sand (SM).

None of the analyzed soil samples contained chlorinated solvents, pesticides, chlorinated herbicides, arsenic, and/or lead at concentrations exceeding regulatory guidelines and/or background concentrations.

PCE was detected in one soil gas sample (B7-SG5) at a concentration exceeding the residential screening level and below the commercial/industrial screening level. None of the remaining VOCs were detected in the soil gas samples.

Based on the results of the Phase II, subsurface soil gas appears to be impacted by PCE in the southwest portion of the subject property near boring B7. Partner recommended additional investigation to evaluate the potential vapor intrusion concern to future subject property occupants. Additionally, Partner recommended that a Soil Management Plan be utilized for site redevelopment to protect workers from potential subsurface impacts associated with the PCE impacts to soil gas.

Objective and Scope

The objective of the project was to further evaluate the known impacts of chlorinated solvents to soil gas and/or soil as a consequence of a release or releases from former on-site operations.

The investigation scope included the advancement of four borings (one co-located with previous boring B7 and three step-out borings) to a terminal depth of 25 feet bgs, collecting soil samples in 5-foot intervals from 5 feet bgs to the terminal depth. Partner prepared 20 soil samples for laboratory analysis and installed nested temporary soil gas probes in each boring at 5, 15, and 25 feet bgs. Twelve soil gas samples and one duplicate sample were collected and analyzed for chlorinated solvents [specifically PCE; trichloroethylene (TCE); cis-1,2-dichloroethylene (DCE); trans-1,2-DCE; 1,1-DCE; and vinyl chloride] via EPA Method 8260 using an on-site mobile laboratory.

None of the analyzed soil samples contained chlorinated solvents at concentrations exceeding laboratory detection levels which were below applicable screening levels.

One of the analyzed soil gas samples (B7C-SG15) contained PCE at a concentration of 30 micrograms per cubic meter (µg/m^3) at a depth of 15 feet bgs which exceeded the residential screening level of 15 µg/m^3; however, the soil gas samples above and below the hotspot at 5 and 25 feet bgs were non-detect for PCE and the detected PCE in soil gas appears to be limited in extent. Based on the limited extent of PCE impacts in soil gas it appears unlikely that a vapor barrier for the proposed residential development will be needed and no additional engineering controls are recommended at this time. Furthermore, based on the lack of PCE detections in soil and the proposed grading in the vicinity of the PCE detections to a depth of 5 feet bgs, it is likely that PCE concentrations will decrease in the vicinity of the previous impacts. Based on the Additional Investigation there does not appear to be an environmental or health concern for the proposed residential development at this time and Partner recommends no further investigation at this time; however, Partner recommends that a Soil Management Plan be utilized for site redevelopment to protect workers from potential subsurface impacts associated with the PCE impacts to soil gas.

The complete report including professional stamp, methodology, figures, tables, and appendices will be issued under a separate cover.

Limitations

This memo presents a summary of the results for fieldwork conducted by Partner and not the complete report. The work includes observations of site conditions encountered and the analytical results provided by an independent third-party laboratory of samples collected during the course of the project. The number

and location of samples were selected to provide the required information. It cannot be assumed that the limited available data are representative of subsurface conditions in areas not sampled.

Conclusions and/or recommendations are based on the observations, laboratory analyses, and the governing regulations. Conclusions and/or recommendations beyond those stated and reported herein should not be inferred from this document.

Partner warrants that the environmental consulting services contained herein were accomplished in accordance with generally accepted practices in the environmental engineering, geology, and hydrogeology fields that existed at the time and location of work. No other warranties are implied or expressed.

User Reliance

Partner was engaged by WJK Development Co. (the Addressee), or their authorized representative, to perform this investigation. The engagement agreement specifically states the scope and purpose of the investigation, as well as the contractual obligations and limitations of both parties. This report and the information therein, are for the exclusive use of the Addressee. This report has no other purpose and may not be relied upon, or used, by any other person or entity without the written consent of Partner. Third parties that obtain this report, or the information therein, shall have no rights of recourse or recovery against Partner, its officers, employees, vendors, successors or assigns. Any such unauthorized user shall be responsible to protect, indemnify and hold Partner, the Addressee and their respective officers, employees, vendors, successors and assigns harmless from any and all claims, damages, losses, liabilities, expenses (including reasonable attorneys' fees) and costs attributable to such use. Unauthorized use of this report shall constitute acceptance of, and commitment to, these responsibilities, which shall be irrevocable and shall apply regardless of the cause of action or legal theory pled or asserted.

This memo has been completed under specific Terms and Conditions relating to scope, relying parties, limitations of liability, indemnification, dispute resolution, and other factors relevant to any reliance on this report. Any parties relying on this report do so having accepted Partner's standard Terms and Conditions, a copy of which can be found at http://www.partneresi.com/terms-and-conditions.php.

Signatures of Environmental Professionals

If you have any questions, please do not hesitate to contact Mike Cunneen at 310-439-3438.

Sincerely,

Brian T. Godbois
Project Manager

Samantha J. Fujita, P.G.
Technical Director – Subsurface Investigation

Mike Cunneen
National Client Manager

Appendix F4 – Vapor Intrusion Memorandum

PARTNER

January 13, 2025

Grant Keene
WJK Development Co.
28392 Airoso Street
Rancho Mission Viejo, California 92694
(949) 677-0668
Grant@wjkdevelopment.com

RE: **Vapor Intrusion Technical Memorandum**
32281 Riverside Drive
Lake Elsinore, California 92530
Project Number: ES23-397410

Dear Grant Keene:

Partner Engineering and Science, Inc. (Partner) has prepared this technical memorandum to evaluate potential vapor intrusion exposures to volatile organic compounds (VOCs) that were detected in soil vapor beneath the proposed building at concentrations exceeding regulatory guidance levels at the above referenced Site, hereafter referred to as "the Site."

PROPERTY DESCRIPTION AND SITE HISTORY

The Site consists of one parcel of land comprising 4.95 acres located on northwest side of Riverside Drive within a residential and commercial area of Lake Elsinore, California. The Site is currently vacant land overgrown with natural vegetation with remnants of foundations associated with the former on-site structures located on the central and south portions of the property. In addition, the Site is improved with chain link/concrete masonry fencing along the property perimeter.

The Site is bound by residential properties to the northwest and southwest, residential properties to the northeast across the canal, commercial properties across Riverside Drive to the southeast.

Partner completed a Phase I Environmental Site Assessment Report (Phase I) for the Site, dated February 21, 2023. According to the Phase I, the Site was formerly developed with agricultural land (row crops and/or orchards) from at least 1938 to 1954. By 1962, the site was redeveloped with a resort complete with 40 guest rooms, courtyard, swimming pool and shed-like structure on the southern corner of the property. This development was later razed in 2004; however, the foundation and paved surface parking lots were left in place.

The following recognized environmental conditions (RECs) were identified in the Phase I:

- The Site was formerly occupied by "The Grove" resort from at least 1984 to 1986 and "Lakeside Health Resort" from at least 1986 to 1992. According to the reviewed city directories, dry cleaning services were conducted on site from at least 1974 to 1977. Dry cleaning operations typically use chlorinated solvents, particularly tetrachloroethylene (PCE), during the dry cleaning process. These solvents, even when properly stored and disposed, can be released from these facilities in small, frequent releases through floor drains, cracked

concrete, and sewer systems. Chlorinated solvents are highly mobile chemicals that can easily accumulate in soil and migrate to groundwater beneath a facility.

- The Site was historically used for agricultural purposes. There is a potential that agricultural chemicals, such as pesticides, herbicides and fertilizers, were used on Site, and that the Site has been impacted by the use of such agricultural chemicals. Due to the planned redevelopment of the Site for residential and/or commercial use, this potential is considered a REC.

In March 2023, Partner performed a Phase II Subsurface Investigation for the Site to evaluate the potential impact of chlorinated solvents, pesticides, chlorinated herbicides, arsenic, and/or lead to soil gas and/or soil as a consequence of a release or releases from former on-site operations. The scope of the Phase II included the advancement of eight borings. Eight soil samples were analyzed for chlorinated solvents, pesticides, chlorinated herbicides, arsenic, and lead; and eight soil gas samples were analyzed for chlorinated solvents.

PCE was detected in one soil gas sample (B7-SG5) at a concentration exceeding the residential screening level but below the commercial/industrial screening level. None of the remaining chlorinated solvents were detected in the soil gas samples.

Based on the results of the Phase II, subsurface soil gas appears to be impacted by PCE in the southwest portion of the Site near boring B7. In April 2023, Partner conducted an Additional Investigation at the Site to further evaluate the known impacts of chlorinated solvents to soil gas and/or soil as a consequence of a release or releases from former on-site operations. The scope of the Additional Investigation included the advancement of four borings to collect representative soil and/or soil gas samples. Twelve soil samples and 13 soil gas samples were analyzed for chlorinated solvents.

One of the analyzed soil gas samples (B7C-SG15) contained PCE at a concentration of 30 micrograms per cubic meter (µg/m^3) at a depth of 15 feet bgs, which exceeds the residential screening level of 15 µg/m^3 calculated using the default attenuation factor (AF) of 0.03 recommended by the Department of Toxic Substances Control (DTSC).

Following performance of the supplemental investigation, Partner concluded that due to the limited extent of PCE impacts in soil gas, adverse impacts to the future Site occupants appears unlikely and a vapor barrier or additional engineering controls for the proposed residential development do not appear warranted. Furthermore, based on the lack of PCE detections in soil and the proposed grading in the vicinity of the PCE detections to a depth of 5 feet bgs, it is likely that PCE concentrations will decrease from the soil disturbance.

Because PCE was detected at concentrations exceeding the residential screening level, on January 8, 2025 the client requested that Partner provide an evaluation of the soil vapor data to evaluate the potential exposure risk to occupants of the proposed residential Site building.

EXPOSURE RISK EVALUATION

During performance of the Phase II and supplemental Phase II site assessments, PCE was detected in soil vapor samples collected from depths of 5 and 15 feet bgs at concentrations of 26 µg/m^3 and 30 µg/m^3, respectively. These concentrations slightly exceeded the residential screening level calculated using a default attenuation factor of 0.03. The document entitled *Supplemental Guidance: Screening and Evaluating Vapor Intrusion* (Guidance) published in February 2023 by DTSC and the California State Water Resources Board (SRWRCB) allows for the calculation of a site-specific attenuation factor to be used to evaluate vapor intrusion risk to occupants of a building. In Section 2B.2 of the Guidance, one can calculate the cancer risk and non-cancer hazard quotient using the estimated concentration of indoor air (C_{IA}). The C_{IA}, in turn, can be calculated by applying an AF to the sub-slab soil vapor concentration. However, as the proposed building has not been constructed yet, an attenuation factor cannot be

calculated as there is no concrete slab in place that would provide the barrier to the soil vapor from entering the proposed building. Without a concrete slab, we must establish a practical AF for the proposed slab that could be used to calculate the modeled indoor air concentration.

Several studies have been performed to provide a technically defensible range of AFs that have been calculated at existing buildings across California. Two of these studies performed in 2021 and 2022 have shown that a practical AF that can reasonably used in California is much less than the default 0.03 AF used by DTSC and the SRWQCB. In a study published in the Spring 2021 issue of *Groundwater Monitoring and Remediation* magazine, the authors Matthew Lahvis of Shell Global Solutions, Inc. and Robert Ettinger of Geosyntec, performed a study that included collection of 8,415 paired indoor and sub-slab vapor samples from 485 buildings at 36 sites in California, which were filtered to 788 paired samples by removal of data of suspect quality or that were potentially impacted by background sources. This study found that an average AF of 0.0008 was calculated from these sites. A second study published on December 26, 2022 in *Groundwater Monitoring and Remediation* magazine was performed by the DTSC under the direction of Rafat Abbasi, Chief of the Discovery and Enforcement Program. According to this DTSC study that included 600 pairs of samples from 32 sites across the state of California, an average attenuation factor of 0.0009 was calculated. Both of these studies generated similar AFs calculated from a different set of sites. Based on these results, a practical AF for the proposed concrete slab would range from 0.0008 to 0.0009. Copies of these study reports are attached.

Using the more conservative AF of 0.0009, we calculate that the concentration of PCE in indoor air of the future building would be 0.027 µg/m^3 using the equation:

$$C_{IA} = C_{SG} * AF$$

Where C_{SG} = concentration in soil gas.

Based on this calculation, the anticipated indoor air concentration inside the proposed building would be below the indoor air screening level for residential use of 0.46 µg/m^3. Therefore, no remediation or engineered controls are required to allow the building for residential use.

CLOSING

Please contact David Lehnus at (714) 415-5847 or dlehnus@partneresi.com if you have any additional questions.

Sincerely,



David Lehnus, PG, LEP
Operations Manager – Environmental Solutions Group

Mike Cunneen
National Client Manager

Attachments

Check for updates

Groundwater Monitoring&Remediation

Improving Risk-Based Screening at Vapor Intrusion Sites in California

by Matthew A. Lahvis and Robert A. Ettinger

Abstract

The attenuation factor (AF) of 0.03 recommended by the U.S. Environmental Protection Agency (USEPA) is increasingly being used by regulatory agencies for the development of subsurface vapor screening levels for vapor intrusion (VI). There are concerns, however, over the database used to derive the AF and the AF's applicability to building types and geographies not included in USEPA database. To derive a more technically defensible AF for subsurface vapor screening in California, a database consisting of 8415 paired indoor and subsurface vapor samples collected from 485 buildings at 36 sites in California was compiled. Filtering was applied to remove data of suspect quality that were potentially affected by background (non-VI) sources. Filtering reduced the size of the database to 788 indoor air and subsurface vapor pairs, 80% of which were trichloroethylene (TCE) measurements. An AF of 0.0008 was derived from only TCE vapor data, based on the ability of the AF to reliably identify buildings with indoor air concentrations above screening levels in 95% of cases where subsurface vapor screening levels were exceeded. The AF derived from this study demonstrated limited sensitivity to the variables typically considered important in VI characterization, which was partially attributed to relatively weak correlation of indoor air and subsurface vapor concentration data. The results of this study can be used to improve VI screening in California and other states and help focus limited resources on sites posing the greatest potential risk.

Introduction

A vapor intrusion (VI) attenuation factor (AF) is used by regulatory agencies to establish subsurface vapor screening levels (SSSLs) for subslab or soil gas based on indoor air screening levels (IASLs) as follows:

$$SSSL = IASL / AF$$

The AF defines the extent to which vapor concentrations decrease as they migrate from the subsurface, across building foundations, and into indoor air. The AF is dependent on numerous factors that affect chemical vapor migration in the subsurface, through building foundations, and within buildings. The AF applicable to subsurface vapor screening can be expressed as the ratio of the vapor concentration of a chemical in indoor air (C_{IA}) to its concentration in subsurface vapor (C_{SOURCE}):

$$AF = C_{IA} / C_{SOURCE}$$

To date, AFs and associated SSSLs have been based on either model estimates (Johnson and Ettinger 1991; Brewer et al. 2014) or empirical studies of subsurface and indoor air vapor data (USEPA 2012). The USEPA (2012) study involved a statistical analysis of C_{IA} and C_{SOURCE} data collected at numerous, predominantly chlorinated, VI sites across the United States. These data were extensively filtered to limit the use of data potentially biased by background sources. The USEPA (2012) AF was later recommended by USEPA (2015a) as a generic value for subslab and "near-source" external soil-gas screening. As of 2018, nine U.S. states had reported SSSLs for shallow subsurface vapor screening based on USEPA's default AF of 0.03 (Eklund et al. 2018).

USEPA's default AF has been the subject of much debate (Yao et al. 2013, 2018; Brewer et al. 2014; Ettinger et al. 2018). The argument stems, in part, from the fact that the AF was largely based on vapor data collected from single-family residences with basement foundations (16% unfinished), several of which were located in states, such as Colorado and New York, where VI can be enhanced by stack effects from heating of indoor air during winter months. Concerns were also noted over potential bias and representativeness of the AF for buildings constructed for commercial/industrial (C/I) purposes (e.g., office complexes, warehouses, schools, and churches). The final dataset used by USEPA to derive the AF did not include C/I buildings or soil-gas vapor concentration data which were shown to be highly variable and associated with a 95th percentile AF = 0.3. An empirical AF study of VI sites in California conducted by Ettinger et al. (2018) resulted in 95th percentiles AFs of 0.0014 (residential) and 0.0025 (nonresidential) VI screening, which were more than an order of magnitude less than the USEPA value. The Ettinger et al. (2018) study

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doi: 10.1111/gwmr.12450

involved C/I buildings and a higher percentage of buildings with slab-on-grade and crawl-space foundation construction. Lastly, Yao et al. (2013) determined that the USEPA AF was based on C_{IA} and C_{SOURCE} data that were weakly correlated.

Empirical AF assessments, such as USEPA's, are challenging because of bias from background (non-VI) sources, which mostly affects low C_{IA} and C_{SOURCE} data. USEPA attempted to address this issue by filtering out vapor data where (1) C_{IA} were greater than C_{SOURCE} (i.e., instances where AFs were >1) and (2) C_{SOURCE} were <50× the 90th percentile of background concentrations in indoor air. The C_{SOURCE} filter was intended to help screen out vapor data pairs potentially affected by background sources and normalize the AF distribution. Some bimodality remained, however, in the data after USEPA's efforts to balance data quality and data retention. The use of vapor measurements that are discrete in time and space and do not account for the spatiotemporal variability often observed with C_{IA} and C_{SOURCE} data (Folkes et al. 2009; USEPA 2012; Johnston and Gibson 2014) represent an additional challenge.

The California Environmental Protection Agency (CalEPA) is currently proposing to adopt the USEPA (2015a) default AF = 0.03 for subsurface vapor screening (CalEPA 2020). This AF is substantially higher than the default AFs previously used across California for screening residential (0.002) and nonresidential (0.001) buildings (SFBRWQCB 2016). If adopted, the AF = 0.03 has the potential to "screen in" many new sites that previously were not considered to pose significant risk. Further work is needed to understand the impact of the change, especially given the noted concerns with the USEPA 2012 study, possible effects on state and financial resources, limitations on redevelopment at brownfield sites, and encumbrance of building occupants that can occur from protractive and disruptive VI investigations. With this as motivation, this study expands upon the California empirical AF study by Ettinger et al. (2018) by incorporating additional data and performing an alternative, risk-based analysis of the AF for subsurface vapor screening and the variables that affect it.

Development of Empirical AF Database of VI Sites in California

Database Development

An empirical AF database from VI sites in California was populated with data manually extracted from site investigation reports, many of which were made publicly available via CalEPA's online Geotracker Database (https://geotracker.waterboards.ca.gov/). VI data for California sites in the USEPA (2012) study were also included. General site information and characteristics of the database are summarized in Table 1. In total, the database consisted of 8415 paired subsurface (subslab and soil gas) and indoor air vapor concentration measurements collected from 485 buildings located at 36 sites. Groundwater data were excluded from the database because the goal of the study was to derive an AF solely for subsurface vapor screening. Vapor data pairs were uniquely defined for each indoor air and subslab or soil-gas vapor sample collected; hence, one indoor air sample was potentially paired with multiple subsurface vapor samples, or one subsurface vapor sample paired with multiple indoor air samples. Unlike in the USEPA (2012) study, AFs were not uniquely derived for subslab and soil-gas VI screening, which allowed the AF to be based on a larger dataset of subsurface vapor data. The implications of soil-gas and subslab data consolidation on the AF was later found to be minimal (see Results and Discussion section).

The database contained vapor concentration data for 33 chemicals, most of which were trichloroethylene (TCE) (39%) and tetrachloroethylene (PCE) (23%). Overall, petroleum hydrocarbons (benzene, alkylbenzenes, alkanes, and naphthalene) constituted only a small percentage (7%) of total population of unfiltered data pairs. The VI data were collected mainly from residential buildings (52%) and commercial (24%) and industrial properties (16%), with a smaller contribution from military bases (5%) and schools (2%). Although the number of residential sites (10) was less than one-half the number of nonresidential (commercial, industrial, military, and school) sites (27), they accounted for roughly 80% (=390/485) of the total building population. The geographic distribution of residential data was relatively limited, with 98% of the residential data from six sites located in the broader Los Angeles metropolitan region (see Figure S1). Most of the data contained in the database were collected at buildings with slab-on-grade foundations (75%); the remaining 25% of buildings had crawl space foundations, all of which involved soil-gas sampling. The foundation types for residential buildings were more evenly split between crawl space (47%) and slab-on-grade (53%) construction. Only one site had a building with a basement foundation, and the associated data were eventually screened out based on the filtering process that is described later in this section. Although the vapor data were largely restricted to the coastal metropolitan areas of California, the database is assumed to represent the bulk of the VI sites with indoor air and subsurface vapor concentration data reported in Geotracker and reflect the types and relative distribution of sites in California's VI portfolio.

The database contained information on the following variables that are commonly considered to directly or indirectly affect the AF:

- current land use (e.g., residential, commercial, industrial, school);
- building type/use: (e.g., retail, manufacturing, storage, office, warehouse, school, single-family homes, multifamily buildings);
- building foundation type (slab-on-grade, basement, crawl space);
- building size (square footage);
- chemical;
- vapor concentration (indoor air, outdoor/ambient air, subsurface vapor—subslab or soil gas) and detection limits;
- subsurface sample type (soil gas, subslab);
- soil-gas sample depth (feet below ground surface, feet buildings);
- predominant vadose zone soil type;
- surrounding surface cover (pavement, open ground);
- vapor sampling dates and indoor air sample duration (8, 12, or 24 hours);

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Table 1

General Information on California VI Sites in the Empirical AF Database

Name/City	Building Type/Land Use[1]	Primary Volatile Organic Compound (VOC)	# of Buildings	# of Subslab Locations/Data Pairs	# of Soil-Gas Locations/Data Pairs
1. Confidential A, Los Angeles	RSF	PCE, TCE	17	—	27/324
2. Confidential C, Los Angeles	RMF	PCE, TCE	9	6/30	2/100
3. Del Amo, Los Angeles	I	PCE, TCE	1	5/20	—
4. Confidential G, Los Angeles	I	TCE, PCE	1	2/2	—
5. Elementary School, Los Angeles	S	PCE, TCE	24	3/6	13/68
6. Bell Gardens/Plaza, Bell Gardens	C	Radon	1	3/4	—
7. Confidential B, Burbank	RSF	PCE, TCE	5	1/4	3/66
8. Former Kast, Carson	RSF	Petroleum VOCs, PCE, TCE	254	309/876	—
9. Confidential F, Torrance	C	TCE, PCE	1	—	6/31
10. Puente Valley OU, Puente Valley	RSF, C	PCE, TCE, Other	18	2/297	31/2509
11. Confidential J, Compton	I	TCE, PCE	1	—	3/6
12. Confidential D, Santa Fe Springs	I	PCE, TCE, Other	1	5/16	—
13. Confidential I, Ontario	I	TCE, PCE	1	—	4/8
14. Edwards AFB, Edwards	M	PCE, TCE	13	23/230	6/17
15. Confidential H, Orange County	I	TCE, PCE	1	6/7	—
16. A&E Facility, Newport Beach	R	TCE	43	—	83/1342
17. Electronics Manufacturer, El Cajon	C, I	Chlorinated VOCs	4	10/415	4/24
18. Mobile Home Park, El Cajon	R	PCE, TCE, 1,1-DCE	30	—	16/84
19. Elementary School, El Cajon	S	TCE	1	—	2/131
20. R&D Facility, San Diego	C	PCE, TCE	1	29/96	5/16
21. North Island NAS, San Diego	M	TCE	13	74/134	—
22. Confidential E, Brisbane	I	PCE, TCE, Other	1	12/34	—
23. Solvent Storage, So. San Francisco	I	PCE, TCE	2	2/8	7/22
24. Ind. Warehouse, So. San Francisco	I	TCE	1	—	1/1
25. Cleaners, San Mateo	C	PCE, TCE	3	8/62	—
26. Semiconductor Facility, Santa Clara	C	PCE, TCE	6	15/518	—
27. Cleaners, Santa Clara	C	PCE	1	2/6	1/3
28. Cleaner Storage, Oakland	C	Chlorinated VOCs	1	—	7/698
29. Solvent Storage, Emeryville	C	PCE	5	—	5/5
30. Cleaners, Alameda	C	PCE, TCE	3	12/63	—
31. Cleaners, San Leandro	I	PCE	1	4/4	—
32. Service Center, Davis	C	PCE	4	8/86	4/20
33. Alameda NAS, Alameda[2]	C	Petroleum VOCs	1	1/1	—
34. Allepo, Mountain View[2]	R	TCE	3	3/3	—
35. Mountain View, Mountain View[2]	R	TCE	3	—	3/3
36. Orion Park, Mountain View[2]	R	TCE, PCE	8	8/8	—

[1]C, Commercial; I, Industrial; M, Military; R, Residential; RMF, Residential, Multi-Family; RSF, Residential, Single Family; S, School.
[2]Included in USEPA (2012) VI database.

- subsurface sample distance relative to indoor air and building perimeter;
- heating, ventilation, and air conditioning (HVAC) operation during sampling (on, off, not reported); and
- quality assurance/quality control (QA/QC) issues and measures (leak testing, vacuum loss, tracer identification, preferential pathway, background source, other).

Filtering Methods

The data entered into the database were extensively reviewed to assess data quality. QA/QC measures included reviews of site investigation reports, site plans, vapor sample collection methods and analyses, data quality testing (e.g., pneumatic and tracer testing, purging procedures), and broad consistency with the VI conceptual model. Suspect

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data associated with unacceptable QA/QC; sample methods; proximity to exhaust fans, floor drains, sumps, and elevators; and possible indoor air sources (e.g., bathrooms, janitor closets) were flagged and eliminated from further analysis. This process reduced the total number of vapor data pairs from 8415 to 7891.

The database was further filtered to remove data potentially influenced by background (non-VI) chemical sources (see Table 2). Filters C and F are consistent with those applied by USEPA (2012). Conversely, key differences in the filtering process from that applied by USEPA (2012) were the elimination of vapor data pairs that met the following conditions:

- Filter A: C_{IA} < analytical detection and reporting levels;
- Filter B: C_{IA} < median of 90th percentile of residential background C_{IA} reported in literature (background indoor air vapor concentration [C_{BGRD}]), including chemicals with unreported or unknown background C_{IA} data USEPA 2012);
- Filter D: C_{IA} < concentrations in outdoor air (C_{OA}); and
- Filter E: $C_{SOURCE} < 500\times C_{BGRD}$.

The C_{IA} and C_{OA} filters were used to exclude low-concentration C_{IA} data with greater likelihood of bias from background sources and indoor-outdoor air exchange, recognizing that the bias could not be fully eliminated. The $500\times C_{BGRD}$ multiplier resulted in the most normally distributed AF and C_{SOURCE} data (see Figure 1) and exclusion of lower concentration C_{SOURCE} data with the greatest likelihood of bias from background sources and other confounding factors. The 500× multiplier is an order of magnitude higher than the $50\times C_{BGRD}$ filter applied by USEPA (2012), yet more consistent with the $300\times C_{BGRD}$ multiplier estimated by Song et al. (2011) in an evaluation of USEPA's 2008 empirical AF database. Increasing the magnitude of the C_{SOURCE} filter from 50× to 500× had little effect on the overall distribution of AFs (25th, 50th, and 75th percentiles, minimums, maximums), but did decrease the 95th percentile AF by 3.5× (see Results and Discussion section).

The vast majority of vapor data pairs (6629 data pairs = 84%) were screened by the application of Filters A and B. Although these filters were applied to reduce bias in the AF associated with low C_{IA} data generated from background (non-VI) chemical sources, their application may have biased the AF high because data pairs with low C_{IA}, attributable to VI, were excluded from the data evaluation. The USEPA (2012) study sought to retain low C_{IA} data (i.e., vapor concentrations below reporting limits) by applying the Kaplan–Meier method (Kaplan and Meier 1958). The Kaplan–Meier method was not applied in this study because inclusion of vapor concentration data analytical reporting and detection limits was shown to have little to no effect on the AF distribution or 95th percentile AFs determined from filtered TCE vapor data (see Results and Discussion section—Figure 5a). Filters G, H, and I were added to improve the overall quality of the empirical data but were also ultimately shown to be inconsequential based on limited sensitivity of the AF to these variables (see Results and Discussion section).

Filtered Database

The application of the data quality and background vapor concentration filters resulted in a final filtered dataset consisting of 788 C_{IA} and C_{SOURCE} vapor data pairs from 71 buildings, chemically distributed as follows: TCE (643 data pairs = 82% of population); PCE (138 data pairs = 18% of population), and 1,1-dichloroethylene (1,1-DCE) (seven data pairs = <1% of population). TCE and PCE vapor data pair populations for individual buildings are reported in Tables S1 and S2. Table 3 provides a summary of the database as a function of building type (broadly categorized

Table 2

Database Filters to Account for Data Quality and Background (Non-VI) Chemical Sources

	All Chemicals		TCE Only	
Filter	**# of Vapor Data Pairs Eliminated**	**Total Remaining Data Pairs**	**# of Vapor Data Pairs Eliminated**	**Total Remaining Data Pairs**
Initial database after QA/QC review	524	7891	515	3009
A. C_{IA} < analytical detection and reporting levels (including U-qualified nondetect data)	3210	4681	1118	1891
B. $C_{IA} < C_{BGRD}$	3419	1262	991	900
C. $C_{IA} \geq C_{SOURCE}$ concentrations (i.e., AF ≥1)	30	1232	14	886
D. C_{IA} < reported C_{OA}	13	1219	11	875
E. $C_{SOURCE} < 500\times C_{BGRD}$ (including U-qualified nondetect data)	138	1081	52	823
F. C_{SOURCE} < analytical detection or reporting levels	94	987	14	809
G. Paired C_{IA} and C_{SOURCE} samples reported to be more than 92 days (~3 months) apart	95	892	63	746
H. Paired C_{IA} and C_{SOURCE} samples reported to be more than 100 feet apart (including C_{IA} samples collected from second floors of buildings)	90	802	89	657
I. Soil-gas data collected more than 30 feet buildings	14	788	14	643

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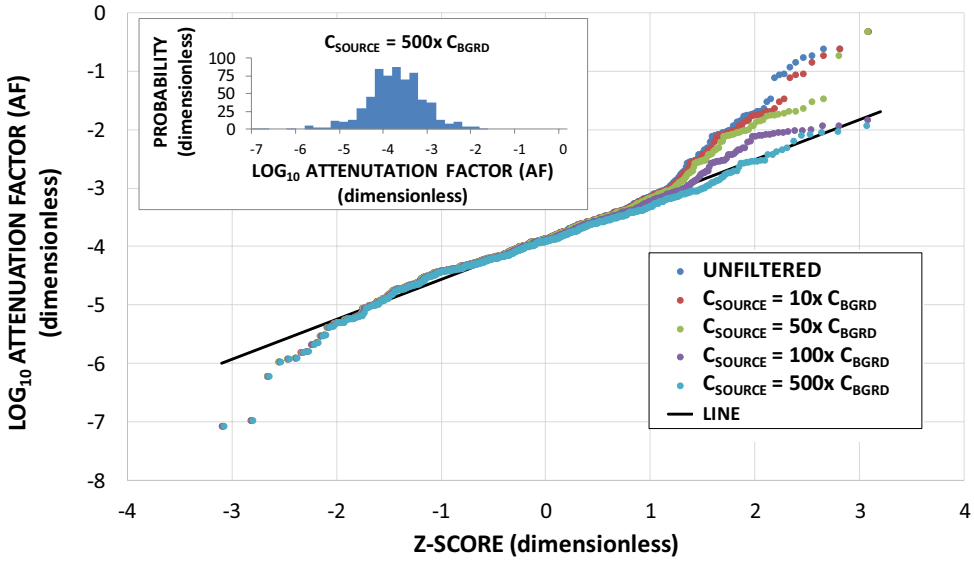


Figure 1. Cumulative probability plots summarizing empirical attenuation factors determined from the filtered TCE database associated with various levels of subsurface chemical vapor concentrations (C_{SOURCE}) screening based on 10×, 50×, 100×, and 500× multipliers of C_{BGRD}. The histogram inset illustrates the distribution of empirical AF for the most normal distribution of C_{SOURCE} data which was achieved by filtering out $C_{SOURCE} < 500\times C_{BGRD}$. The z-score indicates the number of standard deviations a given AF value is above or below the mean of the AF distribution.

Table 3

Paired Vapor Data Populations as a Function of Building Type, Chemical, and Sample Type

Building Type	Chemical			Building-Type Designation	Subslab Sample Population	Soil-Gas Sample Population
	TCE	PCE	All VOCs			
Commercial	36	47	83	Nonresidential	192	127
Industrial	91	68	160		Chemical data pairs	Chemical data pairs
Military	50	0	50		TCE = 143	TCE = 40
School	6	20	26		PCE = 48	PCE = 87
Subtotal	183	135	319		1,1-DCE = 1	
Residential	460	3	469	Residential	4	465
					Chemical data pairs	Chemical data pairs
					TCE = 4	TCE = 456
						PCE = 3
						1,1-DCE = 6
Total	643	138	788		196	592

as "nonresidential" [commercial, industrial, military, and school] and "residential"), chemical, and sample type.

The filtered database was used to both derive an empirical AF and assess the effects of background indoor air concentrations and key variables on the AF. Only TCE vapor data were ultimately used in the AF derivation to reduce the potential for chemical-specific variability and exclude certain chemicals, such as PCE, which were later shown to be more affected by non-VI sources (see Results and Discussion section). The final TCE database used to derive the AF included vapor data collected at 59 buildings and was larger than the USEPA (2012) database in both sample population (643 vs. 431 vapor data pairs) and site count (19 vs. 12). Approximately 72% ($N = 460$) and 28% ($N = 183$) of the TCE vapor data pairs in this study were from residential and nonresidential building types, respectively. Less than 1% (4/460) of the residential vapor data were subslab samples. The filtered TCE database included a relatively high percentage (496/643 = 77%) of exterior soil-gas vapor data pairs. Again, soil-gas data were not factored into the default AF recommended by USEPA because the soil-gas AF distribution was found to be highly variable with a 95th percentile AF = 0.3 (USEPA 2015a). The inclusion of a large percentage of soil-gas data in the current study, including the small population of subslab samples from residential buildings, and the elimination of chemicals other than TCE, represent other key con-

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trasts between this and the USEPA (2012) study. The effects of background C_{IA} and C_{SOURCE} filtering and key variables (e.g., sample type, sample depth) on the AF are described in greater detail in the Results and Discussion section.

Results and Discussion

General Relations between C_{IA} and C_{SOURCE}

As shown in Figure 2, C_{IA} are relatively independent of C_{SOURCE} for filtered TCE data, all chemicals contained in the unfiltered database, and even for a subset of 125 filtered TCE and PCE indoor air and subsurface vapor samples that were generally concurrent and co-located (i.e., collected within 20 feet and 1 day of one another and where the C_{SOURCE} samples were collected <2 feet below the building foundation). The lower bound in C_{IA} (0.01–0.1 µg/m^3) largely coincides with analytical detection limits for various volatile organic compounds (VOCs) in indoor air. The reason for the apparent upper bound limit, generally marked by C_{IA} ~ 20 µg/m^3, is uncertain but may be due to adsorption or reaction processes. Yao et al. (2013) observed similar relations in their review of the USEPA (2012) AF database.

The spatiotemporal variability associated with vapor migration in and around buildings (Folkes et al. 2009; USEPA 2012; Johnston and Gibson 2014) can be caused by numerous factors, including variable airflow/air-exchange inside buildings, preferential vapor migration (e.g., via sumps, floor drains, utility conduits, and other building foundation penetrations), background (non-VI) sources, vapor sampling at locations other than where vapors enter buildings, and general resistance of building foundations to VI. The weak correlation between C_{IA} and C_{SOURCE} results in AFs that decrease with increasing C_{SOURCE} (Figure 3). The dependence of the AF on C_{SOURCE} implies the AF is sensitive to variables that affect subsurface vapor concentration, such as the separation distance between a groundwater source and vapor sample location in the vadose zone. Again, these findings highlight the uncertainties in empirical AF assessments that are based on discrete indoor air and subsurface vapor concentration measurements.

Statistical Analysis of Empirical AFs

The 95th percentile AFs based on the entire population of TCE (643 data pairs), PCE (138 data pairs), and both TCE and PCE (781 data pairs) in the filtered database are 0.0013, 0.0025, and 0.0018, respectively. The 95th percentile AF for PCE is approximately 2× the value for TCE; this difference is likely explained by background sources of PCE (USEPA 2011). The median AFs for TCE, PCE, and TCE and PCE calculated from the filtered database are all equivalent (0.00012).

Bias in the AF can be introduced by data from certain buildings with large numbers of vapor data pairs. To assess the potential bias, a 95th percentile AF was calculated for TCE based on 59 building-specific AFs and median AF values for buildings with multiple vapor data pairs (see Table S1). The analysis resulted in a 95th percentile AF = 0.003, which is 3× less than the 95th percentile AF = 0.001 determined from the collective filtered TCE database. This difference indicates a slight bias in the 95th percentile AF = 0.001, which is attributed to relatively low AF values (5.07E-5 to 1.4E-4) for seven buildings with >30 vapor data pairs. A similar analysis was not considered for PCE given the relatively small population (14) of buildings where PCE vapor samples were collected.

In summary, the 95th percentile AFs derived from the TCE and PCE filtered database are approximately more

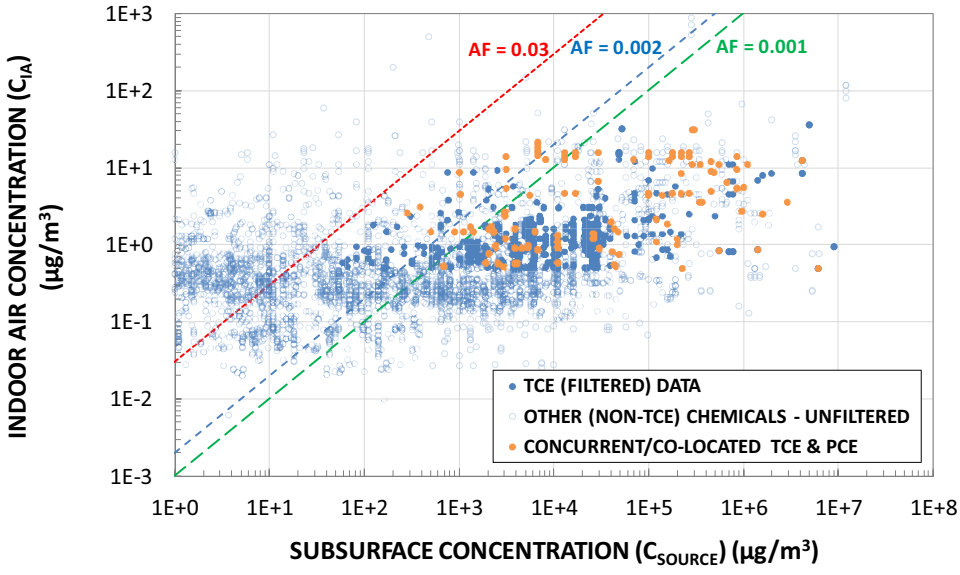


Figure 2. Concentrations of all chemicals in indoor air (C_{IA}) plotted as a function of subsurface vapor concentrations (C_{SOURCE}) for a) filtered TCE data, b) other (non-TCE) chemicals contained in the unfiltered empirical database, and c) filtered TCE and PCE data where indoor air and subsurface vapor sampling was generally concurrent and co-located. The vapor concentration data are shown relative to the USEPA recommended AF = 0.03 and AFs previously used in California for residential (AF = 0.002) and non-residential (AF = 0.001) buildings.

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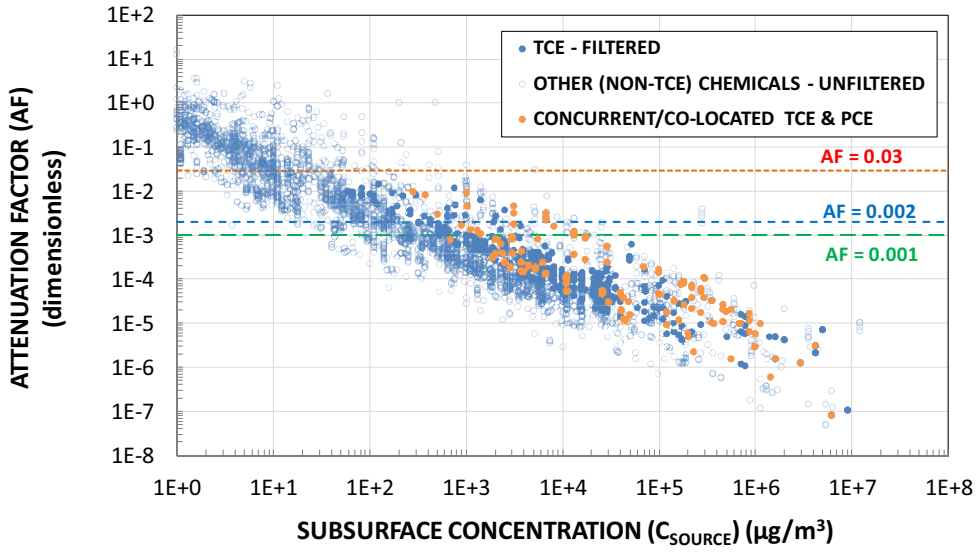


Figure 3. Empirical attenuation factors (AFs) plotted as a function of subsurface vapor concentration (C_{SOURCE}) for a) filtered TCE data, b) all chemicals contained in the unfiltered empirical database, and c) TCE and PCE data where C_{IA} and C_{SOURCE} samples were generally concurrent and co-located. The vapor concentration data are shown relative to the USEPA recommended AF = 0.03 and AFs previously used in California for residential (AF = 0.002) and nonresidential (AF = 0.001) buildings.

than an order of magnitude less than the USEPA (2015a) default AF = 0.03 value. A more detailed evaluation of 95th percentile AFs as a function of various database variables is provided in a subsequent section titled Factors Affecting the AF for Subsurface Vapor Screening.

Reliability Assessment

Following the approach used by USEPA (2015a), an evaluation was conducted to assess the reliability of the AF as a VI screening tool. In particular, the reliability was defined by the percentage of times the AF would "correctly" or "incorrectly" identify potential VI risks when applied to the filtered TCE database. Correct assessments were denoted by:

a) True positives: C_{SOURCE} > SSSL and C_{IA} > IASL; and
b) True negatives: C_{SOURCE} < SSSL and C_{IA} < IASL.

Incorrect assessments were denoted by:

c) False negatives: C_{SOURCE} < SSSL and C_{IA} > IASL; and
d) False positives: C_{SOURCE} > SSSL and C_{IA} < IASL.

Of note, an excessively low AF triggers a disproportionate number of false negatives (i.e., the AF fails to identify instances where the C_{IA} are above the IASLs and further investigation is warranted). Conversely, an excessively high AF generates an overabundance of false positives (i.e., the AF may prompt unnecessary investigations at buildings where the C_{IA} are below the IASLs).

The AF reliability methodology was used by USEPA to support the AF = 0.03 value based on the 95th percentile of calculated AFs from their filtered database (USEPA 2015a). In the current study, the reliability assessment was favored over the 95th percentile of calculated AFs primarily because (1) the C_{IA} and C_{SOURCE} data were weakly correlated, and (2) the ultimate goal was to derive an AF that reliably identifies VI sites where C_{IA} exceeds IASLs.

AF reliability was assessed for the filtered TCE database using the following relation:

$$\frac{\text{Total \# of true positives}}{\left(\text{Total \# of true positives} + \text{total \# of false negatives}\right)} \text{ or}$$

$$\frac{\text{Total \# of true positives}}{\text{Total \# of } C_{IA} > \text{IASL}} = 95\%$$

This represents the threshold where C_{SOURCE} exceed SSSLs in 95% of instances where C_{IA} exceed IASLs. A 95% threshold criterion is used here for illustration purposes; the selection of a target level of uncertainty for VI screening (i.e., percentage of "false positives") would ultimately be a regulatory policy decision. The 95% threshold used in this study is consistent with the tolerable level of uncertainty associated with a 95th percentile AF and the inherent assumptions used in the derivation of vertical screening distances for application at petroleum VI sites (USEPA 2015b). This approach is considered to be an improvement over the reliability methodology used by USEPA (2015a) because it places greater emphasis on instances where C_{IA} exceed IASLs.

The reliability analysis using the 95% threshold criterion for C_{IA} > IASLs resulted in an AF = 0.0008 for the filtered TCE dataset and TCE SSSLs for residential and commercial/industrial building types of 600 and 3750 µg/m³, respectively (see Figure 4a). The TCE IASLs for residential (0.48 µg/m³) and C/I (3.0 µg/m³) buildings used in the reliability assessment were taken from current California guidance (DTSC 2020) and the SSSLs were calculated by dividing the IASLs by the AF. The distribution of true positives, false negatives, false positives, and true negatives associated with an AF = 0.0008 is illustrated in Figure 4a and summarized in Table 4. Application of the USEPA AF = 0.03 and SSSLs = 16 µg/m³ (residential) and 100 µg/

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m^3 (C/I) to the same TCE dataset resulted in no false negatives with a margin of conservatism (see Figure 4b) and a 40% [(135–81)/135] increase in the relative percentage of false positives based on the data populations provided in Table 4. The AF = 0.0008 derived from the reliability assessment is slightly lower than (1) the 95th percentile of calculated AFs derived from the filtered TCE vapor dataset (AF = 0.001), (2) the 95th percentile AFs derived from the initial evaluation of empirical California data for residential (0.0014) and nonresidential buildings (AF = 0.0025) (Ettinger et al. 2018), and (3) the values for residential (AF = 0.002) and C/I (AF = 0.001) previously used in California (SFBRWQCB 2016).

To assess potential effects of background C_{IA} filtering on the AF, the reliability analysis was applied to a larger dataset of TCE data where the C_{IA} filters were excluded (i.e., Filter A: C_{IA} < analytical detection and reporting levels, and Filter B: C_{IA} < median background values). For this analysis, the nondetect C_{IA} results were substituted with their associated detection and reporting limits. The inclusion of these data resulted in a dataset of 1371 data pairs and a 95th percentile AF = 0.001, a higher relative percentage of false positives 88% [(660–81)/660], and 2% false negatives (see Table 4 and Figure S2). Of note, the latter is equivalent to the percentage of false negatives associated with the reliability methodology used by USEPA (2015a) to support the 95th percentile subslab AF = 0.03 (USEPA 2015a).

Factors Affecting the AF for Subsurface Vapor Screening

General sensitivities of the AF to background vapor concentration data filtering and key factors contained in the filtered database were assessed using descriptive statistics (see Table 5) and box-and-whisker plots (see Figures 5

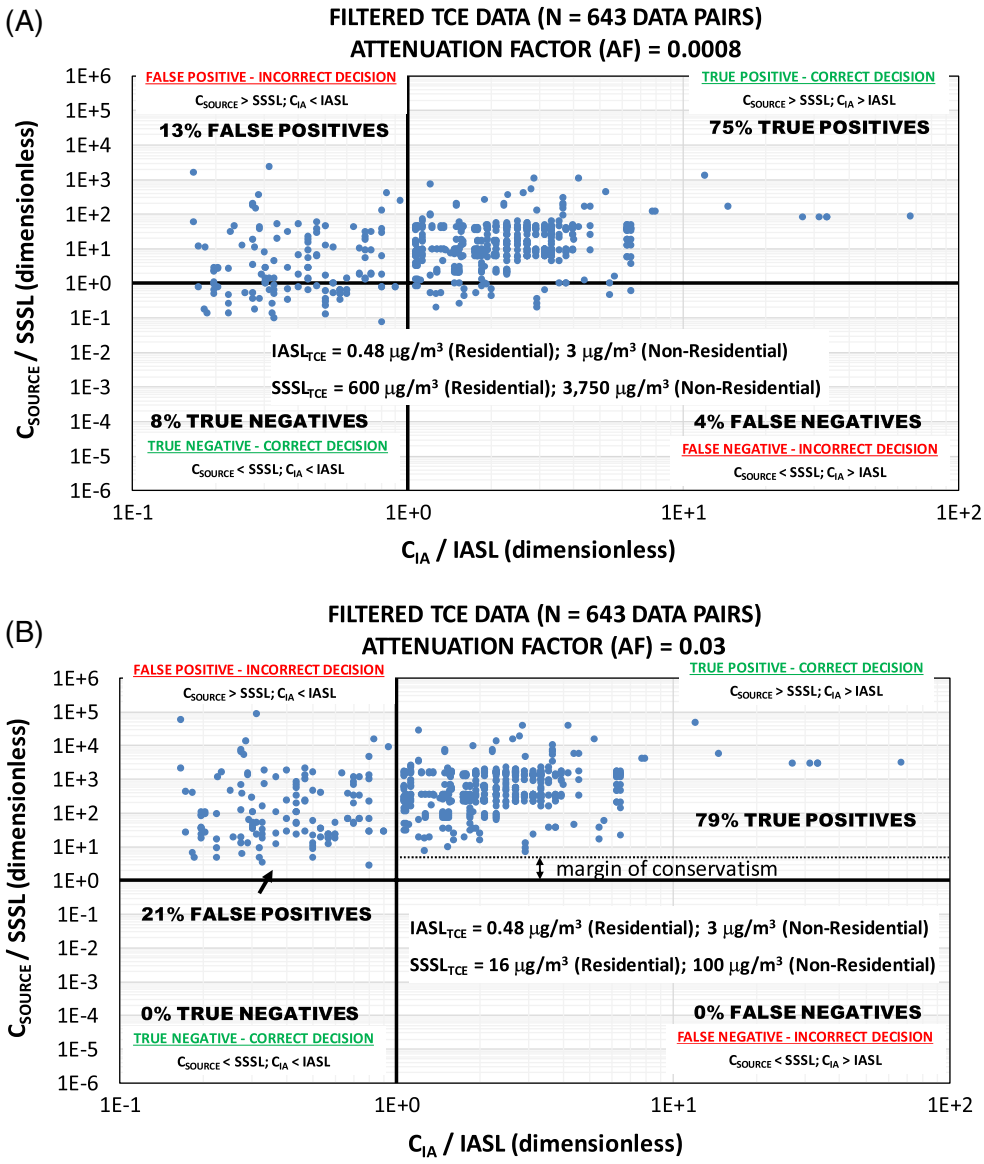


Figure 4. Reliability analysis showing distribution of C_{SOURCE} > SSSL vs. C_{IA} > IASL for the filtered TCE data. The quadrants indicate populations of vapor concentration data associated with correct decisions ("true positives" and "true negatives") and incorrect decisions ("false positives" and "false negatives") that result from application of a) the empirical AF derived from this study (AF = 0.0008) and b) the USEPA default AF (AF = 0.03).

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Table 4

A Comparison of the Number and Percentage of Data Associated with Each of the Reliability Analysis Criterion for Specified TCE Datasets and AFs

		Reliability Criterion			
Dataset	**AF**	**True Positives**	**False Negatives**	**False Positives**	**True Negatives**
TCE: Filtered database (N = 643 data pairs)	0.0008	481 (75%)	27 (4%)	81 (13%)	54 (8%)
TCE: Filtered database (N = 643 data pairs)	0.03	508 (79%)	0 (0%)	135 (21%)	0 (0%)
TCE: Filtered database including C_{IA} < reporting levels and C_{BGRD} (N = 1371 data pairs)	0.001	543 (36%)	27 (2%)	660 (48%)	141 (10%)

and 6). The box-and-whisker plots graphically illustrate the distribution of the AF population (N) through lower (lower box boundary) and upper (upper box boundary) quartiles, 95th percentiles (open circles), means (cross), medians (line within box), and minimum (lower whisker) and maximum (upper whisker) values.

As illustrated, the 95th percentiles and overall variance of AFs were generally less for TCE than PCE even though the AF is expected to be independent of chemical type for nondegradable compounds. The differences can be explained, in part, by the higher likelihood of encountering background sources of PCE in indoor air (Dawson and McAlary 2009; USEPA 2011) and the higher percentage of PCE data collected at nonresidential sites (98%) (see Table 3), where C_{IA} and C_{SOURCE} vapor concentrations were more variable. The effect of C_{IA} filtering and elimination of indoor air data potentially affected by background sources reduced the variability of the AFs but had relatively little effect on the 95th percentile AFs for both TCE and PCE (see Figure 5a). In particular, the 95th percentile AFs were relatively unaffected by the inclusion or exclusion of low-concentration C_{IA} data, implying that efforts to retain C_{IA} below NDs and RLs using Kaplan-Meier (1958) statistics would add little value for this dataset.

The 95th percentile AFs were more sensitive to C_{SOURCE} filtering and the elimination of low-concentration source vapor data (see Figure 5b) that were less log-normally distributed (see Figure 1). The stronger dependence of the AF on C_{SOURCE} than C_{IA} filtering is consistent with the strong dependence of the AF on subsurface vapor concentration (see Figure 3). C_{SOURCE} filtering had less effect on the AF distributions for TCE than PCE, which can be explained by the elimination of a smaller percentage of low-concentration vapor sources for TCE (40/683 = 6%) than PCE (49/187 = 26%). Overall, TCE vapor data appeared to be more suitable for VI screening than PCE and certain chemicals that have a greater likelihood of being affected by background sources.

As shown in Figure 6, median AFs for TCE generally varied within an order of magnitude for most of the factors evaluated. The sensitivity of AF distribution to each variable is addressed below.

- Building type (Figure 6a): Although there were insufficient data to assess the distribution of AFs for PCE in residential buildings (N = 3), the evaluation indicates AFs were generally more variable for nonresidential than residential buildings. The median AF values for TCE residential (0.00012) and nonresidential (0.00012) were equal, but the 95th percentile AF value for residential (0.00081) was approximately 3.5× less than the nonresidential value (0.0029). This difference can be attributed to site conditions for the C/I data including (1) much higher relative percentage of subslab (78%) vs. soil-gas (22%) samples, (2) greater variability in source locations (e.g., groundwater vs. soil source immediately beneath the building foundation in a portion of the building), and (3) greater likelihood of encountering wider ranges in C_{IA} and C_{SOURCE}, HVAC operation, and indoor air exchange rates.
- Foundation type (Figure 6b): AFs determined from soil-gas data at buildings with crawl spaces were approximately 2.5× higher than those for slab-on-grade buildings. This finding implies that C_{IA} may be more sensitive to vapor transport through the vadose zone than across the building foundation. Note that this evaluation of soil gas to indoor air AFs is different from the USEPA (2012) study, which included an evaluation of crawl space to indoor air AFs.
- Sample type (Figure 6c): The 95th percentile AF determined from subslab TCE data (0.0024) was approximately 2× higher than from soil-gas data (0.0010). The relatively small difference in the 95th percentile AFs implies that (1) the soil-gas data were suitable for use in the AF derivation, unlike in the USEPA (2012) study; and (2) the soil-gas vapor data pairs could be reasonably combined with subslab vapor data pairs into a single subsurface vapor dataset for AF derivation. Of note, the AFs derived from this database would be particularly useful for VI assessments at redevelopment sites where subslab data are not available for corrective action decision-making.
- Soil-gas sample depth (Figure 6d): Median and 95th percentile AFs based on shallow (<10 buildings) TCE soil-gas data were approximately four to six times higher than those based on deeper (≥10 feet buildings) soil-gas data. These findings are consistent with the dependence of the AF on subsurface vapor concentration (Figure 3) where the vapor source is located at depth (e.g., groundwater) and mass transport is limited by diffusion through the vadose zone.
- Surface cover (Figure 6e): AFs based on TCE data were relatively higher for buildings surrounded by open ground rather than pavement. This result cannot be easily explained and may simply reflect the relatively small population of vapor data (36 samples) where open ground surface cover data were reported.

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Table 5

Distribution of AFs as a Function of Select Database Variables

Chemical	Category	Variable	Paired Vapor Data Population	95th %ile	90th %ile	50th %ile
TCE	Filtered database	All	643	0.0013	0.00073	0.00012
	C_{IA} filter—percentiles from background studies. ND = nondetect; DLs = detection levels; RLs = reporting levels	NDs at DLs and RLs	1371	0.0013	0.00070	0.000088
		No NDs	908	0.0010	0.00065	0.00011
		50th %ile	764	0.0012	0.00071	0.00011
		75th %ile	720	0.0013	0.00074	0.00012
		Median 90th %iles[1]	643	0.0013	0.00073	0.00012
	C_{SOURCE} filter – multipliers of C_{GBRD}	No Filter	683	0.0080	0.0016	0.00013
		50× C_{IA}	675	0.0046	0.0012	0.00013
		100× C_{IA}	661	0.0028	0.00088	0.00013
		500× C_{IA}	643	0.0013	0.00073	0.00012
	Building type	Residential	460	0.00081	0.00053	0.00012
		Commercial	36	0.0021	0.0016	0.00068
		Industrial	91	0.0023	0.00080	0.000037
		Military	50	0.0022	0.00088	0.00012
		School	6	0.0035	0.0033	0.0021
	Foundation type	Slab	623	0.0012	0.0007	0.0001
		Crawl space	20	0.0029	0.0029	0.0002
	Subsurface vapor sample type	Soil gas	496	0.0010	0.0005	0.0001
		Subslab	147	0.0024	0.0012	0.0001
	Soil-gas sampling depth	$x < 10$ feet	278	0.0018	0.00084	0.00025
		$x \geq 10$ feet	218	0.00030	0.00018	0.000061
	Surrounding surface cover	Pavement	496	0.00081	0.00054	0.00012
		Open ground	36	0.0029	0.0023	0.00061
	HVAC operation	On	72	0.00049	0.00031	0.000048
		Off/None	50	0.0051	0.0028	0.00068
	Distance between indoor air and subsurface vapor vapor samples	$x < 25$ feet	84	0.0027	0.00094	0.00010
		$25 \leq x < 50$ feet	177	0.00081	0.00057	0.00011
		$x \geq 50$ feet	348	0.0012	0.00063	0.00012
	Distance between the subsurface sample and building perimeter	Subslab: $x \leq 10$ feet	7	0.0057	0.0034	0.0000029
		Subslab: $10 < x \leq 20$ feet	27	0.00051	0.00043	0.000046
		Subslab: $20 < x \leq 30$ feet	25	0.00078	0.00070	0.000058
		Subslab: $x > 30$ feet	61	0.0016	0.0011	0.000063
		Soil gas: $x \leq 30$ feet	195	0.00083	0.00058	0.00013
		Soil gas: $30 < x \leq 60$ feet	167	0.0016	0.00048	0.000096
		Soil gas: $x > 60$ feet	121	0.00084	0.00038	0.00013
	Time between indoor air and subsurface vapor sampling	$t < 7$ days	106	0.0059	0.0033	0.00018
		$7 \leq t < 30$ days	208	0.00096	0.00068	0.00010
		$t \geq 30$ days	325	0.00071	0.00053	0.00012
PCE	Filtered database	All	138	0.0025	0.0022	0.00012
	Building type	Residential	3	0.0022	0.0021	0.0017
		Commercial	47	0.0030	0.0024	0.00016
		Industrial	68	0.0025	0.0018	0.00018
		Military	0	—	—	—
		School	20	0.00057	0.00017	0.000070
All VOCs	Filtered database	All	788	0.0018	0.00090	0.00012
	Building type	Residential	469	0.00084	0.00057	0.00012
		Commercial	83	0.0027	0.0023	0.00040
		Industrial	160	0.0025	0.0015	0.000052
		Military	50	0.0022	0.00088	0.00012
		School	26	0.0028	0.0021	0.000089

[1]Data from USEPA (2012).

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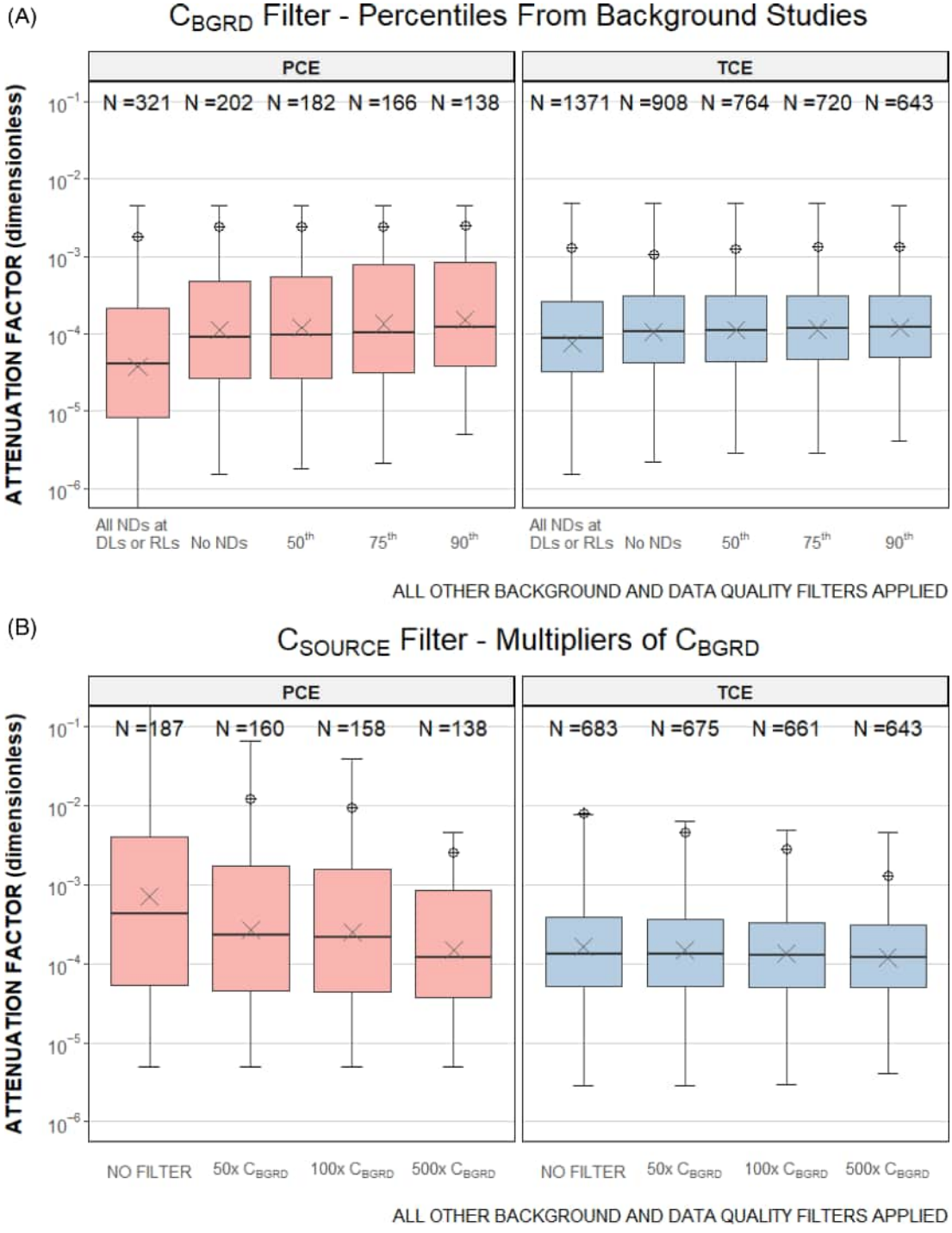


Figure 5. Statistical distributions of empirical attenuation factors (AF) plotted as a function of background vapor concentration filters for a) C_{IA} based on 50th, 75th, and 90th percentiles of median background chemical concentrations in indoor air studies (USEPA 2012); and b) C_{SOURCE} based on no filter (i.e., 1×), 50×, 100×, and 500× multipliers of C_{BGRD}. N represents the sample population size.

- HVAC operation (Figure 6f): Median and 95th percentile AFs for TCE were approximately 10 to 14× higher for nonoperating/nonexisting vs. operating HVAC systems. This difference may indicate that these systems act to reduce or disperse chemical concentrations in indoor air. AFs based on data collected while the HVAC system is not in operation may not, however, be appropriate for use in risk-based decision-making if the system is generally operated during times when the building is occupied.

Sensitivity of the AF to other factors, such as distance of the soil-gas and subslab sampling point from the building perimeter (Figure 6h and 6i, respectively) and the distance and time between indoor air and subsurface vapor samples (Figure 6g and 6j, respectively), was generally small. This observation implies that the AF is more sensitive to other factors or that these factors are not critical in VI screening assessments. Although not shown, relatively little difference was observed in 95th percentile AFs derived using filtered

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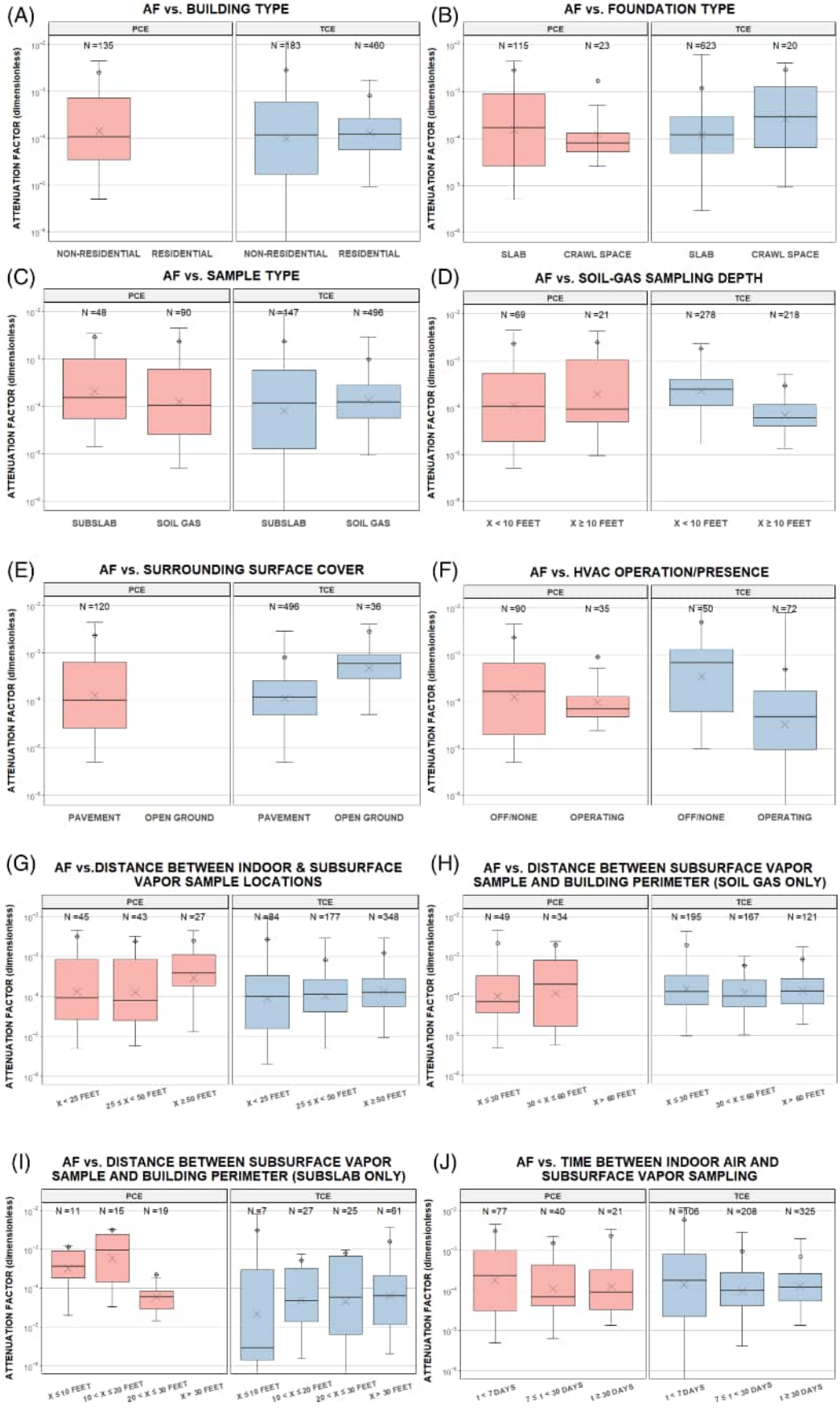


Figure 6. Statistical distributions of attenuation factors (AF) data calculated from the filtered database as a function of a) building type, b) foundation type, c) subsurface vapor sample type, d) soil-gas sample depth, e) land surface cover surrounding building, f) HVAC operation, g) subsurface vapor sample – building perimeter offset distance (subslab data), h) subsurface vapor sample – building perimeter offset distance (soil-gas data), i) distance between indoor air and subsurface vapor sample locations, and j) time between indoor air and subsurface vapor sampling. N represents the sample population size.

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TCE vapor data for small subsets of C/I sites located in generally the southern (e.g., Los Angeles, San Diego metropolitan areas—six sites, 77 vapor data pairs, AF = 0.002) and northern (e.g., San Francisco Bay metropolitan area—four sites, 50 data pairs, AF = 0.004) coastal regions of California.

Other explanations can likely be put forward to support these cursory findings beyond those postulated. A more rigorous analyses of AF relations using multivariate analyses or site- and building-specific AFs and AFs associated with the highest C_{SOURCE} data may prove revealing. Although such assessments were beyond the scope of this study, it is hoped that these findings can be used as a starting point to help guide future VI data collection and AF studies.

Summary

A database of more than 8400 paired subsurface and indoor air vapor concentration measurements of 33 chemicals from VI sites in California was compiled and analyzed to assess the suitability of USEPA's default AF = 0.03 for subsurface vapor (subslab and soil-gas) screening. The vapor data were largely extracted from VI site investigation reports made publicly available on CalEPA's Geotracker online database. The VI sites were primarily located in the metropolitan areas of San Francisco, Los Angeles, and San Diego. Although the geographic distribution of sites in California was limited, the database is considered to reflect the predominant distribution of VI sites in California.

The initial database was extensively filtered to remove vapor data of suspect quality and potentially affected by background (non-VI) sources. The filtering reduced the size of the database to 788 vapor data pairs, 71 buildings, and 23 VI sites. The vapor data were chemically distributed as follows: TCE (643 data pairs); PCE (138 data pairs); and 1,1-DCE (seven data pairs). The filtered TCE vapor data were ultimately used to derive the AF in order to limit chemical-specific variability and reduce potential bias from background (non-VI) sources that was more significant for PCE.

Overall, the indoor air and subsurface vapor concentration data were found to be weakly correlated, which resulted in AFs that decreased with increasing subsurface vapor concentration. The USEPA database used to derive the default AF = 0.03 exhibited similar issues. The trend inherent to both databases underscores the challenges with empirical AF studies based on vapor concentration data that are spatiotemporally variable, yet measured discretely in time and space.

An AF = 0.0008 was determined from the filtered TCE database for subsurface vapor screening. The AF was based on the reliability analysis reported in USEPA (2015a), which was modified to place greater emphasis on the ability of the AF to identify sites with indoor air concentrations above screening levels. The AF = 0.0008 is more than an order of magnitude less than the default USEPA value (0.03), but is comparable to the 95th percentile of AFs (0.001) calculated from the same filtered TCE database and AFs (0.001 and 0.002) previously applied in California VI guidance. AFs based on the reliability method are risk-based and considered more technically defensible than AFs based on 95th percentiles of indoor air and subsurface vapor concentration data that are weakly correlated.

Descriptive statistics were used to visually assess sensitivities of various factors commonly considered to directly or indirectly affect the AF. Parameters with greater influence on the AF included building type, foundation type, sample type, soil-gas sample depth, HVAC operation, and surface cover surrounding the building foundation. Parameters with less influence on the AF were the distance between indoor air and subsurface vapor sample locations, the distance between the subsurface vapor sample and the building perimeter, and the time lag between subsurface and indoor air vapor sampling.

The inability to fully account for the spatiotemporal variability of indoor air and subsurface vapor concentration measurements or the full range of climatic conditions across California should not detract from the relevance of the study nor the applicability of the AF to VI sites in either regions of the state represented by the database or locations/states outside California with similar climatic conditions and building types. Going forward, alternative methodologies for site screening (e.g., mass-flux, longer duration or larger volume concentration measurements) or more detailed evaluation of AF (e.g., multivariate, building-specific, site-specific, or high subsurface vapor concentration analyses) may prove beneficial. In the meantime, it is hoped that the findings of this study can be used to support regulatory policy decisions that improve VI screening, facilitate redevelopment, and ultimately focus limited resources on sites with the greatest potential risk.

Supporting Information

Additional Supporting Information may be found in the online version of this article. Supporting Information is generally not peer reviewed.

Appendix S1. Supporting Information.

Figure S1. Geographic distribution of VI sites contained in the AF database.

Figure S2. Reliability analysis showing distribution of C_{SOURCE} > SSSL versus C_{IA} > IASL for the filtered TCE data without the C_{IA} background vapor concentration Filters A and B. The quadrants indicate populations of vapor concentration data associated with correct decisions ("true positives" and "true negatives") and incorrect decisions ("false positives" and "false negatives") that result from application of (a) the empirical AF derived from this study (AF = 0.001) and (b) the USEPA default value (AF = 0.03).

Table S1. Summary of building-specific TCE vapor data contained in the filtered database.

Table S2. Summary of building-specific PCE vapor data contained in the filtered database.

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The authors would like to acknowledge Steve Luis of Ramboll, Gina Plantz of Haley & Aldrich, Nadine Weinberg of ERM, and Helen Dawson and Todd McAlary of Geosyntec for the valuable contributions to the development and analysis of the empirical database. The authors are currently exploring opportunities to add to the database and make it publicly available online.

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Disclosure

The authors declare no competing interests.

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Empirically Derived California Vapor Intrusion Attenuation Factors

by Rafat Abbasi, William Bosan and Dan Gallagher

Abstract

The California Department of Toxic Substances Control (DTSC) gathered empirical data from sites contaminated with chlorinated volatile organic compounds and generated a vapor intrusion database. The database includes 52 sites across California with 213 buildings, of which, 53% are residential, and 47% are commercial/industrial (nonresidential). DTSC's objective is to improve its knowledge and understanding of vapor intrusion and derive empirical attenuation factors that are representative of the climatic conditions and types of buildings commonly found in the state. Filtering was applied to remove data of suspect quality that were potentially affected by background sources. After filtering to 600 pairs from 32 sites across California, a subslab attenuation factor (AF) was calculated yielding a 95th percentile of 0.005. After filtering to 2926 paired measurements from 39 sites across California, a soil vapor AF was calculated yielding a 95th percentile of 0.0009. The groundwater data was not analyzed due to the small size of the dataset. The AFs from this study are similar to AFs in a California-specific study by Lahvis and Ettinger (2021). Accordingly, converging lines of evidence suggest that vapor attenuation in California is different from what is observed nationwide by the United States Environmental Protection Agency (USEPA), where an AF of 0.03 was empirically derived and later recommended for initial screening of buildings for potential vapor intrusion exposure (USEPA, 2015).

Introduction

Vapor intrusion (VI) is an important migration pathway for sites contaminated with volatile organic compounds (VOCs) and the use of VI attenuation factors (AFs) is a method for screening sites for exposure risk in California (California Department of Toxic Substances Control [DTSC] 2011, California Environmental Protection Agency 2020). Attenuation refers to the reduction in chemical concentrations that occur during vapor migration from the subsurface into indoor air (Johnson and Ettinger 1991). Typically, AFs and their associated subsurface screening levels have been based on either model estimates or empirical studies of subsurface vapor and indoor air data (Ma et al. 2020). Nationwide, most States use screening AFs based on analysis of large empirical datasets (Eklund et al. 2018). The available empirical studies are described briefing below.

The United States Environmental Protection Agency (USEPA) (2012a) completed their nationwide study of empirical VI AFs in 2012. The USEPA's database contains data for 2929 paired indoor air and subsurface measurements collected from 913 buildings in 15 states. Eighty-five percent of the data are from residential buildings and 97% of the chemicals in their database are chlorinated VOCs. Based on the accumulated data, the USEPA (2015) recommends an AF of 0.03 when screening buildings for vapor intrusion with subslab and/or soil vapor data. Subslab data is typically collected about 6 inches directly underneath the foundation slab. The soil vapor data is typically collected at or below 5 feet below-ground surface underneath the building but can also be collected outside the front print of the building. The application of the USEPA's AF for screening buildings in California is challenging for the following reasons:

- The USEPA's database contains very few sites from California. After filtering the database for subsurface source strength, the USEPA evaluation only included two small subslab datasets and two small soil vapor datasets from California, all of which were in the San Francisco Bay Area.
- For the USEPA dataset, most of the soil vapor data were collected in New York and most of the subslab data were collected in New York, Colorado, Connecticut, and Montana, all which have colder climates than most of California (Ettinger et al. 2018).
- More than 75% of the indoor air samples in the USEPA database were collected in residential homes with basements (Brewer et al. 2014). However, less than 5% of the single-family homes in California have basements as indicated by the National Association of Home Builders (2014).
- AFs for commercial/industrial buildings were not generated by the USEPA due to limited nonresidential data in their database. Commercial and industrial buildings often have higher indoor air exchange rates, thicker foundation slabs, and higher ceilings which will attenuate soil vapor more than in a residential setting (Eklund and Burrow 2009; Brenner 2010; Shea et al. 2010; USEPA 2012b; Department of Defense [DoD] 2015).

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In early 2019, the DTSC gathered data from sites contaminated with chlorinated VOCs in California to improve its knowledge and understanding of VI and derive empirical AFs that are representative of the climatic conditions and types of buildings commonly found in the state. The intent of the study was to verify and supplement existing empirical studies of vapor attenuation. The DTSC VI database includes measurements from 52 sites located in 16 counties across California. The DTSC VI database is geographically representative of most of the urbanized areas and climate zones where the majority of VI sites are located in California. The database contains 4972 paired measurements of which, 1196 (24%) are paired subslab vapor and indoor air measurements, 3509 (71%) are soil vapor (interior and exterior) and indoor air measurements, and 267 (5%) are groundwater to indoor air measurements. The database includes 213 buildings, 113 (53%) of which are residential and 100 (47%) are commercial/industrial (nonresidential). Most of the residential data is associated with one site in southern California. The groundwater data was not analyzed due to the small size of the dataset.

Database Criteria and Pairing Convention

The criteria for database input were selected to ensure data usability and consistency. As presented below, the criteria were developed using professional judgment and were based on the approach used by the USEPA (2012a). PCE, TCE, and their associated daughter products were included in the database. Details associated with proximal distance and depths are included in Supplemental Information associated with the publication.

Methodology to Identify Attenuation Factors Affected by Background Indoor Air Concentrations

California has a comprehensive air toxics program administered by the California Air Resources Board (CARB) (2020). CARB maintains numerous real-time ambient outdoor air monitoring stations throughout California and provides both local and statewide monitoring summaries for select toxic air contaminants. Based on the evaluation of CARB data, the median of the maximum outdoor ambient air concentrations, collected over a 10-year period from monitoring stations throughout California, was selected to represent an upper-bound estimate of outdoor background. The outdoor background air concentration used to screen indoor air concentration data was defined as 1.36 µg/m^3 for PCE, TCE, 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), 1,1,1-trichloroethane (1,1,1-TCA), and vinyl chloride (VC). An outdoor background concentration was used for screening purposes due to the lack of indoor air studies specific to California. Further details are included in Supplemental Information associated with the publication.

Application of Source Strength Screening

Consistent with USEPA (2012a) methodology, a source strength screen of 50-times background was selected as the most appropriate screening criterion for minimizing the potential influence of background sources while maintaining a large number of subslab and soil vapor AF data pairs. Details associated with application of source strength screening are included in Supplemental Information associated with the publication.

Relationship Between Subsurface Concentrations and AFs

The relationship of subsurface concentrations and AFs are shown in the scatter plots in Figures 1 and 2. The baseline screening was performed to exclude all nondetectable concentrations in the subsurface and any pairs with AFs greater than 1. The scatter plots were generated from data remaining after baseline and source strength screening of

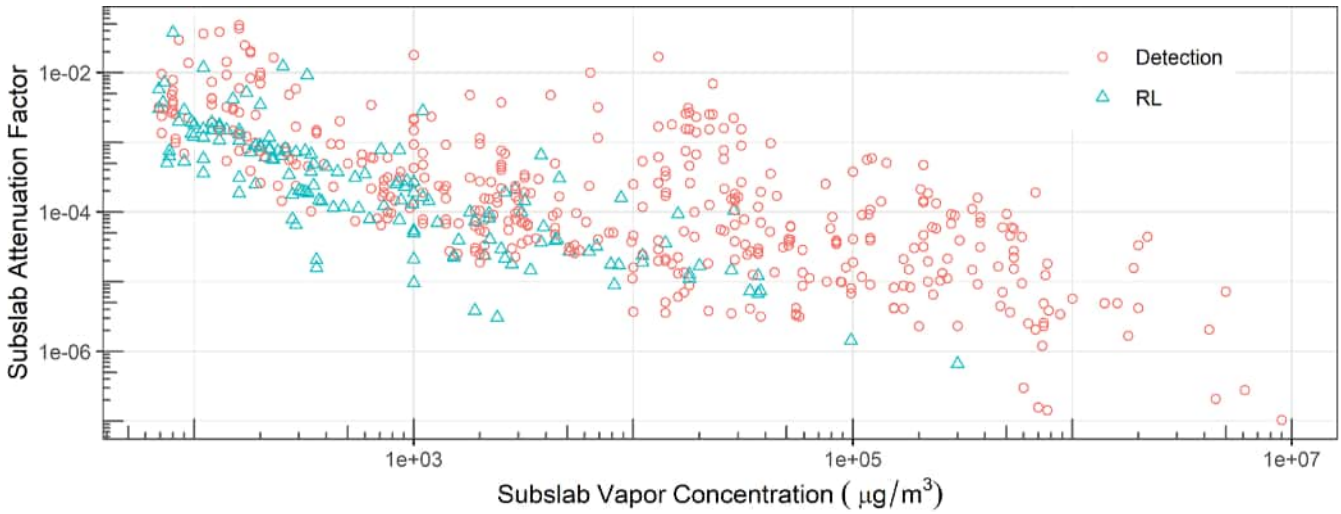


Figure 1. Subslab vapor concentration plotted against its associated subslab vapor AF. Red open circles indicate indoor air concentrations above the laboratory detection limit and blue open triangles indicate indoor air concentrations below the laboratory detection limit with the detection limit used as the plotted value.

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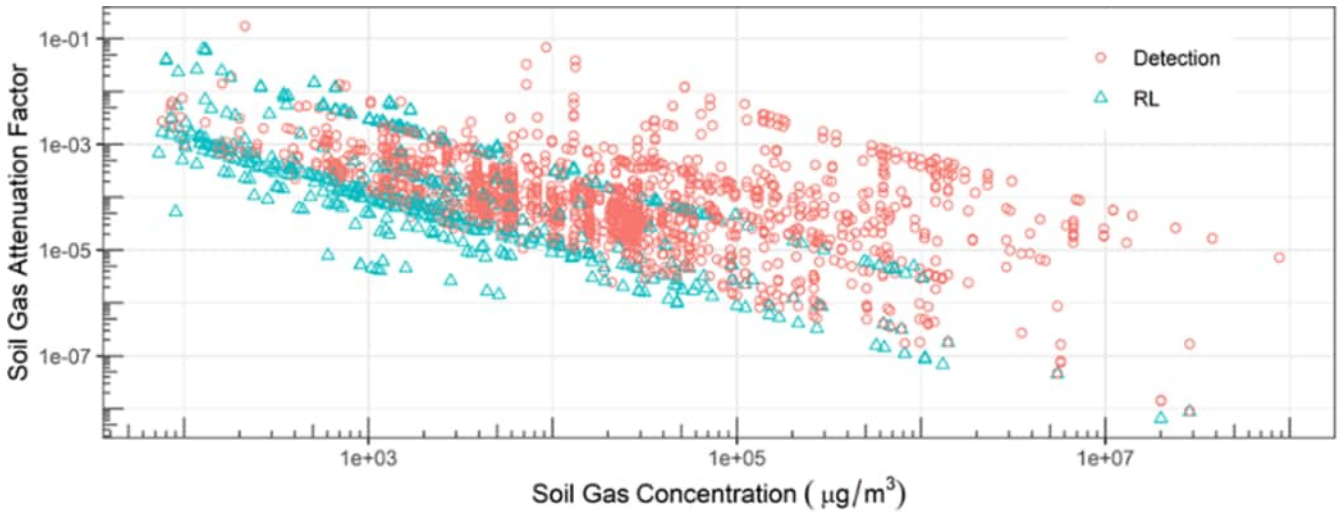


Figure 2. Soil vapor concentration plotted against its associated soil vapor AF. Red open circles indicate indoor air concentrations above the laboratory detection limit and blue open triangles indicate indoor air concentrations below the laboratory detection limit with the detection limit used as the plotted value.

50-times the background indoor air concentration. The laboratory reporting limits were used for indoor air data with nondetectable concentrations. Figure 1 shows a plot of subslab vapor measurements and their associated subslab vapor AF and Figure 2 shows a plot of soil vapor measurements and their associated soil vapor AF. Figures 1 and 2 show an inverse relationship where high subsurface concentrations are associated with low AFs. Lahvis and Ettinger (2021) observed a similar inverse relationship.

Subslab Attenuation Factors

The subslab vapor AFs were calculated using 600 pairs (with indoor air) from 32 sites across California after the application of baseline screens and a source strength screen of 50-times the background indoor air concentration. Table 1 presents the descriptive statistics of the subslab vapor AFs using the Kaplan Meier method (1958) to address the nondetectable concentrations of indoor air.

For comparative purposes, subslab vapor AFs were also calculated using only measured pairs that had detectable indoor air concentrations following the application of baseline screens and a source strength screen of 50-times background (440 paired measurements). Table 2 summarizes the descriptive statistics for paired measurements of the subslab vapor AFs when nondetectable indoor air concentrations are removed, showing that the descriptive statistics for the subslab vapor AFs were similar with or without inclusion of nondetectable concentrations in indoor air and the results only differ by a factor of less than two.

Site-Specific Subslab Attenuation Factors

An evaluation of the subslab vapor AFs was performed to determine how the AFs vary for individual sites. The sites with greater than 15 paired measurements are shown in Table 3 along with their descriptive statistics. Figure 3 shows the box plots summarizing the subslab vapor AFs for these sites.

As shown in Table 3, the 95th percentile of the subslab vapor AFs vary by three orders of magnitude. All sites, except for two, Kast and Green's Cleaners, have a 95th percentile AF lower than the overall 95th percentile of the subslab vapor database of 0.0048. Most of the subslab vapor AFs for the Kast site are associated with low contaminant source strength. Additionally, for Kast, indoor air concentrations were not readily distinguishable from reported site-specific outdoor air concentrations. As a result, the subslab vapor AFs for the Kast site are most likely biased high. For Green's Cleaners, there was a potential indoor air source that resulted in indoor air concentration as high as 220 µg/m^3. Even though no indoor air source was identified in the warehouse adjoining Green's Cleaner's, the presence of indoor air sources cannot be ruled out, thus potentially biasing the results high.

Residential and Nonresidential Subslab Vapor Attenuation Factors

The statistical analysis of residential and nonresidential subslab vapor AFs are shown in Table 4. The 95th percentile AFs for residential and nonresidential buildings vary by one order of magnitude. Figure 4 shows the density plots generated for residential and nonresidential AFs for baseline and source strength screening of 50-times the background concentration. Figure 5 displays the box plots for these data. Figures 4 and 5 demonstrate that residential and nonresidential buildings have different statistical distributions.

Most of the subslab vapor sampling in California occurs at nonresidential buildings as evident in Table 4, which shows 42 pairs from residential sites versus 558 pairs from nonresidential sites. This difference is likely due to homeowner resistance to the invasive nature of subslab vapor sampling and/or regulatory agencies' preference to by-pass such sampling and to directly sample indoor air to evaluate impacts to human health in residential settings. The residential subslab vapor AF data are limited since most of the data (38 out of 42 paired measurements) used for AF calcula-

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Table 1

Descriptive Statistics for the Subslab Vapor AFs After Baseline Screening and a Source Strength Screen of 50-times Background with Nondetectable Indoor Air Concentrations Addressed by the Kaplan Meier Method

Subslab Vapor AFs After Baseline and Source Strength Screening Using All Indoor Air Data				
Number of Pairs	**95th Percentile**	**90th Percentile**	**75th Percentile**	**50th Percentile**
600	0.0048	0.0023	0.00038	0.000067

Table 2

Descriptive Statistics for the Subslab Vapor AFs After Baseline and Source Strength Screening of 50-times Background with Nondetectable Indoor Air Concentrations Removed

Subslab Vapor AFs After Baseline and Source Strength Screening with Nondetectable Indoor Air Data Removed				
Number of Pairs	**95th Percentile**	**90th Percentile**	**75th Percentile**	**50th Percentile**
440	0.0074	0.0031	0.00063	0.00011

Table 3

Descriptive Statistics of the Subslab Vapor AFs for Sites with Greater than 15 Paired Measurements After Baseline and Source Strength Screening of 50-times Background with Nondetectable Indoor Air Concentrations Addressed by the Kaplan Meier Method

Subslab Vapor AFs for Sites with Greater than 15 Paired Measurements					
Site Name	**Number of Subslab Vapor Pairs**	**95th Percentile**	**90th Percentile**	**75th Percentile**	**50th Percentile**
Ace Clearwater	18	0.00061	0.0006	0.00031	0.00016
Cla-Val	34	0.00016	0.00016	0.000079	0.000052
Cornell-Dublier Electronics	26	0.00051	0.00025	0.00011	0.000058
Embee Plating	27	0.000061	0.000056	0.000021	0.000007
Former Kast Property	38	0.019	0.010	0.0073	0.0028
Green's Cleaners	49	0.010	0.007	0.0025	0.0014
National Steel Shipbuilding	20	0.00025	0.000074	0.000031	0.000008
North Island Naval	168	0.00075	0.00039	0.00012	0.00003
Pacific Scientific	32	0.0039	0.0034	0.00095	0.00022
Torrance Memorial	21	0.0003	0.0002	0.000091	0.00005

tions are associated with the Kast site in Southern California. This site has low subsurface source strength, potentially biasing high the results for residential subslab vapor AFs.

Soil Vapor Attenuation Factors

The soil vapor AFs were calculated using 2926 soil vapor and indoor air measurement pairs from 39 sites across California after the application of baseline screens and source strength screen of 50-times the background indoor air concentration. The subsurface data was collected from varying depths, starting from 5 feet below-ground surface. Table 5 presents the descriptive statistics for the soil vapor AFs using the Kaplan Meier (1958) method to address the nondetectable concentrations of indoor air.

For comparative purposes, the soil vapor AFs were also calculated using only measured pairs that had detectable indoor air concentrations (1728 paired measurements) after excluding all the indoor air data with nondetectable concentrations with the application of baseline screening and a source strength screen of 50-times background concentration. Table 6 summarizes descriptive statistics for paired measurements of the soil vapor AFs when nondetectable indoor air concentrations are removed, showing that the descriptive statistics for the soil vapor AFs were similar with and without inclusion of nondetectable concentrations in indoor air and only differ by of factor of less than two.

Site-Specific Soil Vapor Attenuation Factors

An evaluation of the soil vapor AFs was performed to determine how the AFs vary for individual sites. The sites with greater than 40 paired measurements are shown in Table 7 along with their descriptive statistics. Figure 6 shows the box plots summarizing the soil vapor AFs for these sites.

As shown in Table 7, the 95th percentile of soil vapor AFs vary by two orders of magnitude. All sites, except

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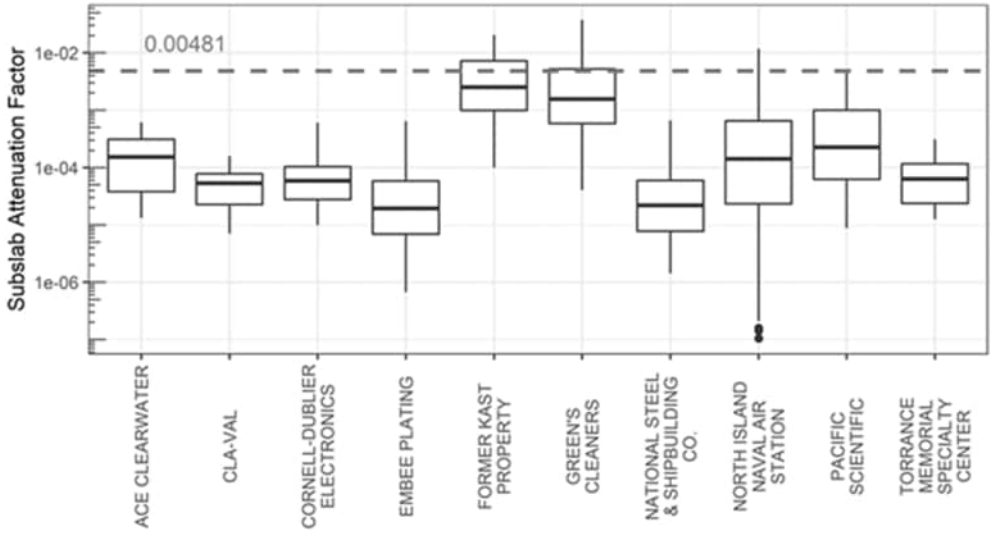


Figure 3. Box plots of the subslab vapor AFs for sites with greater than 15 paired measurements after baseline and source strength screening of 50-times background with the laboratory reporting limit substituted for the detection limit to display the statistical distribution of the data. The dashed line of 0.0048 is the 95th percentile of subslab vapor AFs as taken from Table 1.

Table 4

Descriptive Statistics for Residential and Nonresidential Subslab Vapor AFs After Baseline and Source Strength Screening of 50-times Background with Nondetectable Indoor Air Concentrations Addressed by the Kaplan Meier Method

Subslab Vapor AFs for Nonresidential and Residential Buildings							
Building Use	**Number of Pairs**	**Number of Sites**	**% NDs**	**95th Percentile**	**90th Percentile**	**75th Percentile**	**50th Percentile**
Nonresidential	558	30	29	0.0031	0.0012	0.00024	0.000056
Residential	42	3	0	0.018	0.01	0.0073	0.0025

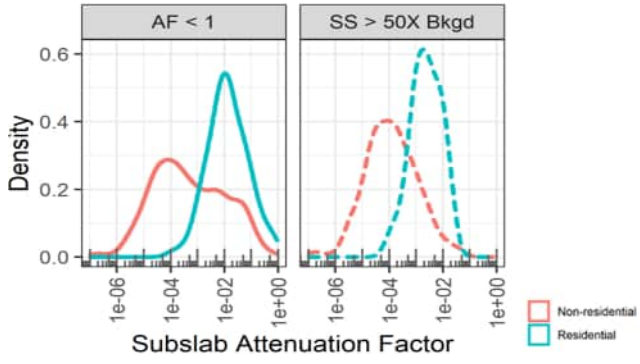


Figure 4. Density plots of the subslab vapor AFs by building type for baseline screening (left) with all AFs less than 1, and source strength screening of 50-time background (right) with the laboratory reporting limit substituted for the detection limit to display the statistical distribution of the data. The red lines are nonresidential data and the blue lines are residential data, displaying the difference in statistical distribution for the two buildings types.

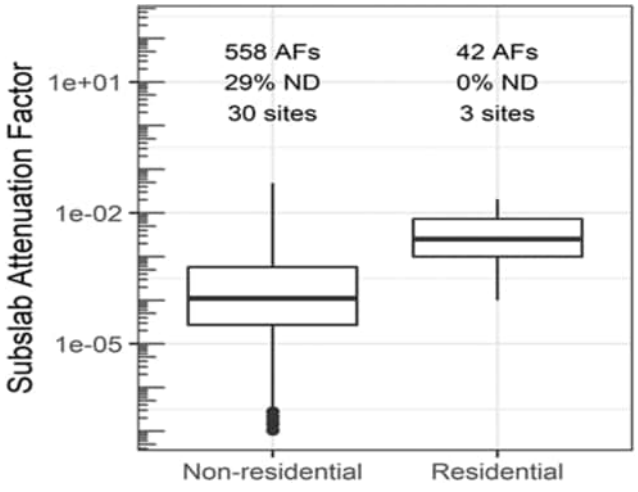


Figure 5. Box plots of the subslab vapor AFs for nonresidential and residential buildings with the laboratory reporting limit substituted for the detection limit to display the statistical distribution of the data (% ND is the percentage of measured pairs with nondetectable concentrations of indoor air).

for five, have a 95th percentile AF lower than the overall 95th percentile of the soil vapor database of 0.00087. For comparative purposes, soil vapor AFs were also calculated excluding data from one site in Southern California (Ford Aeronautics) with a large number of paired measurements. This evaluation was performed to determine whether a site with numerous paired measurements might affect the descriptive statistics. When excluding this one site from Southern California from the analysis, the paired measurements for soil vapor AFs yielded a 95th and 50th percentile of 0.0027 and 0.000086, respectively. These results are in the same numerical range of the previous results and differ by less than a factor of 3.

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Table 5

Descriptive Statistics for the Soil Vapor AFs After Baseline Screening and a Source Strength Screen of 50-times Background with Nondetectable Indoor Air Concentrations Addressed by the Kaplan Meier Method

Soil Vapor AFs After Baseline and Source Strength Screening Using All Indoor Air Data				
Number of Pairs	**95th Percentile**	**90th Percentile**	**75th Percentile**	**50th Percentile**
2926	0.00087	0.00046	0.00015	0.000043

Table 6

Descriptive Statistics for the Soil Vapor AFs After Baseline and Source Strength Screening of 50-times Background with Indoor Air Data with Nondetectable Concentrations Removed

Soil Vapor AFs After Baseline and Source Strength Screening with Nondetectable Indoor Air Data Removed				
Number of Pairs	**95th Percentile**	**90th Percentile**	**75th Percentile**	**50th Percentile**
1728	0.0015	0.00072	0.00028	0.000093

Table 7

Descriptive Statistics of the Soil Vapor AFs for Sites with Greater than 40 Paired Measurements After Baseline and Source Strength Screening of 50-times Background with Nondetectable Indoor Air Concentrations Addressed by the Kaplan Meier Method

Soil Vapor AFs for Sites with Greater than 40 Paired Measurements					
Site Name	**Number of Soil Vapor Pairs**	**95th Percentile**	**90th Percentile**	**75th Percentile**	**50th Percentile**
Cornell-Dublier	45	0.00055	0.00046	0.000068	0.000018
Ford Aeronautics	1133	0.00047	0.00032	0.00014	0.000058
Green's Cleaners	721	0.00059	0.00036	0.0001	0.0000029
Hughes Torrance	45	0.0011	0.00048	0.000094	0.000028
Magnolia Elementary	88	0.0021	0.00073	0.00017	0.00003
Ontario Plaza	70	0.0055	0.0032	0.0015	0.00046
Penetrate Metal Processing	153	0.000082	0.000043	0.000016	0.0000015
PK 1 County Fair SC LP	63	0.00021	0.0002	0.00011	0.000042
TC Rich/Pacifica Chemical	53	0.00029	0.00018	0.00007	0.000049
World Cleaners	42	0.0037	0.0028	0.00063	0.00017
Wyle Laboratories	103	0.0012	0.00046	0.00012	0.000022

Residential and Nonresidential Soil Vapor Attenuation Factors

The statistical analysis for residential and nonresidential buildings soil vapor AFs are shown in Table 8. The 95th percentile AFs for residential and nonresidential buildings vary by a factor of 3. Figure 7 shows the density plots generated for residential and nonresidential AFs for baseline and source strength screening of 50-times background concentration. Figure 8 shows the box plots for these data. Figures 7 and 8 demonstrate that residential and nonresidential buildings have similar statistical distributions.

The descriptive statistics for residential AFs are largely based on the data from one site in Southern California (Ford Aeronautics), where 76% of the paired measurements (1133 of 1485 total pairs) were used to define the percentiles. Additionally, the descriptive statistics for nonresidential AFs are largely based on data from one site in Southern California (Green's Cleaners), where 50% of the paired measurements (721 of 1441 total pairs) were used to define the percentiles.

Comparison of Results to Existing Studies

Table 9 shows the 95th percentile of the subslab and soil vapor AFs from the existing empirical studies along with the results from the analysis presented here (DTSC study). The data shown are for all building types (residential and nonresidential) within the studies.

Numerous empirical studies have been conducted to determine AFs for VI. The USEPA's 2012 VI database contains sampling data for 913 buildings in 15 states with 2929 paired measurements. The AF OF 0.03 is based on 85% of pairs from residential buildings with some pairs collected up to 300 ft apart. Both DTSC and USEPA followed identical filtering and analytical processes. The DoD (2021) compiled a VI database that contained paired subslab vapor and indoor air data for 79 buildings from

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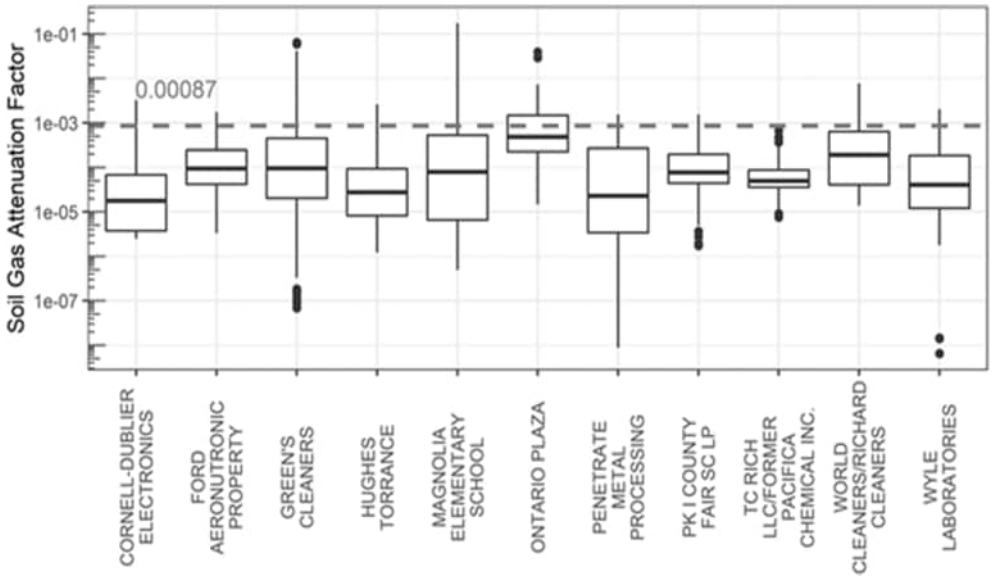


Figure 6. Box Plots of the soil vapor AFs for sites with greater than 40 paired measurements after baseline and source strength screening of 50-times background with the laboratory reporting limit substituted for the detection limit to display the statistical distribution of the data. The dashed line of 0.00087 is the 95th percentile of the soil vapor AFs as taken from Table 5.

Table 8

Descriptive Statistics for the Residential and Nonresidential Soil Vapor AFs After Baseline and Source Strength Screening of 50-times Background with Nondetectable Indoor Air Concentrations Addressed by the Kaplan Meier Method

Soil Vapor AFs for Nonresidential and Residential Buildings							
Building Use	**Number of Pairs**	**Number of Sites**	**% NDs**	**95th Percentile**	**90th Percentile**	**75th Percentile**	**50th Percentile**
Nonresidential	1441	32	42	0.0016	0.00064	0.00016	0.000033
Residential	1485	6	40	0.00057	0.00036	0.00014	0.000052

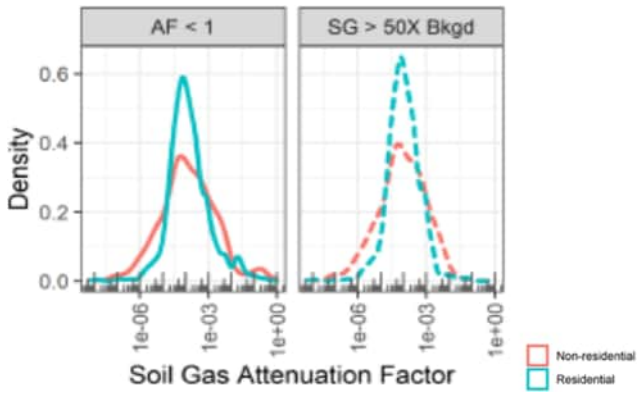


Figure 7. Density plots of the soil vapor AFs by building type for baseline screening (left) with all AFs less than 1, and source strength screening of 50-time background (right) with the laboratory reporting limit substituted for the detection limit to display the statistical distribution of the data. The red lines are nonresidential data and the blue lines are residential data, displaying the similarity in statistical distribution for the two buildings types.

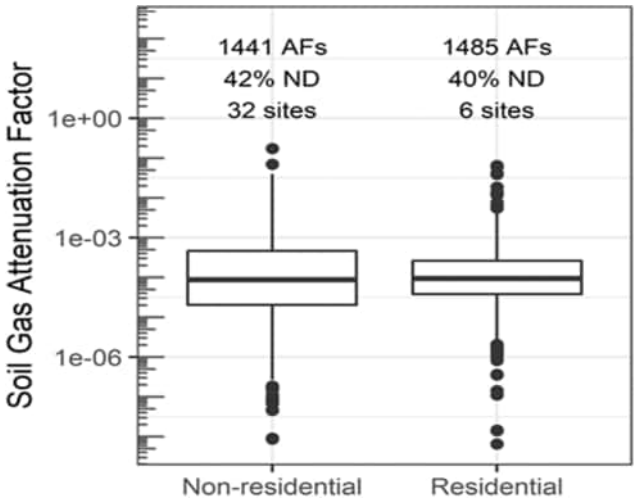


Figure 8. Box plots of the soil vapor AFs for nonresidential and residential buildings with the laboratory reporting limit substituted for the detection limit to display the statistical distribution of the data (% ND is the percentage of measured pairs with nondetectable concentrations of indoor air).

22 military installations nationwide. The military commercial and industrial building database contains 3573 paired indoor air and subslab vapor measurements. Lahvis and Ettinger (2021) created a VI database containing data for 485 buildings from 36 sites in California. The purpose is to study the relationship of AFs with soil types,

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Table 9

Summary of Results from Empirical Studies of the Subslab and Soil Vapor AFs

Empirical study	Subslab vapor AF	Soil vapor AF	Study area
USEPA (2012a)	0.03	0.3	United States
Derycke et al. (2018)	0.04	n/a	France
DoD (2021)	0.001	n/a	United States
Lahvis and Ettinger (2021)	0.002	0.001	California
DTSC study	0.005	0.0009	California

Note: The AFs in the table represent the 95th percentile for all building types in the respective databases after baseline and source strength filtering.

source depth, lateral distance, and operations of heating, ventilation, and air conditioning (HVAC) systems. Their database contains 8415 paired measurements. After baseline and source strength filtering, 496 paired exterior soil vapor and indoor air measurements and 147 paired subslab vapor and indoor air measurements remained. Fifty-two percent of the data are for residential buildings with most residential data originating from the Los Angeles metropolitan area. Derycke et al. (2018) compiled a VI database containing data for 51 schools from 38 towns in France. Their database contains 5042 paired measurements. The numbers of paired measurements for exterior soil vapor to indoor air and subslab vapor to indoor air were not given in the study, but after baseline filtering of the data, too few soil vapor to indoor air pairs remained for statistical quantification. After filtering, 83% of the paired subslab vapor and indoor air measurements had indoor air concentrations below the laboratory quantification limit and were statistically quantified.

The comparison of empirical studies indicates that the results presented here may not be consistent with the results from France and the USEPA's nationwide study but are consistent with the results from the available California-specific study (Lahvis and Ettinger 2021) and the study by the DoD (2021). Accordingly, converging lines of evidence suggest that vapor attenuation in California may be different from what is observed nationwide by the USEPA (2012a). The differences in attenuation may be due to climatic differences and foundation types prevalent to California.

Summary and Conclusions

The DTSC gathered data from sites contaminated with chlorinated VOCs in California and generated a VI database of 4972 paired subsurface and indoor air concentration measurements from 52 sites located in 16 counties across California. The database contains 1196 paired subslab vapor and indoor air measurements and 3509 paired soil vapor and indoor air measurements. The database includes 213 buildings, 113 (53%) of which are residential and 100 (47%) are commercial / industrial (nonresidential).

Subslab vapor AFs were calculated after baseline and source strength screening using 600 pairs from 32 sites across California. The 95th percentile of the 600 paired subslab vapor measurements was approximately 0.005. The 95th percentiles of the nonresidential and residential subslab vapor AFs yielded 0.003 and 0.02, respectively. Out of 600 pairs, only a total of 42 pairs were available to calculate residential subslab vapor AFs. The three sites that yielded the 42 paired subslab vapor measurements for residential buildings are all in Southern California, making state-wide inferences concerning residential subslab vapor AFs challenging. The subslab vapor AFs for nonresidential buildings should be smaller than for residential buildings as indicated by their potentially higher indoor air exchange rates. As noted previously, nonresidential buildings are typically larger with higher indoor air exchange rates and larger mixing volumes, thus nonresidential buildings will dilute incoming vapors more than residential buildings. Accordingly, the statistics associated with subslab vapor data agree with the VI conceptual model. However, while the difference between residential and nonresidential AFs may be an order of magnitude, additional residential empirical data should be collected to verify the difference in attenuation between these two building types due to the limited number of paired measurements for residentials buildings.

The soil vapor AFs were calculated after baseline and source strength screening using 2926 pairs from 39 sites across California. The 95th percentile AF of the 2926 paired soil vapor measurements for all buildings was 0.0009. The 95th percentiles of the residential and nonresidential soil vapor AFs were 0.0006 and 0.002, respectively. Seventy-six percent of the residential soil vapor AFs were collected from one site in Southern California, making state-wide inferences concerning residential soil vapor AFs challenging. Furthermore, the soil vapor AFs for nonresidential buildings should be smaller than for residential buildings as indicated by the VI conceptual model as mentioned above. Hence, the statistics herein associated with soil vapor data do not necessarily agree with the VI conceptual model and yield a difference in AFs by a factor of 3. Lahvis and Ettinger (2021) observed a similar outcome, where, at the 95th percentile level, nonresidential buildings had less attenuation than residential buildings by a factor of about 2.5. This difference between residential and nonresidential building AFs could be attributable to the potential greater range in the types of nonresidential buildings as compared to residential buildings. Nonresidential buildings include a large spectrum of building types from very small retail businesses with lower air exchange and small mixing volumes to very large industrial warehouses with higher air exchange and large mixing volumes. Residential buildings are less variable in size. In addition, nonresidential buildings are generally more likely to exist directly over shallow contaminant sources with less

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transport of vapors from the source to indoor air and heterogeneity in subsurface concentrations is likely to be larger at such sites potentially leading to a wider range of empirical AFs. Additional empirical residential data should be collected to verify the difference in the soil vapor AFs between these two building types.

Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Appendix S1. Supporting information

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Biographical Sketches

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***Dan Gallagher**, P.G., is a Senior Engineering Geologist at the California Department of Toxic Substances Control and has 32 years of experience in both the private and public sector. He is the primary author of DTSC's 2011 Vapor Intrusion Guidance, and co-author of Cal-EPA's 2020 Supplemental Vapor Intrusion Guidance. He has a B.S. in geology from the University of Southern California and a M.S. in geology from the University of Utah.*

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Appendix G – Preliminary Water Quality Management Plan

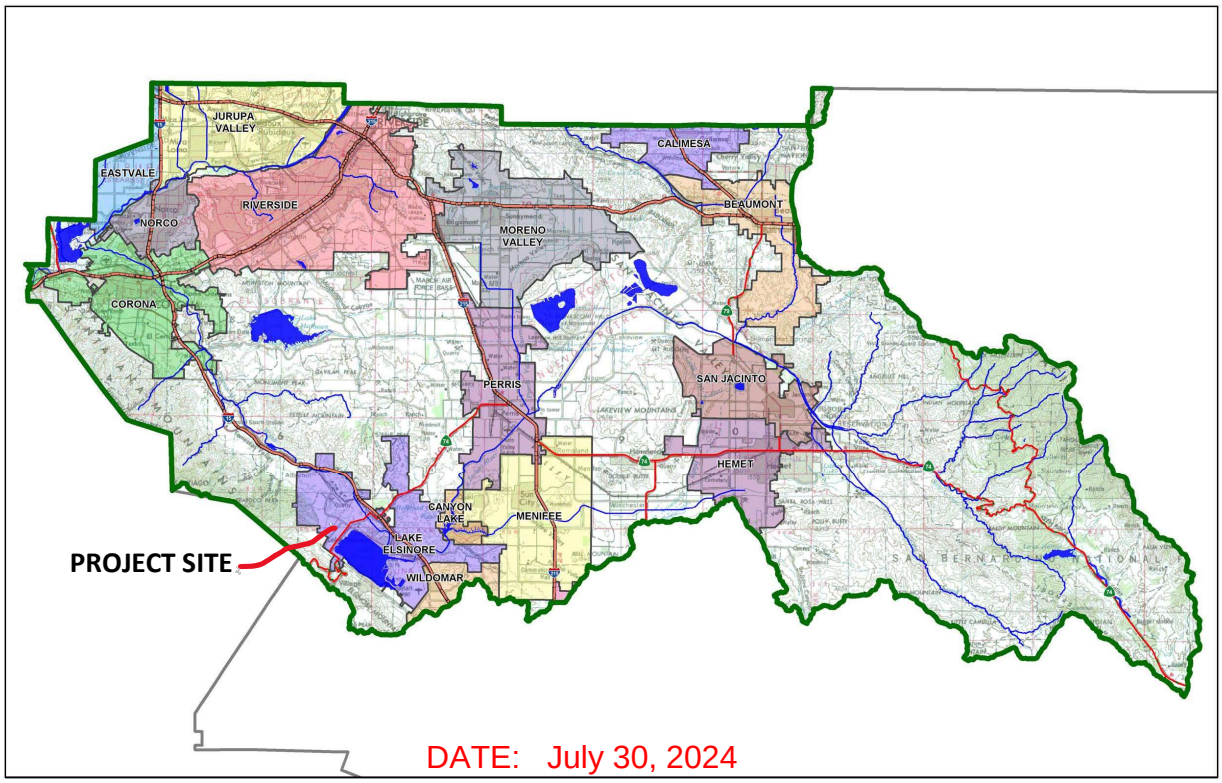
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Riverside Drive Apartments, 32281 Riverside Dr. Lake Elsinore, CA

Development No: PWQMP 2024-0003

Design Review/Case No: Planning Application No. 2023-06 (Riverside Drive Apartments)



ERSC

Engineering Resources of Southern CA

☒ **Preliminary**
☐ **Final**

Stephen H Wilson
APPROVED AS SUBMITTED

Original Date Prepared: 7-7-2023

Revision Date(s): 07-29-2024

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**
Template revised June 30, 2016

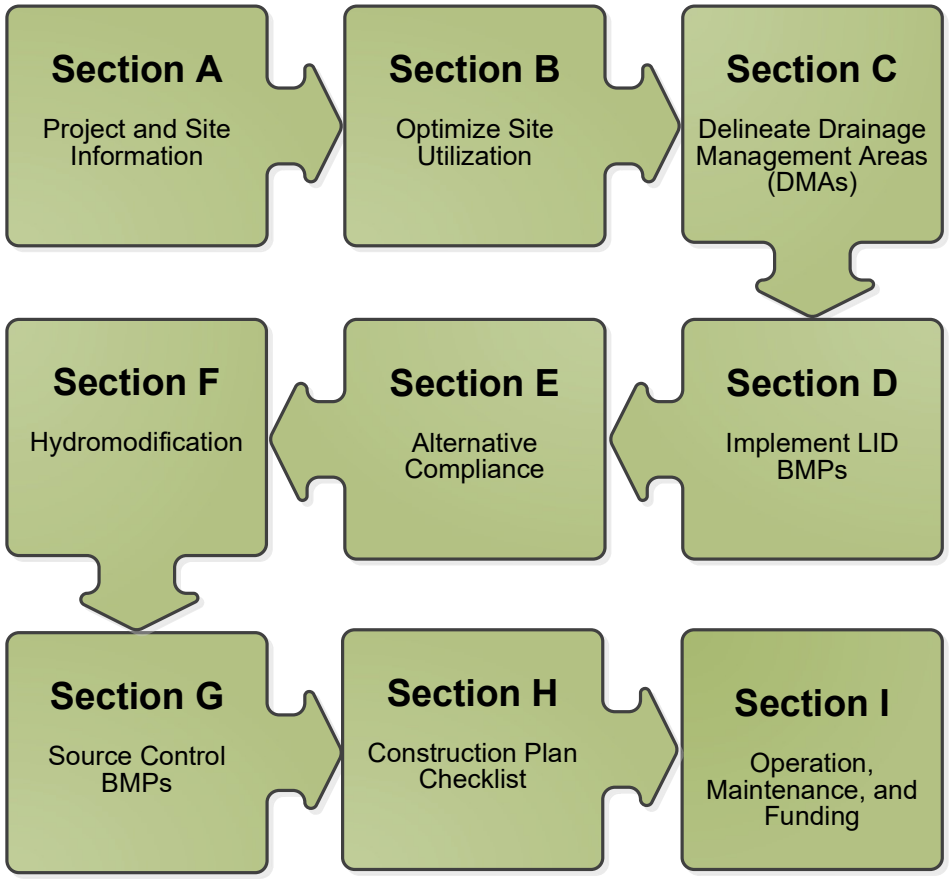
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A Brief Introduction

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 WJK Development Co. by Blue Engineering and Consulting, Inc for the Riverside Drive Apartments project.

This WQMP is intended to comply with the requirements of Lake Elsinor for 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 bie 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 Lake Elsinore Water Quality Ordinance (Municipal Code Section).

"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

8/9/24
Date

Grant Keene
Owner's Printed Name

President
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

01-22-2024
Date

Angel Cesar
Preparer's Printed Name

CEO of Blue Engineering
Preparer's Title/Position

Preparer's Licensure:



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Section A: Project and Site Information

32281 Riverside Drive, Lake Elsinore CA 92530

PROJECT INFORMATION	
Type of Project:	Residential
Planning Area:	Council District 2
Community Name:	n/a
Development Name:	Riverside Drive Apartments
PROJECT LOCATION	
Latitude & Longitude (DMS): 33°40'24.50"N, 117°22'41.00"W	
Project Watershed and Sub-Watershed: Insert text here	
Gross Acres: 4.86 APN(s): 379-315-033 Map Book and Page No.: 111, PG. 59	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	RMU
Proposed or Potential SIC Code(s)	7021
Area of Impervious Project Footprint (SF)	Insert text here
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	Insert text here
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)	88,294.38
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)	B
What is the Water Quality Design Storm Depth for the project?	Insert text here.

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
Lake Elsinore	DDT, Nutrients, Low Dissolved, Oxygen, PCBs, Toxicity	REC1, REC2, COMM, WARM, WILD, RARE	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)* City of Lake Elsinore Grading, Construction & Encroachment Permits	☒ 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?

Yes, due to the site's existing topography, runoff currently drains from north to south. The proposed site will be graded such that the runoff generated will continue to drain from north to south.

Did you identify and protect existing vegetation? If so, how? If not, why?

The site's existing vegetation is a vacant graded dirt lot. The existing vegetation and drainage patterns that will be protected are identified in the WQMP Site Plan.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

The site consists of Garretson very fine sandy loam soil consistent with soil type B. The design infiltration rate of the site is shown to be approximately 0.57 in/hr (as shown in Appendix 3).

Did you identify and minimize impervious area? If so, how? If not, why?

The site currently contains an impervious area covering approximately 41% of the site from a previous development. The proposed development occupies most of the space in relation to the size of the site and the relative density of the development. The site design proposes twelve multi-family buildings, several outdoor concrete areas, a common open space, a pool, and landscaped slopes.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

No, roof runoff will drain to the proposed pavement via hard piping and/or roof drain downspouts from the buildings. From there runoff will be collected by catch basins passing through filter inserts for first treatment then drain to the underground detention basin for mitigation. Because the site runoff will ultimately outlet to Lake Elsinore, the Bio-treatment for the LID is required. A Modular Wetland System has been designed on the outlet pipe of the basin, serves as LID devices, satisfying the City and County's WQMP requirement.

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 A	Roof, Concrete/Asphalt, Ornamental Landscape	211,818	B

[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)

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]

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

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		Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]	DMA name /ID	[D]	[C]/[D]

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA A	BMP A (Modular Wetland System)

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:		
…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:		

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*:*

☐ 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.

Harvest and Use BMPs need not be assessed for the site.

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: n/a

Type of Landscaping (Conservation Design or Active Turf): 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 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: n/a

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: 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 irrigated area that would be required.

Minimum required irrigated area: n/a

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)
n/a	n/a

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: n/a

Project Type: 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 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: n/a

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: 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 toilet users that would be required.

Minimum number of toilet users: n/a

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)
n/a	n/a

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.

☐ None of the above.

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 A	☐	☐	☐	☒	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

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.

Insert narrative description here.

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	*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]			
A	*57,145.31*	*Roof*	*1*	*0.89*	*50,973.6*			
A	*103227.30*	*Concrete or Asphalt*	*1*	*0.892*	*92,078.8*			
A	*51445.22*	*Ornamental Landscaping*	*0.1*	*0.11*	*5,682.5*			
						Design Storm Depth (in)	*Design Capture Volume,* $\mathbf{V_{BMP}}$ *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
	A_T = 211,817.83				Σ= 148,734.9	0.85	[F] = 10,535.4	13,142

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

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.

List DMAs here.

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	INSERT VALUE	INSERT VALUE	INSERT VALUE
Volume (Cubic Feet)	INSERT VALUE	INSERT VALUE	INSERT VALUE

[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:

Lake Elsinore

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.

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.

   All Sources Control BMPs will inspection & maintained by the property Owner.

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 Catch Basins & Inlets (show on WQMP Exhibit)	• The project Developer/Owner shall mark all On-site storm drain signage will utilize the language "No Dumping Drains to Lake", or equally approved text that is consistent with City of the Lake Elsinore's requirements.	• The Owner shall insect and maintain and annually repaint or replace inlet markings for legibility. • 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."
Landscape/ Outdoor Pesticide Use	Final landscape plans will accomplish all 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. • 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/ Provide IPM information to new owners, lessees and operators.
Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	Statewide Model Landscape Ordinance; CASQA New Development BMP Handbook SD-12	Irrigation systems shall be designed to each landscaped area's specific water need. Irrigation controls shall include rain-triggered shutoff devices to prevent irrigation after precipitation.
Driveways, sidewalks, and parking lots	Spill kits are to be always kept on-site per SC-11	Sweep & vacuum driveways, sidewalks, and parking lots monthly 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.
Design and construct trash and waste storage areas to reduce pollution	CASQA New Development BMP Handbook SD-32 All project trash enclosures shall	The project will incorporate lined dumpsters to reduce leaking of liquid waste. Trash storage areas

	be constructed with a solid canopy-style roof and set on a raised concrete pad and the roofed trash enclosures shall be shown on the Architectural Plans.	shall be located away from storm drain inlets.
Roofing, gutters, and trim		Avoid roofing, gutters and trim made of copper of other unprotected metals that may leach into runoff.
Maintain Swimming Pool	CASQA SC-60 & 72	Efficient and safe housekeeping (pool chemical storage, use and cleanup). Prevent algae problems with consistent chlorination and clean-up and manage pH and water hardness if the City allows discharges from pool draining into the City's stormwater system or requires discharge to the Sanitary Sewer.

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 Location (Lat/Long)
DMA A	BMP A	WQMP Exhibit	33°40'21.60"N/117°22'39.69"W

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)?

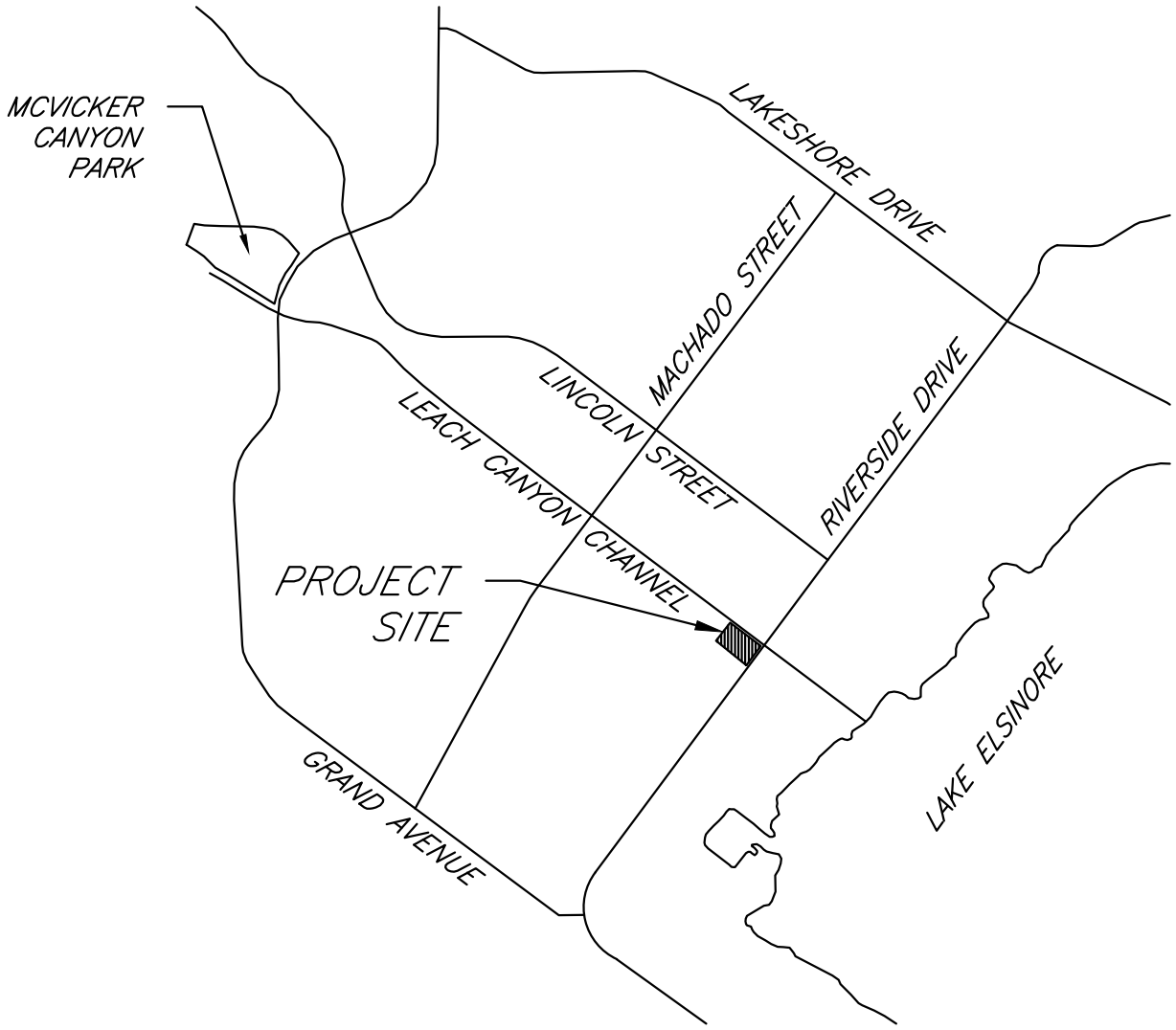
☐ Y ☒ N

Owner will inspection and maintain all source control and treatment BMPs.

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



VICINITY MAP

N.T.S.

PREPARED BY:

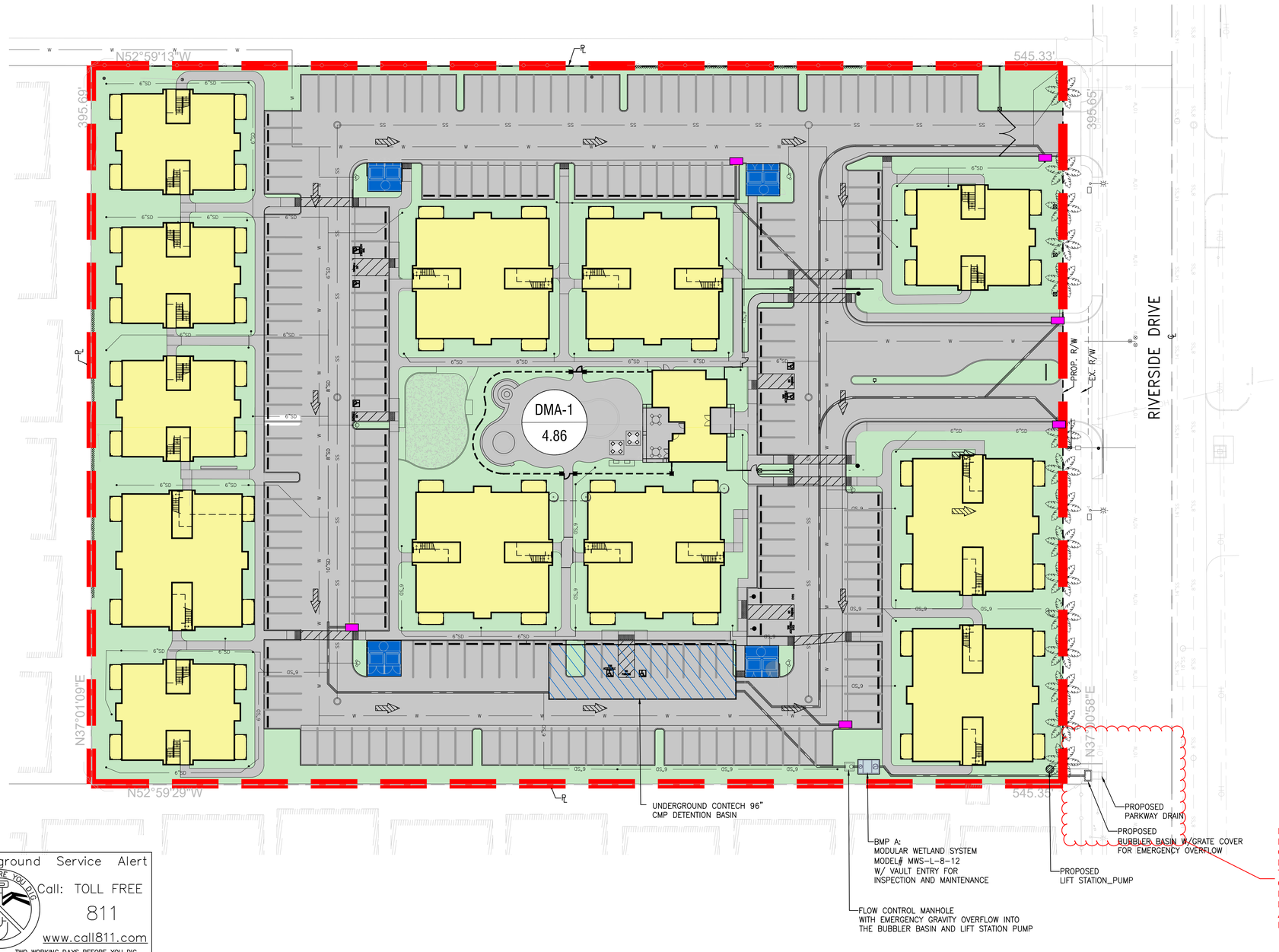
BLUE ENGINEERING & CONSULTING, INC
FOREVER BLUE N.G.

9320 BASELINE RD., STE. D
RANCHO CUCAMONGA, CA 91701
909-248-6557
INFO@BLUECIVILENG.COM -
WWW.BLUECIVILENG.COM

Z:\Shared\Blue\2023216 - Lake Elsinore Apartments_Reports\Hydrology\Appendix A-Vicinity Map\216 Vicinity Map.dwg 6/30/23 9:37 AM

IN THE CITY OF LAKE ELSINORE, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

PRELIMINARY WQMP SITE PLAN
RIVERSIDE DRIVE APARTMENTS
RESIDENTIAL MULTI-USE DEVELOPMENT
APN: 379-315-033



LEGEND:

- TREATMENT CONTROL BMP – MODULAR WETLAND SYSTEM (MWS)
- ROOF AREA
- ROADWAY / SIDEWALK / PATIO AREA (MAINTAIN PER CASQA BMP #SC-43)
- LANDSCAPING AREA (MAINTAIN PER CASQA BMP #SD-10, SD-12 & SC-41)
- UNDERGROUND CMP DETENTION BASIN
- ROOFED TRASH ENCLOSURE AREA (MAINTAIN PER CASQA BMP #SD-32 & SD-34)
- CATCH BASIN WITH FILTER INSERT (MAINTAIN PER CASQA BMP #MP-52 & SC-44)
- PUMP_LIFT STATION
- DMA-1 / 4.86 — DMA NUMBER / TRIBUTARY AREA (ACRES)
- WQMP TRIBUTARY AREA BOUNDARY
- PROPOSED STORM DRAIN
- FLOW DIRECTION

DMA-1 AREA SUMMARY TABLE

SURFACE	PERVIOUS (AC)	IMPERVIOUS (AC)
ROOF	–	1.31
AC/CONC	–	2.37
LANDSCAPING	1.18	–
TOTAL	1.18	3.68
% IMPERVIOUS = 75.72%		

DMA ID	DMA TRIBUTARY AREA (sq.ft.)	IMPERVIOUS PERCENTAGE (%)	DESIGN CAPTURE VOLUME (DCV)	VOLUME PROVIDED
DMA-1	211,818	75.72	10,535.4 CU.FT.	15,109 CU.FT.

SCALE
40 0 20 40 80
(FEET)
1 INCH = 40 FT.

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811
www.call811.com
TWO WORKING DAYS BEFORE YOU DIG

MARK	REVISIONS	APPR.	DATE

THESE PLANS HAVE BEEN REVIEWED FOR COMPLIANCE WITH THE APPROPRIATE CONDITIONS OF DEVELOPMENT AND/OR CITY AND STATE LAWS AND HAVE BEEN FOUND ACCEPTABLE

REMON HABIB, RCE No. 83156
CITY ENGINEER
CITY OF LAKE ELSINORE
DATE

PREPARED BY:
BLUE ENGINEERING
10535 FOOTHILL BLVD SUITE 440
RANCHO CUCAMONGA, CA 91730
YOUR LAND DEVELOPMENT CONSULTANTS
INFO@BLUECIVILENG.COM • 909-970-5654

ANGEL CESAR, P.E. RCE 87222
DATE

REGISTERED PROFESSIONAL ENGINEER
ANGEL CESAR
No. 87222
CIVIL
STATE OF CALIFORNIA

SCALE:
DATE:

BENCH MARK:
EL-28-80
ELEVATION: 1264.79 (NGVD 29)
SEE SHEET NO.1 FOR DESC.

CITY OF LAKE ELSINORE

32281 RIVERSIDE DRIVE
RIVERSIDE DRIVE APARTMENTS
ENTITLEMENT SET
PRELIMINARY WQMP SITE PLAN

SHEET 9 OF 9 SHEETS
FILE No. ---

Z:\SHARED\BLUE\2023216 - LAKE ELSINORE APARTMENTS_REPORTS\PWQMP\APPENDIX 1 - MAPS AND SITE PLANS\2023216 - WQMP SITE PLAN.DWG, August 12, 2022

San Bernardino County

Santa Ana River Watershed

Los Angeles County

Orange County

Riverside County

Whitewater River Watershed

Santa Margarita River Watershed

Jurupa Valley

Eastvale

Norco

Corona

Riverside

Moreno Valley

Calimesa

Beaumont

Perris

San Jacinto

Hemet

Canyon Lake

Menifee

Lake Elsinore

Wildomar

Santa Ana River

Temescal Creek

San Jacinto River

Pacific Ocean

PROJECT SITE

Service Layer Credits: Sources, Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Appendix 2: Construction Plans

Grading and Drainage Plans

CITY OF LAKE ELSINORE

GENERAL NOTES FOR GRADING

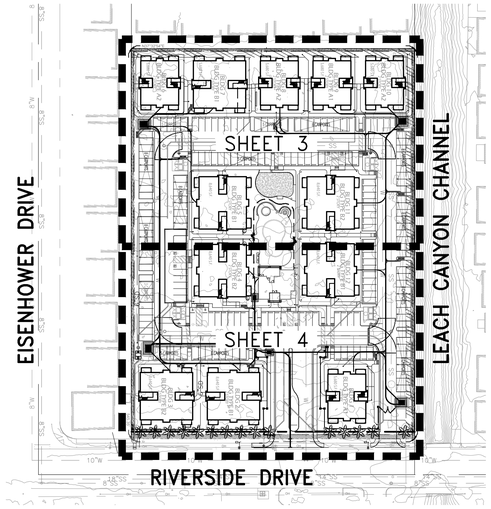
1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF LAKE ELSINORE MUNICIPAL CODE, CHAPTER 15.72 AND APPLICABLE STANDARDS AND SPECIFICATIONS AND THE LATEST EDITION OF THE UNIFORM BUILDING CODE (U.B.C.), CHAPTER 33.
2. A PERMIT SHALL BE OBTAINED FROM THE ENGINEERING DEPARTMENT, CITY OF LAKE ELSINORE, PRIOR TO ANY OPERATIONS.
3. THE DEVELOPER AND/OR CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AND U.S.A. ALERT (1-800-422-4133) FOURTY-EIGHT (48) HOURS PRIOR TO GRADING.
4. THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEERING DEPARTMENT AT LEAST TWENTY-FOUR (24) HOURS IN ADVANCE OF BEGINNING GRADING OPERATIONS.
5. DUST SHALL BE CONTROLLED BY WATERING OR OTHER METHODS APPROVED BY THE CITY ENGINEER.
6. CUT SLOPES SHALL BE NO STEEPER THAN 2 HORIZONTAL TO 1 VERTICAL, UNLESS OTHERWISE APPROVED, AND SHALL BE SHOWN ON THE PLAN.
7. FILL SLOPES SHALL BE NO STEEPER THAN 2 HORIZONTAL TO 1 VERTICAL, UNLESS OTHERWISE APPROVED, SHALL BE SHOWN ON PLAN, AND SHALL NOT HAVE LESS THAN 90% RELATIVE COMPACTION OUT TO THE FINISHED SURFACE.
8. FILLS SHALL BE COMPACTED THROUGHOUT TO 90% DENSITY AS DETERMINED BY THE MODIFIED THREE (3) LAYER A.S.T.M. D-1557-70 TEST METHOD.
9. FILL AREAS SHALL BE CLEANED OF ALL VEGETATION AND DEBRIS, SCARIFIED, AND INSPECTED BY THE GRADING INSPECTOR AND APPROVED SOILS TESTING AGENCY PRIOR TO THE PLACING OF FILL.
10. ALL FILL MATERIAL SHALL BE CLEAN EARTH. NO FILL SHALL BE PLACED UNTIL PREPARATION OF GROUND IS APPROVED BY THE SOILS ENGINEER.
11. FINISH GRADE SHALL BE SLOPED AWAY FROM ALL EXTERIOR WALLS AT NOT LESS THAN 1/2" PER FOOT FOR A MINIMUM OF THREE (3) FEET, THEN 1% (MINIMUM) TO FLOW LINE OF EARTH SWALE.
12. MINIMUM BUILDING PAD AND DRAINAGE SWALE SLOPE SHALL BE 1% IF CUT OR FILL SLOPE IS LESS THAN TEN FEET (10'), AND 2% IF CUT OR FILL IS GREATER THAN TEN FEET (10'). DRAINAGE SWALES SHALL BE A MINIMUM OF 0.5' DEEP AND CONSTRUCTED A MINIMUM OF TWO FEET (2)' FROM THE TOP OF CUT OR FILL SLOPES.
13. PROVIDE 5' WIDE BY 1' HIGH BERM OR EQUIVALENT ALONG THE TOP OF ALL FILL SLOPES OVER 5' HIGH.
14. PROVIDE A BROW DITCH, DESIGNED TO HANDLE ONE HUNDRED (100) YEAR STORM FLOWS ALONG THE TOP OF CUT SLOPE.
15. NO OBSTRUCTION OF FLOOD PLAINS OR NATURAL WATER COURSES SHALL BE PERMITTED.
16. A SOILS ENGINEER SHALL BE RETAINED BY THE DEVELOPER, TO SUPERVISE GRADING AND PROVIDE A FINAL SOILS REPORT WHICH INCLUDES FOUNDATION REQUIREMENTS (SUBDIVISIONS) AND EXPANSIVE CHARACTERISTICS OF THE SOIL.
17. GRADING CERTIFICATION BY THE DEVELOPER'S CIVIL ENGINEER AND A FINAL COMPACTION REPORT BY A SOILS ENGINEER SHALL BE SUBMITTED TO THE BUILDING AND ENGINEERING DEPARTMENTS PRIOR TO ISSUANCE OF BUILDING PERMITS.
18. THE SOILS ENGINEERING INVESTIGATION DATED PREPARED BY GEOSOILS CONSULTANTS, INC DATED 7/12/23, SHALL BE CONSIDERED A PART OF THIS GRADING PLAN AND SHALL BE IN COMPLIANCE.
19. A REGISTERED CIVIL ENGINEER OR LICENSED LAND SURVEYOR SHALL SUBMIT CERTIFICATION OF BUILDING PAD ELEVATION. WHERE SPECDIFIC ELEVATIONS ARE REQUIRED, THE ELVEATION (WITH RESPECT TO MEAN SEA LEVEL) SHALL BE GIVIN. IF AN ELEVATION WITH RESPECT TO ADJACENT GROUND SURFACE IS REQUIRED, THE ACTUAL DISTANCE ABOVE THE ADJACENT GROUND SHALL BE GIVEN.
20. ALL PROPERTY CORNERS SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION/GRADING.
21. STABILITY CALCULATIONS WITH A SAFETY FACTOR OF AT LEAST 1.5 SHALL BE SUBMITTED BY A SOILS ENGINEER TO THE BUILDING AND ENGINEERING DEPARTMENTS FOR CUT AND FILL SLOPES OVER THIRTY FEET (30') IN VERTICAL HEIGHT.
22. A FINAL COMPACTION REPORT WILL BE REQUIRED FOR ALL FILLS GREATER THAN ONE (1) FOOT.
23. IF STEEP SLOPING TERRAIN OCCURS UPON WHICH FILL IS TO BE PLACED, IT MUST BE CLEARED, KEYED AND BENCHED INTO FIRM NATURAL SOIL FOR FULL SUPPORT. PREPARATION SHALL BE APPROVED BY A REGISTERED SOILS ENGINEER PRIOR TO PLACEMENT OF FILL MATERIAL. SLOPES GREATER THAN 5:1 ARE REQUIRED TO BE KEYED AND BENCHED.
24. THE SOILS ENGINEER SHOULD INSPECT THE CONSTRUCTION IN THE FOLLOWING STAGES:
    24.A. UPON COMPLETION OF CLEARING AND DURING EXCAVATION AND BEFORE BACKFILL OF ALLUVIAL, COLLUVIAL AND TERRACED AREAS AND ANY SUBSTRUCTURES.
    24.B. DURING ALL ROUGH GRADING AND OPERATIONS INCLUDING PRE-COMPACTION, BENCHING AND FILLING OPERATIONS.
    24.C. DURING INSTALLATION OF BUTTRESS AND CANYON SUB-DRAINS AND FILTER MATERIAL.
    24.D. WHEN ANY UNUSUAL GRADING CONDITIONS ARE ENCOUNTERED DURING CONSTRUCTION.
25. EROSION CONTROL: ALL GRADED SLOPES SHALL BE PLANTED WITH ROSEA ICE PLANT OR ANOTHER APPROVED GROUND COVER, AT TWELVE INCHES (12") ON CENTER. SLOPES OVER FIFTEEN FEET (15') IN VERTICAL HEIGHT, IN ADDITION TO GROUND COVER, SHALL BE PLANTED WITH APPROVED TREES, SHRUBS OR COMBINATION THEREOF. SHRUBS SHALL BE PLANTED AT TEN FEET (10') ON CENTER; TREES AT TWENTY FEET (20') ON CENTER; COMBINATIONS FIFTEEN FEET (15') ON CENTER. SLOPES OVER THREE FEET (3') IN VERTICAL HEIGHT SHALL HAVE PERMANENT IRRIGATION SYSTEMS WITH BACKFLOW PREVENTION DEVICES PER U.B.C.
26. APPROVED PROTECTIVE MEASURES AND TEMPROARY DRAINAGE PROVISIONS MUST BE USED TO PROTECT ADJOINGING PROPERTIES DURING THE GRADING PROJECT.
27. APPROVED EROSION PREVENTATIVE DEVICES SHALL BE PROVIDED AND MAINTAINED DURING THE RAINY SEASON AND SHALL BE IN PLACE AT THE END OF EACH DAY'S WORK.
28. ALL WORK SHALL CONFORM TO THE CITY AND STATE CONSTRUCTION SAFETY ORDERS.
29. THE LOCATION AND PROTECTION OF ALL UTILITIES IS THE RESPONSIBILITY OF THE PERMITTEE.
30. AN APPROVED SET OF GRADING PLANS SHALL BE ON THE JOB SITE AT ALL TIME.
31. SANITARY FACILITIES SHALL BE MAINTAINED ON THE SITE FROM BEGINNING TO COMPLETION OF GRADING OPERATION.
32. ALL SLOPES SHALL BE PLANTED AND IRRIGATION FACILITIES SHALL BE PROVIDED FOR ALL SLOPES IN EXCESS OF THREE FEET (3') VERTICAL HEIGHT WITHIN NINETY (90) DAYS AFTER COMPLETION OF ROUGH GRADING AND SHALL BE IN ACCORDANCE WITH CITY OF LAKE ELSINORE GRADING ORDINANCE NO. 882 PRIOR TO THE APPROVAL OF FINAL INSPECTION.
33. ANY CONTRACTOR PERFORMING WORK ON THIS PROJECT SHALL FAMILIARIZE HIMSELF WITH THE SITE AND BE SOLELY RESPONSIBLE FOR ANY DAMAGE TO EXISTING FACILITIES RESULTING DIRECTLY OR INDIRECTLY FROM HIS OPERATIONS, WHETHER OR NOT SUCH FACILITIES ARE SHOWN ON THESE PLANS.
34. THE DESIGN ENGINEER SHALL PROVIDE A MINIMUM OF ONE (1) BLUE TOP PER FINISHED PAD, PRIOR TO ROUGH GRADING APPORVAL.
35. APPROXIMATE DATE OF:
    BEGINNING OPERATION: _____
    COMPLETION: _____
36. NO ROCK OR OTHER IRREDUCIBLE MATERIAL WITH A MAXIMUM DIMENSION GREATER THAN THREE INCHES (3") WILL BE PLACED IN FILLS WITHIN ROADBED AREAS OR THREE FEET (3') OF FINISH GRADES, UNLESS THE LOCATION, MATERIALS, AND DISPOSAL METHODS ARE SPECIFICALLY APPROVED BY THE SOILS ENGINEER.
37. THE ENGINEER MUST SET GRADE STAKES FOR ALL DRAINAGE DEVICES AND OBTAIN INSPECTION BEFORE APPROVAL
38. GRADING PLANS WILL NOT BE APPROVED UNTIL ALL RETAINING WALLS ARE APPROVED BY THE BUILDING DEPARTMENT.
39. THIS SITE HAS OBTAINED A NATIONAL POLLUTION PREVENTION ELIMINATION SYSTEM (NPDES) PERMIT TO REGULATE MUNICIPAL AND INDUSTRIAL STORM WATER DISCHARGES.
    NPDES WDID#_____ DATE PERMIT ISSUED:_____
40. DRAINAGE EASEMENTS WILL BE KEPT CLEAR OF ALL OBSTRUCTIONS. NO BUILDINGS OR WALLS SHALL BE PLACED WITHIN EASEMENT LIMITS. TEMPORARY IMPROVEMENTS ARE SUBJECT TO REMOVAL AT OWNER'S EXPENSE.

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811
www.call811.com
TWO WORKING DAYS BEFORE YOU DIG

EARTHWORK VOLUMES

	CUT(CY)	FILL(CY)
RAW*	1,627	5,789
	4,162 <IMPORT>	

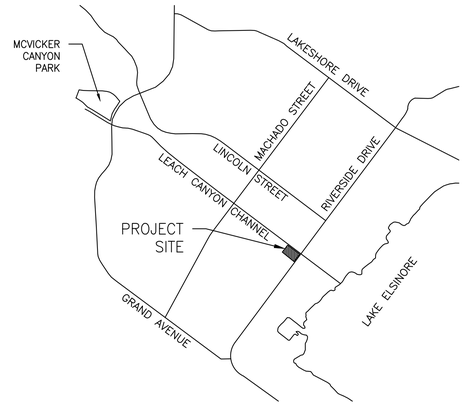
NOTE: THE ABOVE QUANTITIES HAVE BEEN ESTIMATED BY THE ENGINEER FOR PERMIT PURPOSES ONLY! THE CONTRACTOR SHALL DETERMINE HIS OWN QUANTITIES AND HE IS SOLELY RESPONSIBLE FOR DETERMINING THE AMOUNT AND COST OF IMPORT/EXPORT AND OTHER GRADING QUANTITIES FOR THIS PROJECT.



KEY MAP
SCALE 1"=100'

SHEET INDEX

NO.	DESCRIPTION
1	TITLE SHEET
2	CONCEPTUAL SITE PLAN
3	PRELIMINARY GRADING
4	PRELIMINARY GRADING
5	SECTIONS AND DETAILS
6	CONCEPTUAL UTILITIES
7	PRE-DEVELOPED CONDTION
8	POST-DEVELOPED CONDITION
9	PRELIMINARY WQMP SITE PLAN



VICINTY MAP
N.T.S

OWNER/DEVELOPER

GRANT KEENE
WJK DEVELOPMENT CO.
28392 AIROSO ST.
RANCHO MISSION VIEJO, CA 92694
(949) 677 0668
GRANT@WJKDEVELOPMENT.COM

ENGINEER

BLUE ENGINEERING AND CONSULTING, INC
10535 FOOTHILL BLVD-SUITE 440
CONTACT: ANGEL CESAR
EMAIL: INFO@BLUECIVILENG.COM
PHONE: (909)-970-5654

SOILS ENGINEER

GEOSOILS CONSULTANTS INC.
6634 VALJEAN AVE
VAN NUYS, CA 91406
CONTACT: KAREN MILLER
PHONE: (818) 785-2158
REPORT TITLE: "GEOLOGIC AND GEOTECHNICAL ENGINEERING INVESTIGATION...
APN 379-315-033"
DATE: 7/12/23
WORK ORDER: 7853
MDN: 23642

FEMA FLOOD DATA:

F.I.R.M.=06065C2017G EFFECTIVE 8/28/08
THE SITE IS WITHIN A ZONE "X" DEFINED AS AREAS OF 0.2% ANNUAL CHANCE FLOOD HAZARD, AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTH OF LESS THAN 1FT. OR WITH DRAINAGE AREAS OF LESS THAN ONE SQ.MI.; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD

UTILITY NOTES

WATER: ELSINORE VALLEY MUNICIPAL WATER DISTRICT
31315 CHANEY STREET
LAKE ELSINORE, CA 92331
(951) 674-3146

SEWER: ELSINORE VALLEY MUNICIPAL WATER DISTRICT
31315 CHANEY STREET
LAKE ELSINORE, CA. 92530
(951) 674-3146

GAS: SOUTHERN CALIFORNIA GAS CO.
1981 W. LUGONIA AVE.
REDLANDS, CA 92374
(909) 335-7828

PHONE: SBC/PACIFIC BELL
1265 N. VAN BUREN
SUITE 180
ANAHEIM, CA. 92807 (951) 672-6518
(714) 666-5423

GTE (VERIZON)
150 S. JUANITA ST.
HEMET, CA.92543

ELECTRIC: SO. CAL. EDISON CO.
26100 MENIFEE ROAD
ROMOLAND, CA 92585
(951) 928-8207
(951) 820-5498

FIRE: RIVERSIDE COUNTY FIRE DEPARTMENT
4080 LEMON STREET 2ND FLOOR
RIVERSIDE, CA 92502
(951) 955-4777

FIBEROPTIC: LEVEL 3 COMMUNICATIONS
NETWOR4K RELOCATIONS DEPARTMENT
1025 EL DORADO BLVD BLDG 33A-522
BROOMFIELD, CO 80021
(720) 888-5688

NOTICE TO CONTRACTORS:

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES, CONDUITS, OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT THOSE SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN ON THESE DRAWINGS. THE CONTRACTOR FURTHER ASSUMES ALL LIABILITY AND RESPONSIBILITY FOR THE UTILITY PIPES, CONDUITS OR STRUCTURES, SHOWN OR NOT SHOWN ON THESE PLANS.

CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION ON THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS OR PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE CITY, THE OWNER, AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT.

THE CONTRACTOR SHALL CALL IN A LOCATION REQUEST TO UNDERGROUND SERVICE ALERT (USA) PHONE 811, TWO (2) WORKING DAYS PRIOR TO DIGGING. NO CONSTRUCTION PERMIT ISSUED BY THE DIRECTOR OF TRANSPORTATION SHALL BE VALID INVOLVING UNDERGROUND FACILITIES UNLESS THE APPLICANT HAS AN INQUIRY NUMBER ISSUED BY U.S.A.

SOIL ENGINEER'S CERTIFICATE:

THESE GRADING PLANS HAVE BEEN REVIEWED BY THE UNDERSIGNED AND FOUND TO BE CONFORMANCE WITH THE RECOMMENDATIONS AND SPECITIFACTIONS OUTLINED IN THE SOILS AND GEOLOGICAL RECONNAISSANCE REPORT PREPARED FOR THIS DEVELOPMENT.

SIGNATURE _____ RCE NO. _____ DATE _____

FIRM PANEL NUMBER: 06065C2017G
MAP REVISED 08/28/2008
WITHIN ZONE X

PRIVATE ENGINEER'S NOTICE TO CONTRACTORS

1. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.
2. ALL UNDERGROUND UTILITIES OR STRUCTURES, REPORTED OR FOUND ON PUBLIC RECORDS, ARE INDICATED WITH THEIR APPROXIMATE LOCATION AND EXTENT. THE OWNER, BY ACCEPTING THESE PLANS OR PROCEEDING THE THE IMPROVEMENTS HEREON, AGREES TO ASSUME LIABILITY AND HOLD THE ENGINEER HARMLESS FOR ANY DAMAGES RESULTING FROM THE EXISTENCE OF UNDERGROUND UTILITIES OR STRUCTURES NOT REPORTED OR INDICATED ON PUBLIC RECORDS,OR THOSE CONSTRUCTED AT VARIANCE WITH REPORTED OR RECORD LOCATIONS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES OR STRUCTURES SHOWN AND ANY OTHER FOUND AT THE SITE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNERS OF ALL UTILITIES OR STRUCTURES CONCERNED BEFORE STARTING WORK.
3. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THESE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.
4. QUANTITIES SHOWN HEREON ARE PROVIDED FOR BONDING PURPOSES ONLY. CONTRACTORS SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES PRIOR TO BIDDING FOR CONSTRUCTION.

LEGAL DESCRIPTION

LOT 154 OF TRACT NO. 13799, IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 111 PAGES 59 TO 63 INCLUSIVE OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

BASIS OF BEARING

CENTERLINE OF RIVERSIDE DR. N37°00'58"E
PER TRACT NO. 13799, M.B. 111/59-63

BENCHMARK

COUNTY B.M. EL-28-80

FROM THE INTER. OF GRAND AVE. AND RIVERSIDE DR, NE 0.8 MI. ALONG RIVERSIDE DR. TO THE SOUTHERLY SIDE OF A CONC. FLOOD CONTROL CHANNEL; 325' ± SOUTHERLY FROM ABOVE FENCE; 1' ± W OF SURVEY MARKER POST.

ELEVATION: 1264.79 (NGVD29)

ASSESSORS PARCEL NUMBER (APN)

APN: 379-315-033

LEGEND

- RIGHT OF WAY LINE/ PROPERTY LINE
- CENTERLINE
- (101) EXISTING CONTOUR
- 101 PROPOSED CONTOUR
- FLOWLINE

ABBREVIATIONS

AC	ASPHALT CONCRETE	INV	INVERT
BC	BEGIN CURVE	LP	LOW POINT
BCR	BEGIN CURB RETURN	PVMT	PAVEMENT
CL	CENTER LINE	PCC	PORTLAND CEMENT CONCRETE
EC	END CURVE	PCR	POINT OF REVERSE CURVE
ECR	END CURB RETURN	P/L	PROPERTY LINE
EG	EXISTING GROUND	R/W	RIGHT OF WAY
ELEV	ELEVATION	SD	STORM DRAIN
EP	EDGE OF PAVEMENT	SERV	SERVICE
FF	FINISH FLOOR	SF	SQUARE FEET
FG	FINISH GROUND	SWR	SANITARY SEWER
FL	FLOWLINE	STA	STATION
FS	FINISH SURFACE	STD	STANDARD
GB	GRADE BREAK	TC	TOP OF CURB
HDPE	HIGH-DENSITY POLYTHEYLENE		
HP	HIGH POINT		

MARK	REVISIONS	APPR.	DATE

THESE PLANS HAVE BEEN REVIEWED FOR COMPLIANCE WITH THE APPROPRIATE CONDITIONS OF DEVELOPMENT AND/OR CITY AND STATE LAWS AND HAVE BEEN FOUND ACCEPTABLE

REMON HABIB, RCE No. 83156 DATE
CITY ENGINEER
CITY OF LAKE ELSINORE

PREPARED BY:
BLUE ENGINEERING
10535 FOOTHILL BLVD SUITE 440
RANCHO CUCAMONGA, CA 91730
YOUR LAND DEVELOPMENT CONSULTANTS
INFO@BLUECIVILENG.COM • 909-970-5654

ANGEL CESAR, P.E. RCE 87222 DATE

REGISTERED PROFESSIONAL ENGINEER
ANGEL CESAR
No. 87222
CIVIL
STATE OF CALIFORNIA

SCALE:
DATE:

BENCH MARK:
EL-28-80
ELEVATION: 1264.79' (NGVD 29)
SEE SHEET NO.1 FOR DESC.

CITY OF LAKE ELSINORE
32281 RIVERSIDE DRIVE
RIVERSIDE DRIVE APARTMENTS
ENTITLEMENT SET
TITLE SHEET

SHEET 1 OF 9 SHEETS
FILE No. ---

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LEACH CANYON CHANNEL

MONROE STREET

RIVERSIDE DRIVE

EISENHOWER DRIVE

PROP. DRAIN
PROP. WALL
EX. FENCE
PROP. CARPORT COVER (TYP.)
PROP. TRASH ENCLOSURE
DRIVE AISLE
PROP. CB
PROP. GATE
PROP. ADA CROSSING
PROP. ADA COMPLIANT RAMP
PROP. WALKWAY (TYP.)
2 STORY BLDG 10 TYPE A2
2 STORY BLDG 9 TYPE A1
2 STORY BLDG 8 TYPE A
2 STORY BLDG 7 TYPE A1
2 STORY BLDG 6 TYPE A2
2 STORY BLDG 11 TYPE B2
2 STORY BLDG 12 TYPE B1
2 STORY BLDG 5 TYPE B1
2 STORY BLDG 4 TYPE B2
2 STORY BLDG 1 TYPE A1
2 STORY BLDG 2 TYPE B1
2 STORY BLDG 3 TYPE B2
COMMON OPEN SPACE
POOL
MAIL /LEASE
PROP. MONUMENT
PROP. R/W
EX. R/W
PROP. ISLAND
EX. WALL
EX. FENCE GATE
PROP. STORMWATER LIFT STATION
PROPOSED BUBBLER BASIN
FLOW CONTROL MANHOLE WITH EMERGENCY GRAVITY OVERFLOW TO THE BUBBLER BASIN
PROP. MODULAR WETLANDS (MWS-L-8-12) WITH VAULT ENTRY FOR INSPECTION/MAINTENANCE

BUBBLER AND PUMP WILL BE CONDITIONED TO BE OUTSIDE OF THE ROW AND ONTO PRIVATE PROPERTY. REQUIRED TO BE ADDRESSED IN FINAL WQMP.

SCALE
30 0 15 30 60
(FEET)
1 INCH = 30 FT.

Underground Service Alert
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TWO WORKING DAYS BEFORE YOU DIG

MARK	REVISIONS	APPR.	DATE

THESE PLANS HAVE BEEN REVIEWED FOR COMPLIANCE WITH THE APPROPRIATE CONDITIONS OF DEVELOPMENT AND/OR CITY AND STATE LAWS AND HAVE BEEN FOUND ACCEPTABLE

REMON HABIB, RCE No. 83156 — DATE
CITY ENGINEER
CITY OF LAKE ELSINORE

PREPARED BY:
BLUE ENGINEERING
10535 FOOTHILL BLVD SUITE 440
RANCHO CUCAMONGA, CA 91730
YOUR LAND DEVELOPMENT CONSULTANTS
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ANGEL CESAR, P.E. RCE 87222 — DATE

REGISTERED PROFESSIONAL ENGINEER
ANGEL CESAR
No. 87222
CIVIL
STATE OF CALIFORNIA

SCALE:
DATE:

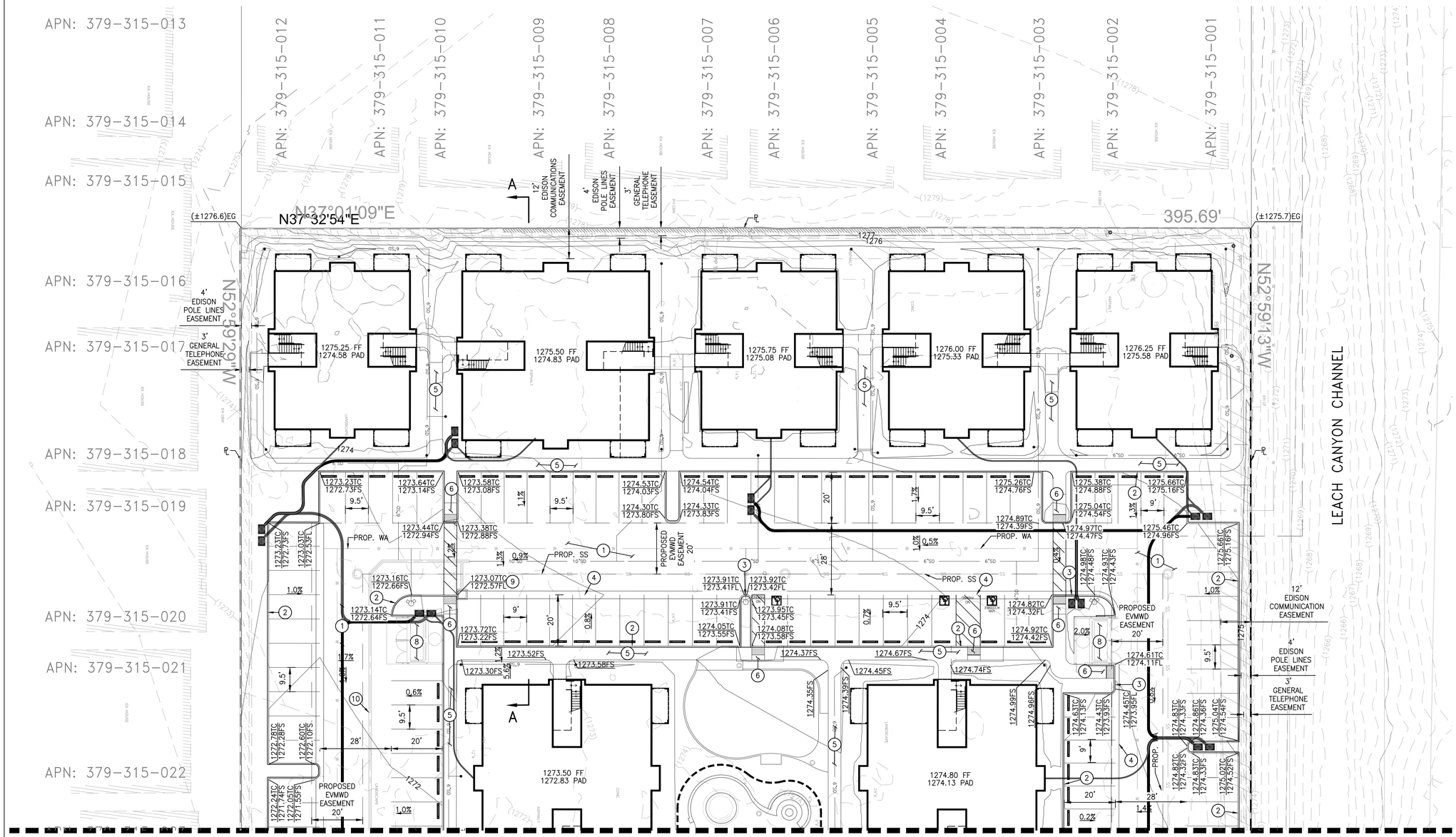
BENCH MARK:
EL-28-80
ELEVATION: 1264.79' (NGVD 29)
SEE SHEET NO.1 FOR DESC.

CITY OF LAKE ELSINORE

32281 RIVERSIDE DRIVE
RIVERSIDE DRIVE APARTMENTS
ENTITLEMENT SET
CONCEPTUAL SITE PLAN

SHEET 2 OF 9 SHEETS
FILE No. ---

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MATCH LINE SEE SHEET 4

CONSTRUCTION NOTES

1. PROPOSED 4" AC OVER 9" AGGREGATE BASE
2. PROPOSED 6" CURB TYPE 6A PER CITY OF LAKE ELSINORE STD 202
3. PROPOSED 6" CURB AND GUTTER TYPE 6 PER CITY OF LAKE ELSINORE STD 200
4. PROPOSED 3' WIDE V-GUTTER PER DETAIL ON SHEET 5
5. PROPOSED 5' WIDE WALKWAY
6. PROPOSED ADA RAMP PER CITY OF CITY OF LAKE ELSINORE STD 214C
7. PROPOSED COMMERCIAL DRIVEWAY APPROACH PER RIVERSIDE COUNTY STANDARD 207A
8. PROPOSED ROOFED TRASH ENCLOSURE
9. PROPOSED CATCH BASIN
10. PROPOSED 12" STORM DRAIN PIPE
11. PROPOSED CONTECH 96" CMP UNDERGROUND RETENTION SYSTEM
12. PROPOSED STORMWATER LIFT STATION & PUMP
13. PROPOSED MWS L-8-12

SCALE
20 0 10 20 40
(FEET)
1 INCH = 20 FT.

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MARK	REVISIONS	APPR.	DATE

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REMON HABIB, RCE No. 83156
CITY ENGINEER
CITY OF LAKE ELSINORE

DATE

PREPARED BY:
BLUE ENGINEERING
10535 FOOTHILL BLVD SUITE 440
RANCHO CUCAMONGA, CA 91730
YOUR LAND DEVELOPMENT CONSULTANTS
INFO@BLUEGVLENG.COM - 909-470-0454

ANGEL CESAR, P.E. RCE 87222

DATE

REGISTERED PROFESSIONAL ENGINEER
ANGEL CESAR
No. 87222
CIVIL
STATE OF CALIFORNIA

SCALE:

DATE:

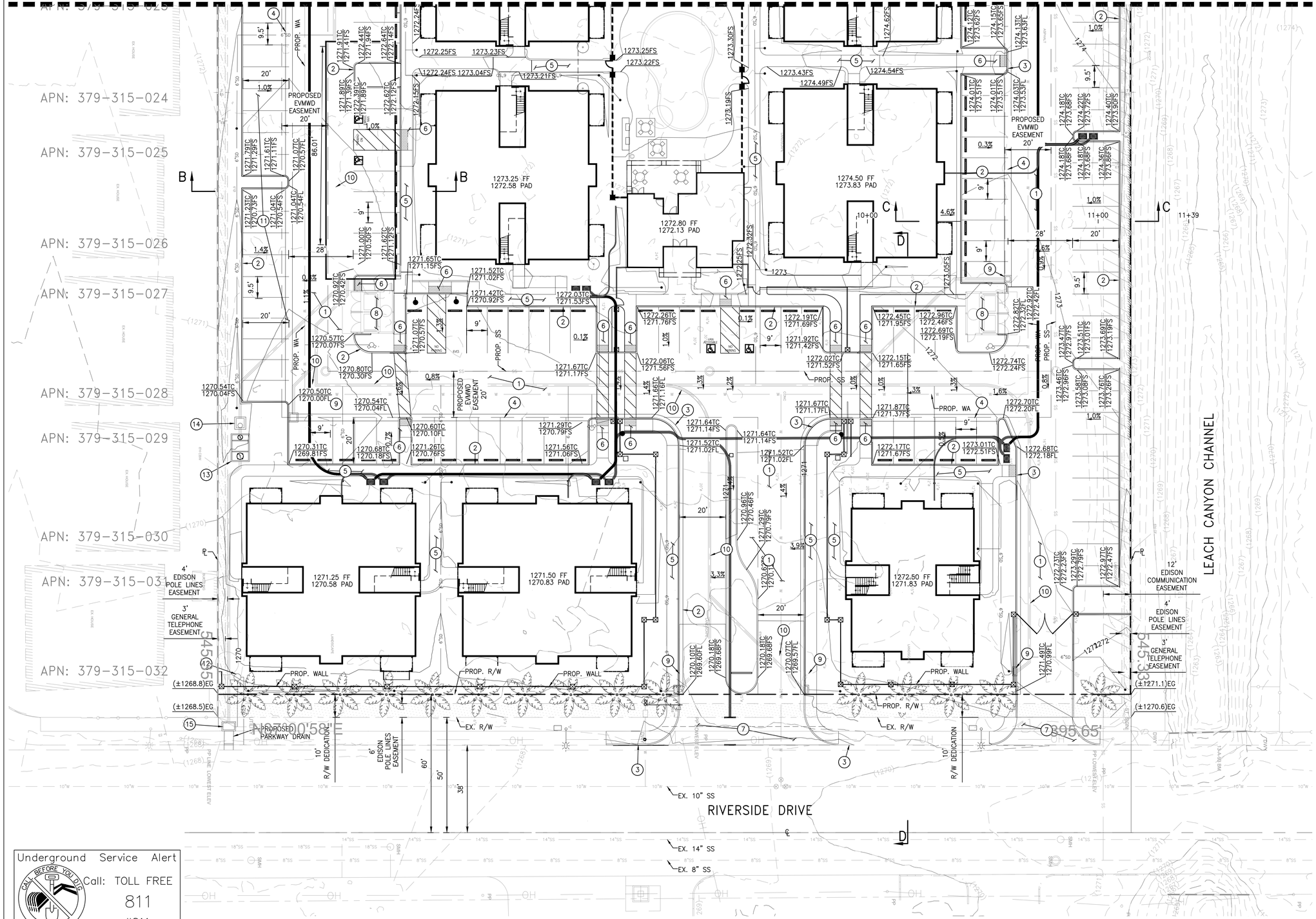
BENCH MARK:
EL-28-80
ELEVATION: 1264.79 (NGVD 29)
SEE SHEET NO.1 FOR DESC.

CITY OF LAKE ELSINORE

32281 RIVERSIDE DRIVE
RIVERSIDE DRIVE APARTMENTS
ENTITLEMENT SET
PRELIMINARY GRADING

SHEET 3
OF 9 SHEETS
FILE No. ---

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CONSTRUCTION NOTES

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3. PROPOSED 6" CURB AND GUTTER TYPE 6 PER CITY OF LAKE ELSINORE STD 200
4. PROPOSED 3' WIDE V-GUTTER PER DETAIL ON SHEET 5
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10. PROPOSED 12" STORM DRAIN PIPE
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12. PROPOSED STORMWATER LIFT STATION & PUMP
13. PROPOSED MWS L-8-12
14. PROPOSED FLOW CONTROL MANHOLE WITH GRATE COVER FOR EMERGENCY OVERFLOW
15. PROPOSED BUBBLER BASIN W/ GRATE COVER FOR EMERGENCY OVERFLOW

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MARK	REVISIONS	APPR.	DATE

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REMON HABIB, RCE No. 83156
CITY ENGINEER
CITY OF LAKE ELSINORE

DATE

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BLUE ENGINEERING
10535 FOOTHILL BLVD SUITE 440
RANCHO CUCAMONGA, CA 91730
YOUR LAND DEVELOPMENT CONSULTANTS
INFO@BLUECIVILENG.COM • 909-470-5654

ANGEL CESAR, P.E. RCE 87222 — DATE

REGISTERED PROFESSIONAL ENGINEER
ANGEL CESAR
No. 87222
CIVIL
STATE OF CALIFORNIA

SCALE:

DATE:

BENCH MARK:
EL-28-80
ELEVATION: 1264.79' (NGVD 29)
SEE SHEET NO.1 FOR DESC.

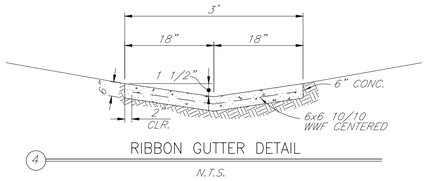
CITY OF LAKE ELSINORE

32281 RIVERSIDE DRIVE
RIVERSIDE DRIVE APARTMENTS
ENTITLEMENT SET
PRELIMINARY GRADING

SHEET 4 OF 9 SHEETS

FILE No. ---

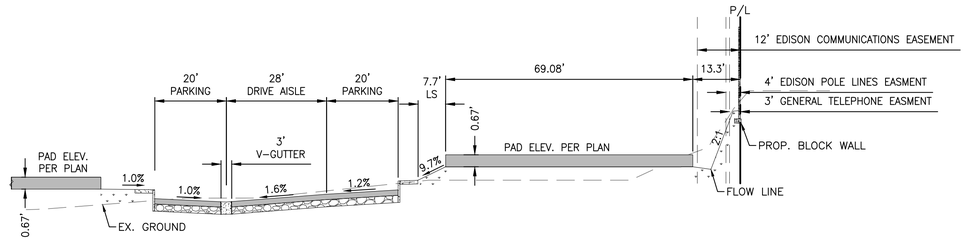
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RIBBON GUTTER DETAIL

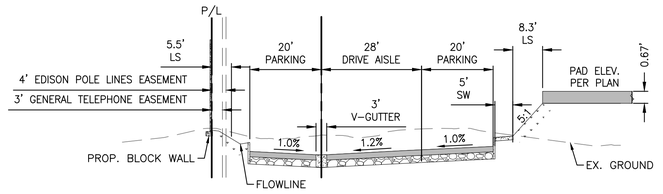
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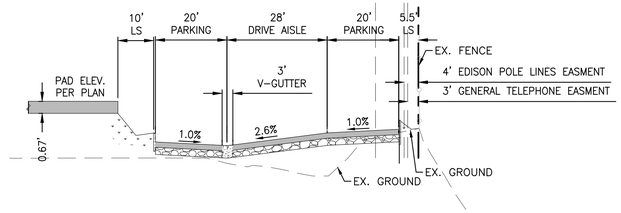
SECTION A-A

NOT TO SCALE



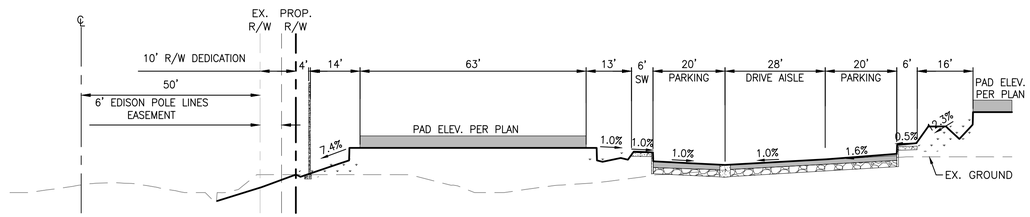
SECTION B-B

NOT TO SCALE



SECTION C-C

NOT TO SCALE



SECTION D-D

NOT TO SCALE

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MARK	REVISIONS	APPR.	DATE

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REMON HABIB, RCE No. 83156 — DATE
CITY ENGINEER
CITY OF LAKE ELSINORE

PREPARED BY:

BLUE ENGINEERING
10535 FOOTHILL BLVD SUITE 440
RANCHO CUCAMONGA, CA 91730
YOUR LAND DEVELOPMENT CONSULTANTS
INFO@BLUECIVILENG.COM • 909-970-5654

ANGEL CESAR, P.E. RCE 87222 — DATE

REGISTERED PROFESSIONAL ENGINEER — ANGEL CESAR — No. 87222 — CIVIL — STATE OF CALIFORNIA

SCALE:

DATE:

BENCH MARK:
EL-28-80
ELEVATION: 1264.79' (NGVD 29)
SEE SHEET NO.1 FOR DESC.

CITY OF LAKE ELSINORE

32281 RIVERSIDE DRIVE
RIVERSIDE DRIVE APARTMENTS
ENTITLEMENT SET
SECTIONS AND DETAILS

SHEET 5 OF 9 SHEETS

FILE No. ---

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LEACH CANYON CHANNEL

MONROE STREET

RIVERSIDE DRIVE

PROP. OFFSITE D. WA. POC

PROP. 48" SS MH

PROP. WA

PROP. SS CO

PROP. SS

PROP. SS 45° ELBOW

PROP. PRIVATE SANITARY SEWER WYE CONNECTION

PROP. 48" SS MH

PROP. WA

PROP. SS CO

PROP. WA

PROP. SS CO

PROP. 48" SS MH

PROP. WA

PROP. R/W

EX. R/W

PROP. OFFSITE D. WA. POC

PROP. OFFSITE IRR. WA. POC

PROP. 48" SS MH

PROP. WA

PROP. MWS-L-8-12 UNIT

PROP. M.H. W/ GRATE COVER

PROP. BUBBLER BASIN

PROP. PARKWAY CULVERT

PROP. SD PUMP

CONTECH 96" UNDERGROUND CMP BASIN

1276.25 FF
1275.58 PAD

1276.00 FF
1275.33 PAD

1275.75 FF
1275.08 PAD

1275.50 FF
1274.83 PAD

1275.25 FF
1274.58 PAD

1274.80 FF
1274.13 PAD

1274.50 FF
1273.83 PAD

1273.50 FF
1272.83 PAD

1273.25 FF
1272.58 PAD

1272.50 FF
1271.83 PAD

1271.50 FF
1270.83 PAD

1271.25 FF
1270.58 PAD

68'
30'
10'
28'
26'
10'
68'
29'
68'
28'
30'
6'
4'
10'
60'
50'
10'
40'
23'
9'
30'
12'
6'
8'
41'
68'
27'

LEGEND

- PROPOSED 12" WATER LINE
- PROPOSED 8" SEWER LINE
- PROPOSED SEWER MANHOLE
- PROPOSED SEWER CLEANOUT
- PROPOSED 12" STORM DRAIN LINE
- PROPOSED STORM DRAIN CATCH BASIN
- PROPOSED LANDSCAPE DRAIN
- PROPOSED FIRE DDC
- PROPOSED BACKFLOW DEVICE
- PROPOSED MODULAR WETLAND SYSTEM: MODEL# MWS-L-8-12
- PROPOSED CONTECH 96" UNDERGROUND CMP BASIN
- EXISTING 8" WATER LINE
- EXISTING 10" WATER LINE
- EXISTING 8" SEWER LINE
- EXISTING 14" SEWER LINE

SCALE
40 0 20 40 80
(FEET)
1 INCH = 40 FT.

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REMON HABIB, RCE No. 83156
CITY ENGINEER
CITY OF LAKE ELSINORE

DATE

PREPARED BY:

BLUE ENGINEERING
10535 FOOTHILL BLVD SUITE 440
RANCHO CUCAMONGA, CA 91730
YOUR LAND DEVELOPMENT CONSULTANTS
INFO@BLUECIVILENG.COM • 909-970-5654

ANGEL CESAR, P.E. RCE 87222

DATE

REGISTERED PROFESSIONAL ENGINEER
ANGEL CESAR
No. 87222
CIVIL
STATE OF CALIFORNIA

SCALE:

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ELEVATION: 1264.79' (NGVD 29)
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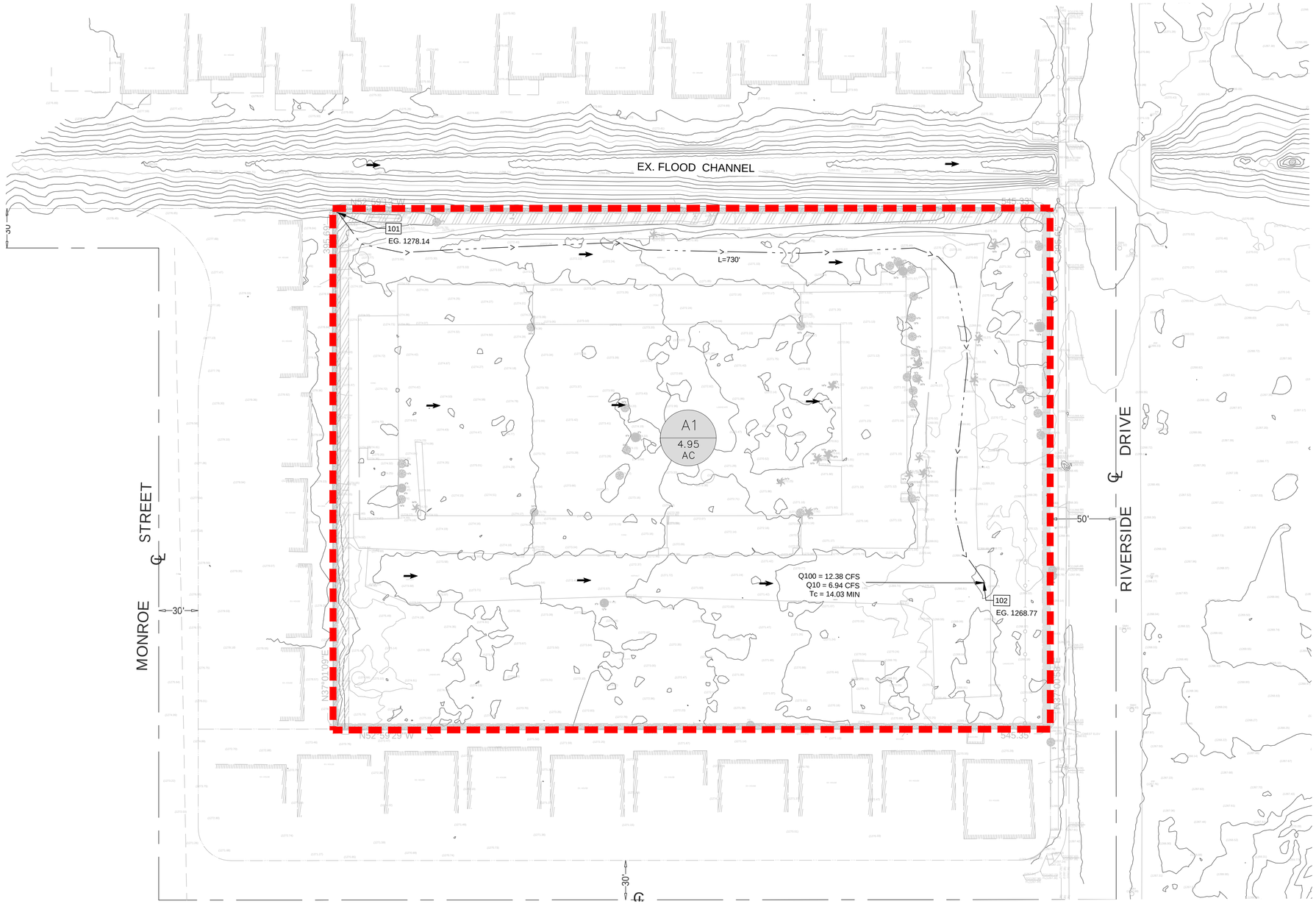
CITY OF LAKE ELSINORE

32281 RIVERSIDE DRIVE
RIVERSIDE DRIVE APARTMENTS
ENTITLEMENT SET
CONCEPTUAL UTILITIES

SHEET 6 OF 9 SHEETS

FILE No. ---

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LEGEND

- A1 / 2.20 / AC — DRAINAGE AREA DESIGNATION, AREA IN ACRES
- 102 — NODE DESIGNATION
- MAJOR WATERSHED BOUNDARY
- FLOW PATH
- L=100' — LENGTH OF FLOW PATH
- Q100 — CALCULATED 100-YEAR STORM RUNOFF
- FLOW DIRECTION

HYDROLOGY INFORMATION

SITE AREA:	4.95 AC	
SOIL GROUP:	B	(PER WEB SOIL SURVEY)
IMPERVIOUS:	PER COVER CONDITION	
	40%	(PRE-DEVELOPMENT CONDITION)
	80%	(POST-DEVELOPMENT CONDITION-APARTMENT)
RAINFALL RATE:	1.30 IN/HR.	(100-YEAR)
	0.79 IN/HR.	(10-YEAR)
AMC NUMBER:		(SOIL GROUP C)
	2	(For 10-YEAR STORM)
	3	(For 100-YEAR STORM)
FREQUENCY:	100 & 10 YEAR	
METHOD:	RIVERSIDE COUNTY HYDROLOGY MANUAL	

SCALE
40 0 20 40 80
(FEET)
1 INCH = 40 FT.

PLAN PREPARED BY:
BLUE ENGINEERING & CONSULTING, INC
FOREVER BLUE N.G.
9320 BASELINE ROAD, SUITE D – RANCHO CUCAMONGA, CA 91701
PHONE: 909-294-5022
E-MAIL INFO@BLUECIVILENG.COM
WEBSITE WWW.BLUECIVILENG.COM

SEAL
REGISTERED PROFESSIONAL ENGINEER
NIGEL CLEAR
No. 87222
CIVIL
STATE OF CALIFORNIA

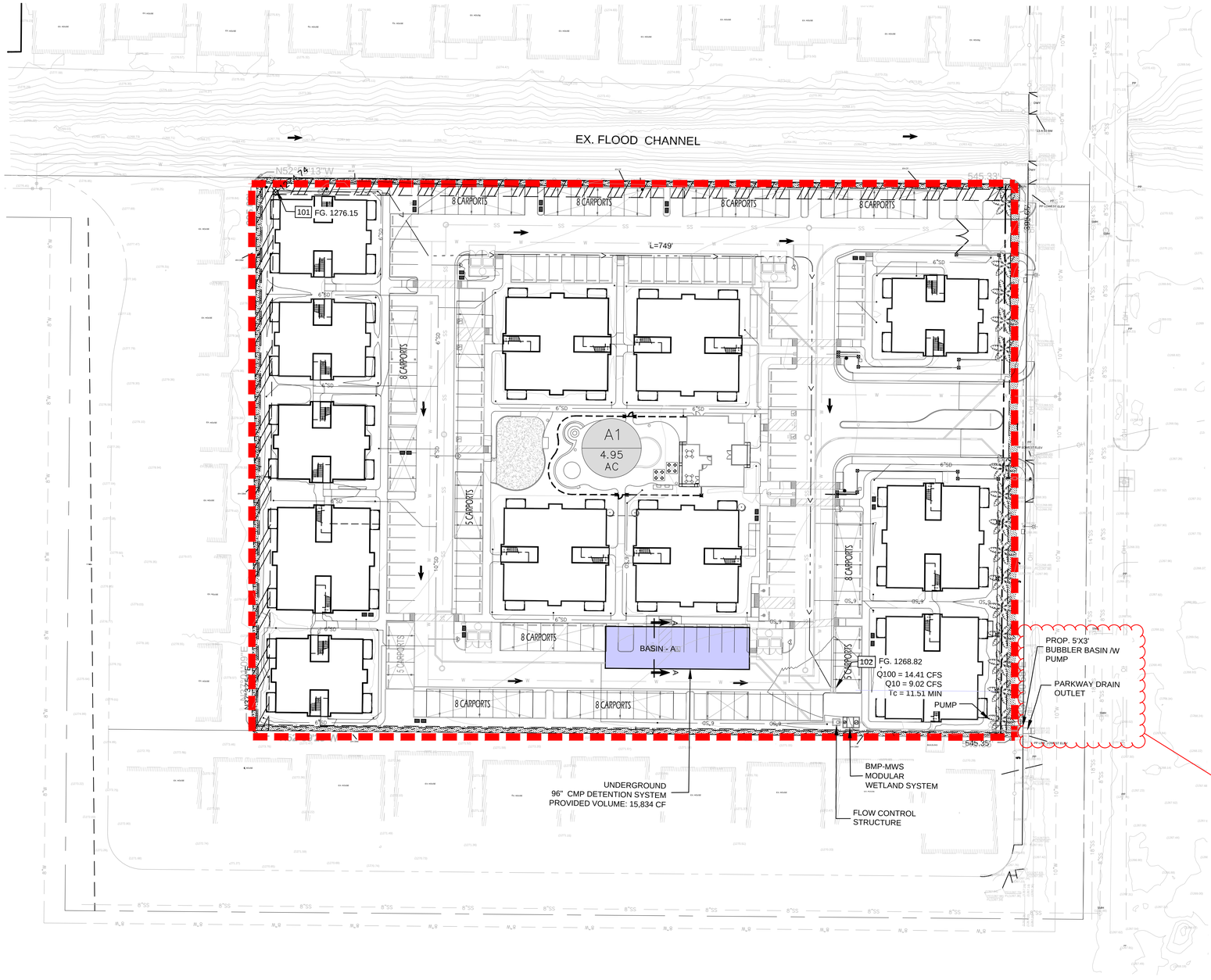
DESIGN ENGINEER DATE

DATE

PRE-DEVELOPMENT CONDITION

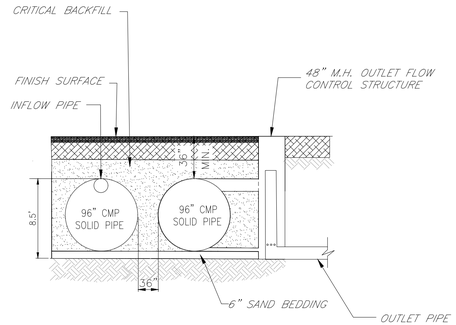
HYDROLOGY STUDY EXHIBIT

SHEET 1 OF 2



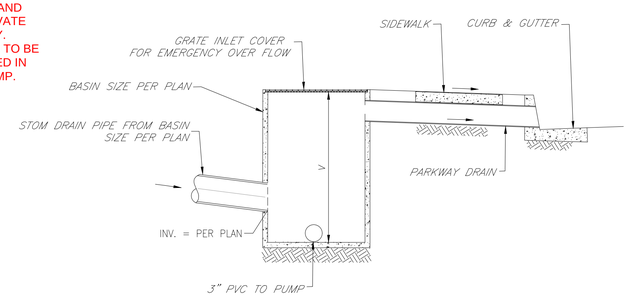
LEGEND

- PROPOSED UNDERGROUND DETENTION BASIN
- A1 / 2.20 AC — DRAINAGE AREA DESIGNATION / AREA IN ACRES
- 102 — NODE DESIGNATION
- MAJOR WATERSHED BOUNDARY
- FLOW PATH
- L=100' — LENGTH OF FLOW PATH
- Q100 — CALCULATED 100-YEAR STORM RUNOFF
- FLOW DIRECTION



SECTION A-A
96" CMP DETENTION SYSTEM SECTION
NOT TO SCALE

BUBBLER AND PUMP WILL BE CONDITIONED TO BE OUTSIDE OF THE ROW AND ONTO PRIVATE PROPERTY. REQUIRED TO BE ADDRESSED IN FINAL WQMP.



BUBBLE OUT BASIN SECTION DETAILS
N.T.S.

HYDROLOGY INFORMATION

SITE AREA:	4.95 AC	
SOIL GROUP:	B	(PER WEB SOIL SURVEY)
IMPERVIOUS:	PER COVER CONDITION	
	40%	(PRE-DEVELOPMENT CONDITION)
	80%	(POST-DEVELOPMENT CONDITION-APARTMENT)
RAINFALL RATE:	1.30 IN/HR.	(100-YEAR)
	0.79 IN/HR.	(10-YEAR)
AMC NUMBER:		(SOIL GROUP C)
	2	(For 10-YEAR STORM)
	3	(For 100-YEAR STORM)
FREQUENCY:	100 & 10 YEAR	
METHOD:	RIVERSIDE COUNTY HYDROLOGY MANUAL	

SCALE
40 0 20 40 80
(FEET)
1 INCH = 40 FT.

PLAN PREPARED BY:
BLUE ENGINEERING & CONSULTING, INC
FOREVER BLUE N.G.
9320 BASELINE ROAD, SUITE D – RANCHO CUCAMONGA, CA 91701
PHONE: 909-294-5022
E-MAIL: INFO@BLUECIVILENG.COM
WEBSITE: WWW.BLUECIVILENG.COM

SEAL
REGISTERED PROFESSIONAL ENGINEER
ANGEL CEDAR
No. 87222
CIVIL
STATE OF CALIFORNIA

DESIGN ENGINEER DATE

DATE

POST-DEVELOPMENT CONDITION

HYDROLOGY STUDY EXHIBIT

SHEET 2 OF 2

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Western Riverside Area, California



July 5, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:1,670 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 15, Sep 6, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 14, 2022—Mar 17, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GaA	Garretson very fine sandy loam, 0 to 2 percent slopes	5.1	100.0%
Totals for Area of Interest		**5.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Western Riverside Area, California

GaA—Garretson very fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hcv1
Elevation: 490 to 1,480 feet
Mean annual precipitation: 12 to 25 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 220 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Garretson and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Garretson

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from metasedimentary rock

Typical profile

H1 - 0 to 10 inches: very fine sandy loam
H2 - 10 to 60 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: B
Ecological site: R019XD029CA - LOAMY
Hydric soil rating: No

Minor Components

Perkins

Percent of map unit: 5 percent
Hydric soil rating: No

Arbuckle

Percent of map unit: 5 percent
Hydric soil rating: No

Cortina

Percent of map unit: 5 percent
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.



Map Scale: 1:1,670 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

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Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Survey Area Data: Version 15, Sep 6, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 14, 2022—Mar 17, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
GaA	Garretson very fine sandy loam, 0 to 2 percent slopes	B	5.1	100.0%
Totals for Area of Interest			**5.1**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

Phase I Environmental Site Assessment Report is not required because no infiltration BMPs are proposed.

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Since the subject site runoff drains to Lake Elsinore, infiltration is not allowed be used for the LID stormwater treatment BMP, per the 'Highest and Best Use' principle and biotreatment is required by the city. A Modular Wetland System is proposed for the bio-treatment BMP, to treat the design capture volume of site runoff within 48 hours of storm conclusion.

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Santa Ana Watershed - BMP Design Volume, V_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Blue Engineering & Consulting
Date: 7/5/2023
Designed by: Marcus Gubba-Reiner
Case No:
Company Project Number/Name: Riverside Drive Apartments, Lake Elsinore

BMP Identification

BMP NAME / ID: BMP A

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85} = 0.85 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
A	*57145.31*	*Roofs*	*1*	*0.89*	*50973.6*			
A	*103227.3*	*Concrete or Asphalt*	*1*	*0.892*	*92078.8*			
A	*51445.22*	*Ornamental Landscaping*	*0.1*	*0.11046*	*5682.5*			
	211817.83		*Total*		*148734.9*	*0.85*	*10535.4*	*13,142*

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Blue Engineers — Date: 11/12/2018

Designed by: HZ — Case No:

Company Project Number/Name: Riverside Drive Apartments, Lake Elsinore

BMP Identification

BMP NAME / ID: MWS

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity: I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMAs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
Roofs	*57145.31*	*Roofs*	*1*	*0.89*	*50973.6*			
Dwy	*103227.3*	*Concrete or Asphalt*	*1*	*0.892*	*92078.8*			
Landscape	*51445.22*	*Ornamental Landscaping*	*0.1*	*0.110458*	*5682.5*			

R 07 W | R 06 W | R 05 W | R 04 W | R 03 W | R 02 W | R 01 W | R 01 E | R 02 E | R 03 E | R 04 E | R 05 E

T 01 S
T 02 S
T 03 S
T 04 S
T 05 S
T 06 S
T 07 S
T 08 S

06	05	04	03	02	01
07	08	09	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

0.85 MiraLoma
0.61 Riverside North
0.54 Riverside South
0.68 PigeonPass
0.66 MorenoEast
0.85 Beaumont
0.88 PradoDam
0.51 Woodcrest
0.50 LakeMathews
0.68 PerrisReservoir
0.87 VistaGrandeGS
0.70 SanJacintoNWS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.90 HurkeyCreek
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley

Santa Ana River Watershed
Santa Margarita Watershed

JURUPA VALLEY | EASTVALE | NORCO | CORONA | RIVERSIDE | MORENO VALLEY | CALIMESA | BEAUMONT | SAN JACINTO | PERRIS | CANYON LAKE | LAKE ELSINORE | WILDOMAR | MENIFEE | HEMET | MURRIETA | TEMECULA

N

Rain Gage Locations

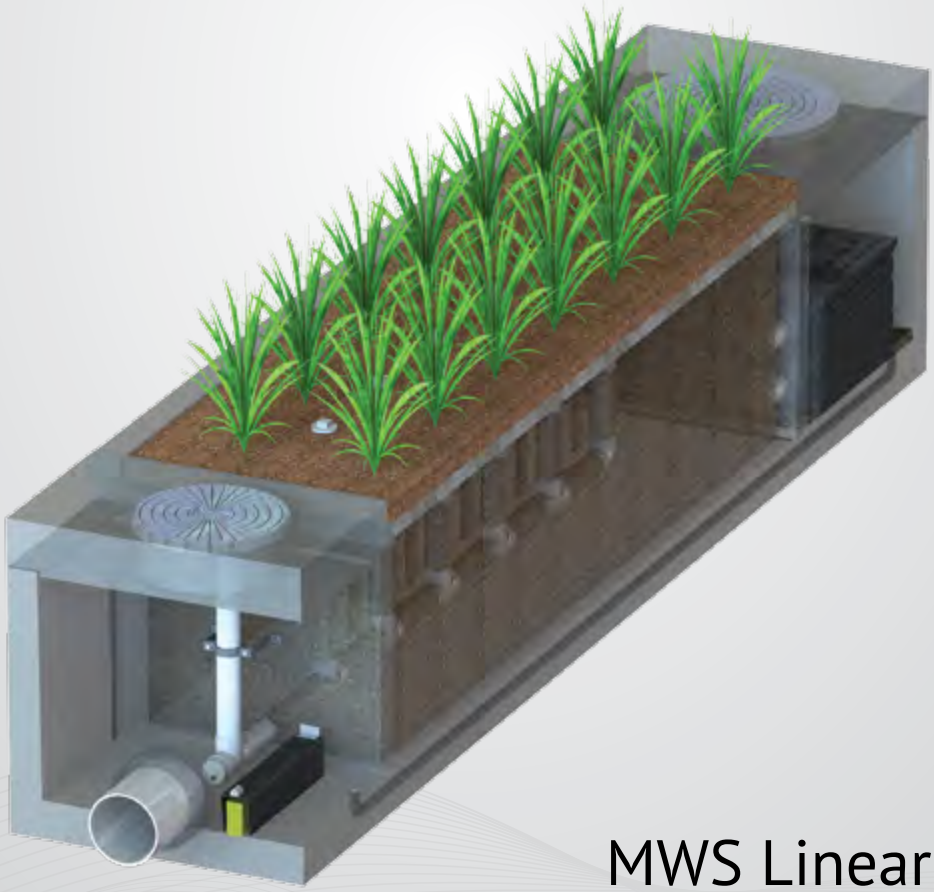
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Isohyetal Map for the 85th Percentile 24 hour Storm Event

July 2011

MODULAR WETLANDS™

*Advanced **Stormwater** Biofiltration*



MWS Linear



Contents

1 Introduction

2 Applications

3 Configurations

4 Advantages

5 Operation

6 Orientations | Bypass

7 Performance | Approvals

8 Sizing

9 Installation | Maintenance | Plants

The Urban Impact

For hundreds of years natural wetlands surrounding our shores have played an integral role as nature's stormwater treatment system. But as our cities grow and develop, these natural wetlands have perished under countless roads, rooftops, and parking lots.



Plant A Wetland

Without natural wetlands our cities are deprived of water purification, flood control, and land stability. Modular Wetlands and the MWS Linear re-establish nature's presence and rejuvenate water ways in urban areas.





MWS Linear

The Modular Wetland System Linear represents a pioneering breakthrough in stormwater technology as the only biofiltration system to utilize patented horizontal flow, allowing for a smaller footprint and higher treatment capacity. While most biofilters use little or no pre-treatment, the MWS Linear incorporates an advanced pre-treatment chamber that includes separation and pre-filter cartridges. In this chamber sediment and hydrocarbons are removed from runoff before it enters the biofiltration chamber, in turn reducing maintenance costs and improving performance.

Applications

The MWS Linear has been successfully used on numerous new construction and retrofit projects. The system's superior versatility makes it beneficial for a wide range of stormwater and waste water applications - treating rooftops, streetscapes, parking lots, and industrial sites.



Industrial

Many states enforce strict regulations for discharges from industrial sites. The MWS Linear has helped various sites meet difficult EPA mandated effluent limits for dissolved metals and other pollutants.



Residential

Low to high density developments can benefit from the versatile design of the MWS Linear. The system can be used in both decentralized LID design and cost-effective end-of-the-line configurations.



Streets

Street applications can be challenging due to limited space. The MWS Linear is very adaptable, and offers the smallest footprint to work around the constraints of existing utilities on retrofit projects.



Parking Lots

Parking lots are designed to maximize space and the MWS Linear's 4 ft. standard planter width allows for easy integration into parking lot islands and other landscape medians.



Commercial

Compared to bioretention systems, the MWS Linear can treat far more area in less space - meeting treatment and volume control requirements.



Mixed Use

The MWS Linear can be installed as a raised planter to treat runoff from rooftops or patios, making it perfect for sustainable "live-work" spaces.

More applications are available on our website: www.ModularWetlands.com/Applications

- Agriculture
- Reuse
- Low Impact Development
- Waste Water





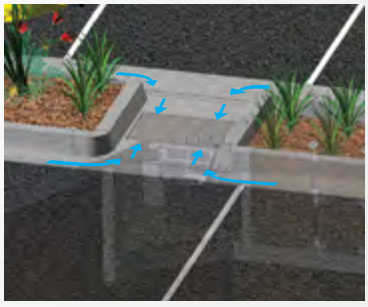
Configurations

The MWS Linear is the preferred biofiltration system of Civil Engineers across the country due to its versatile design. This highly versatile system has available "pipe-in" options on most models, along with built-in curb or grated inlets for simple integration into your stormdrain design.



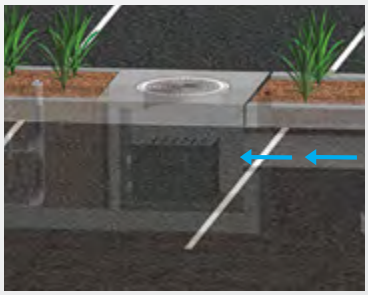
Curb Type

The *Curb Type* configuration accepts sheet flow through a curb opening and is commonly used along road ways and parking lots. It can be used in sump or flow by conditions. Length of curb opening varies based on model and size.



Grate Type

The *Grate Type* configuration offers the same features and benefits as the *Curb Type* but with a grated/drop inlet above the systems pre-treatment chamber. It has the added benefit of allowing for pedestrian access over the inlet. ADA compliant grates are available to assure easy and safe access. The *Grate Type* can also be used in scenarios where runoff needs to be intercepted on both sides of landscape islands.



Vault Type

The system's patented horizontal flow biofilter is able to accept inflow pipes directly into the pre-treatment chamber, meaning the MWS Linear can be used in end-of-the-line installations. This greatly improves feasibility over typical decentralized designs that are required with other biofiltration/bioretention systems. Another benefit of the "pipe in" design is the ability to install the system downstream of underground detention systems to meet water quality volume requirements.



Downspout Type

The *Downspout Type* is a variation of the *Vault Type* and is designed to accept a vertical downspout pipe from roof top and podium areas. Some models have the option of utilizing an internal bypass, simplifying the overall design. The system can be installed as a raised planter and the exterior can be stuccoed or covered with other finishes to match the look of adjacent buildings.

Advantages & Operation

The MWS Linear is the most efficient and versatile biofiltration system on the market, and the only system with horizontal flow which improves performance, reduces footprint, and minimizes maintenance. Figure-1 and Figure-2 illustrate the invaluable benefits of horizontal flow and the multiple treatment stages.

Featured Advantages

- Horizontal Flow Biofiltration
- Greater Filter Surface Area
- Pre-Treatment Chamber
- Patented Perimeter Void Area
- Flow Control
- No Depressed Planter Area

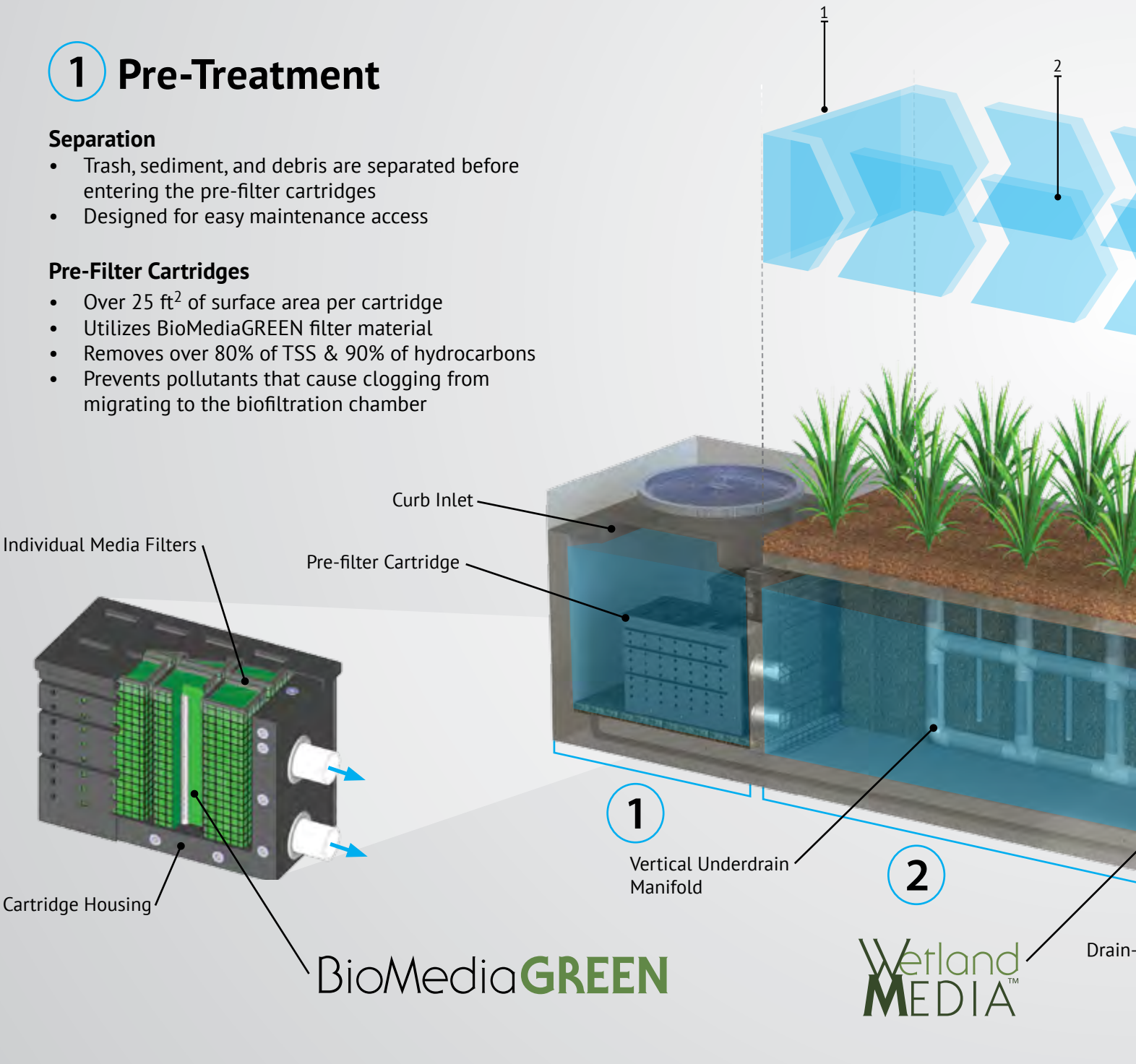
1 Pre-Treatment

Separation

- Trash, sediment, and debris are separated before entering the pre-filter cartridges
- Designed for easy maintenance access

Pre-Filter Cartridges

- Over 25 ft^2 of surface area per cartridge
- Utilizes BioMediaGREEN filter material
- Removes over 80% of TSS & 90% of hydrocarbons
- Prevents pollutants that cause clogging from migrating to the biofiltration chamber



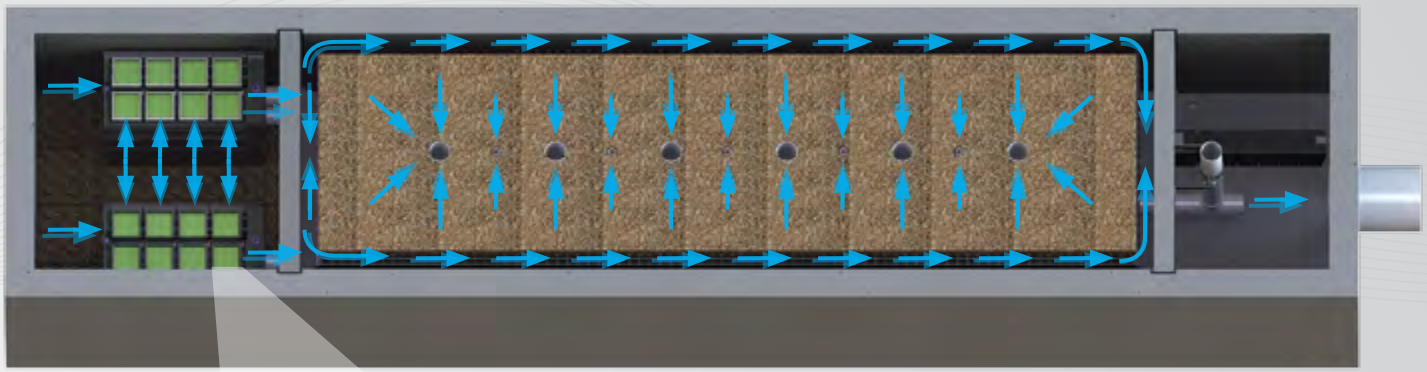


Fig. 2 - Top View

2x to 3x More Surface Area Than Traditional Downward Flow Bioretention Systems.



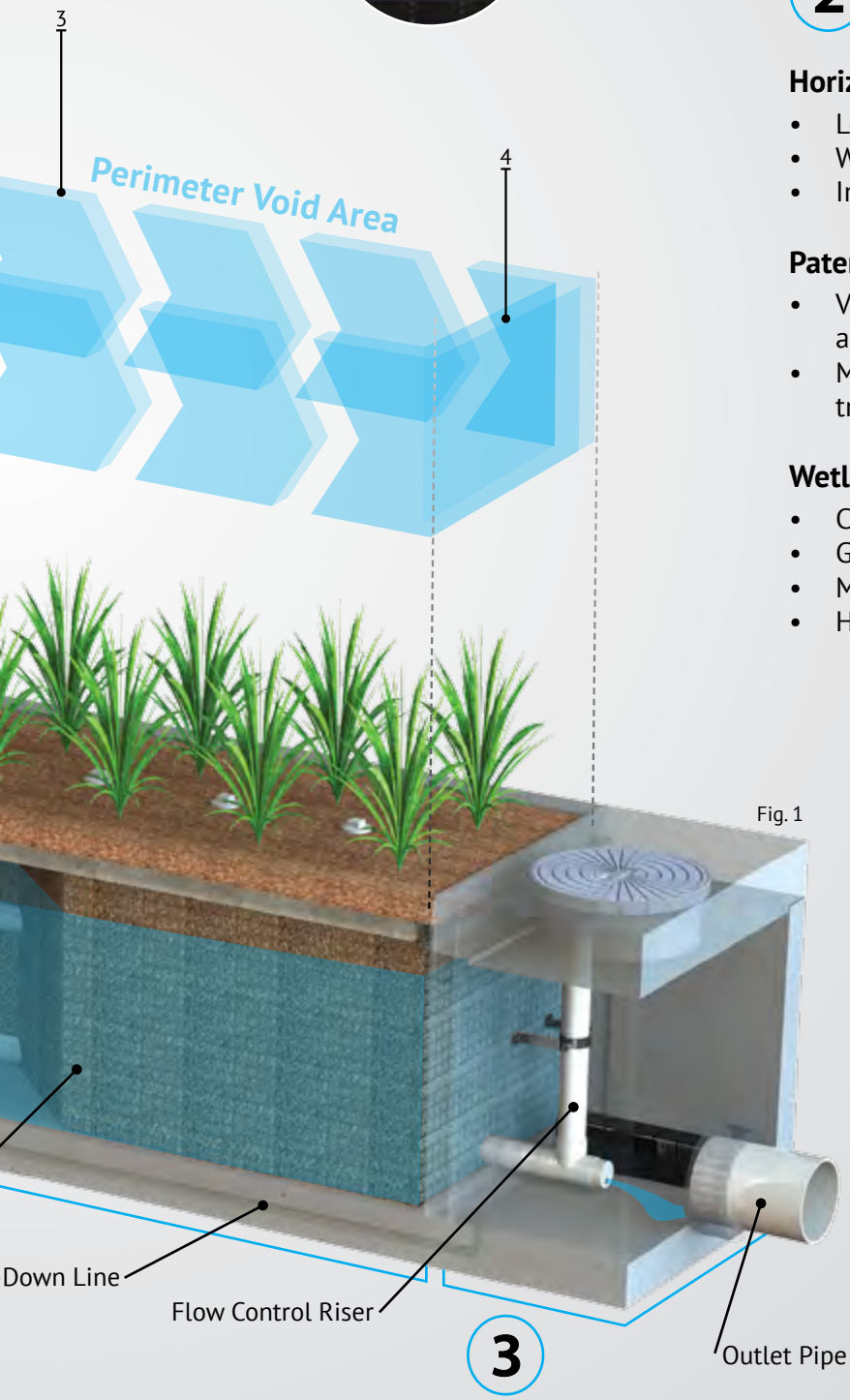


Fig. 1

2 Biofiltration

Horizontal Flow

- Less clogging than downward flow biofilters
- Water flow is subsurface
- Improves biological filtration

Patented Perimeter Void Area

- Vertically extends void area between the walls and the WetlandMEDIA on all four sides.
- Maximizes surface area of the media for higher treatment capacity

WetlandMEDIA

- Contains no organics and removes phosphorus
- Greater surface area and 48% void space
- Maximum evapotranspiration
- High ion exchange capacity and light weight

3 Discharge

Flow Control

- Orifice plate controls flow of water through WetlandMEDIA to a level lower than the media's capacity.
- Extends the life of the media and improves performance

Drain-Down Filter

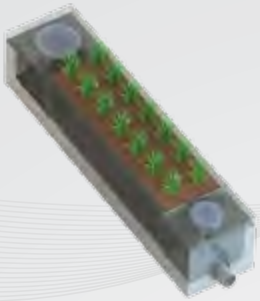
- The Drain-Down is an optional feature that completely drains the pre-treatment chamber
- Water that drains from the pre-treatment chamber between storm events will be treated

Orientations



Side-By-Side

The *Side-By-Side* orientation places the pre-treatment and discharge chamber adjacent to one another with the biofiltration chamber running parallel on either side. This minimizes the system length, providing a highly compact footprint. It has been proven useful in situations such as streets with directly adjacent sidewalks, as half of the system can be placed under that sidewalk. This orientation also offers internal bypass options as discussed below.



End-To-End

The *End-To-End* orientation places the pre-treatment and discharge chambers on opposite ends of the biofiltration chamber therefore minimizing the width of the system to 5 ft (outside dimension). This orientation is perfect for linear projects and street retrofits where existing utilities and sidewalks limit the amount of space available for installation. One limitation of this orientation is bypass must be external.

Bypass

Internal Bypass Weir (Side-by-Side Only)

The *Side-By-Side* orientation places the pre-treatment and discharge chambers adjacent to one another allowing for integration of internal bypass. The wall between these chambers can act as a bypass weir when flows exceed the system's treatment capacity, thus allowing bypass from the pre-treatment chamber directly to the discharge chamber.

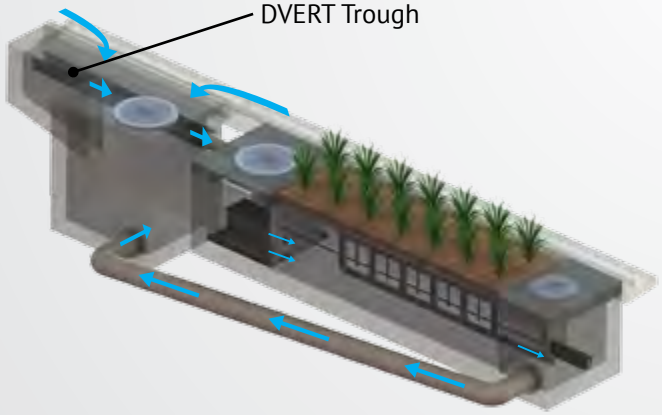
External Diversion Weir Structure

This traditional offline diversion method can be used with the MWS Linear in scenarios where runoff is being piped to the system. These simple and effective structures are generally configured with two outflow pipes. The first is a smaller pipe on the upstream side of the diversion weir - to divert low flows over to the MWS Linear for treatment. The second is the main pipe that receives water once the system has exceeded treatment capacity and water flows over the weir.

Flow By Design

This method is one in which the system is placed just upstream of a standard curb or grate inlet to intercept the first flush. Higher flows simply pass by the MWS Linear and into the standard inlet downstream.

DVERT Low Flow Diversion



This simple yet innovative diversion trough can be installed in existing or new curb and grate inlets to divert the first flush to the MWS Linear via pipe. It works similar to a rain gutter and is installed just below the opening into the inlet. It captures the low flows and channels them over to a connecting pipe exiting out the wall of the inlet and leading to the MWS Linear. The DVERT is perfect for retrofit and green street applications that allows the MWS Linear to be installed anywhere space is available.





Performance

The MWS Linear continues to outperform other treatment methods with superior pollutant removal for TSS, heavy metals, nutrients, hydrocarbons and bacteria. Since 2007 the MWS Linear has been field tested on numerous sites across the country. With it's advanced pre-treatment chamber and innovative horizontal flow biofilter, the system is able to effectively remove pollutants through a combination of physical, chemical, and biological filtration processes. With the same biological processes found in natural wetlands, the MWS Linear harnesses natures ability to process, transform, and remove even the most harmful pollutants.

Approvals

The MWS Linear has successfully met years of challenging technical reviews and testing from some of the most prestigious and demanding agencies in the nation, and perhaps the world.



Washington State DOE Approved

The MWS Linear is approved for General Use Level Designation (GULD) for Basic, Enhanced, and Phosphorus treatment at 1 gpm/ft^2 loading rate. The highest performing BMP on the market for all main pollutant categories.

TSS	Total Phosphorus	Ortho Phosphorus	Nitrogen	Dissolved Zinc	Dissolved Copper	Total Zinc	Total Copper	Motor Oil
85%	64%	67%	45%	66%	38%	69%	50%	95%



DEQ Assignment

The Virginia Department of Environmental Quality assigned the MWS Linear, the highest phosphorus removal rating for manufactured treatment devices to meet the new Virginia Stormwater Management Program (VSMP) Technical Criteria.



MASTEP Evaluation

The University of Massachusetts at Amherst – Water Resources Research Center, issued a technical evaluation report noting removal rates up to 84% TSS, 70% Total Phosphorus, 68.5% Total Zinc, and more.



Rhode Island DEM Approved

Approved as an authorized BMP and noted to achieve the following minimum removal efficiencies: 85% TSS, 60% Pathogens, 30% Total Phosphorus for discharges to freshwater systems, and 30% Total Nitrogen for discharges to saltwater or tidal systems.

Flow Based Sizing

The MWS Linear can be used in stand alone applications to meet treatment flow requirements. Since the MWS Linear is the only biofiltration system that can accept inflow pipes several feet below the surface it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

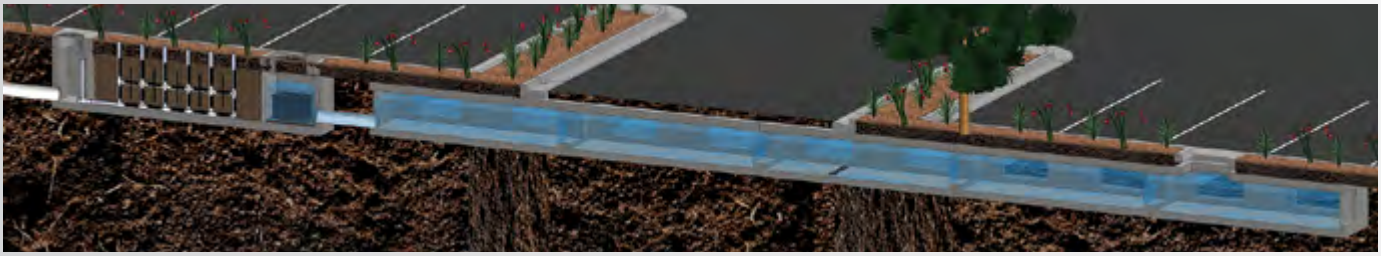


Treatment Flow Sizing Table

Model #	Dimensions	WetlandMedia Surface Area	Treatment Flow Rate (cfs)
MWS-L-4-4	4' x 4'	23 ft^2	0.052
MWS-L-4-6	4' x 6'	32 ft^2	0.073
MWS-L-4-8	4' x 8'	50 ft^2	0.115
MWS-L-4-13	4' x 13'	63 ft^2	0.144
MWS-L-4-15	4' x 15'	76 ft^2	0.175
MWS-L-4-17	4' x 17'	90 ft^2	0.206
MWS-L-4-19	4' x 19'	103 ft^2	0.237
MWS-L-4-21	4' x 21'	117 ft^2	0.268
MWS-L-8-8	8' x 8'	100 ft^2	0.230
MWS-L-8-12	8' x 12'	151 ft^2	0.346
MWS-L-8-16	8' x 16'	201 ft^2	0.462

Volume Based Sizing

Many states require treatment of a water quality volume and do not offer the option of flow based design. The MWS Linear and its unique horizontal flow makes it the only biofilter that can be used in volume based design installed downstream of ponds, detention basins, and underground storage systems.



Treatment Volume Sizing Table

Model #	Treatment Capacity (cu. ft.) @ 24-Hour Drain Down	Treatment Capacity (cu. ft.) @ 48-Hour Drain Down
MWS-L-4-4	1140	2280
MWS-L-4-6	1600	3200
MWS-L-4-8	2518	5036
MWS-L-4-13	3131	6261
MWS-L-4-15	3811	7623
MWS-L-4-17	4492	8984
MWS-L-4-19	5172	10345
MWS-L-4-21	5853	11706
MWS-L-8-8	5036	10072
MWS-L-8-12	7554	15109 > 10,349 cu-ft
MWS-L-8-16	10073	20145

use for the project

Installation

The MWS Linear is simple, easy to install, and has a space efficient design that offers lower excavation and installation costs compared to traditional tree-box type systems. The structure of the system resembles pre-cast catch basin or utility vaults and is installed in a similar fashion.

The system is delivered fully assembled for quick installation. Generally, the structure can be unloaded and set in place in 15 minutes. Our experienced team of field technicians are available to supervise installations and provide technical support.



Maintenance

Reduce your maintenance costs, man hours, and materials with the MWS Linear. Unlike other biofiltration systems that provide no pre-treatment, the MWS Linear is a self-contained treatment train which incorporates simple and effective pre-treatment.

Maintenance requirements for the biofilter itself are almost completely eliminated, as the pre-treatment chamber removes and isolates trash, sediments, and hydrocarbons. What's left is the simple maintenance of an easily accessible pre-treatment chamber that can be cleaned by hand or with a standard vac truck. Only periodic replacement of low-cost media in the pre-filter cartridges is required for long term operation and there is absolutely no need to replace expensive biofiltration media.



Plant Selection

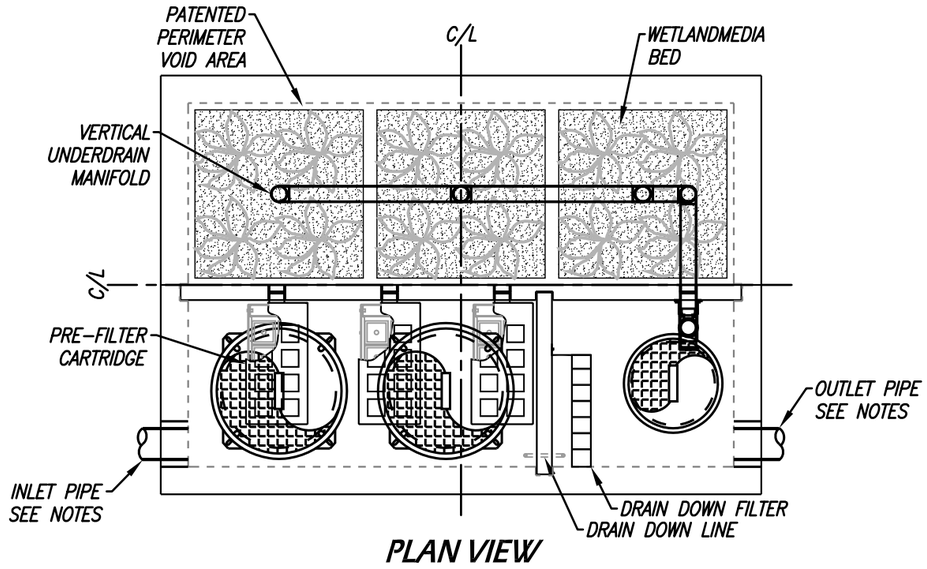
Abundant plants, trees, and grasses bring value and an aesthetic benefit to any urban setting, but those in the MWS Linear do even more - they increase pollutant removal. What's not seen, but very important, is that below grade the stormwater runoff/flow is being subjected to nature's secret weapon: a dynamic physical, chemical, and biological process working to break down and remove non-point source pollutants. The flow rate is controlled in the MWS Linear, giving the plants more "contact time" so that pollutants are more successfully decomposed, volatilized and incorporated into the biomass of The MWS Linear's micro/macro flora and fauna.

A wide range of plants are suitable for use in the MWS Linear, but selections vary by location and climate. View suitable plants by selecting the list relative to your project location's hardy zone.

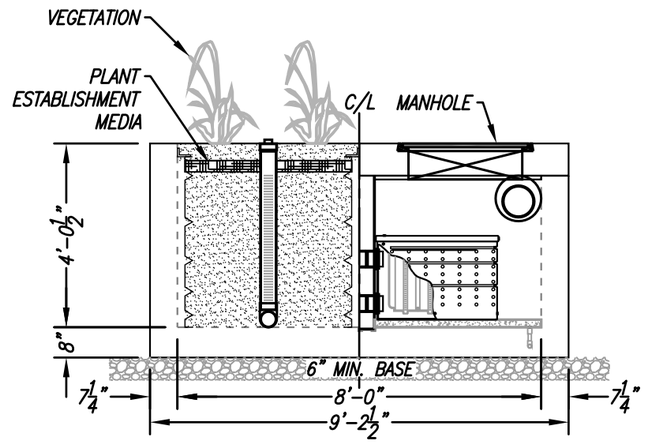
Please visit www.ModularWetlands.com/Plants for more information and various plant lists.



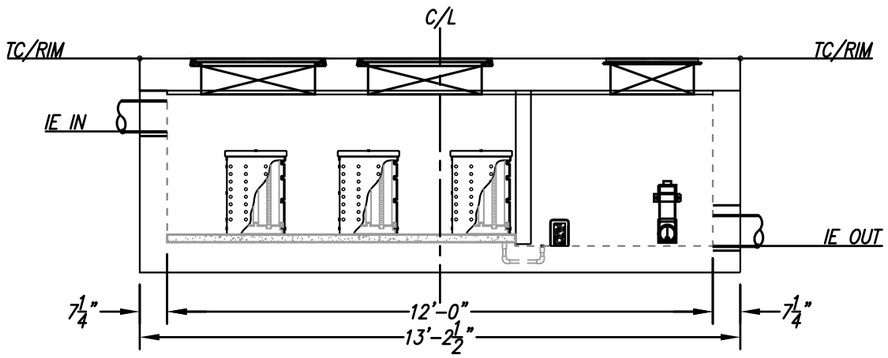
SITE SPECIFIC DATA			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PARKWAY	OPEN PLANTER	PARKWAY
FRAME & COVER	ø30"	N/A	ø24"
WETLANDMEDIA VOLUME (CY)			7.26
WETLANDMEDIA DELIVERY METHOD			TBD
ORIFICE SIZE (DIA. INCHES)			ø2.66"
MAXIMUM PICK WEIGHT (LBS)			TBD
NOTES:			



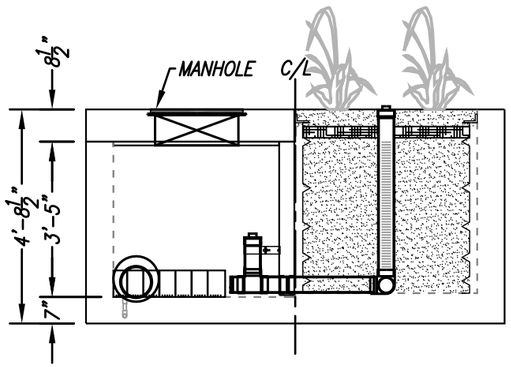
PLAN VIEW



LEFT END VIEW
BIOFILTRATION/PRETREATMENT



ELEVATION VIEW



RIGHT END VIEW
DISCHARGE/BIOFILTRATION

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.

TREATMENT FLOW (CFS)	0.346
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	TBD
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

THE PRODUCT DESCRIBED MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

PROPRIETARY AND CONFIDENTIAL:

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF MODULAR WETLANDS SYSTEMS. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF MODULAR WETLANDS SYSTEMS IS PROHIBITED.

MODULAR WETLANDS
www.ModularWetlands.com | (855) 5MOD-WET

MWS-L-8-12-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

Not Applicable since all site drainage is conveyed indirectly into Lake Elsinore, via the City's MS4 system.

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.** Owner shall install 5mm stainless steel storm drain filters in all on-site catch basin drains and inspect the filters on a monthly schedule. All filters with debris accumulations greater than 25% of capacity shall be cleaned with proper disposal of waste.	☒ **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.**

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.**

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/

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**

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.**

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/

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**

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.**	Driveways, sidewalks and parking lots are shown on the WQMP Exhibit		☒ **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

O & M will be completed in final engineering

WATER QUALITY MANAGEMENT PLAN
STORMWATER BMP
OPERATION AND MAINTENANCE AGREEMENT GUIDANCE

- **Explanation of Operation and Maintenance Agreement**
- **Inspection & Maintenance Agreement**
- **Long Term Maintenance Plan Instructions**
- **BMP Inspections Checklists (Templates)**

Explanation of Operation and Maintenance Agreement

The Operation and Maintenance Agreement is a required component of the Operations and Maintenance Plan (OMP). Guidance on the preparation of the OMP can be found at Chapter 6, Step 5 of the Riverside County, Santa Ana Region WQMP Guidance Document and Template (www.lake-elsinore.org WQMP web page).

The Operation and Maintenance (O&M) Agreement for a site is comprised of the following elements:

1. An Inspection and Maintenance Agreement signed by the developer or BMP owner.

2. A Long-term Maintenance Plan written by the design engineer or plan designer. The maintenance plan must include a description of the stormwater system and its components, inspection priorities and inspection schedule for each component, and a schematic for each BMP.

3. Drawing of easements on a plat or a system location map and decimal longitude and latitude to enable City of Lake Elsinore to locate BMPs as needed.

The O&M Agreement **must be submitted** for City of Lake Elsinore review and approval with the final Water Quality Management Plan. Under the terms of the Inspection and Maintenance Agreement, the property owner or owners are responsible for inspections and maintenance of BMPs and privately-owned stormwater system components outside of the right-of-way. **The O&M Agreement is to be recorded by the Developer/Owner at the Office of the Riverside County Recorder, with a conformed copy provided to the City Engineering Div. before a site is granted occupancy**. If the final configuration of the stormwater system components or BMPs differs from that described in the recorded O&M Agreement, a revised O&M Agreement must be recorded.

An **Inspection and Maintenance Agreement** is contained in this section, as are templates for inspection checklists for each type of structural BMP, including water quality buffers. As noted above, inspection priorities and schedules for each BMP type must be submitted as a component of the long-term maintenance plan for the site. The inspection checklists can serve this purpose, as well as serving as inspection reports for each facility. The template checklists are a general guideline of inspection elements; however, engineers may modify checklists to include inspections and maintenance elements as needed.

RECORDING REQUESTED BY

AND WHEN RECORDED MAIL TO:

Owner Information

TAX STATEMENTS
DO NOT CHANGE MAILING

(Space above this line for City and Recorder's use)

APN'S: 379-315-033

STORMWATER MANAGEMENT FACILITIES OPERATIONS AND MAINTENANCE AGREEMENT AND RIGHT OF ENTRY

PROJECT: Lake Elsinore Apartment Development
Project Address, **32281 Riverside Drive .**
Lake Elsinore, CA 92530

OWNER'S NAMES: Grant Keene

by WJK Development Co.

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INSPECTION AND MAINTENANCE AGREEMENT FOR PRIVATE STORMWATER FACILITIES

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INSPECTION AND MAINTENANCE AGREEMENT FOR STORMWATER MANAGEMENT FACILITIES

Map & Parcel No: APN: 379-315-033

Project Name & Address: 32281 Riverside Drive, Lake Elsinore, CA 92530

THIS AGREEMENT, made this _____ day of _____, 20 ____ , by and between _____,

hereinafter referred to as the "OWNER(S)" of the following property and CITY OF LAKE ELSINORE, a municipal corporation, located in the County of Riverside, State of California hereinafter referred to as the "CITY".

WHEREAS, the OWNER(S) own real property ("Property") in the City of Lake Elsinore, County of Riverside, State of California, more specifically described in Exhibit "A" and show in Exhibit "B" attached hereto and incorporate herein by this reference;

WHEREAS, at the time of initial approval of development project know as

_____

Within the Property described herein, the CITY required the project to employ Best Management Practices (BMP), hereinafter referred to as "BMPs", to minimize pollutants in urban runoff;

WHEREAS, the OWNER(S) has chosen to install and/or implement BMPs as described in the Water Quality Management Plan (WQMP) on file with the CITY to minimize pollutants in urban runoff and to minimize other adverse impacts of urban runoff;

WHEREAS, the OWNER(S) in said WQMP at Section I have identified the funding and maintenance sources for the BMPs. The OWNER(S) has agreed to provide funding for and conduct the maintenance of the stormwater quality facilities identified in Exhibit "C" attached hereto and incorporated herein by this reference;

WHEREAS, the OWNER(S) is aware that periodic and continuous maintenance, including, but not necessarily limited to, filter material replacement and sediment removal, is required to assure peak performance of all BMPs in the WQMP and that furthermore, such maintenance activity will require compliance with all Local, State, or Federal laws and regulations, including those pertaining to confined space and waste disposal methods, in effect at the time such maintenance occurs;

WITNESSETH WE, the OWNER(S), with full authority to execute deeds, mortgages, other covenants, do hereby covenant with the CITY and agree as follows:

1. The OWNER(S) covenant and agree with the CITY that the OWNER(S) shall provide for adequate long term funding and maintenance and continuation of the stormwater quality measures described in the Long Term Maintenance Plan and shown in the location map, deed of easement drawing or plat attached hereto to ensure that the facilities are and remain in

proper working condition in accordance with approved design standards, rules and regulations, and applicable laws. The OWNER(S) shall perform preventative maintenance activities at intervals described in the inspection schedule included in the Long Term Maintenance Plan along with necessary landscaping (grass cutting, etc.) and trash removal as part of regular maintenance. All reasonable precautions shall be exercised by OWNER(S) and OWNER(S) representative or contractor in the removal and extraction of any material(s) from the BMPs and the ultimate disposal of the materials(s) in a manner consistent with all relevant laws and regulations in effect at the time. As may be requested from time to time and provided in the annual report to the CITY, the OWNER shall provide the CITY with documentation identifying the material(s) removed, the quantity, and disposal destination.

2. The OWNER(S) shall submit to the CITY an **annual report and certification prepared by a Registered Civil Engineer by July 1st** of each year. The report shall include the Long Term Maintenance Plan that documents the inspection schedule, times of inspection, remedial actions taken to repair, modify or reconstruct the system, the state of control measures, and notification of any planned change in responsibility for the system.

3. The OWNER(S) shall grant to the CITY or its agent or contractor the right of entry at reasonable times and in a reasonable manner for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the facility at the OWNER(S) expense as provided in paragraph 5 below.

4. The OWNER(S) shall grant to the CITY the necessary easements and rights-of-way and maintain perpetual access from public rights-of-way to the facility for CITY or its agent and contractor.

5. If, upon inspection, the CITY finds that OWNER(S) has failed to properly maintain the facilities, the CITY may order the work performed within ten (10) days. In the event the work is not performed within the specified time, the OWNER(S) agrees to allow the CITY to enter the property and take whatever steps it deems necessary to maintain the stormwater quality facilities. This provision shall not be construed to allow the CITY to erect any structure of a permanent nature on the land of the OWNER(S) without first obtaining written approval of the OWNER(S).

6. The CITY is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the CITY The OWNER(S) shall reimburse the CITY upon demand the costs incurred in the maintenance of the facilities.

7. The CITY may require the OWNER(S) to post security in form and for a time period satisfactory to the CITY to quarantee the performance of the obligations stated herein. Should the OWNER fail to perform the obligations under the Agreement, the CITY may, in the case of a cash bond, act for the OWNER(S) using the proceeds from it, or in the case of a surety bond, require the sureties to perform the obligations of the Agreement. As an additional remedy, the CITY may withdraw any previous stormwater related approval with respect to the property on which BMPs have been installed and/or implemented until such time as OWNER(S) repays to CITY its reasonable costs incurred in accordance with paragraph 5 above.

8. If the OWNER(S) fails to pay the CITY for the above expenses after forty-five (45) days written notice, the OWNER(S) authorizes the CITY to collect said expenses from the

OWNER(S) through appropriate legal action and the OWNER(S) shall be liable for the reasonable expenses of collection, court costs, and attorney fees.

9. The OWNER(S) and the OWNER(S) heirs, administrators, executors, assigns, and any other successor in interest shall indemnify and hold harmless the CITY and its officers, agents and employees for any and all damages, accidents, casualties, occurrences, claims or attorney's fees which might arise or be asserted, in whole or in part, against the CITY from the construction, presence, existence, or maintenance of the stormwater control facilities subject to this AGREEMENT. In the event a claim is asserted against the CITY, its officers, agents or employees, the CITY shall notify OWNER(S) and the OWNER(S) shall defend at OWNER(S) expense any suit based on such claim. If any judgment or claims against the CITY, its officers, agents or employees, shall be allowed, the OWNER(S) shall pay all costs and expenses in connection therewith. The CITY will not indemnify, defend or hold harmless in any fashion the OWNER(S) from any claims arising from any failure, regardless of any language in any attachment or other document that the OWNER(S) may provide.

10. The OWNER(S) shall not be able to transfer, assign or modify its responsibilities with respect to this agreement without the CITY'S written prior consent. Nothing herein shall be construed to prohibit a transfer by OWNER(S

11. No waiver of any provision of this AGREEMENT shall affect the right of any party thereafter to enforce such provision or to exercise any right or remedy available to it in the event of any other default.

12. The OWNER(S) shall record a plat showing and accurately defining the easements for stormwater control facilities. The plat must reference the Instrument Number where this AGREEMENT and its or attachments are recorded and contain a note that the OWNER(S) is responsible for maintaining the stormwater management facilities.

13. The OWNER(S) shall record this AGREEMENT in the Office of the Recorder of Riverside County, California, at the expense of the OWNER(S) and shall constitute notice to all successors and assigns of the title to said Property of the obligation herein set forth, and also a lien in such amount as will fully reimburse the CITY, including interest as herein above set forth, subject to foreclosure in event of default in payment.

14. It is the intent of the parties hereto that burdens and benefits herein undertaken shall constitute a covenant running with the land, and shall be binding upon the OWNER(S) and the OWNER(S) heirs, administrators, executors, assigns, and any other successors in interest and constitute a lien there against OWNER(S) shall provide such notice prior to such successor obtaining an interest in all or part of the Property. Owner shall provide a copy of such notice to the CITY at the same time such notice is provided to the successor.

15. Time is of the essence in the performance of this Agreement.

16. Any notice to a party required or called for in this Agreement shall be served in person, or by deposit in the U.S. Mail, first class postage prepaid, to the address set forth below. Notice(s) shall be deemed effective upon receipt, or seventy-two (72) hours after deposit in the U.S. Mail, whichever is earlier. A party may change a notice address only by providing written notice thereof to the other party.

IF TO CITY: City of Lake Elsinore
Engineering Division
130 South Main Street
Lake Elsinore, CA 92530

IF TO OWNER(S): _____

_____

_____

_____

[SIGNATURES ON NEXT PAGE]

In WITNESS WHEREOF, the OWNER(S) has caused this agreement to be executed this _____ day of _____, 20___.

OWNER(S):

SIGNED: _____

BY: _____
Type Name & Title on line above

FOR: _____
Type Name of Company on line above

SIGNED: _____

BY: _____
Type Name & Title on line above

FOR: _____
Type Name of Company on line above

CITY OF LAKE ELSINORE

BY:_____
City Manager
CITY OF LAKE ELSINORE

ATTEST:

_____
City Clerk
CITY OF LAKE ELSINORE

NOTARIES ON FOLLOWING PAGE

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EXHIBIT A
(Legal Description)

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EXHIBIT B
(Plat Exhibit)

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EXHIBIT C

LONG TERM BMP MAINTENANCE PLAN

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Long Term Maintenance Plan Instructions

The Long Term Maintenance Plan is a component of the Operation and Maintenance Agreement for the development or site. One of the purposes of the Long Term Maintenance Plan is to inform property owners about the system components on their properties, so that they will know the locations and maintenance needs of the components and structural BMPs

Using the Schedule Format provided the Long-Term Maintenance Plan must include or address the following elements:

- Description and locations of stormwater system components to be inspected, prepared by the engineer. GIS Decimal Degree longitude and latitude coordinates of each BMP to be maintained.

- Schedule of inspections and the techniques used to inspect and maintain the systems to ensure that they are functioning properly as designed. Documentation checklists for each type of BMP including the inspection schedule and potential maintenance items that must be addressed. Templates for checklists are found in this document.

- Where and how the trash, sediment and other pollutants removed from the stormwater system will be disposed.

- Schematics of BMPs located on the site.

- Person(s) and phone number(s) of who will be responsible for inspection and maintenance. If the organization that will be responsible is yet to be organized, list the name, address and phone number of the person or entity with interim responsibility.

- Provisions for permanent access and maintenance easements.

Long Term Maintenance Table Instructions: delete word "SAMPLE", delete BMPs listed in table and insert your project specific BMPs in their place.

STORMWATER STRUCTURAL BMP INSPECTION CHECKLIST TEMPLATES
Instructions: delete non-applicable inspection templates; edit 'checklist' to reflect templates included.

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SAMPLE TABLE FOR LONG TERM MAINTENANCE PLAN –

POST CONSTRUCTION BMP LONG TERM MAINTENANCE SCHEDULE

TYPE OF BMP	LOCATION (see attached site plan)	INSPECTION FREQUENCY	MAINTENANCE FREQUENCY	POLLUTANT DISPOSAL METHOD	O&M RESPONSIBLE PERSON	
					NAME	PHONE #
Floguard Catch Basin Insert (1)(2)	Catch basins on Riverside Dr & Walnut (3)	Monthly and after Rain Events	Min. Annually. Additional cleaning as needed	Trash & vegetation – CR&R / Filter – as hazardous waste	John Smith	951-674-4445
Bioretention swale (1)	Along Riverside Drive (3)	Monthly and after Rain Events	Min monthly, with remediation as needed	Landfill as hazardous waste	Tim Jones	951-777-1542
Landscape						

(1) See attached manufacturer data sheets
(2) Access easement to Boos recorded 5-21-13, #234561 – copy attached
(3) See attached site plan

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STORMWATER STRUCTURAL BMP INSPECTION CHECKLIST TEMPLATES

(COMPONENT OF LONG-TERM MAINTENANCE PLAN)

- **ANNUAL CERTIFICATION FORM**
- **WATER QUALITY DETENTION BASIN**
- **CONSTRUCTED WETLANDS**
- **BIORETENTION**
- **SAND FILTER**
- **INFILTRATION TRENCH**
- **ENHANCED SWALE/GRASS CHANNEL/FILTER STRIP**
- **BUFFERS**
- **PROPRIETARY BMP**
- **GREEN ROOF**
- **PERMEABLE PAVEMENT**

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CITY OF LAKE ELSINORE

ANNUAL WATER QUALITY MANAGEMENT PLAN
FACILITY CERTIFICATION

*Complete one form for each water quality facility or facility type (ex. all catch basins on one form, separate form for each water quality basin) – if additional forms are needed contact rthompson@lake-elsinore.org or make copies using this form as a master. Return completed form(s) with Civil Engineer's Certification and/or direct questions to Rita Thompson, Engineering Division, City of Lake Elsinore by **JULY 1st**.*

1. Facility Information:

Facility/Project Name: _____

Facility/Project Address: _____

Owner/Operator Name(s): _____

Mailing Address: _____

City/State/Zip: _____

Telephone No./Email.: P:_____/ EM: _____

2. Water Quality Facility Information:

Water Quality Facility Type (circle one):

BASIN - Detention Bioretention Retention Regional Detention DeSilting

OTHER - Infiltration Trench BioSwale Vegetated Swale Catch Basin Inserts Underground Detention/Infiltration

Proprietary - _____

Water Quality Facility Location on Site:

Provide either a copy of site plan highlighting location of water quality facility or decimal degree longitude (-117.123456) and latitude (33.123456) - not required for catch basin inserts.

Longitude: _____ Latitude: _____

3. Facility Inspections: Summarize below and/or attach separate documentation of inspections performed during the past year:

Date: _____ / Results/Cleanout:_____

Date: _____ / Results/Cleanout: _____

Date: _____ / Results/Cleanout:_____

Date: _____ / Results/Cleanout:_____

Attach a separate sheet for additional inspections and/or results of inspections as needed.

4. Certification:

I, being a Registered Professional Engineer in California, do hereby certify that to the best of my knowledge and belief based upon personal observation that the above facility approved under the Water Quality Management Plan / SWPPP is clear of debris and operational as of _____.
date

_____
Signature / RCE License No. / Expiration Date

_____ Seal
Name - please print or type

Firm or Agency: _____

Address: _____ / City/State/Zip: _____

Telephone _____Email: _____

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Detention Basin Inspections and Maintenance Checklist

Site Name: Owner Change since last inspection? Y ☐ N ☐

Location:

Owner Name:

Address: Phone Number

Site Status:

Date: Time: Site conditions:

Inspection Frequency Key: A=annual; M=monthly; S=after major storms. ***BOLD*** *= recommended frequency.*

Inspection Items	Inspection Frequency	Inspected? (Yes/No)	Maintenance Needed? (Yes/No)	Comments/Description
Embankment and Emergency Spillway				
Vegetation healthy?	**A** / M / **S**			
Erosion on embankment?	**A** / M / **S**			
Animal burrows in embankment?	**A** / M / **S**			
Cracking, sliding, bulging of dam?	**A** / M / **S**			
Drains blocked or not functioning?	**A** / M / **S**			
Leaks or seeps on embankment?	**A** / M / **S**			
Emergency spillway obstructed?	**A** / M / **S**			
Slope protection failure functional?	**A** / M / **S**			
Erosion in/around emergency spillway?	**A** / M / **S**			
Other (describe)	**A** / M / **S**			
Riser and Principal Spillway				
Low-flow orifice functional?	**A** / M / **S**			
Trash rack (Debris removal needed? Corrosion noted?)	**A** / M / **S**			
Sediment buildup in riser?	**A** / M / S			
Concrete/masonry condition (Cracks or displacement? Spalling?)	**A** / M / S			
Metal pipe in good condition?	**A** / M / S			
Control valve operation?	**A** / M / S			
Pond drain valve operation?	**A** / M / S			
Outfall channels function, not eroding?	**A** / M / S			
Other (describe)	**A** / M / S			
Sediment Forebays				
Sedimentation description				
Sediment cleanout needed (over 50% full)?	**A** / M / **S**			

Inspection Items	Inspection Frequency	Inspected? (Yes/No)	Maintenance Needed? (Yes/No)	Comments/Description
Permanent Pool Areas (if applicable)				
Undesirable vegetation growth?	A / **M** / S			
Visible pollution?	A / **M** / S			
Shoreline erosion?	A / **M** / S			
Erosion at outfalls into pond?	A / **M** / S			
Headwalls and endwalls in good condition?	A / **M** / S			
Encroachment into pond or easement area by other activities?	A / **M** / S			
Evidence of sediment accumulation?	**A** / M / S			
Dry Pond Areas (if applicable)				
Vegetation adequate?	A / **M** / S			
Undesirable vegetation or woody plant growth?	A / **M** / S			
Excessive sedimentation?	**A** / M / S			
Hazards				
Have there been complaints from residents?	A / **M** / S			
Public hazards noted?	A / **M** / S			

Inspector Comments: _____

_____

_____

_____

Overall Condition of Facility: ☐: Acceptable ☐ Unacceptable

If any of the above Inspection items are checked “Yes” for “Maintenance Needed”, list Maintenance actions and their completion dates below:

Maintenance Action Needed	Due Date

The next routine inspection is scheduled for approximately: _____

Inspected by: (signature) _____

Inspected by: (printed) _____

Constructed Wetlands
Inspections and Maintenance Checklist

Site Name: Owner Change since last inspection? Y ☐ N ☐

Location:

Owner Name:

Address: Phone Number

Site Status:

Date: Time: Site conditions:

Constructed Wetland Type: _____

Inspection Frequency Key: A=annual; M=monthly; S=after major storms. ***BOLD*** *= recommended frequency.*

Inspection Items	**Inspection Frequency**	**Inspected? (Yes/No)**	**Maintenance Needed? (Yes/No)**	**Comments/Description**
Embankment and Emergency Spillway				
Vegetation healthy?	**A** / M / **S**			
Erosion on embankment?	**A** / M / **S**			
Animal burrows in embankment?	**A** / M / **S**			
Cracking, sliding, bulging of dam?	**A** / M / **S**			
Drains blocked or not functioning?	**A** / M / **S**			
Leaks or seeps on embankment?	**A** / M / **S**			
Emergency spillway obstructed?	**A** / M / **S**			
Slope protection failure functional?	**A** / M / **S**			
Erosion in/around emergency spillway?	**A** / M / **S**			
Other (describe)	**A** / M / **S**			
Riser and Principal Spillway				(describe type: concrete pipe, slotted weir, channel, etc.)
Low-flow orifice functional?	**A** / M / **S**			
Trash rack (Debris removal needed? Corrosion noted?)	**A** / M / **S**			
Sediment buildup in riser?	**A** / M / S			
Concrete/masonry condition (Cracks or displacement? Spalling?)	**A** / M / S			
Metal pipe in good condition?	**A** / M / S			
Control valve operation?	**A** / M / S			
Pond drain valve operation?	**A** / M / S			
Outfall channels function, not eroding?	**A** / M / S			
Other (describe)	**A** / M / S			
Sediment Forebays				
Sedimentation description				
Sediment cleanout needed (over 50% full)?	**A** / M / **S**			

Inspection Items	Inspection Frequency	Inspected? (Yes/No)	Maintenance Needed? (Yes/No)	Comments/Description
Constructed Wetland Ponding Areas (if applicable)				
Wetland vegetation present and healthy?	A / **M** / S			
Vegetation removal needed?	A / **M** / S			
Floatable debris removal needed?	A / **M** / S			
Shoreline problem?	A / **M** / S			
Erosion at outfalls into pond?	A / **M** / S			
Headwalls and endwalls in good condition?	A / **M** / S			
Encroachment into pond or easement area?	**A** / M / S			
Hazards				
Have there been complaints from residents?	A / **M** / S			
Public hazards noted?	A / **M** / S			

Inspector Comments: _____

_____

_____

_____

Overall Condition of Facility: ☐: Acceptable ☐ Unacceptable

If any of the above Inspection items are checked "Yes" for "Maintenance Needed", list Maintenance actions and their completion dates below:

Maintenance Action Needed	Due Date

The next routine inspection is scheduled for approximately: _____

Inspected by: (signature) _____

Inspected by: (printed) _____

Bioretention
Inspections and Maintenance Checklist

Site Name: _____ Owner Change since last inspection? Y ☐ N ☐

Location: _____

Owner Name: _____

Address: _____ Phone Number _____

Site Status: _____

Date: _____ Time: _____ Site conditions: _____

Inspection Frequency Key: A=annual; M=monthly; S=after major storms. ***BOLD*** *= recommended frequency*

Inspection Items	**Inspection Frequency**	**Inspected? (Yes/No)**	**Maintenance Needed? (Yes/No)**	**Comments/Description**
Treatment Area				
Treatment area free of debris?	A / **M** / S			
Inlets and Outlets unobstructed?	A / **M** / S			
Is there standing water longer than 24 hours after a storm event?	A / M / **S**			
Evidence of erosion?	A / **M** / **S**			
Vegetation				
Surrounding area fully stabilized? (no evidence of material eroding into Bioretention area)	**A** / M / S			
Grass height not more than 6 inches?	A / **M** / S			
Plant height not less than design water depth?	**A** / M / S			
Plant composition according to approved plan?	**A** / M / S			
Vegetation overgrown?	**A** / M / S			
Other				
Hazards				
Have there been complaints from residents?	A / **M** / S			
Public hazards noted?	A / **M** / S			

Inspector Comments: _____

_____

_____

_____

Overall Condition of Facility: ☐: Acceptable ☐ Unacceptable

If any of the above Inspection items are checked "Yes" for "Maintenance Needed", list Maintenance actions and their

completion dates below:

Maintenance Action Needed	Due Date

The next routine inspection is scheduled for approximately: _____

Inspected by: (signature) _____

Inspected by: (printed) _____

Sand Filter
Inspections and Maintenance Checklist

Site Name: Owner Change since last inspection? Y ☐ N ☐

Location:

Owner Name:

Address: Phone Number

Site Status:

Date: Time: Site conditions:

Sand Filter Type: Perimeter Filter ____ Underground Filter ____ Above Ground Filter ____

Inspection Frequency Key: A=annual; M=monthly; S=after major storms. ***BOLD*** *= recommended frequency*

Inspection Items	**Inspection Frequency**	**Inspected? (Yes/No)**	**Maintenance Needed? (Yes/No)**	**Comments/Description**
Debris Removal				
Sand filter free of debris?	A / **M** / S			
Inlets and Outlets free of debris?	A / **M** / S			
Vegetation				
Surrounding area fully stabilized? (no evidence of material eroding into sand filter)	**A** / M / S			
Water Retention (where required)				
Water holding chambers at normal pool?	A / **M** / S			
Evidence of erosion?				
Sediment Deposition				
Filtration chamber free of sediments?	**A** / M / S			
Sedimentation chamber not more than 50% full?	**A** / M / S			
Structural Components				
Any evidence of structural deterioration?	**A** / M / S			
Grates in good condition?	**A** / M / S			
Spalling or cracking of structural parts?	**A** / M / S			
Outlet/Overflow Spillway	**A** / M / S			
Other				
Noticeable odors?	**A** / M / S			
Evidence of flow bypassing facility?	**A** / M / S			

Inspector Comments: _____

_____

_____

_____

Overall Condition of Facility: ☐: Acceptable ☐ Unacceptable

If any of the above Inspection items are checked “Yes” for “Maintenance Needed”, list Maintenance actions and their completion dates below:

Maintenance Action Needed	Due Date

The next routine inspection is scheduled for approximately: _____

Inspected by: (signature) _____

Inspected by: (printed) _____

Infiltration Trench
Inspections and Maintenance Checklist

Site Name: Owner Change since last inspection? Y ☐ N ☐

Location:

Owner Name:

Address: Phone Number

Site Status:

Date: Time: Site conditions:

Inspection Frequency Key: A=annual; M=monthly; S=after major storms. ***BOLD*** *= recommended frequency*

Inspection Items	Inspection Frequency	Inspected? (Yes/No)	Maintenance Needed? (Yes/No)	Comments/Description
Debris Removal				
Trench surface clear of debris?	A / **M** / S			
Inlets / inflow pipes free of debris?	A / **M** / S			
Overflow spillway clear of debris?	A / **M** / S			
Vegetation				
Mowing done when necessary?	A / **M** / S			
Fertilizer per specification?	A / **M** / S			
Any evidence of erosion?	A / **M** / S			
Contributing drainage area stabilized?	A / **M** / S			
Dewatering)				
Trench dewaters between storms?	A / **M** / S			
Sediment traps, forebays, or pretreatment swales				
Obviously trapping sediment?	**A** / M / S			
Greater than 50% of original storage volume remaining?	**A** / M / S			
Sediment removal of trench				
Any evidence of sedimentation in trench?	**A** / M / S			
Does sediment accumulation currently require removal?	**A** / M / S			
Inlets				
Good condition (no need for repair)?	**A** / M / S			
Any evidence of erosion?	**A** / M / S			
Outlets/overflow spillway				
Good Condition (no need for repair)?	**A** / M / S			
Any evidence of erosion?	**A** / M / S			

Inspection Items	Inspection Frequency	Inspected? (Yes/No)	Maintenance Needed? (Yes/No)	Comments/Description
Aggregate repairs				
Surface of aggregate clean?	**A** / M / S			
Top layer of stone in need of replacement?	**A** / M / S			
Trench in need of rehabilitation?	**A** / M / S			
Observation wells				
Evidence of clogging (failure to percolate)?	A / **M** / S			

Inspector Comments: _____

_____

_____

_____

Overall Condition of Facility: ☐: Acceptable ☐ Unacceptable

If any of the above Inspection items are checked “Yes” for “Maintenance Needed”, list Maintenance actions and their completion dates below:

Maintenance Action Needed	Due Date

The next routine inspection is scheduled for approximately: _____

Inspected by: (signature) _____

Inspected by: (printed) _____

CITY OF LAKE ELSINORE
DREAM EXTREME

Enhanced Swales / Grass Channels / Filter Strips
Inspections and Maintenance Checklist

Site Name: Owner Change since last inspection? Y ☐ N ☐

Location:

Owner Name:

Address: Phone Number

Site Status:

Date: Time: Site conditions:

Inspection Frequency Key: A=annual; M=monthly; S=after major storms. ***BOLD*** *= recommended frequency*

Inspection Items	Inspection Frequency	Inspected? (Yes/No)	Maintenance Needed? (Yes/No)	Comments/Description
Debris Removal				
Facility and adjacent area free of debris?	A / **M** / S			
Inlets and Outlets free of debris?	A / **M** / S			
Any dumping of yard wastes into facility?	A / **M** / S			
Litter (branches) removed?	A / **M** / S			
Vegetation				
Surrounding area fully stabilized? (no evidence of material eroding into sand filter)	A / **M** / S			
Grass mowed?	A / **M** / S			
Plant height not less than design water depth?	A / **M** / S			
Fertilized per specification?	A / **M** / S			
Plan composition according to approved plan?	A / **M** / S			
Unauthorized or inappropriate plantings?	A / **M** / S			
Plants healthy? (no diseased or dying vegetation)	A / **M** / S			
Evidence of plants stressed from inadequate watering?	A / **M** / S			
Filtration Capacity				
Clogging from oil or grease?	A / **M** / S			
Facility dewaters between storms?	A / **M** / S			
Water Retention (where required)				
Water holding chambers at normal pool?	A / **M** / S			
Evidence of erosion?				
Inspection Items	**Inspection Frequency**	**Inspected? (Yes/No)**	**Maintenance Needed? (Yes/No)**	**Comments/Description**

Check dams and energy dissipators/sumps				
Any evidence of sedimentation built up?	**A** / M / **S**			
Are sumps grater than 50% full of sediment?	**A** / M / **S**			
Any evidence of erosion and down stream toe of drop structures?	**A** / M / **S**			
Sediment Deposition				
Swale clean of sediments?	**A** / M / S			
Sediment not more than 20% of swale design depth?	**A** / M / S			
Outlet/Overflow Spillway				
In good condition?	**A** / M / S			
Any evidence of erosion?	**A** / M / S			
Any evidence of blockages?	**A** / M / S			
Has facility been filled or blocked inappropriately?	**A** / M / S			

Inspector Comments: _____

_____

_____

_____

Overall Condition of Facility: ☐: Acceptable ☐ Unacceptable

If any of the above Inspection items are checked “Yes” for “Maintenance Needed”, list Maintenance actions and their completion dates below:

Maintenance Action Needed	Due Date

The next routine inspection is scheduled for approximately: _____

Inspected by: (signature) _____

Inspected by: (printed) _____

Buffers
Inspections and Maintenance Checklist

Site Name: _____ Owner Change since last inspection? Y ☐ N ☐

Location: _____

Owner Name: _____

Address: _____ Phone Number _____

Site Status: _____

Date: _____ Time: _____ Site conditions: _____

Inspection Frequency Key: A=annual; M=monthly; S=after major storms. ***BOLD*** *= recommended frequency*

Inspection Items	Inspection Frequency	Inspected? (Yes/No)	Maintenance Needed? (Yes/No)	Comments/Description
Vegetation				
Mowing done when necessary?	A / **M** / S			
Surrounding area fully stabilized? (no evidence of eroding material into buffer)?	A / **M** / S			
Vegetation healthy?	A / **M** / S			
Level Spreader				
Vegetation is healthy?	A / **M** / S			
Lip of spreader shows no signs of erosion?	A / **M** / S			
Sediment noted in spreader?	A / **M** / S			

Inspector Comments: _____

_____

_____

_____

Overall Condition of Facility: ☐: Acceptable ☐ Unacceptable

If any of the above Inspection items are checked “Yes” for “Maintenance Needed”, list Maintenance actions and their completion dates below:

Maintenance Action Needed	Due Date

The next routine inspection is scheduled for approximately: _____

Inspected by: (signature) _____

Inspected by: (printed) _____

CITY OF LAKE ELSINORE
DREAM EXTREME

Proprietary BMP
Inspections and Maintenance Checklist

Site Name: Owner Change since last inspection? Y ☐ N ☐

Location:

Owner Name:

Address: Phone Number

Site Status:

Date: Time: Site conditions:

Inspection Frequency Key: A=annual; M=monthly; S=after major storms. ***BOLD*** *= recommended frequency*

Inspection Items	Inspection Frequency	Inspected? (Yes/No)	Maintenance Needed? (Yes/No)	Comments/Description
Debris Removal				
Adjacent area free of debris?	A / **M** / S			
Inlets and Outlets free of debris?	A / **M** / S			
Facility (internally) free of debris?	A / **M** / S			
Vegetation				
Surroundng area fully stabilized? (no evidence of material eroding into sand filter)	**A** / M / S			
Grass mowed?	A / **M** / S			
Water Retention (where required)				
Water holding chambers at normal pool?	A / **M** / S			
Evidence of erosion?	A / **M** / S			
Sediment Deposition				
Filtration chamber free of sediments?	**A** / M / S			
Sedimentation chamber not more than 50% full?	**A** / M / S			
Structural Components				
Any evidence of structural deterioration?	**A** / M / S			
Grates in good condition?	**A** / M / S			
Spalling or cracking of structural parts?	**A** / M / S			
Outlet/Overflow Spillway	**A** / M / S			
Other				
Noticeable odors?	**A** / M / S			
Any evidence of filter(s) clogging?	A / **M** / S			
Evidence of flow bypassing facility?	**A** / M / S			

Inspector Comments: _____

_____

_____

_____

Overall Condition of Facility: ☐: Acceptable ☐ Unacceptable

If any of the above Inspection items are checked “Yes” for “Maintenance Needed”, list Maintenance actions and their completion dates below:

Maintenance Action Needed	Due Date

The next routine inspection is scheduled for approximately: _____

Inspected by: (signature) _____

Inspected by: (printed) _____

Green Roof Inspections and Maintenance Checklist

Site Name: Owner Change since last inspection? Y ☐ N ☐

Location:

Owner Name:

Address: Phone Number

Site Status:

Date: Time: Site conditions:

Green Roof Type: Extensive Roof Cover ☐ Intensive Roof Garden ☐

Inspection Frequency Key: A=annual; M=monthly; S=after major storms; G=monthly during April-September growing season
***BOLD** = recommended frequency*

Inspection Items	Inspection Frequency	Inspected? (Yes/No)	Maintenance Needed? (Yes/No)	Comments/Description
Debris Removal				
Gutter inlets blocked by plan debris/trash or plant growth hindered by debris?	A / **M** / S / G			
Inlets and Outlets free of debris?	A / **M** / S			
Vegetation				
Any evidence of additional irrigation needs?	A / M / S / **G**			
Fallen leaves/debris interfering with plant health?	A / **M** / S / G			
Any dead plants to be replaced?	A / **M** / S / G			
Any need for weeding/mowing/trimming?	A / M / S / **G**			
Soil Substrate/Growing Medium				
Any evidence of wind/water erosion?	**A** / M / S / G			
Structural Components				
Any evidence of structural deterioration?	**A** / M / S / G			
Load-bearing walls in good condition?	**A** / M / S / G			
Spalling or cracking of structural parts?	**A** / M / S / G			
Access/maintenance routes maintained and free of debris?	A / **M** / S / G			
Other				
Any locations of standing water that may harbor insect infestations?	A / M / **S** / G			
	A / M / S / G			

Inspector Comments: _____

_____

_____

_____

Overall Condition of Facility: ☐: Acceptable ☐ Unacceptable

If any of the above Inspection items are checked “Yes” for “Maintenance Needed”, list Maintenance actions and their completion dates below:

Maintenance Action Needed	Due Date

The next routine inspection is scheduled for approximately: _____

Inspected by: (signature) _____

Inspected by: (printed) _____

Permeable Pavement
Inspections and Maintenance Checklist

Site Name: Owner Change since last inspection? Y ☐ N ☐

Location:

Owner Name:

Address: Phone Number

Site Status:

Date: Time: Site conditions:

Inspection Frequency Key: A=annual; M=monthly; S=after major storms. ***BOLD*** *recommended frequency*

Inspection Items	Inspection Frequency	Inspected? (Yes/No)	Maintenance Needed? (Yes/No)	Comments/Description
Pavement Area				
Pavement area free of debris?	A / **M** / S			
Inlets and Outlets unobstructed?	A / **M** / S			
Is any water standing after a storm event?	A / M / **S**			
Any evidence of clogged pores that require vacuum-sweeping?	A / **M** / S			
Access to pervious pavement (egress and ingress routes) safe and efficient?	A / **M** / S			
Vegetation				
Adjacent area fully stabilized (no evidence of eroding material into or from pervious pavement area)?	**A** / M / S			
Any noticeable irrigation needs?	A / **M** / S			
Fallen leaves/plant debris collecting in paving area?	A / **M** / S			
Grass height over 4 inches?	A / **M** / S			
Vegetation health affected by oil/grease from vehicles?	**A** / M / S			
Other	**A** / M / S			
Hazards				
Obstructions or debris affecting overflows/emergency spillway?	A / **M** / S			
Load-bearing capability of pavement intact?	A / **M** / S			

Inspector Comments: _____

_____

_____

_____

Overall Condition of Facility: ☐: Acceptable ☐ Unacceptable

If any of the above Inspection items are checked “Yes” for “Maintenance Needed”, list Maintenance actions and their completion dates below:

Maintenance Action Needed	Due Date

The next routine inspection is scheduled for approximately: _____

Inspected by: (signature) _____

Inspected by: (printed) _____

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information



The Updated Model Water Efficient Landscape Ordinance

CALIFORNIA DEPARTMENT OF WATER RESOURCES

Landscapes are essential to the quality of life in California. They provide areas for recreation, enhance the environment, clean the air and water, prevent erosion, offer fire protection and replace ecosystems lost to development.

California's economic prosperity and environmental quality are dependant on an adequate supply of water for beneficial uses. In California, about half of the urban water used is for landscape irrigation. Ensuring **efficient landscapes** in new developments and reducing water waste in existing landscapes are the most cost-effective ways to stretch our limited water supplies and ensure that we continue to have sufficient water for California to prosper.





The Water Conservation in Landscaping Act of 2006 (Assembly Bill 1881, Laird) requires cities, counties, and charter cities and charter counties, to adopt landscape water conservation ordinances by January 1, 2010. Pursuant to this law, the Department of Water Resources (DWR) has prepared a Model Water Efficient Landscape Ordinance (Model Ordinance) for use by local agencies. The Model Ordinance was approved by the Office of Administrative Law on September 10, 2009. The Model Ordinance became effective on September 10.

All local agencies must adopt a water efficient landscape ordinance by **January 1, 2010**. The local agencies may adopt the state Model Ordinance, or craft an ordinance to fit local conditions. In addition, several local agencies may collaborate and craft a region-wide ordinance. In any case, the adopted ordinance must be as effective as the Model Ordinance in regard to water conservation.

For more information, please visit our web site at
http://www.water.ca.gov/wateruseefficiency/landscapeordinance/

DWR October 2009

Model Water Efficient Landscape Ordinance
CALIFORNIA DEPARTMENT OF WATER RESOURCES



Important points to consider...

Water purveyors have an important role.

The enabling statute was directed to local agencies that make land use decisions and approve land development. Active participation by water purveyors can make the implementation, enforcement and follow-up actions of an ordinance more effective.

Most new and rehabilitated landscapes are subject to a water efficient landscape ordinance. Public landscapes and private development projects including developer installed single family and multi-family residential landscapes with at least 2500 sq. ft. of landscape area are subject to the Model Ordinance .

Homeowner provided landscaping at single family and multi-family homes are subject to the Model Ordinance if the landscape area is at least 5000 sq. ft

Existing landscapes are also subject to the Model Ordinance.

Water waste is common in landscapes that are poorly designed or not well maintained. Water waste (from runoff, overspray, low head drainage, leaks and excessive amounts of applied irrigation water in landscapes is prohibited by Section 2, Article X of the California Constitution.

Any landscape installed prior to January 1, 2010, that is at least one acre in size may be subject to irrigation audits, irrigation surveys or water use analysis programs for evaluating irrigation system performance and adherence to the Maximum Applied Water Allowance as defined in the 1992 Model Ordinance with an Evapotranspiration Adjustment Factor (ETAF) of 0.8. Local agencies and water purveyors (designated by the local agency) may institute these or other programs to increase efficiency in existing landscapes.

All new landscapes will be assigned a water budget.

The water budget approach is a provision in the statute that ensures a landscape is allowed sufficient water. There are two water budgets in the Model Ordinance; the Maximum Applied Water Allowance (MAWA) and the Estimated Total Water Use (ETWU).

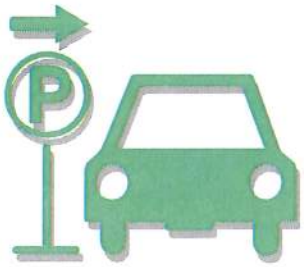
The MAWA, is the water budget used for compliance and is an annual water allowance based on landscape area, local evapotranspiration and ETAF of 0.7. The ETWU is an annual water use estimation for design purposes and is based on the water needs of the plants actually chosen for a given landscape. The ETWU may not exceed the MAWA.

Water efficient landscapes offer multiple benefits.

Water efficient landscapes will stretch our limited water supplies. Other benefits include reduced irrigation runoff, reduced pollution of waterways, less property damage, less green waste, increased drought resistance and a smaller carbon footprint.

The Department of Water Resources will offer technical assistance.

The Department plans to offer a series of workshops, publications and other assistance for successful adoption and implementation of the Model Ordinance or local water efficient landscape ordinances. Information regarding these resources may be found on the DWR website: **http://www.water.ca.gov/wateruseefficiency/landscapeordinance/**
Questions on the Model Ordinance may be sent by e-mail to DWR staff at: **mweo@water.ca.gov.**



R-3
AUTOMOBILE PARKING

The activities outlined in this fact sheet target the following pollutants:	
Sediment	x
Nutrients	
Bacteria	
Foaming Agents	
Metals	X
Hydrocarbons	X
Hazardous Materials	x
Pesticides and Herbicides	
Other	

Parked automobiles may contribute pollutants to the storm drain because poorly maintained vehicles may leak fluids containing hydrocarbons, metals, and other pollutants. In addition, heavily soiled automobiles may drop clods of dirt onto the parking surface, contributing to the sediment load when runoff is present. During rain events, or wash-down activities, the pollutants may be carried into the storm drain system. The pollution prevention activities outlined in this fact sheets are used to prevent the discharge of pollutants to the storm drain system.

Think before parking your car. Remember - The ocean starts at your front door.

Required Activities

- If required, vehicles have to be removed from the street during designated street sweeping/cleaning times.
- If the automobile is leaking, place a pan or similar collection device under the automobile, until such time as the leak may be repaired.
- Use dry cleaning methods to remove any materials deposited by vehicles (e.g. adsorbents for fluid leaks, sweeping for soil clod deposits).

Recommended Activities

- Park automobiles over permeable surfaces (e.g. gravel, or porous cement).
- Limit vehicle parking to covered areas.
- Perform routine maintenance to minimize fluid leaks, and maximize fuel efficiency.

For additional information contact:
County of Orange, OC **Watershed**
Main: (714) 955-0600/ 24hr Water Pollution Discharge Hotline 1-877-89-SPILL
or visit our website at: www.ocwatersheds.com



R-5
DISPOSAL OF PET WASTES

Pet wastes left in the environment may introduce solids, bacteria, and nutrients to the storm drain. The type and quantity of waste will dictate the proper disposal method. Small quantities of waste are best disposed with regular trash or flushed down a toilet. Large quantities of wastes from herbivore animals may be composted for subsequent use or disposal to landfill.

The activities outlined in this fact sheet target the following pollutants:	
Sediment	x
Nutrients	x
Bacteria	x
Foaming Agents	
Metals	
Hydrocarbons	
Hazardous Materials	
Pesticides and Herbicides	
Other	

Pick up after your pet! It's as easy as 1-2-3. 1) Bring a bag. 2) Clean it up. 3) Dispose of it properly (toilet or trash). The pollution prevention activities outlined in this fact sheets are used to prevent the discharge of pollutants to the storm drain system.

Think before you dispose of any pet wastes. Remember - The ocean starts at your front door.

Required Activities

- All pet wastes must be picked up and properly disposed of. Pet waste should be disposed of in the regular trash, flushed down a toilet, or composted as type and quantities dictate.
- Properly dispose of unused flea control products (shampoo, sprays, or collars).
- Manure produced by livestock in uncovered areas should be removed at least daily for composting, or storage in water-tight container prior to disposal. Never hose down to stream or storm drain. Composting or storage areas should be configured and maintained so as not to allow contact with runoff. Compost may be donated to greenhouses, nurseries, and botanical parks. Topsoil companies and composting centers may also accept composted manure.
- Line waste pits or trenches with an impermeable layer, such as thick plastic sheeting.
- When possible, allow wash water to infiltrate into the ground, or collect in an area that is routed to the sanitary sewer.
- Confine livestock in fenced in areas except during exercise and grazing times. Restrict animal access to creeks and streams, preferably by fencing.

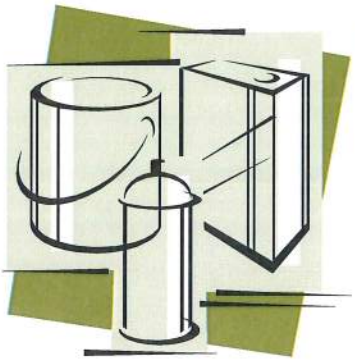
For additional information contact:
County of Orange, OC **Watershed**
Main: (714) 955-0600/ 24hr Water Pollution Discharge Hotline 1-877-89-SPILL
or visit our website at: www.ocwatersheds.com

- Install gutters that will divert roof runoff away from livestock areas.

Recommended Activities

- In order to properly dispose of pet waste, carry bags, pooper-scooper, or equivalent to safely pick up pet wastes while walking with pets.
- Bathe pets indoors and use less toxic shampoos. When possible, have pets professionally groomed.
- Properly inoculate your pet in order to maintain their health and reduce the possibility of pathogens in pet wastes.
- Maintain healthy and vigorous pastures with at least three inches of leafy material.
- Consider indoor feeding of livestock during heavy rainfall, to minimize manure exposed to potential runoff.
- Locate barns, corrals, and other high use areas on portions of property that either drain away from or are located distant form nearby creeks or storm drains.

For additional information contact:
County of Orange, OC **Watershed**
Main: (714) 955-0600/ 24hr Water Pollution Discharge Hotline 1-877-89-SPILL
or visit our website at: www.ocwatersheds.com



R-7
HOUSEHOLD HAZARDOUS WASTE

Household hazardous wastes (HHW) are defined as waste materials which are typically found in homes or similar sources, which exhibit characteristics such as: corrosivity, ignitability, reactivity, and/or toxicity, or are listed as hazardous materials by EPA.

The activities outlined in this fact sheet target the following pollutants:	
Sediment	
Nutrients	
Bacteria	
Foaming Agents	x
Metals	x
Hydrocarbons	x
Hazardous Materials	x
Pesticides and Herbicides	x
Other	x

List of most common HHW products:

Drain openers
Oven cleaners
Wood and metal cleaners and polishes
Automotive oil and fuel additives
Grease and rust solvents
Carburetor and fuel injection cleaners
Starter fluids
Batteries
Paint Thinners
Paint strippers and removers
Adhesives
Herbicides
Pesticides
Fungicides/wood preservatives

Many types of waste can be recycled, however options for each waste type are limited. Recycling is always preferable to disposal of unwanted materials. All gasoline, antifreeze, waste oil, and lead-acid batteries can be recycled. Latex and oil-based paint can be reused, as well as recycled. Materials that cannot be reused or recycled should be disposed of at a properly permitted landfill.

Think before disposing of any household hazardous waste. Remember - The ocean starts at your front door.

RECYCLE USED OIL

Required Activities

- Dispose of HHW at a local collection facility. Call (714) 834-6752 for the household hazardous waste center closest to your area.
- Household hazardous materials must be stored indoors or under cover, and in closed and labeled containers.
- If safe, contain, clean up, and properly dispose all household hazardous waste spills. If an unsafe condition exists, call 911 to activate the proper response team.

Recommended Activities

- Use non-hazardous or less-hazardous products.
- Participate in HHW reuse and recycling. Call (714) 834-6752 for the participating household hazardous waste centers.

The California Integrated Waste Management Board has a Recycling Hotline (800) 553-2962, that provides information and recycling locations for used oil.

For additional information contact:
County of Orange, OC **Watershed**
Main: (714) 955-0600/ 24hr Water Pollution Discharge Hotline 1-877-89-SPILL
or visit our website at: www.ocwatersheds.com



R-8
WATER CONSERVATION

Excessive irrigation and/or the overuse of water is often the most significant factor in transporting pollutants to the storm drain system. Pollutants from a wide variety of sources including automobile repair and maintenance, automobile washing, automobile parking, home and garden care activities and pet care may dissolve in the water and be transported to the storm drain. In addition, particles and materials coated with fertilizers and pesticides may be suspended in the flow and be transported to the storm drain.

The activities outlined in this fact sheet target the following pollutants:	
Sediment	x
Nutrients	x
Bacteria	x
Foaming Agents	x
Metals	x
Hydrocarbons	x
Hazardous Materials	x
Pesticides and Herbicides	x
Other	x

Hosing off outside areas to wash them down not only consumes large quantities of water, but also transports any pollutants, sediments, and waste to the storm drain system. The pollution prevention activities outlined in this fact sheets are used to prevent the discharge of pollutants to the storm drain system.

Think before using water. Remember - The ocean starts at your front door.

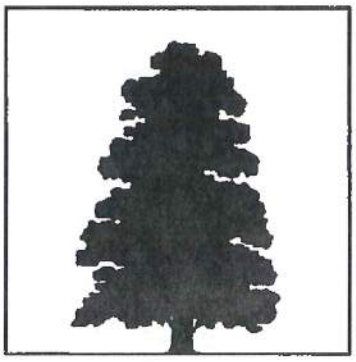
Required Activities

- Irrigation systems must be properly adjusted to reflect seasonal water needs.
- Do not hose off outside surfaces to clean, sweep with a broom instead.

Recommended Activities

- Fix any leaking faucets and eliminate unnecessary water sources.
- Use xeroscaping and drought tolerant landscaping to reduce the watering needs.
- Do not over watering lawns or gardens. Over watering wastes water and promotes diseases.
- Use a bucket to re-soak sponges/rags while washing automobiles and other items outdoors. Use hose only for rinsing.
- Wash automobiles at a commercial car wash employing water recycling.

For additional information contact:
County of Orange, OC **Watershed**
Main: (714) 955-0600/ 24hr Water Pollution Discharge Hotline 1-877-89-SPILL
or visit our website at: www.ocwatersheds.com



FP-2

LANDSCAPE MAINTENANCE

The model procedures described below focus on minimizing the discharge of pesticides and fertilizers, landscape waste, trash, debris, and other pollutants to the storm drain system and receiving waters. Landscape maintenance practices may involve one or more of the following activities:

1. **Mowing, Trimming/Weeding, and Planting**
2. **Irrigation**
3. **Fertilizer and Pesticide Management**
4. **Managing Landscape Waste**
5. **Erosion Control**

POLLUTION PREVENTION:

Pollution prevention measures have been considered and incorporated in the model procedures. Implementation of these measures may be more effective and reduce or eliminate the need to implement other more complicated or costly procedures. Possible pollution prevention measures for landscape maintenance include:

- Implement an integrated pest management (IPM) program. IPM is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools. Refer to Appendix D, Fertilizer and Pesticide Management Guidance for further details.
- Choose low water using flowers, trees, shrubs, and groundcover.
- Appropriate maintenance (i.e. properly timed fertilizing, weeding, pest control, and pruning) will preserve the landscapes water efficiency.
- Once per year, educate municipal staff on pollution prevention measures.

MODEL PROCEDURES:

1. Mowing, Trimming/Weeding, and Planting

Mowing, Trimming/Weeding

✓ Whenever possible, use mechanical methods of vegetation removal rather than applying herbicides. Use hand weeding where practical.

- ✓ When conducting mechanical or manual weed control, avoid loosening the soil, which could erode into streams or storm drains.
- ✓ Use coarse textured mulches or geotextiles to suppress weed growth and reduce the use of herbicides.
- ✓ Do not blow or rake leaves, etc. into the street or place yard waste in gutters or on dirt shoulders. Sweep up any leaves, litter or residue in gutters or on street.
- ✓ Collect lawn and garden clippings, pruning waste, tree trimmings, and weeds. Chip if necessary, and compost or dispose of at a landfill (see waste management section of this procedure sheet).
- ✓ Place temporarily stockpiled material away from watercourses, and berm or cover stockpiles to prevent material releases to storm drains.

Planting

- ✓ Where feasible, retain and/or plant selected native vegetation whose features are determined to be beneficial. Native vegetation usually requires less maintenance (e.g., irrigation, fertilizer) than planting ornamental vegetation.
- ✓ When planting or replanting consider using low water use groundcovers.

OPTIONAL:

- Careful soil mixing and layering techniques using a topsoil mix or composted organic material can be used as an effective measure to reduce herbicide use and watering.

2. Irrigation

- ✓ Utilize water delivery rates that do not exceed the infiltration rate of the soil.
- ✓ Use timers appropriately or a drip system to prevent runoff and then only irrigate as much as is needed.
- ✓ Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.
- ✓ Where practical, use automatic timers to minimize runoff.
- ✓ Use popup sprinkler heads in areas with a lot of activity or where there is a chance the pipes may be broken. Consider the use of mechanisms that reduce water flow to sprinkler heads if broken.
- ✓ If re-claimed water is used for irrigation, ensure that there is no runoff from the landscaped area(s).
- ✓ If bailing of muddy water is required (e.g. when repairing a water line leak), do not put it in the storm drain; pour over landscaped areas.

3. Fertilizer and Pesticide Management

Usage

- ✓ Utilize a comprehensive management system that incorporates integrated pest management techniques.
- ✓ Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.
- ✓ Educate and train employees on use of pesticides and in pesticide application techniques to prevent pollution.
- ✓ Pesticide application must be under the supervision of a California qualified pesticide applicator.
- ✓ When applicable use the least toxic pesticides that will do the job. Avoid use of copper-based pesticides if possible.
- ✓ Do not mix or prepare pesticides or fertilizers for application near storm drains.
- ✓ Prepare the minimum amount of pesticide needed for the job and use the lowest rate that will effectively control the pest.
- ✓ Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.
- ✓ Calibrate fertilizer and pesticide application equipment to avoid excessive application.
- ✓ Periodically test soils for determining proper fertilizer use.
- ✓ Sweep pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- ✓ Inspect pesticide/fertilizer equipment and transportation vehicles daily.
- ✓ Refer to Appendix D for further guidance on Fertilizer and Pesticide management

OPTIONAL:

- Work fertilizers into the soil rather than dumping or broadcasting them onto the surface.
- Use beneficial insects where possible to control pests (green lacewings, ladybugs, praying mantis, ground beetles, parasitic nematodes, trichogramma wasps, seedhead weevils, and spiders prey on detrimental pest species).
- Use slow release fertilizers whenever possible to minimize leaching.

Scheduling

- ✓ Do not use pesticides if rain is expected within 24 hours.
- ✓ Apply pesticides only when wind speeds are low (less than 5 mph).

Disposal

- ✓ Purchase only the amount of pesticide that you can reasonably use in a given time period (month or year depending on the product).
- ✓ Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- ✓ Dispose of empty pesticide containers according to the instructions on the container label.

4. Managing Landscape Waste

Also see Waste Handling and Disposal procedure sheet

- ✓ Compost leaves, sticks, or other collected vegetation or dispose of at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- ✓ Place temporarily stockpiled material away from watercourses and storm drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- ✓ Reduce the use of high nitrogen fertilizers that produce excess growth requiring more frequent mowing or trimming.
- ✓ Inspection of drainage facilities should be conducted to detect illegal dumping of clippings/cuttings in or near these facilities. Materials found should be picked up and properly disposed of.
- ✓ Landscape wastes in and around storm drain inlets should be avoided by either using bagging equipment or by manually picking up the material.

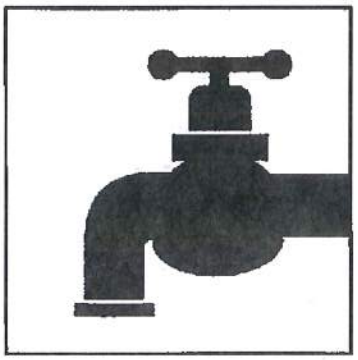
5. Erosion Control

Also see Waste Handling and Disposal procedure sheet

- ✓ Maintain vegetative cover on medians and embankments to prevent soil erosion. Apply mulch or leave clippings to serve as additional cover for soil stabilization and to reduce the velocity of storm water runoff.
- ✓ Minimize the use of disking as a means of vegetation management because the practice may result in erodable barren soil.
- ✓ Confine excavated materials to pervious surfaces away from storm drain inlets, sidewalks, pavement, and ditches. Material must be covered if rain is expected.

LIMITATIONS:

Alternative pest/weed controls may not be available, suitable, or effective in every case.



FP-6

WATER AND SEWER UTILITY OPERATION AND MAINTENANCE

Although the operation and maintenance of public utilities are not considered themselves a chronic source of stormwater pollution, some activities and accidents can result in the discharge of pollutants that can pose a threat to both human health and the quality of receiving waters if they enter the storm drain system. Activities associated with the operation and maintenance of water and sewer utilities to prevent and handle such incidents include the following:

1. **Water Line Maintenance**
2. **Sanitary Sewer Maintenance**
3. **Spill/Leak/Overflow Control, Response, and Containment**

Cities that do not provide maintenance of water and sewer utilities should coordinate with the contracting agency responsible for these activities and ensure that these model procedures are followed.

POLLUTION PREVENTION:

Pollution prevention measures have been considered and incorporated in the model procedures. Implementation of these measures may be more effective and reduce or eliminate the need to implement other more complicated or costly procedures. Possible pollution prevention measures for water and sewer utility operation and maintenance include:

- Inspect potential non-storm water discharge flow paths and clear/cleanup any debris or pollutants found (i.e. remove trash, leaves, sediment, and wipe up liquids, including oil spills).
- Once per year, educate municipal staff on pollution prevention measures.

MODEL PROCEDURES:

1. Water Line Maintenance

Procedures can be employed to reduce pollutants from discharges associated with water utility operation and maintenance activities. Planned discharges may include fire hydrant testing, flushing water supply mains after new construction, flushing lines due to complaints of taste and odor, dewatering mains for maintenance work. Unplanned discharges from treated, recycled water, raw water, and groundwater systems operation and maintenance activities can occur from water main breaks, sheared fire hydrants, equipment malfunction, and operator error.

Planned Discharges

✓ For planned discharges use one of the following options:

- Reuse water for dust suppression, irrigation, or construction compaction
- Discharge to the sanitary sewer system with approval
- Discharge to the storm drain system or to a creek using applicable pollution control measures listed below (this option is ONLY applicable to uncontaminated pumped ground water, water line flushing, fire hydrant testing and flushing, discharges from potable water sources other than water main breaks) and may require a permit from the Regional Water Quality Control Board.

✓ If water is discharged to a storm drain inlet (catch basin), control measures must be put in place to control potential pollutants (i.e. sediment, chlorine, etc.). Examples of some storm drain inlet protection options include:

- Silt fence – appropriate where the inlet drains a relatively flat area.
- Gravel and wire mesh sediment filter – Appropriate where concentrated flows are expected.
- Wooden weir and fabric – use at curb inlets where a compact installation is desired.

✓ Prior to discharge, inspect discharge flow path and clear/cleanup any debris or pollutants found (i.e. remove trash, leaves, sediment, and wipe up liquids, including oil spills).

✓ Select appropriate pollution control measure(s) considering the receiving system (i.e. curb inlet, drop inlet, culvert, creek, etc.) and ensure that the control device(s) fit properly.

✓ General design considerations for inlet protection devices include the following:

- The device should be constructed such that cleaning and disposal of trapped sediment is made easy, while minimizing interference with discharge activities.
- Devices should be constructed so that any standing water resulting from the discharge will not cause excessive inconvenience or flooding/damage to adjacent land or structures.

✓ The effectiveness of control devices must be monitored during the discharge period and any necessary repairs or modifications made as needed.

OPTIONAL:

- Sediment removal may be enhanced by placing filter fabric, gravel bags, etc. at storm drain inlets.

Unplanned Discharges

✓ Stop the discharge as quickly as possible by turning off water source.

✓ Inspect flow path of the discharged water:

- Control erosion along the flow path.
- Identify areas that may produce significant sediment or gullies, use sandbags to redirect the flow.
- Identify erodible areas which may need to be repaired or protected during subsequent repairs or corrective actions

✓ If repairs or corrective action will cause additional discharges of water, select the appropriate procedures for erosion control, chlorine residual, turbidity, and chemical additives. Prevent potential pollutants from entering the flow path and ensure that no additional discharged water enters storm drain inlets.

2. Sanitary Sewer Maintenance

Applicable to municipalities who own and operated a sewage collection system. Facilities that are covered under this program include sanitary sewer pipes and pump stations owned and operated by the Permittee. The owner of the sanitary sewer facilities is the entity responsible for carrying out this prevention and response program.

Sewer System Cleaning

- ✓ Sewer lines should be cleaned on a regular basis to remove grease, grit, and other debris that may lead to sewer backups.
- ✓ Establish routine maintenance program. Cleaning should be conducted at an established minimum frequency and more frequently for problem areas such as restaurants that are identified
- ✓ Cleaning activities may require removal of tree roots and other identified obstructions.

Preventative and Corrective Maintenance

- ✓ During routine maintenance and inspection note the condition of sanitary sewer structures and identify areas that need repair or maintenance. Items to note may include the following:
  - cracked/deteriorating pipes
  - leaking joints/seals at manhole
  - frequent line plugs
  - line generally flows at or near capacity
  - suspected infiltration or exfiltration
- ✓ Document suggestions and requests for repair and report the information to the appropriate manager or supervisor.
- ✓ Prioritize repairs based on the nature and severity of the problem. Immediate clearing of blockage or repair is required where an overflow is currently occurring or for urgent problems that may cause an imminent overflow (e.g. pump station failures, sewer line ruptures, sewer line blockages). These repairs may be temporary until scheduled or capital improvements can be completed.
- ✓ Review previous sewer maintenance records to help identify "hot spots" or areas with frequent maintenance problems and locations of potential system failure.

3. Spill/Leak/Overflow Control, Response, and Containment

Control

Also see Drainage System procedures sheet

- ✓ Refer to countywide *Illicit Discharge Detection and Elimination Program.* Components of this program include:
  - Investigation/inspection and follow-up
  - Elimination of illicit discharges and connections
  - Enforcement of ordinances
  - Respond to sewage spills

- Facilitate public reporting of illicit discharges and connections. A citizen's hotline for reporting observed overflow conditions should be established to supplement the field screening efforts being conducted by the Principal Permittee.

Response and Containment

- ✓ Establish lead department/agency responsible for spill response and containment. Provide coordination within departments.
- ✓ When a spill, leak, and/or overflow occurs, keep sewage from entering the storm drain system to the maximum extent practicable by covering or blocking storm drain inlets or by containing and diverting the sewage away from open channels and other storm drain facilities (using sandbags, inflatable dams, etc.).
- ✓ If a spill reaches the storm drain notify County of Orange Health Care Agency through Control One at (714) 628-7208.
- ✓ Remove the sewage using vacuum equipment or use other measures to divert it back to the sanitary sewer system.
- ✓ Record required information at the spill site.
- ✓ Perform field tests as necessary to determine the source of the spill.
- ✓ Develop additional notification procedures regarding spill reporting as needed.

LIMITATIONS:

Private property access rights needed to perform testing along storm drain right-of-ways. Requirements of municipal ordinance authority for suspected source verification testing necessary for guaranteed rights of entry.

REFERENCES:

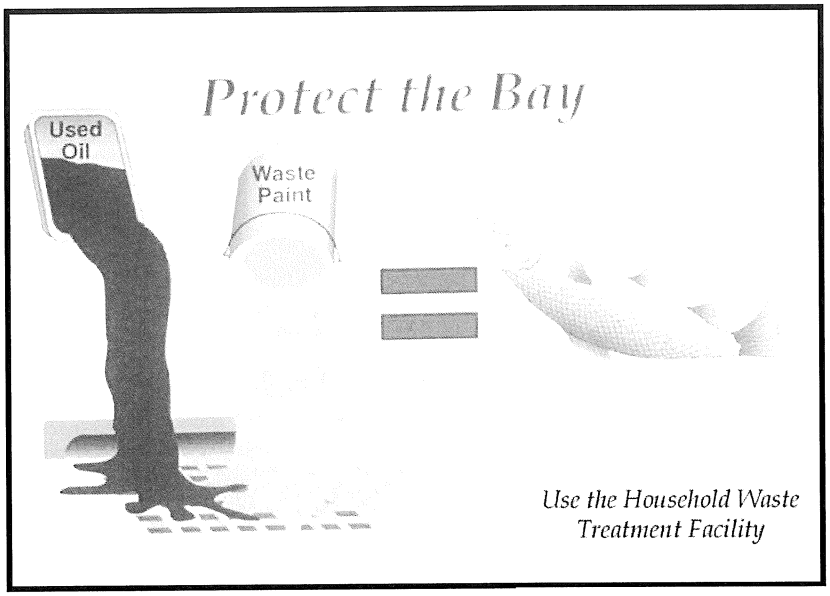
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Los Angeles County Stormwater Quality. Public Agency Activities Model Program. On-line: http://ladpw.org/wmd/npdes/public_TC.cfm

Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

Santa Clara Valley Urban Runoff Pollution Prevention Program. Water Utility Pollution Prevention Plan.

Non-Stormwater Discharges SC-10



Graphic by: Margie Winter

Objectives

- Contain
- Educate
- Reduce/Minimize

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓
Oxygen Demanding	✓

Description

Non-stormwater discharges are those flows that do not consist entirely of stormwater. For municipalities non-stormwater discharges present themselves in two situations. One is from fixed facilities owned and/or operated by the municipality. The other situation is non-stormwater discharges that are discovered during the normal operation of a field program. Some non-stormwater discharges do not include pollutants and may be discharged to the storm drain. These include uncontaminated groundwater and natural springs. There are also some non-stormwater discharges that typically do not contain pollutants and may be discharged to the storm drain with conditions. These include car washing, and surface cleaning. However, there are certain non-stormwater discharges that pose environmental concern. These discharges may originate from illegal dumping or from internal floor drains, appliances, industrial processes, sinks, and toilets that are connected to the nearby storm drainage system. These discharges (which may include: process waste waters, cooling waters, wash waters, and sanitary wastewater) can carry substances (such as paint, oil, fuel and other automotive fluids, chemicals and other pollutants) into storm drains. The ultimate goal is to effectively eliminate non-stormwater discharges to the stormwater drainage system through implementation of measures to detect, correct, and enforce against illicit connections and illegal discharges.

Approach

The municipality must address non-stormwater discharges from its fixed facilities by assessing the types of non-stormwater discharges and implementing BMPs for the discharges determined to pose environmental concern. For field programs the field staff must be

CASQA California Stormwater Quality Association

trained to now what to look for regarding non-stormwater discharges and the procedures to follow in investigating the detected discharges.

Suggested Protocols

Fixed Facility

General

- Post "No Dumping" signs with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Stencil storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Landscaping and beautification efforts of hot spots might also discourage future dumping, as well as provide open space and increase property values.
- Lighting or barriers may also be needed to discourage future dumping.

Illicit Connections

- Locate discharges from the fixed facility drainage system to the municipal storm drain system through review of "as-built" piping schematics.
- Use techniques such as smoke testing, dye testing and television camera inspection (as noted below) to verify physical connections.
- Isolate problem areas and plug illicit discharge points.

Visual Inspection and Inventory

- Inventory and inspect each discharge point during dry weather.
- Keep in mind that drainage from a storm event can continue for several days following the end of a storm and groundwater may infiltrate the underground stormwater collection system. Also, non-stormwater discharges are often intermittent and may require periodic inspections.

Review Infield Piping

- Review the "as-built" piping schematic as a way to determine if there are any connections to the stormwater collection system.
- Inspect the path of floor drains in older buildings.

Smoke Testing

- Smoke testing of wastewater and stormwater collection systems is used to detect connections between the two systems.

- During dry weather the stormwater collection system is filled with smoke and then traced to sources. The appearance of smoke at the base of a toilet indicates that there may be a connection between the sanitary and the stormwater system.

Dye Testing

- A dye test can be performed by simply releasing a dye into either your sanitary or process wastewater system and examining the discharge points from the stormwater collection system for discoloration.

TV Inspection of Storm Sewer

- TV Cameras can be employed to visually identify illicit connections to the fixed facility storm drain system.

Illegal Dumping

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- Clean up spills on paved surfaces with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
- For larger spills, a private spill cleanup company or Hazmat team may be necessary.
- See fact sheet SC-11 Spill Prevention, Control, and Clean Up.

Field Program

General

- Develop clear protocols and lines of communication for effectively prohibiting non-stormwater discharges, especially ones that involve more than one jurisdiction and those that are not classified as hazardous, which are often not responded to as effectively as they need to be.
- Stencil storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- See SC-74 Stormwater Drainage System Maintenance for additional information.

Field Inspection

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- During routine field program maintenance field staff should look for evidence of illegal discharges or illicit connection:
  - Is there evidence of spills such as paints, discoloring, etc.
  - Are there any odors associated with the drainage system
  - Record locations of apparent illegal discharges/illicit connections and notify appropriate investigating agency.
- If trained, conduct field investigation of non-stormwater discharges to determine whether they pose a threat to water quality.

Recommended Complaint Investigation Equipment

- Field Screening Analysis
  - pH paper or meter
  - Commercial stormwater pollutant screening kit that can detect for reactive phosphorus, nitrate nitrogen, ammonium nitrogen, specific conductance, and turbidity
  - Sample jars
  - Sample collection pole
  - A tool to remove access hole covers
- Laboratory Analysis
  - Sample cooler
  - Ice
  - Sample jars and labels
  - Chain of custody forms.
- Documentation
  - Camera
  - Notebook
  - Pens
  - Notice of Violation forms

- Educational materials

Reporting

- A database is useful for defining and tracking the magnitude and location of the problem.
- Report prohibited non-stormwater discharges observed during the course of normal daily activities so they can be investigated, contained and cleaned up or eliminated.
- Document that non-stormwater discharges have been eliminated by recording tests performed, methods used, dates of testing, and any onsite drainage points observed.
- Maintain documentation of illicit connection and illegal dumping incidents, including significant conditionally exempt discharges that are not properly managed.

Enforcement

- Educate the responsible party if identified on the impacts of their actions, explain the stormwater requirements, and provide information regarding Best Management Practices (BMP), as appropriate. Initiate follow-up and/or enforcement procedures.
- If an illegal discharge is traced to a commercial, residential or industrial source, conduct the following activities or coordinate the following activities with the appropriate agency:
  - Contact the responsible party to discuss methods of eliminating the non-stormwater discharge, including disposal options, recycling, and possible discharge to the sanitary sewer (if within POTW limits).
  - Provide information regarding BMPs to the responsible party, where appropriate.
  - Begin enforcement procedures, if appropriate.
  - Continue inspection and follow-up activities until the illicit discharge activity has ceased.
- If an illegal discharge is traced to a commercial or industrial activity, coordinate information on the discharge with the jurisdiction's commercial and industrial facility inspection program.

Training

- Train technical staff to identify and document illegal dumping incidents.
- Well-trained employees can reduce human errors that lead to accidental releases or spills. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur. Employees should be familiar with the Spill Prevention Control and Countermeasure Plan.
- Train employees to identify non-stormwater discharges and report them to the appropriate departments.
- Train staff who have the authority to conduct surveillance and inspections, and write citations for those caught illegally dumping.

- Train municipal staff responsible for surveillance and inspection in the following:
  - OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).
  - OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and federal OSHA 29 CFR 1910.146).
  - Procedural training (field screening, sampling, smoke/dye testing, TV inspection).
- Educate the identified responsible party on the impacts of his or her actions.

Spill Response and Prevention

- See SC-11 Spill Prevention Control and Clean Up

Other Considerations

- The elimination of illegal dumping is dependent on the availability, convenience, and cost of alternative means of disposal. The cost of fees for dumping at a proper waste disposal facility are often more than the fine for an illegal dumping offense, thereby discouraging people from complying with the law. The absence of routine or affordable pickup service for trash and recyclables in some communities also encourages illegal dumping. A lack of understanding regarding applicable laws or the inadequacy of existing laws may also contribute to the problem.
- Municipal codes should include sections prohibiting the discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.
- Many facilities do not have accurate, up-to-date schematic drawings.
- Can be difficult to locate illicit connections especially if there is groundwater infiltration.

Requirements

Costs

- Eliminating illicit connections can be expensive especially if structural modifications are required such re-plumbing cross connections under an existing slab.
- Minor cost to train field crews regarding the identification of non-stormwater discharges. The primary cost is for a fully integrated program to identify and eliminate illicit connections and illegal dumping. However, by combining with other municipal programs (i.e. pretreatment program) cost may be lowered.
- Municipal cost for containment and disposal may be borne by the discharger.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

What constitutes a "non-stormwater" discharge?

- Non-stormwater discharges are discharges not made up entirely of stormwater and include water used directly in the manufacturing process (process wastewater), air conditioning condensate and coolant, non-contact cooling water, cooling equipment condensate, outdoor secondary containment water, vehicle and equipment wash water, landscape irrigation, sink and drinking fountain wastewater, sanitary wastes, or other wastewaters.

Permit Requirements

- Current municipal NPDES permits require municipalities to effectively prohibit non-stormwater discharges unless authorized by a separate NPDES permit or allowed in accordance with the current NPDES permit conditions. Typically the current permits allow certain non-stormwater discharges in the storm drain system as long as the discharges are not significant sources of pollutants. In this context the following non-stormwater discharges are typically allowed:
  - Diverted stream flows;
  - Rising found waters;
  - Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20));
  - Uncontaminated pumped ground water;
  - Foundation drains;
  - Springs;
  - Water from crawl space pumps;
  - Footing drains;
  - Air conditioning condensation;
  - Flows from riparian habitats and wetlands;
  - Water line and hydrant flushing ;
  - Landscape irrigation;
  - Planned and unplanned discharges from potable water sources;
  - Irrigation water;
  - Individual residential car washing; and
  - Lawn watering.

Municipal facilities subject to industrial general permit requirements must include a certification that the stormwater collection system has been tested or evaluated for the presence of non-stormwater discharges. The state's General Industrial Stormwater Permit requires that non-stormwater discharges be eliminated prior to implementation of the facility's SWPPP.

Illegal Dumping

- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)
  - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - Responsible parties

Outreach

One of the keys to success of reducing or eliminating illegal dumping is increasing the number of people on the street who are aware of the problem and who have the tools to at least identify the incident, if not correct it. There we a number of ways of accomplishing this:

- Train municipal staff from all departments (public works, utilities, street cleaning, parks and recreation, industrial waste inspection, hazardous waste inspection, sewer maintenance) to recognize and report the incidents.
- Deputize municipal staff who may come into contact with illegal dumping with the authority to write illegal dumping tickets for offenders caught in the act (see below).
- Educate the public. As many as 3 out of 4 people do not understand that in most communities the storm drain does not go to the wastewater treatment plant. Unfortunately, with the heavy emphasis in recent years on public education about solid waste management, including recycling and household hazardous waste, the sewer system (both storm and sanitary) has been the likely recipient of cross-media transfers of waste.
- Provide the public with a mechanism for reporting incidents such as a hot line and/or door hanger (see below).
- Help areas where incidents occur more frequently set up environmental watch programs (like crime watch programs).
- Train volunteers to notice and report the presence and suspected source of an observed pollutant to the appropriate public agency.

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- Non-stormwater discharges are discharges not made up entirely of stormwater and include water used directly in the manufacturing process (process wastewater), air conditioning condensate and coolant, non-contact cooling water, cooling equipment condensate, outdoor secondary containment water, vehicle and equipment wash water, landscape irrigation, sink and drinking fountain wastewater, sanitary wastes, or other wastewaters.

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  - Footing drains;
  - Air conditioning condensation;
  - Flows from riparian habitats and wetlands;
  - Water line and hydrant flushing ;
  - Landscape irrigation;
  - Planned and unplanned discharges from potable water sources;
  - Irrigation water;
  - Individual residential car washing; and
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Municipal facilities subject to industrial general permit requirements must include a certification that the stormwater collection system has been tested or evaluated for the presence of non-stormwater discharges. The state's General Industrial Stormwater Permit requires that non-stormwater discharges be eliminated prior to implementation of the facility's SWPPP.

Storm Drain Stenciling

- Stencil storm drain inlets with a message to prohibit illegal dumpings, especially in areas with waste handling facilities.
- Encourage public reporting of improper waste disposal by a HOTLINE number stenciled onto the storm drain inlet.
- See Supplemental Information section of this fact sheet for further detail on stenciling program approach.

Oil Recycling

- Contract collection and hauling of used oil to a private licensed used oil hauler/recycler.
- Comply with all applicable state and federal regulations regarding storage, handling, and transport of petroleum products.
- Create procedures for collection such as; collection locations and schedule, acceptable containers, and maximum amounts accepted.
- The California Integrated Waste Management Board has a Recycling Hotline, (800) 553-2962, that provides information and recycling locations for used oil.

Household Hazardous Waste

- Provide household hazardous waste (HHW) collection facilities. Several types of collection approaches are available including permanent, periodic, or mobile centers, curbside collection, or a combination of these systems.

Training

- Train municipal employees and contractors in proper and consistent methods for waste disposal.
- Train municipal employees to recognize and report illegal dumping.
- Train employees and subcontractors in proper hazardous waste management.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Federal Regulations (RCRA, SARA, CERCLA) and state regulations exist regarding the disposal of hazardous waste.
- Municipalities are required to have a used oil recycling and a HHW element within their integrate waste management plan.
- Significant liability issues are involved with the collection, handling, and disposal of HHW.

Examples

The City of Palo Alto has developed a public participation program for reporting dumping violations. When a concerned citizen or public employee encounters evidence of illegal dumping, a door hanger (similar in format to hotel "Do Not Disturb" signs) is placed on the front doors in the neighborhood. The door hanger notes that a violation has occurred in the neighborhood, informs the reader why illegal dumping is a problem, and notes that illegal dumping carries a significant financial penalty. Information is also provided on what citizens can do as well as contact numbers for more information or to report a violation.

The Port of Long Beach has a state of the art database incorporating storm drain infrastructure, potential pollutant sources, facility management practices, and a pollutant tracking system.

The State Department of Fish and Game has a hotline for reporting violations called CalTIP (1-800-952-5400). The phone number may be used to report any violation of a Fish and Game code (illegal dumping, poaching, etc.).

The California Department of Toxic Substances Control's Waste Alert Hotline, 1-800-69TOXIC, can be used to report hazardous waste violations.

References and Resources

http://www.stormwatercenter.net/

California's Nonpoint Source Program Plan http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Orange County Stormwater Program,
http://www.ocwatersheds.com/stormwater/swp_introduction.asp

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program
(http://www.projectcleanwater.org)

Santa Clara Valley Urban Runoff Pollution Prevention Program
http://www.scvurppp-w2k.com/pdf%20documents/PS_ICID.PDF

Spill Prevention, Control & Cleanup SC-11



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Description

Spills and leaks, if not properly controlled, can adversely impact the storm drain system and receiving waters. Due to the type of work or the materials involved, many activities that occur either at a municipal facility or as a part of municipal field programs have the potential for accidental spills and leaks. Proper spill response planning and preparation can enable municipal employees to effectively respond to problems when they occur and minimize the discharge of pollutants to the environment.

Targeted Constituents

Sediment	
Nutrients	☑
Trash	
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Approach

- An effective spill response and control plan should include:
  - Spill/leak prevention measures;
  - Spill response procedures;
  - Spill cleanup procedures;
  - Reporting; and
  - Training
- A well thought out and implemented plan can prevent pollutants from entering the storm drainage system and can be used as a tool for training personnel to prevent and control future spills as well.

Pollution Prevention

- Develop and implement a Spill Prevention Control and Response Plan. The plan should include:

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- A description of the facility, the address, activities and materials involved
- Identification of key spill response personnel
- Identification of the potential spill areas or operations prone to spills/leaks
- Identification of which areas should be or are bermed to contain spills/leaks
- Facility map identifying the key locations of areas, activities, materials, structural BMPs, etc.
- Material handling procedures
- Spill response procedures including:
    - Assessment of the site and potential impacts
    - Containment of the material
    - Notification of the proper personnel and evacuation procedures
    - Clean up of the site
    - Disposal of the waste material and
    - Proper record keeping

- Product substitution – use less toxic materials (i.e. use water based paints instead of oil based paints)
- Recycle, reclaim, or reuse materials whenever possible. This will reduce the amount of materials that are brought into the facility or into the field.

Suggested Protocols

Spill/Leak Prevention Measures

- If possible, move material handling indoors, under cover, or away from storm drains or sensitive water bodies.
- Properly label all containers so that the contents are easily identifiable.
- Berm storage areas so that if a spill or leak occurs, the material is contained.
- Cover outside storage areas either with a permanent structure or with a seasonal one such as a tarp so that rain can not come into contact with the materials.
- Check containers (and any containment sumps) often for leaks and spills. Replace containers that are leaking, corroded, or otherwise deteriorating with containers in good condition. Collect all spilled liquids and properly dispose of them.

- Store, contain and transfer liquid materials in such a manner that if the container is ruptured or the contents spilled, they will not discharge, flow or be washed into the storm drainage system, surface waters, or groundwater.

- Place drip pans or absorbent materials beneath all mounted taps and at all potential drip and spill locations during the filling and unloading of containers. Any collected liquids or soiled absorbent materials should be reused/recycled or properly disposed of.

- For field programs, only transport the minimum amount of material needed for the daily activities and transfer materials between containers at a municipal yard where leaks and spill are easier to control.

- If paved, sweep and clean storage areas monthly, do not use water to hose down the area unless all of the water will be collected and disposed of properly.

- Install a spill control device (such as a tee section) in any catch basins that collect runoff from any storage areas if the materials stored are oil, gas, or other materials that separate from and float on water. This will allow for easier cleanup if a spill occurs.

- If necessary, protect catch basins while conducting field activities so that if a spill occurs, the material will be contained.

Training

- Educate employees about spill prevention, spill response and cleanup on a routine basis.

- Well-trained employees can reduce human errors that lead to accidental releases or spills:

  - The employees should have the tools and knowledge to immediately begin cleaning up a spill if one should occur.

  - Employees should be familiar with the Spill Prevention Control and Countermeasure Plan if one is available.

- Training of staff from all municipal departments should focus on recognizing and reporting potential or current spills/leaks and who they should contact.

- Employees responsible for aboveground storage tanks and liquid transfers for large bulk containers should be thoroughly familiar with the Spill Prevention Control and Countermeasure Plan and the plan should be readily available.

Spill Response and Prevention

- Identify key spill response personnel and train employees on who they are.

- Store and maintain appropriate spill cleanup materials in a clearly marked location near storage areas; and train employees to ensure familiarity with the site's spill control plan and/or proper spill cleanup procedures.

- Locate spill cleanup materials, such as absorbents, where they will be readily accessible (e.g. near storage and maintenance areas, on field trucks).

SC-11 Spill Prevention, Control & Cleanup

- Follow the Spill Prevention Control and Countermeasure Plan if one is available.
- If a spill occurs, notify the key spill response personnel immediately. If the material is unknown or hazardous, the local fire department may also need to be contacted.
- If safe to do so, attempt to contain the material and block the nearby storm drains so that the area impacted is minimized. If the material is unknown or hazardous wait for properly trained personnel to contain the materials.
- Perform an assessment of the area where the spill occurred and the downstream area that it could impact. Relay this information to the key spill response and clean up personnel.

Spill Cleanup Procedures

- Small non-hazardous spills
  - Use a rag, damp cloth or absorbent materials for general clean up of liquids
  - Use brooms or shovels for the general clean up of dry materials
  - If water is used, it must be collected and properly disposed of. The wash water can not be allowed to enter the storm drain.
  - Dispose of any waste materials properly
  - Clean or dispose of any equipment used to clean up the spill properly
- Large non-hazardous spills
  - Use absorbent materials for general clean up of liquids
  - Use brooms, shovels or street sweepers for the general clean up of dry materials
  - If water is used, it must be collected and properly disposed of. The wash water can not be allowed to enter the storm drain.
  - Dispose of any waste materials properly
  - Clean or dispose of any equipment used to clean up the spill properly
- For hazardous or very large spills, a private cleanup company or Hazmat team may need to be contacted to assess the situation and conduct the cleanup and disposal of the materials.
- Chemical cleanups of material can be achieved with the use of absorbents, gels, and foams. Remove the adsorbent materials promptly and dispose of according to regulations.
- If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste.

Reporting

- Report any spills immediately to the identified key municipal spill response personnel.

- Report spills in accordance with applicable reporting laws. Spills that pose an immediate threat to human health or the environment must be reported immediately to the Office of Emergency Service (OES)

- Spills that pose an immediate threat to human health or the environment may also need to be reported within 24 hours to the Regional Water Quality Control Board.

- Federal regulations require that any oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hour)

- After the spill has been contained and cleaned up, a detailed report about the incident should be generated and kept on file (see the section on Reporting below). The incident may also be used in briefing staff about proper procedures

Other Considerations

- State regulations exist for facilities with a storage capacity of 10,000 gallons or more of petroleum to prepare a Spill Prevention Control and Countermeasure Plan (SPCC) Plan (Health & Safety Code Chapter 6.67).

- State regulations also exist for storage of hazardous materials (Health & Safety Code Chapter 6.95), including the preparation of area and business plans for emergency response to the releases or threatened releases.

- Consider requiring smaller secondary containment areas (less than 200 sq. ft.) to be connected to the sanitary sewer, if permitted to do so, prohibiting any hard connections to the storm drain.

Requirements

Costs

- Will vary depending on the size of the facility and the necessary controls.

- Prevention of leaks and spills is inexpensive. Treatment and/or disposal of wastes, contaminated soil and water is very expensive

Maintenance

- This BMP has no major administrative or staffing requirements. However, extra time is needed to properly handle and dispose of spills, which results in increased labor costs

Supplemental Information

Further Detail of the BMP

Reporting

Record keeping and internal reporting represent good operating practices because they can increase the efficiency of the response and containment of a spill. A good record keeping system helps the municipality minimize incident recurrence, correctly respond with appropriate containment and cleanup activities, and comply with legal requirements.

A record keeping and reporting system should be set up for documenting spills, leaks, and other discharges, including discharges of hazardous substances in reportable quantities. Incident records describe the quality and quantity of non-stormwater discharges to the storm drain.

These records should contain the following information:

- Date and time of the incident
- Weather conditions
- Duration of the spill/leak/discharge
- Cause of the spill/leak/discharge
- Response procedures implemented
- Persons notified
- Environmental problems associated with the spill/leak/discharge

Separate record keeping systems should be established to document housekeeping and preventive maintenance inspections, and training activities. All housekeeping and preventive maintenance inspections should be documented. Inspection documentation should contain the following information:

- The date and time the inspection was performed
- Name of the inspector
- Items inspected
- Problems noted
- Corrective action required
- Date corrective action was taken

Other means to document and record inspection results are field notes, timed and dated photographs, videotapes, and drawings and maps.

Examples

The City of Palo Alto includes spill prevention and control as a major element of its highly effective program for municipal vehicle maintenance shops.

References and Resources

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Orange County Stormwater Program
http://www.ocwatersheds.com/stormwater/swp_introduction.asp

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP)
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Waste Handling & Disposal SC-34



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Description

Improper storage and handling of solid wastes can allow toxic compounds, oils and greases, heavy metals, nutrients, suspended solids, and other pollutants to enter stormwater runoff. The discharge of pollutants to stormwater from waste handling and disposal can be prevented and reduced by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, re-use, and recycling; and preventing runon and runoff.

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Approach

Pollution Prevention

- Reduction in the amount of waste generated can be accomplished using the following source controls such as:
  - Production planning and sequencing
  - Process or equipment modification
  - Raw material substitution or elimination
  - Loss prevention and housekeeping
  - Waste segregation and separation
  - Close loop recycling
- Establish a material tracking system to increase awareness about material usage. This may reduce spills and minimize contamination, thus reducing the amount of waste produced.
- Recycle materials whenever possible.

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Suggested Protocols

General

- Cover storage containers with leak proof lids or some other means. If waste is not in containers, cover all waste piles (plastic tarps are acceptable coverage) and prevent stormwater runon and runoff with a berm. The waste containers or piles must be covered except when in use.
- Use drip pans or absorbent materials whenever grease containers are emptied by vacuum trucks or other means. Grease cannot be left on the ground. Collected grease must be properly disposed of as garbage.
- Check storage containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the storage area regularly. If it is paved, do not hose down the area to a storm drain.
- Dispose of rinse and wash water from cleaning waste containers into a sanitary sewer if allowed by the local sewer authority. Do not discharge wash water to the street or storm drain.
- Transfer waste from damaged containers into safe containers.
- Take special care when loading or unloading wastes to minimize losses. Loading systems can be used to minimize spills and fugitive emission losses such as dust or mist. Vacuum transfer systems can minimize waste loss.

Controlling Litter

- Post “No Littering” signs and enforce anti-litter laws.
- Provide a sufficient number of litter receptacles for the facility.
- Clean out and cover litter receptacles frequently to prevent spillage.

Waste Collection

- Keep waste collection areas clean.
- Inspect solid waste containers for structural damage or leaks regularly. Repair or replace damaged containers as necessary.
- Secure solid waste containers; containers must be closed tightly when not in use.
- Place waste containers under cover if possible.
- Do not fill waste containers with washout water or any other liquid.
- Ensure that only appropriate solid wastes are added to the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc. may not be

disposed of in solid waste containers (see chemical/ hazardous waste collection section below).

- Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal.

Good Housekeeping

- Use all of the product before disposing of the container.
- Keep the waste management area clean at all times by sweeping and cleaning up spills immediately.
- Use dry methods when possible (e.g. sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Stencil storm drains on the facility's property with prohibitive message regarding waste disposal.

Chemical/Hazardous Wastes

- Select designated hazardous waste collection areas on-site.
- Store hazardous materials and wastes in covered containers protected from vandalism, and in compliance with fire and hazardous waste codes.
- Place hazardous waste containers in secondary containment.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.

Runon/Runoff Prevention

- Prevent stormwater runon from entering the waste management area by enclosing the area or building a berm around the area.
- Prevent the waste materials from directly contacting rain.
- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropyleneor hypalon.
- Cover the area with a permanent roof if feasible.
- Cover dumpsters to prevent rain from washing waste out of holes or cracks in the bottom of the dumpster.
- Move the activity indoor after ensuring all safety concerns such as fire hazard and ventilation are addressed.

Inspection

- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Check waste management areas for leaking containers or spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.

Training

- Train staff pollution prevention measures and proper disposal methods.
- Train employees and contractors proper spill containment and cleanup. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur.
- Train employees and subcontractors in proper hazardous waste management.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.
- Vehicles transporting waste should have spill prevention equipment that can prevent spills during transport. The spill prevention equipment includes:
  - Vehicles equipped with baffles for liquid waste
  - Trucks with sealed gates and spill guards for solid waste

Other Considerations

- Hazardous waste cannot be re-used or recycled; it must be disposed of by a licensed hazardous waste hauler.

Requirements

Costs

- Capital and operation and maintenance costs will vary substantially depending on the size of the facility and the types of waste handled. Costs should be low if there is an inventory program in place.

Maintenance

- None except for maintaining equipment for material tracking program.

Supplemental Information

Further Detail of the BMP

Land Treatment System

- Minimize the runoff of polluted stormwater from land application of municipal waste on-site by:
  - Choosing a site where slopes are under 6%, the soil is permeable, there is a low water table, it is located away from wetlands or marshes, there is a closed drainage system.
  - Avoiding application of waste to the site when it is raining or when the ground is saturated with water.
  - Growing vegetation on land disposal areas to stabilize soils and reduce the volume of surface water runoff from the site.
  - Maintaining adequate barriers between the land application site and the receiving waters. Planted strips are particularly good.
  - Using erosion control techniques such as mulching and matting, filter fences, straw bales, diversion terracing, and sediment basins.
  - Performing routine maintenance to ensure the erosion control or site stabilization measures are working.

References and Resources

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Associations (BASMAA). On-line: http://www.basmaa.org

Building & Grounds Maintenance SC-41



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓
Oxygen Demanding	✓

Description

Stormwater runoff from building and grounds maintenance activities can be contaminated with toxic hydrocarbons in solvents, fertilizers and pesticides, suspended solids, heavy metals, and abnormal pH. Utilizing the following protocols will prevent or reduce the discharge of pollutants to stormwater from building and grounds maintenance activities by washing and cleaning up with as little water as possible, following good landscape management practices, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the stormwater collection system.

Approach

Pollution Prevention

- Switch to non-toxic chemicals for maintenance when possible.
- Choose cleaning agents that can be recycled.
- Encourage proper lawn management and landscaping, including use of native vegetation.
- Encourage use of Integrated Pest Management techniques for pest control.
- Encourage proper onsite recycling of yard trimmings.
- Recycle residual paints, solvents, lumber, and other material as much as possible.

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Suggested Protocols

Pressure Washing of Buildings, Rooftops, and Other Large Objects

- In situations where soaps or detergents are used and the surrounding area is paved, pressure washers must use a waste water collection device that enables collection of wash water and associated solids. A sump pump, wet vacuum or similarly effective device must be used to collect the runoff and loose materials. The collected runoff and solids must be disposed of properly.
- If soaps or detergents are not used, and the surrounding area is paved, wash water runoff does not have to be collected but must be screened. Pressure washers must use filter fabric or some other type of screen on the ground and/or in he catch basin to trap the particles in wash water runoff.
- If you are pressure washing on a grassed area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash runoff must remain on the grass and not drain to pavement. Ensure that this practice does not kill grass.

Landscaping Activities

- Do not apply any chemicals (insecticide, herbicide, or fertilizer) directly to surface waters, unless the application is approved and permitted by the state.
- Dispose of grass clippings, leaves, sticks, or other collected vegetation as garbage, or by composting. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures on exposed soils.
- Check irrigation schedules so pesticides will not be washed away and to minimize non-stormwater discharge.

Building Repair, Remodeling, and Construction

- Do not dump any toxic substance or liquid waste on the pavement, the ground, or toward a storm drain.
- Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of collected material daily.
- Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning.
- Clean paint brushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.

- Use a storm drain cover, filter fabric, or similarly effective runoff control mechanism if dust, grit, wash water, or other pollutants may escape the work area and enter a catch basin. The containment device(s) must be in place at the beginning of the work day, and accumulated dirty runoff and solids must be collected and disposed of before removing the containment device(s) at the end of the work day.

- If you need to de-water an excavation site, you may need to filter the water before discharging to a catch basin or off-site. In which case you should direct the water through hay bales and filter fabric or use other sediment filters or traps.

- Store toxic material under cover with secondary containment during precipitation events and when not in use. A cover would include tarps or other temporary cover material.

Mowing, Trimming, and Planting

- Dispose of leaves, sticks, or other collected vegetation as garbage, by composting or at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.

- Use mulch or other erosion control measures when soils are exposed.

- Place temporarily stockpiled material away from watercourses and drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.

- Consider an alternative approach when bailing out muddy water; do not put it in the storm drain, pour over landscaped areas.

- Use hand or mechanical weeding where practical.

Fertilizer and Pesticide Management

- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.

- Follow manufacturers' recommendations and label directions. Pesticides must never be applied if precipitation is occuring or predicted. Do not apply insecticides within 100 feet of surface waters such as lakes, ponds, wetlands, and streams.

- Use less toxic pesticides that will do the job, whenever possible. Avoid use of copper-based pesticides if possible.

- Do not use pesticides if rain is expected.

- Do not mix or prepare pesticides for application near storm drains.

- Use the minimum amount needed for the job.

- Calibrate fertilizer distributors to avoid excessive application.

- Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.

- Apply pesticides only when wind speeds are low.
- Work fertilizers into the soil rather than dumping or broadcasting them onto the surface.
- Irrigate slowly to prevent runoff and then only as much as is needed.
- Clean pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Dispose of empty pesticide containers according to the instructions on the container label.
- Use up the pesticides. Rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Implement storage requirements for pesticide products with guidance from the local fire department and County Agricultural Commissioner. Provide secondary containment for pesticides.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.

Training

- Educate and train employees on use of pesticides and in pesticide application techniques to prevent pollution.
- Train employees and contractors in proper techniques for spill containment and cleanup.
- Be sure the frequency of training takes into account the complexity of the operations and the nature of the staff.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Alternative pest/weed controls may not be available, suitable, or effective in many cases.

Requirements

Costs

- Overall costs should be low in comparison to other BMPs.

Maintenance

- Sweep paved areas regularly to collect loose particles, and wipe up spills with rags and other absorbent material immediately, do not hose down the area to a storm drain.

Supplemental Information

Further Detail of the BMP

Fire Sprinkler Line Flushing

Building fire sprinkler line flushing may be a source of non-stormwater runoff pollution. The water entering the system is usually potable water though in some areas it may be non-potable reclaimed wastewater. There are subsequent factors that may drastically reduce the quality of the water in such systems. Black iron pipe is usually used since it is cheaper than potable piping but it is subject to rusting and results in lower quality water. Initially the black iron pipe has an oil coating to protect it from rusting between manufacture and installation; this will contaminate the water from the first flush but not from subsequent flushes. Nitrates, poly-phosphates and other corrosion inhibitors, as well as fire suppressants and antifreeze may be added to the sprinkler water system. Water generally remains in the sprinkler system a long time, typically a year, between flushes and may accumulate iron, manganese, lead, copper, nickel and zinc. The water generally becomes anoxic and contains living and dead bacteria and breakdown products from chlorination. This may result in a significant BOD problem and the water often smells. Consequently dispose fire sprinkler line flush water into the sanitary sewer. Do not allow discharge to storm drain or infiltration due to potential high levels of pollutants in fire sprinkler line water.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

King County - ftp://dnr.metrokc.gov/wlr/dss/spcm/Chapter%203.PDF

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Mobile Cleaners Pilot Program: Final Report. 1997. Bay Area Stormwater Management Agencies Association (BASSMA) http://www.basmaa.org/

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA) http://www.basmaa.org/

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP) -
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Parking/Storage Area Maintenance SC-43



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

Parking lots and storage areas can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges. The following protocols are intended to prevent or reduce the discharge of pollutants from parking/storage areas and include using good housekeeping practices, following appropriate cleaning BMPs, and training employees.

Approach

Pollution Prevention

- Encourage alternative designs and maintenance strategies for impervious parking lots. (See New Development and Redevelopment BMP Handbook).
- Keep accurate maintenance logs to evaluate BMP implementation.

Suggested Protocols

General

- Keep the parking and storage areas clean and orderly. Remove debris in a timely fashion.
- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and/or infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.

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- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide an adequate number of litter receptacles.
- Clean out and cover litter receptacles frequently to prevent spillage.
- Provide trash receptacles in parking lots to discourage litter.
- Routinely sweep, shovel and dispose of litter in the trash.

Surface cleaning

- Use dry cleaning methods (e.g. sweeping or vacuuming) to prevent the discharge of pollutants into the stormwater conveyance system.
- Establish frequency of public parking lot sweeping based on usage and field observations of waste accumulation.
- Sweep all parking lots at least once before the onset of the wet season.
- If water is used follow the procedures below:
  - Block the storm drain or contain runoff.
  - Wash water should be collected and pumped to the sanitary sewer or discharged to a pervious surface, do not allow wash water to enter storm drains.
  - Dispose of parking lot sweeping debris and dirt at a landfill.
- When cleaning heavy oily deposits:
  - Use absorbent materials on oily spots prior to sweeping or washing.
  - Dispose of used absorbents appropriately.

Surface Repair

- Pre-heat, transfer or load hot bituminous material away from storm drain inlets.
- Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff.
- Cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc., where applicable. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal.

- Use only as much water as necessary for dust control, to avoid runoff.
- Catch drips from paving equipment that is not in use with pans or absorbent material placed under the machines. Dispose of collected material and absorbents properly.

Inspection

- Have designated personnel conduct inspections of the parking facilities and stormwater conveyance systems associated with them on a regular basis.
- Inspect cleaning equipment/sweepers for leaks on a regular basis.

Training

- Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, nad implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Limitations related to sweeping activities at large parking facilities may include high equipment costs, the need for sweeper operator training, and the inability of current sweeper technology to remove oil and grease.

Requirements

Costs

Cleaning/sweeping costs can be quite large, construction and maintenance of stormwater structural controls can be quite expensive as well.

Maintenance

- Sweep parking lot to minimize cleaning with water.
- Clean out oil/water/sand separators regularly, especially after heavy storms.
- Clean parking facilities on a regular basis to prevent accumulated wastes and pollutants from being discharged into conveyance systems during rainy conditions.

SC-43 Parking/Storage Area Maintenance

Supplemental Information

Further Detail of the BMP

Surface Repair

Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff. Where applicable, cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal. Use only as much water as necessary for dust control, to avoid runoff.

References and Resources

http://www.stormwatercenter.net/

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA) http://www.basma.org

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP)
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Housekeeping Practices SC-60

Description

Promote efficient and safe housekeeping practices (storage, use, and cleanup) when handling potentially harmful materials such as fertilizers, pesticides, cleaning solutions, paint products, automotive products, and swimming pool chemicals. Related information is provided in BMP fact sheets SC-11 Spill Prevention, Control & Cleanup and SC-34 Waste Handling & Disposal.

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Approach

Pollution Prevention

- Purchase only the amount of material that will be needed for foreseeable use. In most cases this will result in cost savings in both purchasing and disposal. See SC-61 Safer Alternative Products for additional information.
- Be aware of new products that may do the same job with less environmental risk and for less or the equivalent cost. Total cost must be used here; this includes purchase price, transportation costs, storage costs, use related costs, clean up costs and disposal costs.

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Suggested Protocols

General

- Keep work sites clean and orderly. Remove debris in a timely fashion. Sweep the area.
- Dispose of wash water, sweepings, and sediments, properly.
- Recycle or dispose of fluids properly.
- Establish a daily checklist of office, yard and plant areas to confirm cleanliness and adherence to proper storage and security. Specific employees should be assigned specific inspection responsibilities and given the authority to remedy any problems found.
- Post waste disposal charts in appropriate locations detailing for each waste its hazardous nature (poison, corrosive, flammable), prohibitions on its disposal (dumpster, drain, sewer) and the recommended disposal method (recycle, sewer, burn, storage, landfill).
- Summarize the chosen BMPs applicable to your operation and post them in appropriate conspicuous places.

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- Require a signed checklist from every user of any hazardous material detailing amount taken, amount used, amount returned and disposal of spent material.
- Do a before audit of your site to establish baseline conditions and regular subsequent audits to note any changes and whether conditions are improving or deteriorating.
- Keep records of water, air and solid waste quantities and quality tests and their disposition.
- Maintain a mass balance of incoming, outgoing and on hand materials so you know when there are unknown losses that need to be tracked down and accounted for.
- Use and reward employee suggestions related to BMPs, hazards, pollution reduction, work place safety, cost reduction, alternative materials and procedures, recycling and disposal.
- Have, and review regularly, a contingency plan for spills, leaks, weather extremes etc. Make sure all employees know about it and what their role is so that it comes into force automatically.

Training

- Train all employees, management, office, yard, manufacturing, field and clerical in BMPs and pollution prevention and make them accountable.
- Train municipal employees who handle potentially harmful materials in good housekeeping practices.
- Train personnel who use pesticides in the proper use of the pesticides. The California Department of Pesticide Regulation license pesticide dealers, certify pesticide applicators and conduct onsite inspections.
- Train employees and contractors in proper techniques for spill containment and cleanup. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and Countermeasure (SPCC) plant up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- There are no major limitations to this best management practice.
- There are no regulatory requirements to this BMP. Existing regulations already require municipalities to properly store, use, and dispose of hazardous materials

Requirements

Costs

- Minimal cost associated with this BMP. Implementation of good housekeeping practices may result in cost savings as these procedures may reduce the need for more costly BMPs.

Maintenance

- Ongoing maintenance required to keep a clean site. Level of effort is a function of site size and type of activities.

Supplemental Information

Further Detail of the BMP

- The California Integrated Waste Management Board's Recycling Hotline, 1-800-553-2962, provides information on household hazardous waste collection programs and facilities.

Examples

There are a number of communities with effective programs. The most pro-active include Santa Clara County and the City of Palo Alto, the City and County of San Francisco, and the Municipality of Metropolitan Seattle (Metro).

References and Resources

British Columbia Lake Stewardship Society. Best Management Practices to Protect Water Quality from Non-Point Source Pollution. March 2000.
http://www.nalms.org/bclss/bmphome.html#bmp

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities, Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July, 1998, Revised by California Coastal Commission, February 2002.

Orange County Stormwater Program
http://www.ocwatersheds.com/stormwater/swp_introduction.asp

San Mateo STOPPP - (http://stoppp.tripod.com/bmp.html)

Fountain & Pool Maintenance SC-72

Description

The primary pollutant of concern in municipal swimming pool water is chlorine or chloramine used as a disinfectant. This water, if discharged to the storm drain system, can be toxic to aquatic life. In lakes, lagoons, and fountains, the pollutants of concern are chemical algaecides that are added to control algae mainly for aesthetic reasons (visual and odor). Following the procedures noted in this fact sheet will reduce the pollutants in this discharge.

Approach

Pollution Prevention

- Prevent algae problems with regular cleaning, consistent adequate chlorine levels, and well-maintained water filtration and circulation systems.
- Manage pH and water hardness to minimize corrosion of copper pipes.

Suggested Protocols

Pools and Fountains

- Do not use copper-based algaecides. Control algae with chlorine or other alternatives, such as sodium bromide.
- Do not discharge water to a street or storm drain when draining pools or fountains; discharge to the sanitary sewer if permitted to do so. If water is dechlorinated with a neutralizing chemical or by allowing chlorine to dissipate for a few days (do not use the facility during this time), the water may be recycled/reused by draining it gradually onto a landscaped area. Water must be tested prior to discharge to ensure that chlorine is not present.
- Prevent backflow if draining a pool to the sanitary sewer by maintaining an "air gap" between the discharge line and the sewer line (do not seal the connection between the hose and sewer line). Be sure to call the local wastewater treatment plant for further guidance on flow rate restrictions, backflow prevention, and handling special cleaning waste (such as acid wash). Discharge flows should be kept to the low levels typically possible through a garden hose. Higher flow rates may be prohibited by local ordinance.
- Provide drip pans or buckets beneath drain pipe connections to catch leaks. This will be especially pertinent if pool or spa water that has not been dechlorinated is pumped through piping to a discharge location.

Objectives

- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	
Bacteria	☑
Oil and Grease	
Organics	☑
Oxygen Demanding	☑

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- Never clean a filter in the street or near a storm drain.
- Rinse cartridge filters onto a dirt area, and spade filter residue into soil.
- Backwash diatomaceous earth filters onto dirt. Dispose of spent diatomaceous earth in the garbage. Spent diatomaceous earth cannot be discharged to surface waters, storm drainage systems, septic systems, or on the ground.
- If there is not a suitable dirt area discharge filter backwash or rinsewater to the sanitary sewer if permitted to do so by the local sewering agency.

Lakes and Lagoons

- Reduce fertilizer use in areas around the water body. High nitrogen fertilizers can produce excess growth requiring more frequent mowing or trimming, and may contribute to excessive algae growth.
- To control bacteria, discourage the public from feeding birds and fish (i.e. place signs that prohibit feeding of waterfowl).
- Consider introducing fish species that consume algae. Contact the California Department of Fish and Game for more information on this issue.
- Mechanically remove pond scum (blue-green algae) using a 60 micron net.
- Educate the public on algae and that no controls are necessary for certain types of algae that are beneficial to the water body.
- Control erosion by doing the following:
  - Maintain vegetative cover on banks to prevent soil erosion. Apply mulch or leave clippings to serve as additional cover for soil stabilization and to reduce the velocity of stormwater runoff.
  - Areas should be designed (sloped) to prevent runoff and erosion and to promote better irrigation practices.
  - Provide energy dissipaters (e.g. riprap) along banks to minimize potential for erosion.
  - Confine excavated materials to surfaces away from lakes. Material must be covered if rain is expected.
- Conduct inspections to detect illegal dumping of clippings/cuttings in or near a lake. Materials found should be picked up and properly disposed of.
- Avoid landscape wastes in and around lakes should be avoided by either using bagging equipment or by manually picking up the material. Collect trash and debris from within water bodies where feasible
- Provide and maintain trash receptacles near recreational water bodies to hold refuse generated by the public.

- Increase trash collection during peak visitation months (generally June, July and August).

Training

- Train maintenance personnel to test chlorine levels and to apply neutralizing chemicals.
- Train personnel regarding proper maintenance of pools, ponds and lakes.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Managers of pools located in sensitive areas or adjacent to shorelines should check with the appropriate authorities to determine if code requirements apply.
- Cleanup activities at lakes and lagoons may create a slight disturbance for local aquatic species. If the lake is recognized as a wetland, many activities, including maintenance, may be subject to regulation and permitting.

Requirements

Costs

- The maintenance of pools and lakes is already a consideration of most municipal public works departments. Therefore the cost associated with this BMP is minimal and only reflects an increase in employee training and public outreach.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

When dredging is conducted, adhere to the following:

- Dredge with shovels when laying/maintaining pipes.
- To determine amount to dredge, determine rate of volume loss due to sediments.
- For large lakes, dredge every 10 years.
- When dredging small lakes, drain lake.
- When dredging large lakes, use vacuum equipment.
- After dredging test sediment piles for proper disposal. Dredged sediment can be used as fill, or may have to be land filled.

References and Resources

King County Stormwater Pollution Control Manual. Best Management Practices for Businesses. 1995. King County Surface Water Management. July. On-line: http://dnr.metrokc.gov/wlr/dss/spcm.htm

Los Angeles County Stormwater Quality. Public Agency Activities Model Program. On-line: http://ladpw.org/wmd/npdes/public_TC.cfm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July. 1998.

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Santa Clara Valley Urban Runoff Pollution Prevention Program. Maintenance Best Management Practices for the Construction Industry. Brochures: Landscaping, Gardening, and Pool; Roadwork and Paving; and Fresh Concrete and Mortar Application. June 2001.

Site Design & Landscape Planning SD-10



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

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Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Efficient Irrigation SD-12



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

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- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13



Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

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– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

SC-42 Building Repair and Construction

Description

Site modifications are common, particularly at large industrial sites. The activity can range from minor and normal building repair to major remodeling and the construction of new facilities. These activities can generate pollutants that include solvents, paints, paint and varnish removers, finishing residues, spent thinners, soap cleaners, kerosene, asphalt and concrete materials, adhesive residues, and old asbestos insulation. Protocols in this fact sheet are intended to prevent or reduce the discharge of pollutants to stormwater from building repair, remodeling, and minor construction by using soil erosion controls, enclosing or covering building material storage areas, using good housekeeping practices, using safer alternative products, and training employees.

This fact sheet is intended to be used for minor repairs and construction. If major construction is required, the guidelines in the *Construction BMP Handbook* should be followed.

Approach

The best management practice (BMP) approach is to reduce the potential for pollutant discharges through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Recycle residual paints, solvents, lumber, and other materials to the maximum extent practicable.
- ☐ Avoid outdoor repairs and construction during periods of wet weather.
- ☐ Use safer alternative products to the maximum extent practicable. See also SC-35 Safer Alternative Products for more information.

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Substitute Products*

Targeted Constituents	
Sediment	✓
Nutrients	
Trash	✓
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	✓
Erosion and Sediment Controls	✓
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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- Buy recycled products to the maximum extent practicable.
- Inform on-site contractors of company policy on these matters and include appropriate provisions in their contracts to ensure that certain proper housekeeping and disposal practices are implemented.
- Make sure that nearby storm drains are well marked to minimize the chance of inadvertent disposal of residual paints and other liquids.



Good Housekeeping

Repair and Remodeling

- Keep the work site clean and orderly. Remove debris in a timely fashion. Sweep and vacuum the area regularly to remove sediment and small debris.
- Cover raw materials of particular concern that must be left outside, especially during the rainy season. See also SC-33 Outdoor Storage of Raw Materials for more information.
- Use equipment and tools such as bag sanders to reduce accumulation of debris.
- Limit/prohibit work on windy days; implement roll-down walls or other measures to reduce wind transport of pollutants.
- Do not dump waste liquids down the storm drain.
- Dispose of wash water, sweepings, and sediments properly.
- Store liquid materials properly that are normally used in repair and remodeling such as paints and solvents. See also SC-31 Outdoor Liquid Container Storage for more information.
- Sweep out rain gutters or wash the gutter and trap the particles at the outlet of the downspout. A sock or geofabric placed over the outlet may effectively trap the materials. If the downspout is tight lined, place a temporary plug at the first convenient point in the storm drain and pump out the water with a vactor truck, and clean the catch basin sump where you placed the plug.
- Clean the storm drain system in the immediate vicinity of the construction activity after it is completed. See also SC-44 Drainage System Maintenance for more information.

Painting

- Enclose painting operations consistent with local air quality and Occupational Safety and Health Administration (OSHA) regulations.
- Local air pollution regulations may, in many areas of the state, specify painting procedures that, if properly carried out, are usually sufficient to protect water quality.
- Develop paint-handling procedures for proper use, storage, and disposal.

- Transport paint and materials to and from job sites in containers with secure lids and tied down to the transport vehicle.
- Test and inspect spray equipment prior to starting to paint. Tighten all hoses and connections and do not overfill paint containers.
- Mix paint indoors before using it so that any spill will not be exposed to rain. Do so even during dry weather because cleanup of a spill will never be 100 percent effective.
- Transfer and load paint and hot thermoplastic away from storm drain inlets.
- When there is risk of a spill reaching storm drains, plug nearby storm drain inlets prior to starting to paint and remove the plugs when the job is complete.
- If sandblasting is used to remove paint, cover nearby storm drain inlets prior to starting work.
- If painting requires scraping or sandblasting of the existing surface, use a ground cloth to collect the chips. Dispose of the residue properly.
- Cover or enclose painting operations properly to avoid drift.
- If water-based paints are being used, clean the application equipment in a sink that is connected to the sanitary sewer.
- Capture all cleanup-water and dispose of it properly.
- Dispose properly of paints containing lead or tributyl tin and considered a hazardous waste.
- If leftover paints are to be kept for the next job, store them properly, or dispose of them properly.
- Recycle paint when possible. Dispose of paint at an appropriate household hazardous waste facility.



Spill and Leak Prevention and Response

- Keep your spill prevention, control, and countermeasure (SPCC) plan up to date.
- Place a stockpile of spill cleanup materials where they are readily accessible.
- Clean up spills immediately.
- Excavate and remove the contaminated (stained) soil if a spill occurs on dirt.



Material Handling and Waste Management

- Post “No littering” signs, and enforce antilitter laws.
- Provide a sufficient number of litter receptacles for the facility.

- Clean out litter receptacles frequently and cover them to prevent spillage.
- Keep waste collection areas clean.
- Inspect solid waste containers regularly for structural damage. Repair or replace damaged containers as necessary.
- Secure solid waste containers; containers must be closed tightly when not in use.
- Do not fill waste containers with washout water or any other liquid.
- Ensure that only appropriate solid wastes are put in the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, and pesticides may not be disposed of in solid waste containers
- Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal. Affix labels to all waste containers clearly stating what they contain.
- Make sure that hazardous waste is collected, removed, and disposed of properly. See also SC-34 Waste Handling and Disposal for more information.



Erosion and Sediment Controls

- Limit disturbance of bare soils and preserve natural vegetation whenever possible. See also EC-2 Preservation of Existing Vegetation in the *Construction BMP Handbook*.
- Stabilize loose soils by revegetating whenever possible. See also EC-4 Hydroseeding in the *Construction BMP Handbook*.
- Use nonvegetative stabilization methods for areas prone to erosion where vegetative options are not feasible. Examples include:
  - ✓ Areas of vehicular or pedestrian traffic such as roads or paths;
  - ✓ Arid environments where vegetation would not provide timely ground coverage, or would require excessive irrigation;
  - ✓ Rocky substrate, infertile or droughty soils where vegetation would be difficult to establish; and
  - ✓ Areas where vegetation will not grow adequately within the construction time frame.

  There are several nonvegetative stabilization methods and selection should be based on site-specific conditions. See also EC-16 Non-Vegetative Stabilization in the *Construction BMP Handbook*.
- Use chemical stabilization when needed. See also EC-5 Soil Binders in the *Construction BMP Handbook*.

- Use geosynthetic membranes to control erosion if feasible. See also EC-7 Geotextiles and Mats in the *Construction BMP Handbook*.
- Stabilize all roadways, entrances, and exits to sufficiently control discharges of erodible materials from discharging or being tracked off the site. See also TC 1-3 Tracking Control in the *Construction BMP Handbook*.
- Refer to the supplemental information later in this fact sheet for projects that involve more extensive soil disturbance activities.



Employee Training Program

- Educate employees about pollution prevention measures and goals.
- Train employees how to properly implement the source control BMPs described above. Detailed information for erosion and sediment control BMPs is provided in the *Construction BMP Handbook*.
- Proper education of off-site contractors is often overlooked. The conscientious efforts of well-trained employees can be wasted by unknowing off-site contractors, so make sure they are well informed about pollutant source control responsibilities.
- Use a training log or similar method to document training.



Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document minimum BMP activities performed for building repair and construction, types and quantities of waste disposed of, and any improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and the method used to dispose of the waste.
- Establish procedures to complete logs and file them in the central office.

Potential Limitations and Work-Arounds

Some facilities may have space constraints, limited staffing, and time limitations that preclude implementation of BMPs. The following are typical limitations and recommended work-arounds.

- This BMP is for minor construction only. The state's General Construction Activity Stormwater Permit has more extensive requirements for larger projects that would disturb 1 or more acres of surface.
  - ✓ Refer to the companion *Construction BMP Handbook* for specific guidance and BMPs for larger scale projects.
- Time constraints might require some outdoor repairs and construction during wet weather.

- ✓ Require employees to understand and follow good housekeeping and spill and leak prevention BMPs.
- ✓ Inspect erosion and sediment control BMPs daily during periods of wet weather and repair or improve BMP implementation as necessary.

- Hazardous waste that cannot be reused or recycled must be disposed of by a licensed hazardous waste hauler.
  - ✓ Minimize use of hazardous materials to the maximum extent practicable.
- Be certain that actions to help stormwater quality are consistent with Cal/ and Fed/OSHA and air quality regulations.
- Prices for recycled/safer alternative materials and fluids may be higher than those of conventional materials.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Limited capital investments may be required at some sites if cover and containment facilities are inadequate for construction materials and wastes.
- Purchase and installation of erosion and sediment controls, if needed, will require additional capital investments, and this amount will vary depending on site characteristics and the types of BMPs being implemented.
- Minimize costs by maintaining existing vegetation and limiting construction operations on bare soils.

Maintenance

- The erosion and sediment control BMPs described above require periodic inspection and maintenance to remain effective. The cost of these actions will vary depending on site characteristics and the types of BMPs being implemented.
- Irrigation costs may be required to establish and maintain vegetation.

Supplemental Information

Soil/Erosion Control

If the work involves exposing large areas of soil, employ the appropriate soil erosion and control techniques. See the *Construction BMP Handbook*. If old buildings are being torn down and not replaced in the near future, stabilize the site using measures described in SC-40 Contaminated and Erodible Areas.

If a building is to be placed over an open area with a storm drainage system, make sure the storm inlets within the building are covered or removed, or the storm line is connected to the sanitary sewer. If, because of the remodeling, a new drainage system is

to be installed or the existing system is to be modified, consider installing catch basins as they serve as effective "in-line" treatment devices. Include in the catch basin a "turn-down" elbow or similar device to trap floatables.

References and Resources

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Kennedy/Jenks Consultants. 2007. *The Truckee Meadows Industrial and Commercial Storm Water Best Management Practices Handbook*. Available online at https://www.washoecounty.us/csd/engineering_capitalprojects/files-engineering-capital-projects/development_review_forms/Industrial and Commercial Storm Water Best Management Practices Handbook.pdf.

Sacramento Stormwater Management Program. n.d. *Best Management Practices for Industrial Storm Water Pollution Control*. Available online at http://www.waterresources.saccounty.net/stormwater/documents/industrial-BMP-manual.pdf.

US EPA. 2005. *Construction Site Stormwater Runoff Control*. Available online at: https://www3.epa.gov/npdes/pubs/fact2-6.pdf.

SC-44 Drainage System Maintenance

Description

As a consequence of its function, the stormwater drainage facilities on site convey stormwater that may contain certain pollutants either to the off-site conveyance system that collects and transports urban runoff and stormwater, or directly to receiving waters. The protocols in this fact sheet are intended to reduce pollutants leaving the site to the offsite drainage infrastructure or to receiving waters through proper on-site conveyance system operation and maintenance. The targeted constituents will vary depending on site characteristics and operations.

Approach

Successful implementation depends on effective training of employees on applicable best management practices (BMPs) and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Maintain catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the proper hydraulic functioning of the system to avoid flooding.

- ☐ Develop and follow a site-specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.

Good Housekeeping

Illicit Connections and Discharges

- ☐ Look for evidence of illegal discharges or illicit connections during routine maintenance of conveyance system and drainage structures:

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*

Targeted Constituents	
Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	✓
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance and Record Keeping	✓

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- ✓ Identify evidence of spills such as paints, discoloring, and odors.
- ✓ Record locations of apparent illegal discharges or illicit connections.
- ✓ Track flows back to potential discharges and conduct aboveground inspections. This can be done through visual inspection of upgradient manholes or alternate techniques that include zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, and television camera inspection.
- ✓ Eliminate the discharge once the origin of the flow is established.

- ☐ Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste—Drains to Stream" or similar wording stenciled on or next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- ☐ Refer to fact sheet SC-10 Non-stormwater Discharges for additional information.

Illegal Dumping

- ☐ Inspect regularly and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- ☐ Establish a system for tracking incidents. The system should be designed to identify the following:
  - ✓ Illegal dumping hot spots
  - ✓ Types and quantities (in some cases) of wastes
  - ✓ Patterns in time of occurrence (time of day/night, month, or year)
  - ✓ Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - ✓ Responsible parties
- ☐ Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- ☐ Refer to fact sheet SC-10 Non-stormwater Discharges for additional information.



Preventative Maintenance

Catch Basins/Inlet Structures

- ☐ Staff should regularly inspect facilities to ensure compliance with the following:
  - ✓ Immediate repair of any deterioration threatening structural integrity.
  - ✓ Cleaning before the sump is 40 percent full. Catch basins should be cleaned as frequently as necessary to meet this standard.

- Clean catch basins, storm drain inlets, and other conveyance structures before the wet season to remove sediments and debris accumulated during the summer.
- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Prioritize storm drain inlets; clean and repair them as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes if necessary with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and disposed of properly. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System

- Locate reaches of the storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect and pump flushed effluent to the sanitary sewer for treatment whenever possible.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge to reach the storm drain system when cleaning a storm drain pump station or other facility.
- Conduct routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.

Open Channel

- Modify storm channel characteristics to improve channel hydraulics, increase pollutant removal, and enhance channel/creek aesthetic and habitat value.
- Conduct channel modification and improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural state of any river, stream, or lake in California must enter into a stream or lake alteration agreement with the Department of Fish and Wildlife. The developer-applicant should also contact local governments (city, county, or special districts), other state agencies (SWRCB, RWQCB, Department of Forestry, or Department of Water Resources), and the U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service.

SC-44 Drainage System Maintenance



Spill and Leak Prevention and Response

- ☐ Keep your spill prevention, control, and countermeasure (SPCC) plan up to date.
- ☐ Investigate promptly all reports of spills, leaks, and illegal dumping.
- ☐ Place a stockpile of spill cleanup materials where they are readily accessible or at a central location.
- ☐ Clean up all spills and leaks using dry methods (with absorbent materials and/or rags) or dig up, remove, and properly dispose of contaminated soil.



Employee Training Program

- ☐ Educate employees about pollution prevention measures and goals.
- ☐ Train employees how to properly handle and dispose of waste using the source control BMPs described above.
- ☐ Train employees and subcontractors in proper hazardous waste management.
- ☐ Use a training log or similar method to document training.
- ☐ Ensure that employees are familiar with the site's SPCC plan and/or proper spill cleanup procedures.
- ☐ Have staff involved in detection and removal of illicit connections trained in the following:
  - ✓ OSHA-required health and safety training (Title 29 of the Code of Federal Regulations [CFR] 1910.120) plus annual refresher training (as needed).
  - ✓ OSHA confined space entry training (Cal/OSHA Confined Space, Title 8 and Federal/OSHA 29 CFR 1910.146).
  - ✓ Procedural training (field screening, sampling, smoke/dye testing, TV inspection).



Quality Assurance and Record Keeping

- ☐ Keep accurate maintenance logs that document minimum BMP activities performed for drainage system maintenance, types and quantities of waste disposed of, and any improvement actions.
- ☐ Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and the method used to dispose of the waste.
- ☐ Keep accurate logs of illicit connections, illicit discharges, and illegal dumping into the storm drain system, including how wastes were cleaned up and disposed of.
- ☐ Establish procedures to complete logs and file them in the central office.

Potential Limitations and Work-Arounds

The following are typical limitations and recommended work-arounds for drainage system maintenance:

- Cleanup activities might create a slight disturbance for local aquatic species. Access to items and material on private property might be limited. Trade-offs might exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.
  - ✓ Perform all maintenance on-site and do not flush accumulated material downstream to private property or riparian habitats.
- Storm drain flushing is most effective in small-diameter pipes (i.e., a pipe 36 inches in diameter or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing include the availability of a water source, finding a downstream area to collect sediments, and liquid/sediment disposal.
  - ✓ Develop and follow a site-specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.
- Regulations might include adoption of substantial penalties for illegal dumping and disposal.
  - ✓ Do not dump illegal materials anywhere on-site.
  - ✓ Identify illicit connections, illicit discharge, and illegal dumping.
  - ✓ Clean up spills immediately, and properly dispose of wastes.
- Local municipal codes might include sections prohibiting discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the sanitary sewer system.
  - ✓ Collect all materials and pollutants accumulated in the drainage system and dispose of them according to local regulations.
  - ✓ Install debris excluders in areas with a trash total maximum daily load.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital costs will vary substantially depending on the size of the facility and characteristics of the drainage system. Significant capital costs may be associated with purchasing water trucks, vacuum trucks, and any other necessary cleaning equipment or improving the drainage infrastructure to reduce the potential.

- Developing and implementing a site-specific drainage system maintenance plan will require additional capital if a similar program is not already in place.

Maintenance

- Two-person teams might be required to clean catch basins with vactor trucks.
- Teams of at least two people plus administrative personnel are required to identify illicit discharges, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Technical staff are required to detect and investigate illegal dumping violations.
- Methods used for illicit connection detection (e.g., smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors such as the amount of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary.

Supplemental Information

Storm Drain Flushing

Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants from storm drainage systems. Flushing may be designed to hydraulically convey accumulated material to strategic locations such as an open channel, another point where flushing will be initiated, or the sanitary sewer and the treatment facilities, thus preventing resuspension and overflow of a portion of the solids during storm events. Flushing prevents plug flow discharges of concentrated pollutant loadings and sediments. Deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drains usually are flushed along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An inflatable device is placed in an upstream manhole to temporarily plug the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, releasing the backed-up water and resulting in the cleaning of the storm drain segment.

To further reduce impacts of stormwater pollution, a second inflatable device placed well downstream might be used to recollect the water after the force of the flushing wave has dissipated. A pump could then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure might be more practical or required to recollect the flushed waters.

Cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65–75 percent for organics and 55–65 percent for dry weather grit/inorganic

material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used if allowed or that fire hydrant line flushing coincide with storm sewer flushing.

References and Resources

City of Seattle. 2016. *City of Seattle Stormwater Manual*. Seattle Public Utilities Department of Planning and Development. Available online at http://www.seattle.gov/dpd/cs/groups/pan/@pan/documents/web_informational/p2358283.pdf.

Knox County, Tennessee. 2008. Drainage System Maintenance. Chapter 5 in *Stormwater Management Manual*. Available online at http://www.knoxcounty.org/stormwater/manual/Volume 1/knoxco_swmm_v1_chap5_jan2008.pdf.

U.S. Environmental Protection Agency. 2016. National Pollutant Discharge Elimination System. *National Menu of Best Management Practices (BMPs) for Stormwater*. Available online at https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#edu

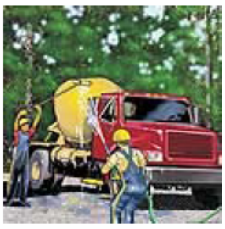
SAN BERNARDINO COUNTY
STORMWATER POLLUTION PREVENTION

Construction & development:

Soil, cement wash, asphalt, oil and other hazardous debris from construction sites often make their way into the San Bernardino County storm drain system, and flow untreated into local waterways. Follow these best management practices to prevent pollution, protect public health and avoid fines or legal action.



- **Store Materials Safely:** Keep construction materials and debris away from the street, gutter and storm drains. Cover exposed stockpiles of soil, sand or gravel and excavated material with plastic sheeting, protected from rain, wind and runoff.
- **Preventing Erosion:** Avoid excavation or grading during wet weather. Plant temporary vegetation or add hydro mulch on slopes where construction is not immediately planned, and permanent vegetation once excavation and grading are complete. Construct diversion dikes to channel runoff to a detention basin and around the construction site. Use gravel approaches where truck traffic is frequent to reduce soil compaction and limit the tracking of sediment into the streets. For more information on erosion control, call (909) 799-7407.



- **Cleaning & Preventing Spills:** Use a drip pan and funnel when draining or pouring fluids. Sweep up dry spills, instead of hosing. Be ready for spills by preparing and using spill containment and cleanup kits that include safety equipment and dry cleanup materials such as kitty litter or sawdust. To report serious spills, call 911.
- **Maintaining Vehicles & Equipment:** Maintain and refuel vehicles and equipment at a single location on-site, away from the street, gutter and storm drains. Perform major equipment repairs and washings off-site. Inspect vehicles and equipment frequently for leaks, and prevent leaks from stored vehicles by draining gas, hydraulic oil, transmission, and brake and radiator fluids.
- **Ordering Materials & Recycling Waste:** Reduce waste by ordering only the amounts of materials needed for the job. Use recycled or recyclable materials whenever possible. You can recycle broken asphalt, concrete, wood, and cleared vegetation. Dispose of hazardous materials through a hazardous waste hauler or other means in accordance with the construction permit. Non-recyclable materials should be taken to a landfill or disposed of as hazardous waste. For recycling and disposal information, call (909) 386-8401.
- **Concrete and mortar application:** Never dispose of cement washout into driveways, streets, gutters or drainage ditches. Wash concrete mixers and equipment only in specified washout areas, where the water flows into lined containment ponds. Cement wash water can be recycled by pumping it back into cement mixers for reuse.

For more information about how you can prevent stormwater pollution:

www.sbcountystormwater.org

Regulatory information

The Federal Water Pollution Control Act prohibits the discharge of any pollutant to navigable waters from a point source unless the discharge is authorized by a National Pollutant Discharge Elimination System (NPDES) permit. The 1987 passage of the Water Quality Act established NPDES permit requirements for discharges of storm water. The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

Industrial facilities and construction sites are regulated by the Regional Water Quality Control Board and State Water Resources Control Board, through general storm water permits. Most industrial, manufacturing or transportation businesses that store materials, products or equipment outdoors, or conduct vehicle washing or process operations outdoors are required to obtain coverage under the State Water Resources Control Board's General Industrial Activities Stormwater Permit. For more information about this permit, visit www.swrcb.ca.gov/stormwtr/industrial.html or contact your local storm water coordinator.

If your business conducts construction activities, including clearing, grading, stockpiling or excavation that results in soil disturbances of at least one acre, you are subject to the State Water Resources Control Board's General Construction Activities Stormwater Permit. To find out more about this storm water permit for construction, visit: www.swrcb.ca.gov/stormwtr/construction.html.

Cities and counties are regulated through permits issued by the Regional Boards. Since 1990, operators of large storm drain systems such as San Bernardino County's have been required to:

- Develop a storm water management program designed to prevent harmful pollutants from being dumped or washed by storm water runoff, into the storm water system, then discharged into local water bodies; and
- Obtain a National Pollutant Discharge Elimination System (NPDES) permit.

The NPDES permit programs in California are administered by the State Water Resources Control Board and by nine regional boards that issue NPDES permits and enforce regulations within their respective region.

San Bernardino County lies within the jurisdiction of the Santa Ana Region. This regional board issues a permit to the San Bernardino County Permittees, which includes the County of San Bernardino, San Bernardino County Flood Control District and incorporated cities of San Bernardino County. Since the program's inception, the County of San Bernardino has served as the principal permittee.



Documents & reports:

The following documents describe the regulations and programs for water quality in San Bernardino County. You can review the latest Basin Plan, National Pollutant Discharge Elimination System (NPDES) Permit and Drainage Area Management Plan (DAMP).

- **Basin Plans:** The document for each region of the State Water Quality Board's jurisdiction, including Santa Ana, is the Water Quality Control Plan, commonly referred to as the Basin Plan. It is the foundation for the regulatory programs of each regional board. The Basin Plan documents the beneficial uses of the region's ground and surface waters, existing water quality conditions, problems, and goals, and actions by the regional board and others that are necessary to achieve and maintain water quality standards.

▶Water Control Plan for the Santa Ana River Basin

- **Municipal National Pollutant Discharge Elimination System (NPDES) Permits:** The permits of each region outline additional steps for a storm water management program and specify requirements to help protect the beneficial uses of the receiving waters. They require permittees to develop and implement Best Management Practices (BMPs) to control/reduce the discharge of pollutants to waters of the United States to the maximum extent practicable (MEP).

  ▶Santa Ana Regional Water Quality Control Board Municipal NPDES Permit Order No. R8-2002-0012

- **Report of Waste Discharge:** The Report of Waste Discharge (ROWD) describes the San Bernardino Stormwater Program, implemented by the County and cities to comply with their jointly held stormwater permit. It is the principle policy and guidance document for the NPDES Stormwater Program.

  ▶Report of Waste Discharge 2000

- **San Bernardino County Storm Water Program Annual Status Report:** The Annual Status Report is a requirement of the NPDES permit for submittal to the Regional Boards and United States Environmental Protection Agency. The report presents an analysis and assessment of permit compliance activities.

▶Annual report - will be posted soon

For more information about how you can prevent stormwater pollution:

www.sbcountystormwater.org

SAN BERNARDINO COUNTY
STORMWATER POLLUTION PREVENTION

Commercial landscape maintenance:

Yard waste, sediments and toxic lawn and garden chemicals used in commercial landscape maintenance often make their way into the San Bernardino County storm drain system and do not get treated before reaching the Santa Ana River. This pollutes our drinking water and contaminates local waterways, making them unsafe for people and wildlife. Follow these best management practices to prevent pollution, protect public health and avoid fines or legal action.

- **Recycle Yard Waste:** Recycle leaves, grass clippings and other yard waste. Do not blow, sweep, rake or hose yard waste into the street. Let your customers know about grass cycling --the natural recycling of grass by leaving clippings on the lawn when mowing instead of using a grass catcher. Grass clippings will quickly decompose, returning valuable nutrients to the soil. You can get more information at www.ciwmb.ca.gov/Organics.
- **Use Fertilizers, Herbicides & Pesticides Safely:** Fertilizers, herbicides and pesticides are often carried into the storm drain system by sprinkler runoff. Use natural, non-toxic alternatives to traditional garden chemicals. If you must use chemical fertilizers, herbicides, or pesticides spot apply rather than blanketing entire areas, avoid applying near curbs and driveways and never apply before a rain.
- **Recycle Hazardous Waste:** Pesticides, fertilizers, herbicides and motor oil contaminate landfills and should be disposed of through a Hazardous Waste Facility. For information on proper disposal, call (909) 386-8401.
- **Use Water Wisely:** Conserve water and prevent runoff by controlling the amount of water and direction of sprinklers. Sprinklers should be on long enough to allow water to soak into the ground but not so long as to cause runoff. Periodically inspect, fix leaks and realign sprinkler heads.



- **Planting:** Plant native vegetation to reduce the need of water, fertilizers, herbicides and pesticides.
- **Prevent Erosion:** Erosion washes sediments, debris and toxic runoff into the storm drain system, polluting waterways. Prevent erosion and sediment runoff by using ground cover, berms and vegetation down-slope to capture runoff. Avoid excavation or grading during wet weather.



- **Store Materials Safely:** Keep landscaping materials and debris away from the street, gutter and storm drains. On-site stockpiles of materials should be covered with plastic sheeting to protect from rain, wind and runoff.

For more information about how you can prevent stormwater pollution:

www.sbcountystormwater.org

SAN BERNARDINO COUNTY
STORMWATER POLLUTION PREVENTION

General industrial & manufacturing businesses:

If you own, manage or help operate a business, especially an industrial or manufacturing company, you can help reduce storm water pollution. From environmentally friendly cleaning and maintenance activities, to recycling hazardous waste materials, businesses can do a lot to prevent storm water pollution.

- Review your cleaning and maintenance activities to look for ways to reduce runoff into the storm drain system, especially in outdoor areas like parking lots, loading docks and maintenance yards. Keep trash enclosure swept and trash bin lids closed.
- Train employees to wash vehicles and equipment indoors in a wash rack that is connected to the sanitary sewer or off-site at a commercial wash facility. Train janitorial staff to dispose of floor cleaning water in the sewer and not into the parking lot. Make sure that cooling towers, boilers, compressors, water softeners and other process equipment are connected to the sanitary sewer and do not discharge wastewater into the parking lot.
- If you use hazardous materials in your everyday business, like ink and solvents for commercial printing, or polishes and chemicals for car detailing or manufacturing after-market accessories, do not put these hazardous materials in the trash or pour them into the gutter. Take them to be recycled safely. Store chemicals, wastes, raw materials and contaminated equipment indoors or in a covered, spill contained area, to prevent exposure of these materials to storm water. For information on proper hazardous waste disposal, call (909)386-8401.
- Take advantage of less-toxic alternatives to dangerous chemicals. From detergents to drain openers, there are a lot of ways to get the same or better result without having to rely toxic substances.
- Looking for raw materials? San Bernardino County Materials Exchange Program, or SBCoMax is a partnership between the County and the California Integrated Waste Management Board, for businesses to provide used but usable materials to those interested in obtaining them. The program helps divert used materials from landfills, saves resources and can save you money.

For more information about how you can prevent stormwater pollution:

www.sbcountystormwater.org

STORMWATER Pollution Prevention

FRESH CONCRETE & MORTAR APPLICATION

Cement wash, sediment, vehicle fluids, dust and hazardous debris from construction sites often make their way into the San Bernardino County storm drain system and do not get treated before reaching the Santa Ana River. This pollutes our drinking water and contaminates waterways, making them unsafe for people and wildlife. Follow these best management practices to prevent pollution and protect public health.



Storing Materials
Keep construction materials and debris away from the street, gutter and storm drains. Secure open bags of cement and cover exposed stockpiles of soil, sand or gravel and excavated material with plastic sheeting, protected from rain, wind and runoff.



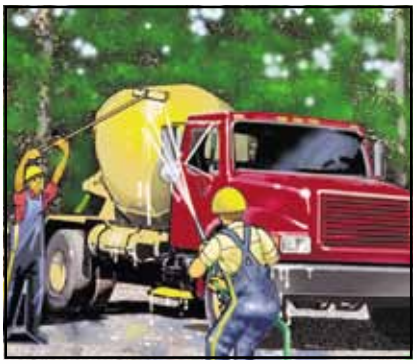
Ordering Materials & Recycling Waste
Reduce waste by ordering only the amounts of materials needed for the job. Use recycled or recyclable materials whenever possible. When breaking up paving, recycle the pieces at a crushing company. You can also recycle broken asphalt, concrete, wood, and cleared vegetation. Non-recyclable materials should be taken to a landfill or disposed of as hazardous waste. Call (909) 386-8401 for recycling and disposal information.



During Construction
Schedule excavation and grading during dry weather. Prevent mortar and cement from entering the street and storm drains by placing erosion controls. Setup small mixers on tarps or drop cloths, for easy cleanup of debris. Never bury waste material. Recycle or dispose of it as hazardous waste.



Cleaning Up
Wash concrete dust onto designated dirt areas, not down driveways or into the street or storm drains. Wash out concrete mixers and equipment in specified washout areas, where water can flow into a containment pond. Cement washwater can be recycled by pumping it back into cement mixers for reuse. Never dispose of cement washout into driveways, streets, gutters, storm drains or drainage ditches.



To report illegal dumping call
(877) WASTE18
sbcountystormwater.org

San Bernardino County STORMWATER PROGRAM

Prevención de Contaminación del Desagüe

APLICANDO CONCRETO FRESCO

Cemento, grava, asfalto y liquidos de auto, tierra y residuos peligrosos de lugares de concreto fresco por llegar a los drenajes del Condado de San Bernardino y terminando en el Rio de Santa Ana. Esto contamina el agua que tomamos, haciendola peligorsa para la gente y la vida salvaje. Sigue estas practicas para prevenir la contaminación y protejer la salud publica.



Almacenando Materiales
Manten materiales de construcción y residuos lejos de las calles, coladeras y desagües. Manten tapados los bultos de arena, grava y herramientas para excavar cuviertos con algun plastico para protejerlos de la lluvia, el aire y el desagüe.



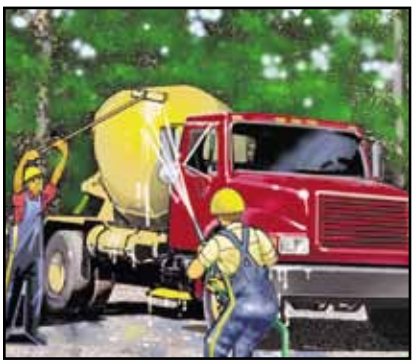
Ordenando Materiales & Reciclando
Reduce la cantidad al ordenar el material, solo ordena lo necesario. Usa materiales recicables cuando sea posible. Cuando estes rompiendo el pavimento, recicla los pedasos en la compañia demolidora. Se puede reciclar el aspfalto, concreto, madera y la vegetacion. Materiales no reciclados se deverian llevar a lugares de desechos peligrosos. llama al (909) 386-8401 para más información.



Durante Construcción
Planea las excavaciones durante clima seco. No dejes que el cemento o la cal lleguen hasta las calles o drenajes, evita esto con plantas temporales para detener el desagüe. Cubre las maquinas de mesclar con alguna garra para que se facilite la limpieza de residuos. Nunca entierres los desechos. Recicla todos los desechos peligrosos.



Limpiando
Lava la cal en un area designada, no la eches hacia la cochera o en la calle. Lava las mescladoras y las herramientas en un lugar especifico, donde el agua llegue a un contenedor. El agua de cemento se puede reciclar volviendola a usar en las mescladoras. Nunca dejes el agua de cemento que corra hacia las calles, alcantarillas o drenajes.



Para reportar actividades ilegales llamar al:

(877) WASTE18
sbcountystormwater.org

San Bernardino County
STORMWATER PROGRAM

STORMWATER Pollution Prevention

CONSTRUCTION

Cement wash, sediment, vehicle fluids, dust and hazardous debris from construction sites often make their way into the San Bernardino County storm drain system and do not get treated before reaching the Santa Ana River. This pollutes our drinking water and contaminates waterways, making them unsafe for people and wildlife. Follow these best management practices to prevent pollution and protect public health.



Store Materials Safely
Keep construction materials and debris away from the street, gutter and storm drains. Cover exposed stockpiles of soil, sand or gravel and excavated material with plastic sheeting, protected from rain, wind and runoff.



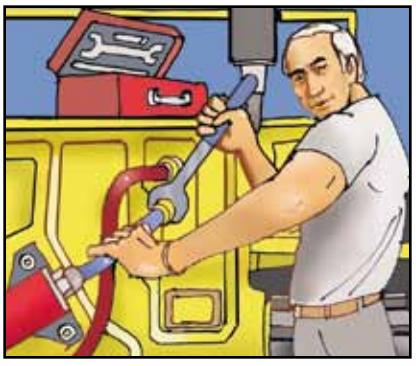
Ordering Materials & Recycling Waste
Reduce waste by ordering only the amounts of materials needed for the job. Use recycled or recyclable materials whenever possible. You can recycle broken asphalt, concrete, wood, and cleared vegetation. Non-recyclable materials should be taken to a landfill or disposed of as hazardous waste. For recycling and disposal information, call (909) 386-8401.



Cleaning & Preventing Spills
Use a drip pan and funnel when draining or pouring fluids. Sweep up dry spills, instead of hosing. Be ready for spills by preparing and using spill containment and cleanup kits that include safety equipment and dry cleanup materials such as kitty litter or sawdust. To report serious spills, call 911.



Preventing Erosion
Avoid excavation or grading during wet weather. Plant temporary vegetation or add hydromulch on slopes where construction is not immediately planned, and permanent vegetation once excavation and grading are complete. Construct diversion dikes to channel runoff to a detention basin and around the construction site. Channels can be lined with grass or roughened pavement to reduce runoff velocity.



Maintaining Vehicles & Equipment
Maintain and refuel vehicles and equipment at a single location on-site, away from the street, gutter and storm drains. Perform major equipment repairs and washings off-site. Inspect vehicles and equipment frequently for leaks, and prevent leaks from stored vehicles by draining gas, hydraulic oil, transmission, brake and radiator fluids.



To report illegal dumping call
(877) WASTE18
sbcountystormwater.org

San Bernardino County STORMWATER PROGRAM

Prevención de Contaminación del Desagüe

CONSTRUCCIÓN

Cemento, sedimentos, liquidos de auto, polvos y residuos peligrosos acaban por llegar a los drenajes del Condado de San Bernardino y terminando en el Rio de Santa Ana. Esto contamina el agua que tomamos, haciendola peligorsa para la gente y la vida salvaje. Sigue estas practicas para prevenir la contaminación y protejer la salud publica.



Almacenando Materiales Cuidadosamente

Manten materiales de construcción y residuos lejos de las calles, coladeras y desagües. Manten tapados los bultos de arena, grava y herramientas para excavar cuviertos con algun plastico para protejerlos de la lluvia, el aire y el desagüe.



Ordenando Materiales & Reciclando Desechos

Reduce la cantidad al ordenar el material, solo ordena lo necesario. Usa materiales que se puedan reciclar cuando sea posible. Se puede reciclar el aspfalto, concreto, madera y la vegetacion. Materiales no reciclados se deven llevar a lugares de desechos peligrosos. Para mas información llama al (909) 386-8401.



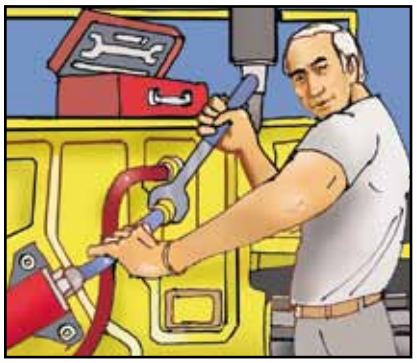
Limpiando & Previniendo Derrames

Usa siempre un enbudo al vaciar liquidos. Barre los derrames en ves de lavarlos con la manguera. Mantente siempre preparado para cualquier derrame, usa siempre las herramientas de seguridad al igual que materiales como, tierra para desechos de gato o aserrin. Para reportar derrames llama al 911.



Previniendo Erosiones

Evita las excavaciones durante lluvia. Planta vegetacion temporal en colinas donde aun no hay planes de construccion y planta vegetacion permanente al terminar las excavaciones. Construye algunos canales para el desagüe. Estos pueden ser creados con pasto y cemento para reducir la velocidad del desagüe.



Mantenimiento de Vehiculos & Herramientas

Has el mantenimiento y carga de vehiculos en el mismo lugar, lejos de la calle, las alcantarillas y los drenajes. Inspecciona los vehiculos y el equipo de cualquier goteadura y preveen goteaduras de autos que no se usan vasiandoles la gasolina, aceite de transmision, frenos y liquidos del radiador.



Para reportar actividades ilegales llamar al:

(877) WASTE18

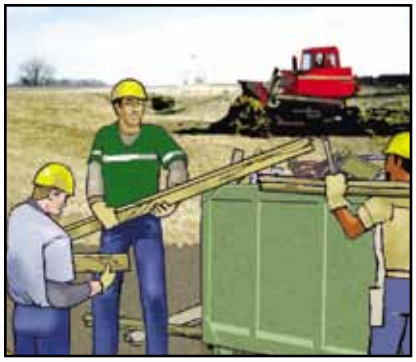
sbcountystormwater.org

San Bernardino County STORMWATER PROGRAM

STORMWATER Pollution Prevention

EXCAVATION AND GRADING

Sediment, cement wash, asphalt and vehicle fluids from soil excavation and grading often make their way into the San Bernardino County storm drain system and do not get treated before reaching the Santa Ana River. This pollutes our drinking water and contaminates waterways, making them unsafe for people and wildlife. Follow these best management practices to prevent pollution and protect public health.



Recycling Waste

Recycle broken asphalt, concrete, wood, and cleared vegetation whenever possible. Non-recyclable materials should be taken to a landfill or disposed of as hazardous waste. For recycling and disposal information, call (909) 386-8401.



Maintaining Vehicles & Equipment

Maintain and refuel vehicles and equipment at a single location on-site, away from the street, gutters and storm drains. Perform major equipment repairs and washings off-site. Inspect vehicles and equipment frequently for leaks. Use gravel approaches where truck traffic is heavy to reduce soil compaction and limit the tracking of sediment into the street.



Cleaning & Preventing Spills

Use a drip pan and funnel when draining or pouring fluids. Sweep up dry spills, instead of hosing. Be ready for spills by preparing and using spill containment and cleanup kits that include safety equipment and dry cleanup materials such as kitty litter or sawdust. Prevent leaks from stored vehicles by draining gas, hydraulic oil, transmission, brake and radiator fluids. To report serious spills, call 911.



Storing Materials

Keep construction materials and debris away from the street, gutter and storm drains. Cover exposed stockpiles of soil, sand or gravel and excavated material with plastic sheeting, protected from rain, wind and runoff.



Preventing Erosion

Avoid excavation or grading during wet weather. Plant temporary vegetation on slopes where construction is not immediately planned, and permanent vegetation once excavation and grading are complete. Construct diversion dikes to channel runoff. Channels can be lined with grass or roughened pavement to reduce runoff velocity.

To report illegal dumping call

(877) WASTE18

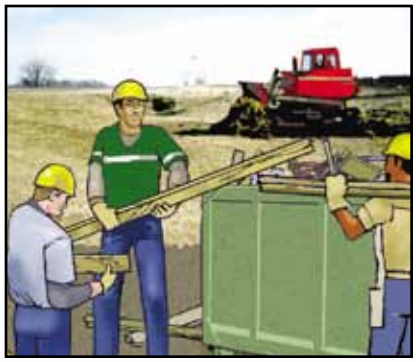
sbcountystormwater.org

San Bernardino County STORMWATER PROGRAM

Prevención de Contaminación del Desagüe

EXCAVACIONES

Sedimento, cemento, asfalto y liquidos de auto, tierra y residuos peligrosos de lugares de construcción acaban por llegar a los drenajes del Condado de San Bernardino y terminando en el Rio de Santa Ana. Esto contamina el agua que tomamos, haciendola peligorsa para la gente y la vida salvaje. Sigue estas practicas para prevenir la contaminación y protejer la salud publica.



Reciclando Desechos
Recicla el aspfalto, concreto, madera y la vegetacion cuando sea posible. Materiales no reciclados se deverian llevar a lugares de desechos peligrosos. Para màs informacion llama al (909) 386-8401.



Manteniendo Vehiculos & Herramientas
Has el mantenimiento y carga de vehiculos en el mismo lugar, lejos de la calle, las alcantarillas y los drenajes. Inspecciona los vehiculos y el equipo de cualquier goteadura. Usa grava donde mayormente se consentra el trafico de camiones para y reducir el sedimento en las calles.



Limpiando & Previniendo Derrames
Usa siempre un enbudo al vaciar liquidos. Barre los derrames en ves de lavarlos con la manguera. Mantente siempre preparado para cualquier derrame, usa siempre las herramientas de seguridad al igual que materiales como, tierra para desechos de gato o aserrin. Preveen goteaduras de autos que no se usan vasiandoles la gasolina, aceite de transmision, frenos y liquidos del radiador. Para reportar derrames llama al 911.



Almacenando Materiales
Manten materiales de construccion y residuos lejos de las calles, coladeras y desagües. Manten tapados los bultos de arena, grava y erramientas para excavar cuviertos con algun plastico para protejerlos de la lluvia, el aire y el desagüe.



Previniendo Erosiones
Evita las excavaciones durante lluvia. Planta vegetacion temporal en colinas donde aun no hay planes de construcción y planta vegetacion permanente al terminar las excavaciones. Construye algunos canales para el desagüe. Estos pueden ser creados con pasto y cemento para reducir la velocidad del desagüe.

Para reportar actividades ilegales llamar al:

(877) WASTE18

sbcountystormwater.org

San Bernardino County STORMWATER PROGRAM

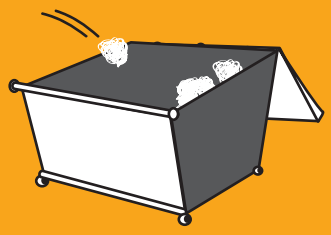
COMMERCIAL TRASH ENCLOSURES

FOLLOW THESE **REQUIREMENTS** TO **KEEP OUR WATERWAYS CLEAN**

Trash enclosures, such as those found in commercial and apartment complexes, typically contain materials that are intended to find their way to a landfill or a recycling facility. **These materials are NOT meant to go into our local lakes and rivers.**

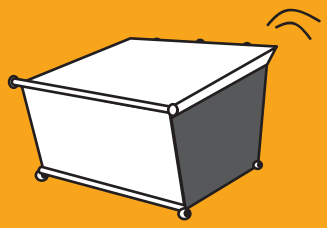
PROTECT WATER QUALITY BY FOLLOWING THESE SIMPLE STEPS

PUT TRASH INSIDE



Place trash inside the bin (preferably in sealed bags)

CLOSE THE LID



Prevent rain from entering the bin in order to avoid leakage of polluted water runoff

KEEP TOXICS OUT



- Paint
- Grease, fats and used oils
- Batteries, electronics and fluorescent lights

SOME ADDITIONAL GUIDELINES, INCLUDE

✓ SWEEP FREQUENTLY

Sweep trash enclosure areas frequently, instead of hosing them down, to prevent polluted water from flowing into the streets and storm drains.

✓ FIX LEAKS

Address trash bin leaks immediately by using dry clean up methods and report to your waste hauler to receive a replacement.

✓ CONSTRUCT ROOF

Construct a solid cover roof over the existing trash enclosure structure to prevent rainwater from coming into contact with trash and garbage. Check with your local City/County for Building Codes.

In San Bernardino County, stormwater pollution is caused by food waste, landscape waste, chemicals and other debris that are washed into storm drains and end up in our waterways - untreated! You can be part of the solution by maintaining a water-friendly trash enclosure.

THANK YOU FOR HELPING TO KEEP SAN BERNARDINO COUNTY CLEAN AND HEALTHY!

San Bernardino County STORMWATER PROGRAM

To report illegal dumping **(877-WASTE18)** or
to find a household hazardous waste facility (800-OILY CAT): **sbcountystormwater.org**
To dispose of hazardous waste call the San Bernardino County Fire Dept. - CUPA Program **(909) 386-8401**

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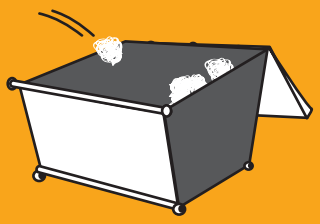
CONTENEDORES COMERCIALES PARA LA BASURA

SIGA ESTOS **PASOS** PARA MANTENER **LIMPIAS NUESTRAS VÍAS FLUVIALES**

Los contenedores de basura, tales como aquellos que se encuentran en las unidades comerciales y departamentos, generalmente contienen materiales que están destinados a los rellenos sanitarios o en algún establecimiento de reciclaje.
Estos materiales NO deben ser vertidos en nuestros lagos y ríos locales.

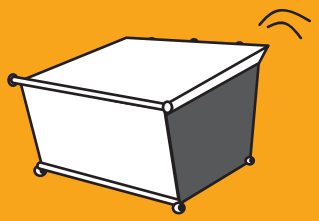
SIGA ESTOS PASOS PARA PROTEGER LA CALIDAD DEL AGUA

COLOQUE LA BASURA ADENTRO



Coloque la basura adentro del contenedor (preferentemente en bolsas selladas)

CIERRE LA TAPA



Evite que la lluvia ingrese al contenedor para evitar un escape de escorrentía contaminada

MANTENGA LOS PRODUCTOS TÓXICOS AFUERA



- Pintura
- Lubricante, grasas y aceites usados
- Baterías, componentes electrónicos y luces fluorescentes

ALGUNAS GUÍAS ADICIONALES, LAS CUALES INCLUYEN

✓ BARRER CON FRECUENCIA

Barra con frecuencia las áreas de los recintos para la basura, en lugar de lavarlas con una manguera, para evitar que el agua contaminada se vierta en las calles y los desagües de lluvia.

✓ REPARE LAS GOTERAS

Ocúpese inmediatamente de las goteras en los contenedores de basura. Use los métodos de limpieza en seco e infórmele a su recolector de basura para que reciba un reemplazo.

✓ CONSTRUYA UN TECHO

Construya un techo de cubierta sólida sobre la estructura actual del recinto para la basura a fin de evitar que el agua de lluvia entre en contacto con los desechos y la basura. Consulte con su Ciudad/Condado para conocer los Códigos de Construcción.

En el Condado de San Bernardino, los desechos de alimentos y jardines, los productos químicos y otros restos que se vierten en los desagües de aguas pluviales y que terminan en nuestras vías fluviales sin tratamiento alguno provocan la contaminación de estas aguas. Usted puede ser parte de la solución si mantiene un recinto para la basura que no contamine el agua.

¡MUCHAS GRACIAS POR AYUDAR A MANTENER EL CONDADO DE SB LIMPIO Y SIN CONTAMINACIÓN!

San Bernardino County STORMWATER PROGRAM

Para informar acerca del vertedero ilegal, llame a **(877-WASTE18)**, o para encontrar un establecimiento donde arrojar los residuos peligrosos del hogar, llame a **(800-OILY CAT)**: **sbcountystormwater.org**
Para deshacerse de los residuos peligrosos llame al Condado de San Bernardino Departamento de Bomberos - programa CUPA **(909) 386-8401**

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Appendix H – Noise Impact Analysis

Riverside Drive

NOISE IMPACT ANALYSIS

CITY OF LAKE ELSINORE

PREPARED BY:

Bill Maddux
bmaddux@urbanxroads.com
(619) 788-1971

NOVEMBER 27, 2024

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
Hz	Hertz
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
L_{min}	Minimum level measured over the time interval
mph	Miles per hour
OPR	Office of Planning and Research
PPV	Peak particle velocity
Project	Riverside Drive
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the potential noise impacts and the necessary noise mitigation measures, if any, for the Riverside Drive ("Project"). The Project site is located at 32281 Riverside Drive in the City of Lake Elsinore.

The results of this Riverside Drive Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines (1). Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA. All impacts are considered less than significant without mitigation.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Less Than Significant*	-
Off-Site Traffic Noise[1]	8	-	-
Operational Noise	10	*Less Than Significant*	-
Construction Noise	11	*Less Than Significant*	-
Construction Vibration		*Significant*	*Less Than Significant*

[1]CEQA does not evaluate the effects of the environment on the Project

CONSTRUCTION VIBRATION ANALYSIS

It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. At distances ranging from 15 to 210 feet from Project construction activity, construction vibration velocity levels are expected to range from less than 0.01 to 0.19 RMS in./sec., which will exceed the City of Lake Elsinore 0.10 RMS in./sec. threshold at receiver locations R5 and R6. The construction vibration analysis shows that the unmitigated Project-related vibration impacts will be *significant* during the construction activities at the Project site and mitigation is required.

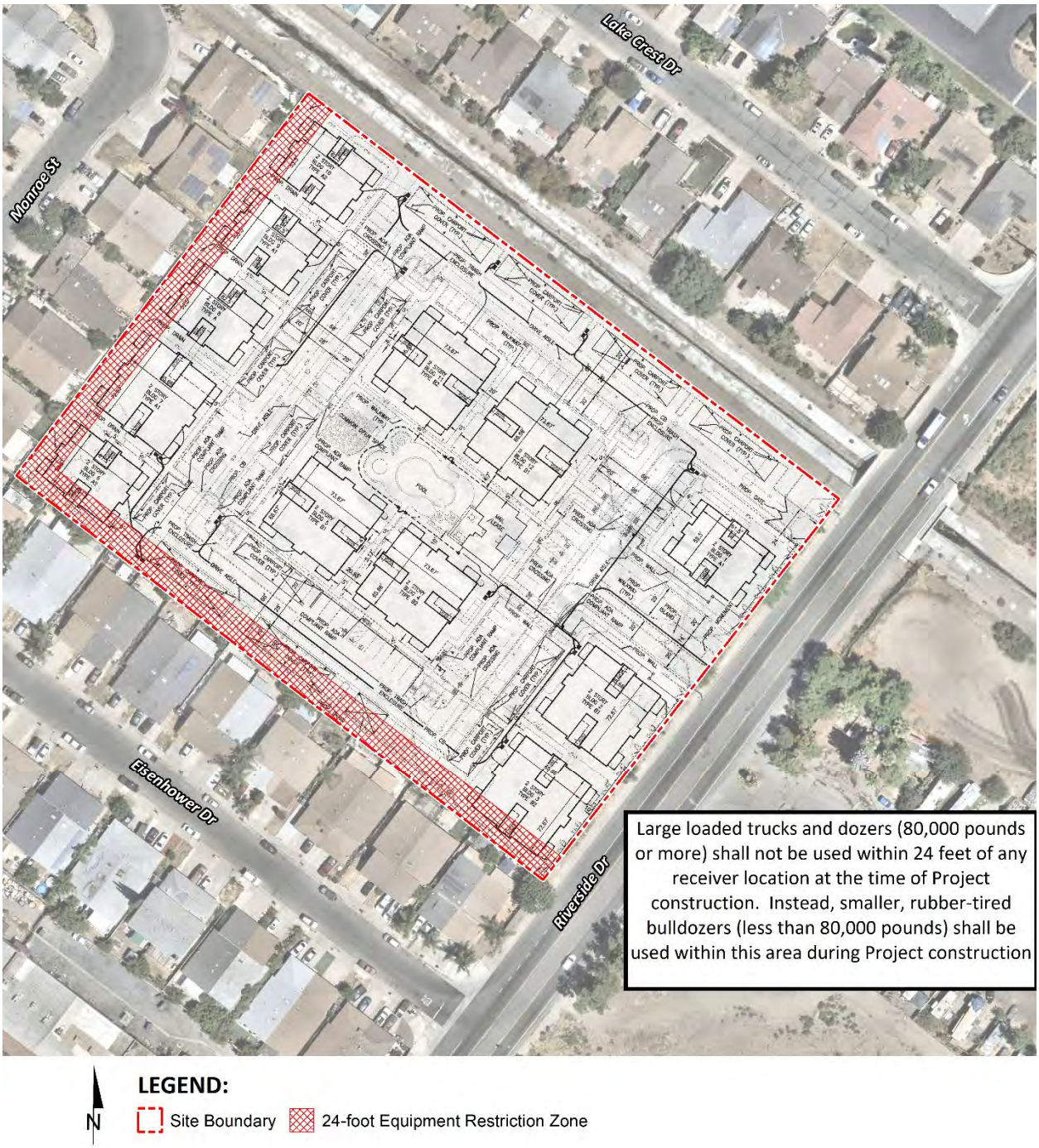
Therefore, a 24-foot vibration buffer zone mitigation measure is required to restrict the use of large loaded trucks and dozers (greater than 80,000 pounds) within 50 feet of occupied sensitive receiver locations R4 through R6. With this mitigation measure, the mitigated vibration levels with the 24-foot buffer zone will be reduced to less than 0.10 RMS in./sec. and will satisfy the City of Lake Elsinore threshold for vibration impacts. Therefore, impacts with the construction vibration will be *less than significant*.

CONSTRUCTION VIBRATION MITIGATION

To reduce the construction vibration impacts to *less than significant* levels, the following vibration mitigation measure is required for Project-related construction activities:

- Large loaded trucks and dozers (greater than 80,000 pounds) shall not be used within 24 feet of occupied noise-sensitive residential homes, as shown on Exhibit ES-A, represented by receiver locations R4 through R6, during Project construction activities. Instead, small rubber-tired or alternative equipment shall be used within this area during Project construction to reduce vibration effects. If all mobile equipment used during Project construction are less than 80,000 pounds, then the 24-foot buffer vibration mitigation is not required.

EXHIBIT ES-A: SUMMARY OF RECOMMENDATION



1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the Riverside Drive ("Project"). This noise study briefly describes the Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents the study methods and procedures for transportation-related CNEL traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The Project site is located northwest of Riverside Drive at 32281 Riverside Drive, in the City of Lake Elsinore, as shown in Exhibit 1-A. The Project site is surrounded by residential land uses, with residential land uses located adjacent to the northeast and southwest, and additional residential land uses to the southeast across Riverside Drive and to the northeast across a drainage channel.

1.2 PROJECT DESCRIPTION

The Project, as shown in Exhibit 1-B, consists of developing 96 residential dwelling units, 200 parking spots, a recreational clubhouse, and a swimming pool.

EXHIBIT 1-A: LOCATION MAP

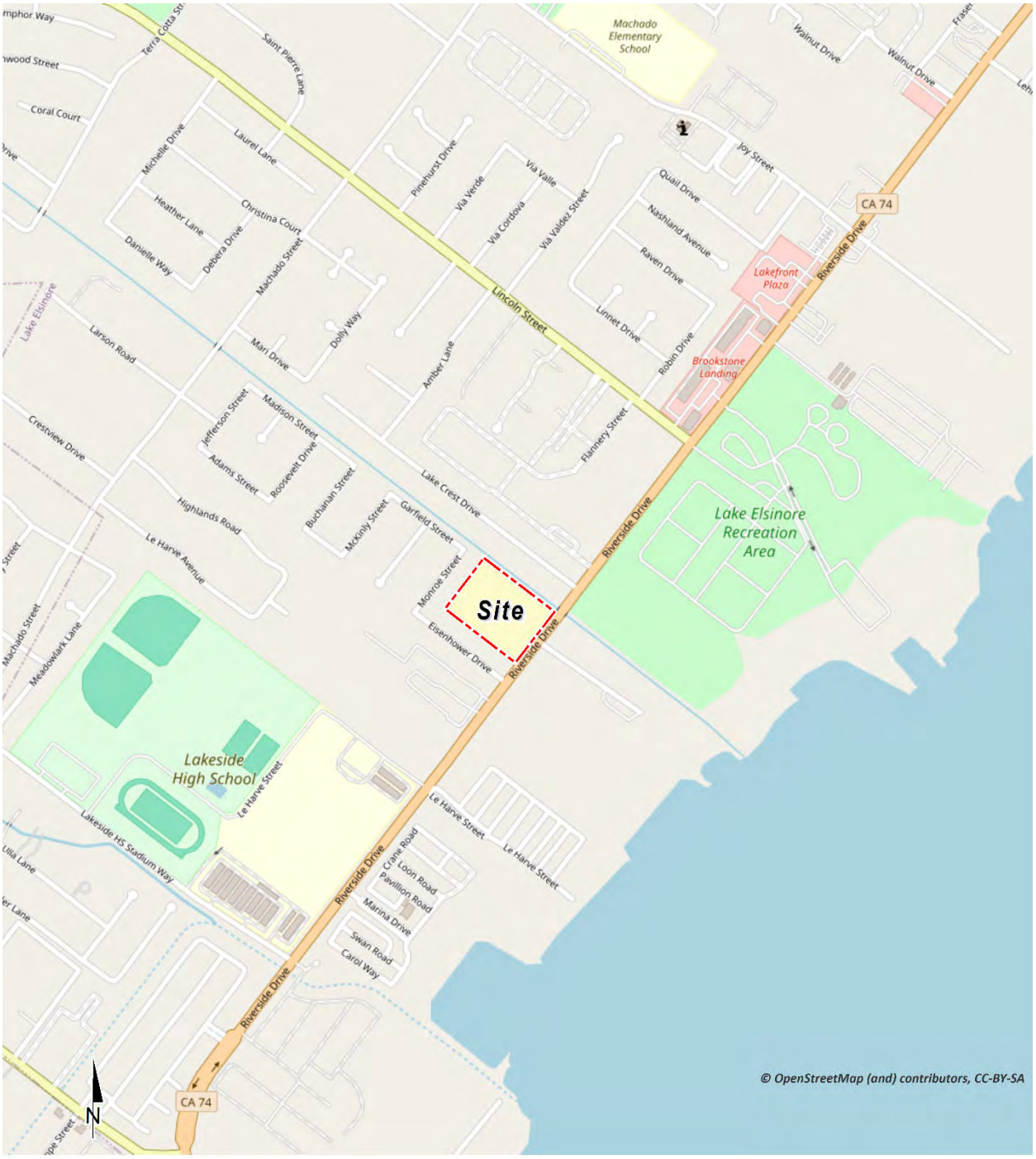


EXHIBIT 1-B: SITE PLAN



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2 FUNDAMENTALS

Noise is simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud (2). The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 100 feet, which can cause serious discomfort (3). Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most used figure is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period (typically one hour) and is commonly used to describe the "average" noise levels within the environment.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment, however. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time-of-day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The City of Lake Elsinore relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. Based on guidance from the U.S. Department of Transportation, Federal Highway Administration (FHWA), Office of Environment and Planning, Noise and Air Quality Branch, the way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source (2).

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation

associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source (4).

2.3.3 ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects (2).

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an "out of sight, out of mind" effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearest residents. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The Federal Highway Administration (FHWA) does not consider the planting of vegetation to be a noise abatement measure (4).

2.3.5 REFLECTION

Field studies conducted by the FHWA have shown that the reflection from barriers and buildings does not substantially increase noise levels (4). If all the noise striking a structure was reflected back to a given receiving point, the increase would be theoretically limited to 3 dBA. Further, not all the acoustical energy is reflected back to same point. Some of the energy would go over the structure, some is reflected to points other than the given receiving point, some is scattered by ground coverings (e.g., grass and other plants), and some is blocked by intervening structures and/or obstacles (e.g., the noise source itself). Additionally, some of the reflected energy is lost due to the longer path that the noise must travel. FHWA measurements made to quantify reflective increases in traffic noise have not shown an increase of greater than 1-2 dBA; an increase that is not perceptible to the average human ear.

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, receiver, or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by up to 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source (4).

2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, recreation areas or buildings where people normally sleep. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized (5).

2.7 COMMUNITY RESPONSE TO NOISE

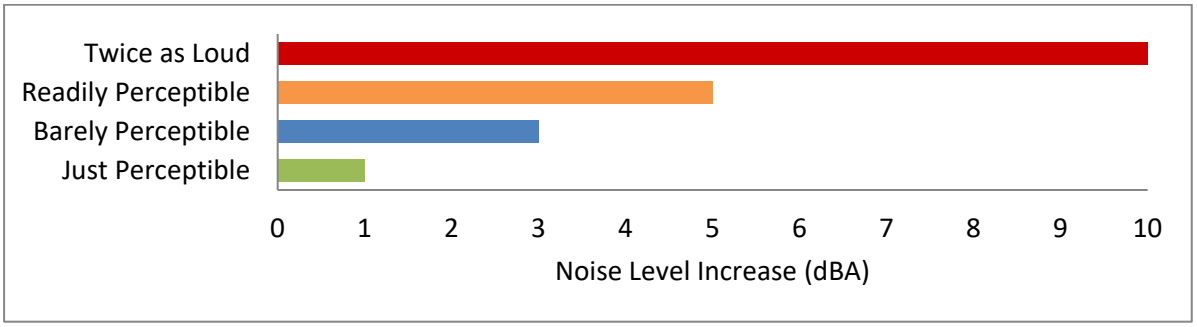
Community responses to noise varies depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Twenty-five percent of the population will not complain even in very severe noise

environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment (6). Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain (6). Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (4)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual*, vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

Additionally, in contrast to airborne noise, ground-borne vibration outdoors is not a common environmental problem and annoyance from ground-borne vibration is almost exclusively an indoor phenomenon (7). Therefore, the effects of vibrations should only be evaluated at a structure and the effects of the building structure on the vibration should be considered. Wood-frame buildings, such as typical residential structures, are more easily excited by ground vibration than heavier buildings. In contrast, large masonry buildings with spread footings have a low response to ground vibration (7). In general, the heavier a building is, the lower the response will be to the incident vibration energy. However, all structurers reduce vibration levels due to the coupling of the building to the soil.

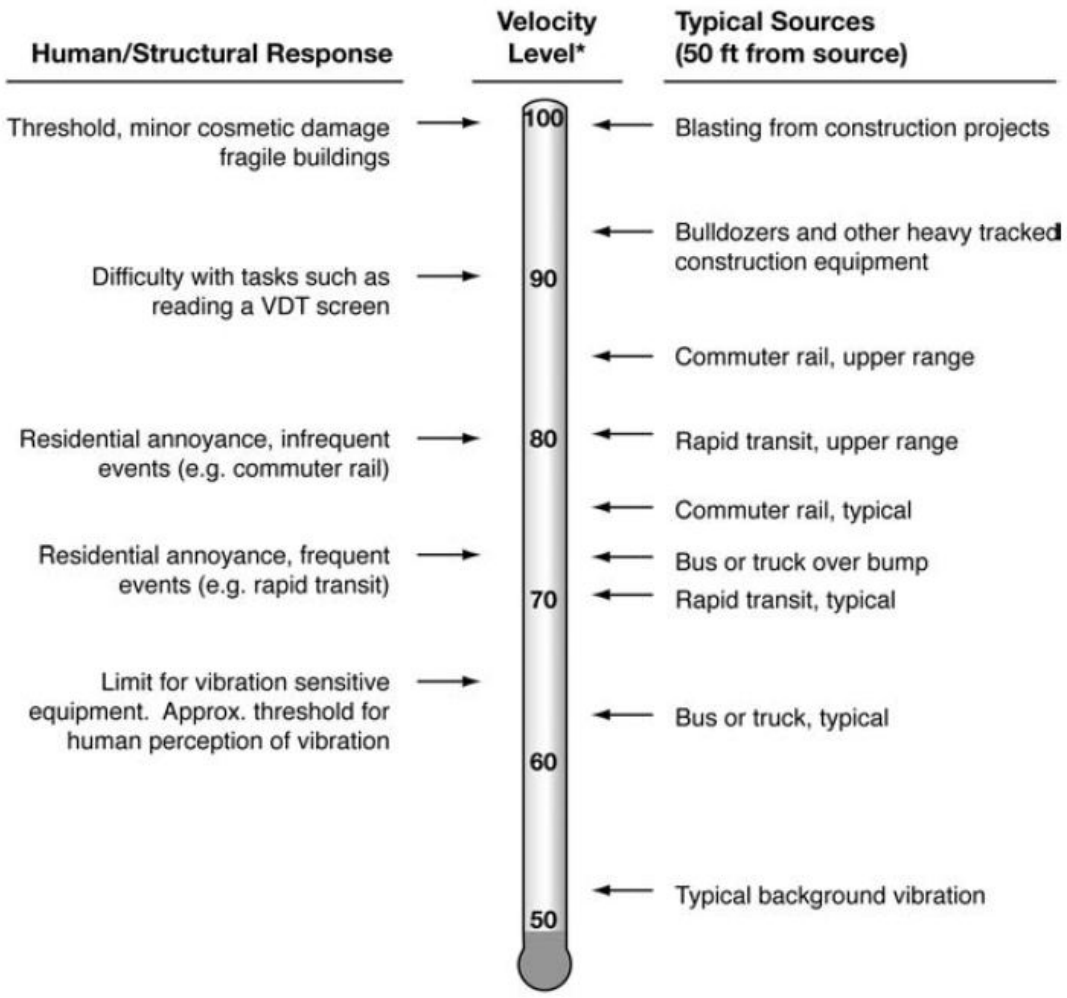
There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal (7). The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to

respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body (7). However, the RMS amplitude and PPV are related mathematically, and the RMS amplitude of equipment is typically calculated from the PPV reference level. The RMS amplitude is approximately 70% of the PPV (8). Thus, either can be used on the description of vibration impacts.

While not universally accepted, vibration decibel notation (VdB) is another vibration notation developed and used by the FTA in their guidance manual to describe vibration levels and provide a background of common vibration levels and set vibration limits (9). Decibel notation (VdB) serves to reduce the range of numbers used to describe vibration levels and is used in this report to describe vibration levels.

As stated in the FTA guidance manual, the background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



** RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

Source: Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual.

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3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE

CALIFORNIA ENVIRONMENTAL QUALITY ACT

The State of California regulates transportation noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (10) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

CALIFORNIA BUILDING CODE – TITLE 24

The State of California's interior noise standards for all new construction with habitable spaces are codified in the California Code of Regulations (CCR), Title 24, Building Standards Administrative Code, Chapter 12, Section 1206. A habitable space in a building is defines as a space used for "living, sleeping, eating, or cooking. Bathrooms, toilet rooms, closets, halls, storage, or utility spaces and similar areas are not considered habitable spaces." These noise standards are primarily applicable to all new residential construction, inns, hotels, motels, and residential care facility land uses in California for controlling interior noise levels resulting from exterior noise sources. The acceptable interior noise limit is 45 CNEL in all habitable rooms (11).

3.2 CITY OF LAKE ELSINORE

GENERAL PLAN

The City of Lake Elsinore has adopted Section 3.7, *Noise,* of the Public Safety and Welfare Element (12) of the General Plan to control and abate environmental noise, and to protect the citizens of Lake Elsinore from excessive exposure to noise. The Noise section specifies the maximum allowable exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the Noise section identifies noise polices designed to protect, create, and maintain an environment free from noise that may

jeopardize the health or welfare of sensitive receivers, or degrade quality of life. To protect City of Lake Elsinore residents from excessive noise, the Noise section contains the following goal related to the Project:

Goal 7 *Maintain an environment for all City residents and visitors free of unhealthy, obtrusive, or otherwise excessive noise.*

To ensure noise-sensitive land uses are protected from excessive noise levels (Goal 7), the Noise section identifies the following policies:

7.1 Apply the noise standards set forth in the Lake Elsinore Noise and Land Use Compatibility Matrix (see Table 3-1) and Interior and Exterior Noise Standards (see Table 3-2) when considering all new development and redevelopment proposed within the City.

7.2 Require that mixed-use structures and areas be designed to prevent transfer of noise and vibration from commercial areas to residential areas.

7.3 Strive to reduce the effect of transportation noise on the I-15.

7.4 Consider estimated roadway noise contours based upon Figure 3.6, Noise Contours, when making land use design decisions along busy roadways throughout the City.

7.5 Participate and cooperate with other agencies and jurisdictions in the development of noise abatement plans for highways.

Land Use Compatibility

The *Noise and Land Use Compatibility Matrix* (Table 3-1) in the City of Lake Elsinore General Plan Noise section provides guidelines to evaluate the land use compatibility of transportation related noise. The compatibility criteria, shown on Exhibit 3-A, provides the City with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels.

The *Noise and Land Use Compatibility Matrix* describes categories of compatibility and not specific noise standards. According to these categories of compatibility, sensitive residential land use in the Project Study area is considered *clearly compatible* with exterior noise levels below 60 dBA CNEL and *normally compatible* with exterior noise levels below 70 dBA CNEL. For *normally compatible* land use, *new construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.* (12)

MUNICIPAL CODE

To analyze noise impacts originating from a designated fixed location or private property such as the Riverside Drive Project, stationary-source (operational) noise is typically evaluated against standards established under a City's Municipal Code.

EXHIBIT 3-A: NOISE AND LAND USE COMPATIBILITY MATRIX

Land Use Categories		Day-Night Noise Level (LDN)						
Categories	**Uses**	**≤55**	**60**	**65**	**70**	**75**	**80≥**	
Residential	Single, Family, Duplex, Multiple Family	A	A	B	B	C	D	D
Residential	Mobile Homes	A	A	B	C	C	D	D
Commercial Regional District	Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D
Commercial Regional Village, District Special	Commercial, Retail, Bank, Restaurant, Movie Theatre	A	A	A	A	B	B	C
Commercial Industrial Institutional	Office Building, Research and Development, Professional Offices, City Office Building	A	A	A	B	B	C	D
Commercial Regional Institutional Civic Center	Amphitheatre, Concert Hall Auditorium, Meeting Hall	B	B	C	C	D	D	D
Commercial Recreation	Children's Amusement Park, Miniature Golf Course, Go-cart Track, Equestrian Center, Sports Club	A	A	A	B	B	D	D
Commercial General, Special Industrial Institutional	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B
Institutional General	Hospital, Church, Library, Schools, Classroom	A	A	B	C	C	D	D
Open Space	Parks	A	A	A	B	C	D	D
Open Space	Golf Course, Cemeteries, Nature Centers, Wildlife Reserves, Wildlife Habitat	A	A	A	A	B	C	C
Agriculture	Agriculture	A	A	A	A	A	A	A

Interpretation	
Zone A Clearly Compatible	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.
Zone B Normally Compatible	New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed nose insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.
Zone C Normally Incompatible	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.
Zone D Clearly Incompatible	New construction or development should generally not be undertaken.

Source: City of Lake Elsinore General Plan, Public Safety and Welfare Element, Table 3-1.

Section 17.176.060 of the City of Lake Elsinore Municipal Code states the following: *No person shall, operate or cause to be operated, any source of sound at any location within the incorporated City or allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person which causes the noise level when measured on any other property, either incorporated or unincorporated to exceed*…the maximum permissible sound levels by receiving land use. For residential land use, the Municipal Code identifies base exterior noise level limits for the daytime (7:00 a.m. to 10:00 p.m.) hours of 50 dBA L_{50} and 40 dBA L_{50} during the nighttime (10:00 p.m. to 7:00 a.m.) hours. These standards shall apply for a cumulative period of 30 minutes in any hour (L_{50}), as well as the standard plus 5 dBA cannot be exceeded for a cumulative period of more than 15 minutes in any hour (L_{25}), or the standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour (L_8), or the standard plus 15 dBA for a cumulative period of more than 1 minute in any hour (L_2), or the standard plus 20 dBA for any period of time (L_{max}). (13). Table 3-1 shows the City of Lake Elsinore noise standards by land use.

TABLE 3-1: OPERATIONAL EXTERIOR NOISE LEVEL STANDARDS

Receiving Land Use	Condition[2]	Based Exterior Noise Level Standards (dBA)[1]				
		L_{50}	L_{25}	L_8	L_2	L_{max}
		(30 mins)	(15 mins)	(5 mins)	(1 min)	(Anytime)
Single-Family Residential	Daytime	50	55	60	65	70
	Nighttime	40	45	50	55	60
Multi-Family Residential	Daytime	50	55	60	65	70
	Nighttime	45	50	55	60	65
Public Space/ Light Comm.	Daytime	60	65	70	75	80
	Nighttime	55	60	65	70	75
General Commercial	Daytime	65	70	75	80	85
	Nighttime	60	65	70	75	80
Light Industrial	Anytime	70	75	80	85	90
Heavy Industrial	Anytime	75	80	85	90	95

[1] City of Lake Elsinore Municipal Code, Section 17.176.060(A)(2) & Table 1 (Appendix 3.1).
[2] "Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

The percentile noise descriptors are provided to ensure that the duration of the noise source is fully considered. However, due to the relatively constant intensity of the Project operational sources, the L_{50} or average L_{eq} noise level metrics best describes the noise level impacts. In addition, the L_{eq} noise level metric accounts for noise fluctuations over time by energy averaging the louder and quieter events and giving more weight to the louder events. In addition, due to the mathematical relationship between the median (L_{50}) and the mean (L_{eq}), the L_{eq} will always be larger than or equal to the L_{50}. The more variable the noise becomes, the larger the L_{eq} becomes in comparison to the L_{50}. Therefore, this noise study conservatively relies on the energy average L_{eq} sound level limits to describe the Project operational noise levels.

3.4 CONSTRUCTION NOISE STANDARDS

The City's Municipal Code Section 17.176.080 pertains specifically to prohibited acts that would be contrary to the City policy. Subsection 17.176.080.F relates to construction/demolition activities. This provision of the City's Municipal Code states that:

1. Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on weekends or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance issued by the City.
2. Noise Restrictions at Affected Properties. Where technically and economically feasible, construction activities shall be conducted in such a manner that the maximum noise levels at affected residential properties will not exceed those listed in the following schedule:

Mobile Equipment: Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment:

	Type I Areas Single-Family Residential	Type II Areas Multifamily Residential	Type III Areas Semi-Residential/ Commercial
Daily, except Sundays and Legal Holidays 7:00 a.m. to 7:00 p.m.	75 dBA	80 dBA	85 dBA
Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and Legal Holidays	60 dBA	65 dBA	70 dBA

Stationary Equipment: Maximum noise levels for repetitively scheduled and relatively long-term operation (period of 10 days or more) of stationary equipment:

	Type I Areas Single-Family Residential	Type II Areas Multifamily Residential	Type III Areas Semi-Residential/ Commercial
Daily, except Sundays and Legal Holidays 7:00 a.m. to 7:00 p.m.	60 dBA	65 dBA	70 dBA
Daily,7:00 p.m. to 7:00 a.m. and all day Sunday and Legal Holidays	50 dBA	55 dBA	60 dBA

Commercial Properties:

Mobile Equipment: Maximum noise levels for nonscheduled, intermittent, short-term operation of mobile equipment:

Daily, including Sundays and Legal Holidays, all hours: 85 dBA.

Stationary Equipment: Maximum noise levels for repetitively scheduled and relatively long-term operation of stationary equipment:

Daily, including Sundays and Legal Holidays, all hours: 75 dBA

3. All mobile or stationary internal combustion engine powered equipment or machinery shall be equipped with suitable exhaust and air intake silencers in proper working order.

3.5 CONSTRUCTION VIBRATION STANDARDS

To analyze the vibration impacts originating from the construction of the Project, vibration from construction activities is typically evaluated against standards established under a City's Municipal Code. The City of Lake Elsinore Municipal Code, Section 17.176.080(G), states that *operating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property or at 150 feet (46 meters) from the source if on public space or public right-of-way* is prohibited. However, the City Municipal code does not define a quantitative vibration threshold. The Caltrans Construction Vibration Manual defines the thresholds for readily or distinctly vibration levels for transient and continuous vibration sources as 0.24 and 0.08 PPV in/sec, respectively. The vibration from traffic is considered continuous and vibration from a single blasting event is a single transient event; however, many types of construction activities fall between a single event and a continuous source. A vibration level of 0.16 PPV in/sec is the middle point between the 0.08 and 0.24 PPV in/sec. To be conservative a vibration level of 0.1 PPV in/sec is considered appropriate for a source that is both transient and continuous. Thus, this analysis uses 0.1 PPV in/sec threshold for construction activity under CEQA.

4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the State CEQA Guidelines. (14) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

B. Generation of excessive ground-borne vibration or ground-borne noise levels?

C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

4.1 NOISE LEVEL INCREASES (THRESHOLD A)

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines. Under CEQA, consideration must be given to the magnitude of the increase, the existing baseline ambient noise levels, and the location of receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (15) This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will typically be judged. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment. The *ambient noise level* is the composite of noise from all sources, excluding the alleged offensive noise. In this context, it represents the normal or existing level of environmental noise at a given location for a specified time of day or night.

4.1.1 TRANSPORTATION NOISE (SUBSTANTIAL PERMANENT NOISE LEVEL INCREASE)

The Federal Interagency Committee on Noise (FICON) (16) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

As previously stated, the approach used in this noise study recognizes *that there is no single noise increase that renders a noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (15) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, a *readily perceptible* 5 dBA or greater

project-related noise level increase is considered a significant impact when the without project noise levels are below 60 dBA. Per the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance.

The FICON guidance provides an established source of criteria to assess the impacts of substantial permanent increase in baseline ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project (baseline) noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived acceptance at noise sensitive receiver locations are consistent with guidance provided by both the Federal Highway Administration (17 p. 9) and Caltrans (18 p. 2_48).

The City of Lake Elsinore General Plan Noise Element, *Noise Compatibility by Land Use Type* was used to establish the satisfactory noise levels of significance for non-noise-sensitive land uses in the Project study area. As previously shown on Exhibit 3-A, the *completely compatible* exterior noise level for non-noise-sensitive land uses is 70 dBA CNEL. To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive land uses, a *barely perceptible* 3 dBA criteria is used. When the without Project noise levels are greater than the *completely compatible* 70 dBA CNEL land use compatibility criteria, a *barely perceptible* 3 dBA or greater noise level increase is considered a significant impact since the noise level criteria is already exceeded. The noise level increases used to determine significant impacts for non-noise-sensitive land uses is generally consistent with the FICON noise level increase thresholds for noise-sensitive land uses but instead rely on the City of Lake Elsinore General Plan Noise Element, *Noise Compatibility by Land Use Type completely compatible* 70 dBA CNEL exterior noise level criteria.

4.1.2 NON-TRANSPORTATION NOISE (SUBSTANTIAL PERMANENT NOISE LEVEL INCREASE)

The FICON criteria are also used to determine if Project-related stationary source (operational) noise level increases are significant at off-site receiver locations. For non-transportation noise source activities, a substantial permanent noise level increase consists of increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying ambient noise levels.

4.1.3 CONSTRUCTION NOISE (SUBSTANTIAL TEMPORARY NOISE LEVEL INCREASE)

In addition to absolute noise limits, the temporary noise level increases over the existing ambient conditions must be considered under CEQA Significance Threshold A. Recent court cases have also placed an emphasis on the increase as opposed to the noise level limit. However, limits and acceptable increases are not unrelated since, often, the noise level limits can subtly include the increase limit.

While specific noise ordinances can vary widely, many jurisdictions across California set construction noise level limits around 75 to 80 dBA L_{eq} and only allow construction during daytime hours (e.g., City and County of Los Angeles, City and County of San Diego, City and County of San Francisco, etc.) In contrast, everyday noise limits are stricter because they apply to continuous, long-term activities where excessive noise can greatly affect the quality of life over time. Thus, for everyday noise limits, many jurisdictions across California set residential daytime noise level limits around 55 dBA L_{eq} during daytime hours. This implies that during daytime hours, many California communities consider an increase of 20 dBA over the daytime limit an acceptable temporary increase for construction activities. This is also illustrated in the adoption of many CEQA documents statewide that use an 80 dBA L_{eq} limit for assessing construction impacts while using everyday noise level limits of local noise ordinances in assessing on-site operational impacts.

However, since an increase of 20 dBA could result in noise levels over 85 dBA L_{eq}, which the California Occupational Safety and Health Administration (CalOSHA) identifies as a potentially hazardous noise level, the increase should not be allowed to result in an absolute noise level greater than 80 dBA Leq at any residence, which is consistent with the FTA recommendations.

Therefore, if the Project-related construction noise levels generate a temporary noise level increase over the existing daytime ambient noise levels in excess of 20 dBA L_{eq}, and exceed 80 dBA L_{eq}, then the Project construction noise level increases will be considered a *significant* impact.

4.2 VIBRATION (THRESHOLD B)

As described in Section 3.6, the vibration impacts are appropriately evaluated using the Caltrans vibration damage thresholds to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive buildings adjacent to the Project site can best be described as “older residential structures” with a maximum acceptable continuous vibration threshold of 0.1 PPV (in/sec).

4.3 CEQA GUIDELINES NOT FURTHER ANALYZED (THRESHOLD C)

CEQA Noise Threshold C applies when there are nearby public and private airports and/or airstrips and focuses on land use compatibility of the Project to nearby airports and airstrips. The Project site is not located within two miles of an airport or airstrip. The closest airport is the Perris Valley Airport-L65, located roughly 11 miles northeast of the Project site. As such, the Project site would not be exposed to excessive noise levels from airport operations, and

therefore, impacts are considered *less than significant,* and no further noise analysis is conducted in relation to Appendix G to the CEQA Guidelines, Noise Threshold C.

4.3 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-1 shows the significance criteria summary matrix.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Condition(s)	Significance Criteria	
		Daytime	Nighttime
Off-Site[1]	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
	If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
	If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
On-Site	Exterior Noise Compatibility1	See Exhibit 3-A	
	Interior Noise Level Standard2	45 dBA CNEL	
Operational[2]	Exterior Noise Level Standards	See Table 3-1	
Construction	Noise Level Threshold[3]	75 dBA L_{eq}	n/a
	Noise Level Increase[4]	20 dBA L_{eq}	
	Vibration Level Threshold[5]	0.1 PPV (in/sec)	

[1] FICON, 1992.
[2] City of Lake Elsinore Municipal Code, Chapter 17.176 Noise Control (Appendix 3.1).
[3] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018.
[4] Caltrans, Traffic Noise Analysis Protocol, 2020
[5] City of Lake Elsinore Municipal Code, Section 17.176.080(G) (Appendix 3.1).
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at six locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Wednesday, November 6th, 2024. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (19)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (2) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (20)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (20) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts.

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the average or equivalent sound levels (L_{eq}). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location.

TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Measurement Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]	
		Daytime	Nighttime
L1	Located northwest of the site near the residence at 3511 Lake Crest Dr.	54.4	47.7
L2	Located northeast of the site near the residence at 3499 Lake Crest Dr.	63.1	59.0
L3	Located southeast of the site near the RV Park at 32390 Riverside Dr.	56.6	54.1
L4	Located Southwest of the site near the residence at 3606 Eisenhower Dr.	54.1	50.1
L5	Located southwest of the site near the residence at 3708 Eisenhower Dr.	55.4	51.5
L6	Located northwest of the site near the residence at 1114 Monroe St.	58.8	47.7

[1] See Exhibit 5-A for the noise level measurement locations.
[2] Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix C.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with the SR-74 and other local surface streets. This

includes the auto and heavy truck activities on study area roadway segments near the noise level measurement locations.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



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6 TRAFFIC NOISE PREDICTION METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future off-site traffic noise environment. Consistent with the *Land Use Compatibility for Community Noise Exposure*, all transportation related noise levels are presented in terms of the 24-hour CNEL's.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The expected roadway noise level increases from vehicular traffic were calculated by Urban Crossroads, Inc. using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (21) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (22) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (23)

6.2 ON-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

The on-site roadway parameters including the average daily traffic (ADT) volumes used for this study are presented in Table 6-1. Based on the City of Lake Elsinore General Plan Update Draft Program EIR, Section 3.4, Riverside Drive is classified as an Urban Arterial (24) To predict the future on-site noise environment at the Project site, parameters including the daily volume thresholds were obtained from the City of Lake Elsinore General Plan Draft Program EIR and other parameters such as the number of lanes and speed limits were found with aerial maps. For the purposes of this analysis, soft site conditions were used to analyze the on-site traffic noise impacts for the Project study area. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (23)

TABLE 6-1: ON-SITE ROADWAY PARAMETERS

Roadway	Lanes	Classification[1]	Maximum Daily Traffic Volume[2]	Posted Speed Limit (mph)	Site Conditions
Riverside Drive	2	Urban Arterial	34,000	45	Soft

[1] City of Lake Elsinore General Plan Update Draft Program EIR – Section 3.4: Transportation and Circulation, August

Table 6-2 provides the time of day (daytime, evening, and nighttime) vehicle splits. The daily Project truck trip-ends were assigned to the individual off-site study area roadway segments based on the Project truck trip distribution percentages (25). Table 6-3 shows the traffic flow by vehicle type (vehicle mix) used for all Project traffic scenarios.

TABLE 6-2: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits[1]			Total of Time of
	Daytime	Evening	Nighttime	Day Splits
Autos	77.50%	12.90%	9.60%	100.00%
Medium Trucks	84.80%	4.90%	10.30%	100.00%
Heavy Trucks	86.50%	2.70%	10.80%	100.00%

[1] Typical Southern California vehicle mix.
"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-3: PROJECT VEHICLE MIX

Roadway Classification	Total % Traffic Flow[1]			Total
	Autos	Medium Trucks	Heavy Trucks	
All Roadways	97.42%	1.84%	0.74%	100.00%

[1] Typical Southern California vehicle mix.

To predict the future noise environment at each building within the Project site, coordinate information was collected to identify the noise transmission path between the noise source and receiver. The coordinate information is based on the site plan showing the plotting of each building in relationship to adjacent analyzed roadways, as shown in Appendix 6.1. The plans are used to identify the relationship between the roadway centerline elevation, the pad elevation and the centerline distance to the noise barrier, and the building façade. The first-floor exterior noise level receivers were placed five feet above the pad elevation. Second-floor receiver locations were placed at fourteen feet above the pad elevation.

7 OFF-SITE TRAFFIC NOISE ANALYSIS

The Project would result in a small increase in regional and local traffic volumes. The Project is anticipated to generate a maximum increase of 647 vehicle trips (26), which would represent an incremental increase to the existing roadway volumes of 22,000 ADT for Riverside Drive (27) and is not expected to generate a perceptible noise level increase (i.e., less than 3 dBA CNEL) at nearby sensitive land uses adjacent to study area roadways. Due to the low traffic volumes generated by the Project, the off-site traffic noise levels generated by the Project are considered *less than significant* and no further analysis is required.

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8 ON-SITE TRAFFIC NOISE IMPACTS

An on-site exterior noise impact analysis has been completed to determine the traffic noise exposure and to identify potential necessary noise abatement measures for the Project that is consistent with City of Lake Elsinore noise standards. It is expected that the primary source of noise impacts to the Project site will be traffic noise from Riverside Drive and Grand Avenue, both of which are also SR74 in the Project study area. The Project will also experience some background traffic noise from the Project's internal local streets; however, due to the low traffic volume/speeds, traffic noise from these roads will not make a significant contribution to the noise environment.

8.1 ON-SITE EXTERIOR NOISE ANALYSIS

Using the FHWA traffic noise prediction model and the parameters outlined in Section 6, the expected future exterior noise levels for the building façade were calculated. Table 8-1 presents a summary of future exterior noise levels at the building façade within the Project site. The on-site traffic noise level analysis indicates that the building facades adjacent to Riverside Drive will experience unmitigated exterior noise levels ranging up to 73.5 dBA CNEL. See Appendix 8.1 for the on-site noise modeling.

The future mitigated exterior noise levels, with a 6-foot-high wall, for the lots adjacent to Riverside Drive are shown to range up to 63.5 dBA CNEL. This noise analysis shows that with the recommended noise mitigation the future noise levels will comply with the *normally acceptable* standard of 70 dBA CNEL for residential land uses.

TABLE 8-1: EXTERIOR NOISE LEVELS (CNEL)

Roadway	Unmitigated Noise Level (dBA CNEL)	Mitigated Noise Level (dBA CNEL)	Barrier Height (Feet)
Riverside Dr.	73.5	63.5	6

[1] Exterior noise level calculations are included Appendix 8.1.

8.1.1 ON-SITE EXTERIOR MITIGATION

As shown in Table 8-1, mitigated exterior noise levels will exceed the City of Lake Elsinore noise level *clearly compatible* level for residential land uses. However, noise levels would be considered *normally compatible*. Therefore, as required by Exhibit 3-A, "*new construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.*"

8.2 ON-SITE INTERIOR NOISE ANALYSIS

The future noise levels were calculated at the first and second-floor building façades to ensure that the interior noise levels comply with the State City of Lake Elsinore45 dBA CNEL interior noise standards.

8.2.1 NOISE REDUCTION METHODOLOGY

The interior noise level is the difference between the predicted exterior noise level at the building façade and the noise reduction of the structure. Typical building construction will provide a Noise Reduction (NR) of approximately 12 dBA with "windows open" and a minimum 25 dBA noise reduction with "windows closed." However, sound leaks, cracks and openings within the window assembly can greatly diminish its effectiveness in reducing noise. Several methods are used to improve interior noise reduction, including [1] weather-stripped solid core exterior doors; [2] upgraded dual-glazed windows; [3] mechanical ventilation/air conditioning; and [4] exterior wall/roof assemble free of cutouts or openings.

8.2.2 INTERIOR NOISE LEVEL ASSESSMENT

Tables 8-2 and 8-3 show that the residential units require a windows-closed condition and a means of mechanical ventilation (e.g., air conditioning). Table 8-2 shows that the future unmitigated noise levels at the first-floor building façade are expected to range up to 63.5 dBA CNEL. The first-floor interior noise level analysis shows that the City of Lake Elsinore 45 dBA CNEL with windows-closed interior noise standards can be satisfied using windows with a minimum STC rating of 27 for units adjacent to Riverside Drive, based on the minimum interior noise reduction for standard construction.

Table 8-3 shows the future unmitigated noise levels at the second-floor building façade are expected to range from up to 73.2 dBA CNEL. The second-floor interior noise level analysis shows that the City of Lake Elsinore 45 dBA CNEL with windows closed interior noise standards can be satisfied using upgraded windows with a minimum STC rating of 31 for units adjacent to Riverside Drive.

TABLE 8-2: FIRST-FLOOR INTERIOR NOISE IMPACTS (CNEL)

Lot	Noise Level at Façade[1]	Required Interior Noise Reduction[2]	Interior Noise Reduction[3]	Upgraded Windows[4]	Recommended STC[4]	Interior Noise Level[5]
Riverside Dr.	63.5	18.5	25	No	27	38.5

[1] Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g., air conditioning).
[2] Noise reduction required to satisfy the 45 dBA CNEL interior noise standards.
[3] Minimum interior noise reduction
[4] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[5] Estimated interior noise level with minimum STC rating for all windows.

TABLE 8-3: SECOND-FLOOR INTERIOR NOISE IMPACTS (CNEL)

Lot	Noise Level at Façade[1]	Required Interior Noise Reduction[2]	Interior Noise Reduction[3]	Upgraded Windows[4]	Recommended STC[4]	Interior Noise Level[5]
Riverside Dr.	73.2	28.2	29	Yes	31	44.2

[1] Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g., air conditioning).
[2] Noise reduction required to satisfy the 45 dBA CNEL interior noise standards.
[3] Minimum interior noise reduction
[4] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[5] Estimated interior noise level with minimum STC rating for all windows.

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9 SENSITIVE RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 9-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, five receiver locations (R#) in the vicinity of the Project site were identified. All distances are measured from the Project site boundary to the outdoor living areas (e.g., private backyards) or at the building façade, whichever is closer to the Project site. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 5.2. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

R1: R1 represents an existing residence at 3511 Lake Crest Drive, approximately 86 feet northeast of the Project site. R1 is placed at the building façade. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: R2 represents an existing single-family residence at 3499 Lake Crest Drive, approximately 85 feet northeast of the Project site. R2 is placed at the building façade facing the Project site. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R3: R3 represents an existing RV Park at 32390 Riverside Drive, approximately 210 feet southeast of the Project site. R3 is placed at the building façade facing the Project site. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

R4: R4 represents an existing residence at 3606 Eisenhower Drive, approximately 24 feet southwest of the Project site. R4 is placed at the building façade facing the Project site. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

R5: R5 represents an existing residence at 3708 Eisenhower Drive, approximately 18 feet southwest of the Project site. R5 is placed at the building façade facing the Project site.

A 24-hour noise measurement was taken near this location, L5, to describe the existing ambient noise environment.

R6: R6 represents an existing residence at 1114 Monroe Street, approximately 15 feet northwest of the Project site. R6 is placed at the building façade facing the Project site. A 24-hour noise measurement was taken near this location, L5, to describe the existing ambient noise environment.

EXHIBIT 9-A: SENSITIVE RECEIVER LOCATIONS



10 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearby receiver locations and planned future medium density residential land use, identified in Section 8, resulting from the operation of the Project. To conservatively describe the potential worst-case noise environment, Exhibit 10-A presents the noise source activities used to assess the operational noise levels.

10.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts to the existing environment associated with the expected typical daytime and nighttime activities at the Project site. Riverside Drive is considered a noise-sensitive receiving land use and is not expected to include any meaningful sources of noise activity. Additionally, according to the recently adopted Section 21085 of the California Public Resources Code, “noise effects” on humans that are associated with “project occupants and guests” within residential Projects are not an impact on the environment. (24) Based on Section 21085, it is expected that for CEQA purposes, operational noise level impacts are limited to the air conditioning units.

10.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the Project. This section provides a detailed description of the reference noise level measurements shown in Table 10-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the sewage lift station all operating at the same time. These sources of noise activity will likely vary throughout the day.

10.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precision sound level meter (serial number 01146). The LxT sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 200, was programmed in "slow" mode to record noise levels in "A" weighted form and was located at approximately five feet above the ground elevation for each measurement. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (19)

EXHIBIT 10-A: OPERATIONAL NOISE SOURCE LOCATIONS

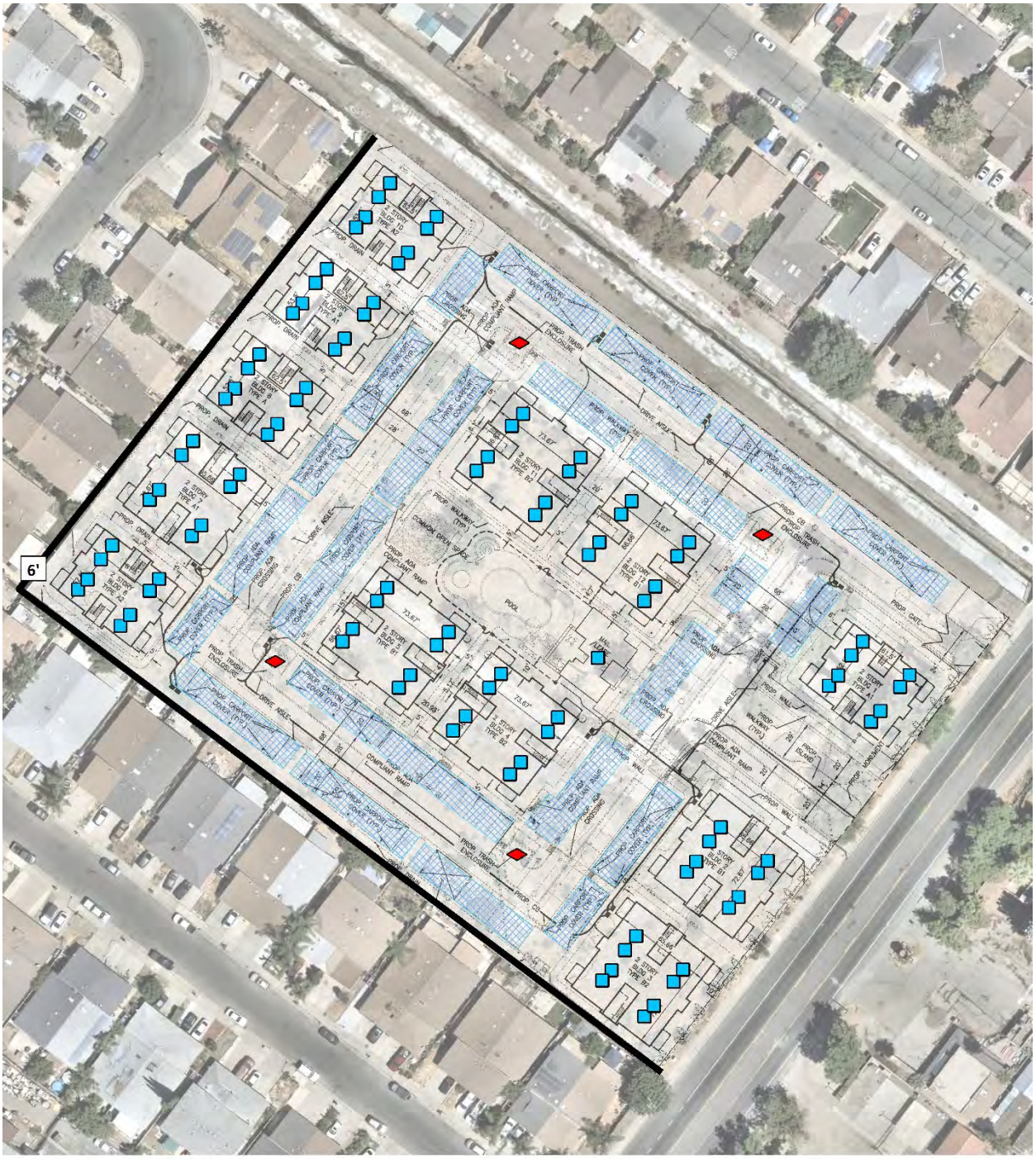


TABLE 10-1: REFERENCE NOISE LEVEL MEASUREMENTS

Reference Noise Source	Noise Source Height (Feet)	Min./ Hour[1]		Reference Noise Level (dBA L_{eq}) @ 50 Feet	Sound Power Level (dBA)[2]
		Day	Night		
Roof-Top Air Conditioning Units	5'	45	30	44.4	76.0
Parking Lot Vehicle Movements	5'	60	30	31.4	63.0
Trash Enclosure Activity	5'	10	10	57.4	89.0

[1] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.
[2] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source. Numbers may vary due to size differences between point and area noise sources.

10.2.2 AIR CONDITIONING UNITS

To assess the noise levels created by the air conditioning units, reference noise levels were taken from equipment specifications for a 2- to 5-ton residential packaged air conditioning unit (Carrier 50VR-A,C). The manufacturer's specifications are included in Appendix 10.1. At a uniform reference distance of 50 feet, the units would generate a reference noise level of 44.4 dBA L_{eq}. The air conditioning units were modeled 3 feet above the roof level, operating 45 minutes per hour during the daytime and 30 minutes at nighttime, which represents the typical maximum operating time for properly sized AC systems.

10.2.3 PARKING LOT VEHICLE MOVEMENTS

Parking activities are based on the area of the parking spaces. The Project includes approximately 200 new surface parking spaces, which are assumed to have up to 2 movements per hour for a total of 400 events in an hour. Based on studies conducted in Europe and Australia, the average parking procedure, which included movement associated with either entering or exiting the parking area, parking the vehicles, and opening and closing doors, resulted in a sound power level of approximately 63 dBA Lw/square meter per event (28) (29). The parking lot activities are expected to be limited to the daytime hours of 7:00 a.m. to 10:00 p.m. when the recreational areas are in use.

10.2.4 TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with trash enclosure activity, Urban Crossroads collected a reference noise level measurement at an existing trash enclosure containing two dumpster bins. The trash enclosure noise levels describe metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, and trash dropping into the metal dumpster. The reference noise levels describe trash enclosure noise activities when trash is dropped into an empty metal dumpster, as would occur at the Project Site. The measured reference noise level at the uniform 50-foot reference distance is 57.4 dBA L_{eq} for the trash enclosure activity. The reference noise level describes the expected noise source activities associated with the trash enclosures for the Project's proposed building.

10.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict outdoor noise levels. Using the ISO 9613-2 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of the noise level at each receiver and the partial noise level contributions by noise source.

Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources. While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment. The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the noise analysis to account for mixed ground representing a combination of hard and soft surfaces. Appendix 9.1 includes the detailed noise dBA L_{eq} model inputs used to estimate the Project operational noise levels presented in this section.

10.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the Project operations that include sewage lift station, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 10-2 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 38.1 to 54.4 dBA L_{eq}.

Table 10-3 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 35.4 to 42.7 dBA L_{eq} at the existing noise-sensitive receiver locations. The differences between the daytime and nighttime noise levels are largely related to the estimated duration of noise activity, as outlined in Table 10-1 and Appendix 10.1.

TABLE 10-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)					
	R1	R2	R3	R4	R5	R6
Roof-Top Air Conditioning Units	41.8	40.1	37.8	42.5	43.3	45.4
Parking Lot Vehicle Movements	38.4	38.0	19.9	37.6	34.7	18.8
Trash Enclosure Activity	38.3	39.4	25.9	38.6	33.9	17.2
Total (All Noise Sources)	**44.6**	**44.0**	**38.1**	**44.9**	**44.3**	**45.4**

[1] See Exhibit 10-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

TABLE 10-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)					
	R1	R2	R3	R4	R5	R6
Roof-Top Air Conditioning Units	39.1	37.4	35.1	39.8	40.6	42.7
Parking Lot Vehicle Movements	37.5	37.0	18.9	36.6	33.8	17.8
Trash Enclosure Activity	34.3	35.4	21.9	34.6	29.9	13.3
Total (All Noise Sources)	**42.2**	**41.5**	**35.4**	**42.3**	**41.7**	**42.7**

[1] See Exhibit 10-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

10.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the unmitigated Project-only operational noise levels are evaluated against exterior noise level thresholds based on the City of Lake Elsinore exterior noise level standards at nearby noise-sensitive receiver locations. Table 10-4 shows the unmitigated operational noise levels associated with Riverside Drive will not exceed the exterior noise level standards (see Table 5-1) per the City of Lake Elsinore Municipal Code Section 17.176.060[A][3]. Therefore, the stationary operational noise impacts are considered *less than significant* at the nearest noise-sensitive receiver locations.

TABLE 10-4: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Measurement Location	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Noise Level Standards Exceeded?[4]	
		Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	L1	44.6	42.2	55	45	No	No
R2	L2	44.0	41.5	55	45	No	No
R3	L3	38.1	35.4	55	45	No	No
R4	L4	44.9	42.3	55	45	No	No
R5	L5	44.3	41.7	55	45	No	No
R6	L6	45.4	42.7	55	45	No	No

[1] See Exhibit 9-A for the receiver locations.
[2] Project operational noise levels as shown in Tables 10-2 and 10-3.
[3] Exterior noise level standards, adjusted in five (5) dBA increments to reflect the ambient noise levels (see Table 5-1) per the Lake Elsinore Municipal Code Section 17.176.060[A][3].
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
[5] Project operational noise levels provided for informational purposes
"Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

10.6 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearby receiver locations that may be potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (2) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at existing receiver locations when Project-source noise is added to the daytime and nighttime ambient conditions are presented in Tables 10-5 and 10-6, respectively. As indicated in Table 10-5, the Project will generate a daytime operational noise level increase ranging from 0.1 to 0.5 dBA L_{eq} at the nearest receiver locations. Table 10-6 shows that the Project will generate a nighttime operational noise level increase ranging from 0.1 to 1.2 dBA L_{eq} at the nearest receiver locations. Project-related operational noise level increases will not exceed the operational noise level increase significance criteria presented in Table 4-1. Therefore, Project-related operational noise level increases at the sensitive receiver locations will be *less than significant.*

TABLE 10-5: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	44.6	L1	54.4	54.8	0.4	5.0	No
R2	44.0	L2	63.1	63.2	0.1	5.0	No
R3	38.1	L3	56.6	56.7	0.1	5.0	No
R4	44.9	L4	54.1	54.6	0.5	5.0	No
R5	44.3	L5	55.4	55.7	0.3	5.0	No
R6	45.4	L6	58.8	59.0	0.2	5.0	No

[1] See Exhibit 9-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown in Table 10-2.
[3] Reference noise level measurement locations as shown in Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown in Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the Project activities.
[7] Significance increase criteria as shown in Table 4-1.

TABLE 10-6: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	42.2	L1	47.7	48.8	1.1	5.0	No
R2	41.5	L2	59.0	59.1	0.1	5.0	No
R3	35.4	L3	54.1	54.2	0.1	5.0	No
R4	42.3	L4	50.1	50.8	0.7	5.0	No
R5	41.7	L5	51.5	51.9	0.4	5.0	No
R6	42.7	L6	47.7	48.9	1.2	5.0	No

[1] See Exhibit 9-A for the receiver locations.
[2] Total Project nighttime operational noise levels as shown in Table 10-3.
[3] Reference noise level measurement locations as shown in Exhibit 5-A.
[4] Observed nighttime ambient noise levels as shown in Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the Project activities.
[7] Significance increase criteria as shown in Table 4-1.

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11 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 11-A shows the construction noise source locations in relation to the nearest sensitive receiver locations previously described in Section 8. To prevent high levels of construction noise from impacting noise-sensitive land uses, Section 17.176.080 of the City of Lake Elsinore Municipal Code prohibits construction activities between the hours of 7:00 p.m. and 7:00 a.m. or at any time on weekend or on holidays.

11.1 CONSTRUCTION ACTIVITIES

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that, when combined, can reach high levels. The number and mix of construction equipment are expected to occur in the following stages:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

11.2 TYPICAL CONSTRUCTION REFERENCE NOISE LEVELS

To describe peak construction noise activities, this construction noise analysis was prepared using reference noise level measurements published in the *Update of Noise Database for Prediction of Noise on Construction and Open Sites* by the Department for Environment, Food and Rural Affairs (DEFRA). (30). The DEFRA database provides the most recent and comprehensive source of reference construction noise levels. Table 11-1 provides a summary of the DEFRA construction reference noise level measurements expressed in hourly average dBA L_{eq} using the estimated FHWA Roadway Construction Noise Model (RCNM) usage factors (31) to describe the typical construction activities for each stage of Project construction.

EXHIBIT 11-A: TYPICAL CONSTRUCTION NOISE SOURCE LOCATIONS



TABLE 11-1: TYPICAL CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})	Highest Reference Noise Level (dBA L_{eq})
Site Preparation	Crawler Tractors	77	77
	Hauling Trucks	71	
	Rubber Tired Dozers	71	
Grading	Graders	79	79
	Excavators	64	
	Compactors	67	
Building Construction	Cranes	67	72
	Tractors	72	
	Welders	65	
Paving	Pavers	70	70
	Paving Equipment	69	
	Rollers	69	
Architectural Coating	Cranes	67	67
	Air Compressors	67	
	Generator Sets	67	

[1] Update of noise database for prediction of noise on construction and open site expressed in hourly average L_{eq} based on estimated usage factor.

11.3 TYPICAL CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearest sensitive receiver locations were completed. To assess the worst-case construction noise levels, the Project construction noise analysis relies on the highest noise level impacts when the equipment with the highest reference noise level is operating at the closest point from the edge of primary construction activity (Project site boundary) to each receiver location. As shown in Table 11-2, the construction noise levels are expected to range from 47.7 to 69.7 dBA L_{eq}, and the highest construction levels are expected to range from 59.7 to 69.7 dBA L_{eq} at the nearest receiver locations. Appendix 11.1 includes the detailed CadnaA construction noise model inputs.

TABLE 11-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA Leq)					
	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	61.9	63.9	56.9	54.9	51.9	63.9
R2	61.9	63.9	56.9	54.9	51.9	63.9
R3	57.7	59.7	52.7	50.7	47.7	59.7
R4	66.7	68.7	61.7	59.7	56.7	68.7
R5	67.0	69.0	62.0	60.0	57.0	69.0
R6	67.7	69.7	62.7	60.7	57.7	69.7

[1] Construction noise source and receiver locations are shown in Exhibit 11-A.
[2] Construction noise level calculations based on distance from the project site boundaries (construction activity area) to nearby receiver locations. CadnaA construction noise model inputs are included in Appendix 11.1.

11.4 TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at the nearest receiver locations, a construction-related daytime noise level threshold of 75 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 75 dBA L_{eq} significance threshold during Project construction activities, as shown in Table 11-3. Therefore, the noise impacts due to Project construction noise is considered *less than significant* at all receiver locations.

TABLE 11-3: CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	63.9	75	No
R2	63.9	75	No
R3	59.7	75	No
R4	68.7	75	No
R5	69.0	75	No
R6	69.7	75	No

[1] Noise receiver locations are shown in Exhibit 9-A.
[2] Highest construction noise level operating at the Project site boundary to nearby receiver locations (Table 11-2).
[3] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

11.5 TEMPORARY CONSTRUCTION NOISE LEVEL INCREASES

To describe the temporary Project construction noise level contributions to the existing ambient noise environment, the Project construction noise levels were combined with the existing

ambient noise level measurements at the nearest off-site receiver locations. The difference between the combined Project-construction and ambient noise levels is used to describe the construction noise level contributions. Temporary noise level increases that would be experienced at sensitive receiver locations when Project construction-source noise is added to the ambient daytime conditions are presented in Table 11-4. A temporary noise level increase of 20 dBA is considered a *significant* impact.

TABLE 11-4: DAYTIME CONSTRUCTION NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Construction Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	63.9	L1	54.4	64.4	10.0	20	No
R2	63.9	L2	63.1	66.5	3.4	20	No
R3	59.7	L3	56.6	61.4	4.8	20	No
R4	68.7	L4	54.1	68.8	14.7	20	No
R5	69.0	L5	55.4	69.2	13.8	20	No
R6	69.7	L6	58.8	70.0	11.2	20	No

[1] Construction noise source and receiver locations are shown in Exhibit 11-A.
[2] Total Project daytime construction noise levels as shown in Table 11-2.
[3] Reference noise level measurement locations as shown in Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown in Table 5-1.
[5] Represents the combined ambient conditions plus the Project construction activities.
[6] The noise level increase expected with the addition of the Project construction activities.
[7] Caltrans Traffic Noise Analysis Protocol.

As indicated in Table 11-4, the Project will contribute to construction noise level increases ranging from 3.4 to 14.7 dBA L_{eq} during the daytime hours at the nearest receiver locations. The unmitigated construction noise analysis shows that the nearest receiver locations will not exceed the *substantial* 20 dBA L_{eq} noise level increase significance threshold during Project construction activities. The temporary construction noise level increase analysis shows that the noise impacts due to Project construction noise are considered *less than significant*.

11.6 TYPICAL CONSTRUCTION VIBRATION IMPACTS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. Ground vibration levels associated with various types of construction equipment are summarized on Table 11-5. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation: $PPV\ (in/sec)_{equip} = PPV\ (in/sec)_{ref} \times (25/D)^{1.5}$

TABLE 11-5: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018.

Table 11-6 presents the expected typical construction equipment vibration levels at the nearest receiver locations. At distances ranging from 15 feet to 210 feet from typical Project construction activities (at the Project site boundary), construction vibration levels are estimated to range from 0.01 to 0.19 in/sec PPV (in/sec) at the nearest receiver locations. The Project construction is not expected to generate vibration levels exceeding the City of Lake Elsinore maximum acceptable vibration standard of 0.1 in/sec PPV (in/sec). Therefore, the Project-related vibration impacts are considered *significant* during the construction activities at the Project site and require mitigation.

11.7 CONSTRUCTION VIBRATION IMPACTS MITIGATION

A 24-foot equipment buffer zone is required to restrict the use of heavy construction equipment (greater than 80,000 pounds), vibratory rollers, large loaded trucks, and large bulldozers within 24 feet of occupied sensitive receiver locations at R5 and R6. With the mitigation measures identified in this analysis and shown in Exhibit ES-A, the mitigated vibration levels with the 24-foot buffer zone will be reduced to 0.09 in/sec RMS and will satisfy the City of Lake Elsinore 0.01 in/sec RMS threshold, as shown in Table 11-7. Therefore, impacts with the construction vibration mitigation measure identified in this study will be *less than significant*.

Further, vibration levels at the site of the closest sensitive receiver are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter. Moreover, construction at the Project site will be restricted to the daytime hours, consistent with City of Lake Elsinore requirements, thereby eliminating potential vibration impacts during the sensitive evening and nighttime hours.

- Large loaded trucks and dozers (80,000 pounds or more) shall not be used within 24 feet of any receiver location at the time of Project construction. Instead, smaller, rubber-tired bulldozers (less than 80,000 pounds) shall be used within this area during Project construction reduce vibration effects.

TABLE 11-6: CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver Location[1]	Distance to Const. Activity (Feet)[2]	Typical Construction Vibration Levels PPV (in/sec)[3]					Thresholds PPV (in/sec)[4]	Thresholds Exceeded?[5]
		Small bulldozer	Jack-hammer	Loaded Trucks	Large Bulldozer	Highest Vibration Level		
R1	81'	0.00	0.01	0.01	0.02	0.02	0.10	No
R2	85'	0.00	0.01	0.01	0.01	0.01	0.10	No
R3	210'	0.00	0.00	0.00	0.00	0.00	0.10	No
R4	24'	0.00	0.04	0.08	0.09	0.09	0.10	No
R5	18'	0.00	0.06	0.12	0.15	0.15	0.10	**Yes**
R6	15'	0.01	0.08	0.16	0.19	0.19	0.10	**Yes**

[1] Receiver locations are shown in Exhibit 9-A.
[2] Distance from receiver location to Project construction boundary.
[3] Based on the Vibration Source Levels of Construction Equipment (Table 11-5).
[4] Thresholds for transient sources associated with typical construction activities, Caltrans Transportation and Construction Vibration Manual, April 2020 p.38.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

TABLE 11-7: MITIGATED CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver Location[1]	Distance to Const. Activity (Feet)[2]	Typical Construction Vibration Levels PPV (in/sec)[3]					Thresholds PPV (in/sec)[4]	Thresholds Exceeded?[5]
		Small bulldozer	Jack-hammer	Loaded Trucks	Large Bulldozer	Highest Vibration Level		
R1	81'	0.00	0.01	0.01	0.02	0.02	0.10	No
R2	85'	0.00	0.01	0.01	0.01	0.01	0.10	No
R3	210'	0.00	0.00	0.00	0.00	0.00	0.10	No
R4	24'	0.00	0.04	0.08	0.09	0.09	0.10	No
R5	24'	0.00	0.04	0.08	0.09	0.09	0.10	No
R6	24'	0.00	0.04	0.08	0.09	0.09	0.10	No

[1] Receiver locations are shown in Exhibit 9-A.
[2] Distance from receiver location to Project construction boundary.
[3] Based on the Vibration Source Levels of Construction Equipment (Table 9).
[4] Thresholds for transient sources associated with typical construction activities, Caltrans Transportation and Construction Vibration Manual, April 2020 p.38.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

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13 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (619) 788-1971.

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EDUCATION

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California Polytechnic State University, Pomona • June 2000

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
APA – American Planning Association
AWMA – Air and Waste Management Association
INCE – Institute of Noise Control Engineers

PROFESSIONAL CERTIFICATIONS

Approved Acoustical Consultant • County of San Diego
FHWA Traffic Noise Model of Training • November 2004
CadnaA Basic and Advanced Training Certificate • October 2008.

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APPENDIX 3.1:

CITY OF LAKE ELSINORE MUNICIPAL CODE

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Chapter 17.176
NOISE CONTROL

Sections:

17.176.010 Purpose.
17.176.020 Definitions.
17.176.030 Authority and duties of the Noise Control Office(r) (NCO).
17.176.040 General noise regulations.
17.176.050 Noise measurement procedure.
17.176.060 Exterior noise limits.
17.176.070 Interior noise standards.
17.176.080 Prohibited acts.
17.176.090 Motor vehicles operating on public right-of-way.
17.176.100 Special provisions – Exemptions.
17.176.110 Special variances.

17.176.010 Purpose.

In order to control unnecessary, excessive and annoying noise and vibration in the City, it is hereby declared to be the policy of the City to prohibit such noise and vibration generated from or by all sources as specified in this chapter. It shall be the policy of the City to maintain quiet in those areas which exhibit low noise levels and to implement programs aimed at reducing noise in those areas within the City where noise levels are above acceptable values.

It is determined that certain noise levels and vibrations are detrimental to the public health, welfare and safety, and are contrary to public interest. Therefore, the City Council does ordain and declare that creating, maintaining, causing or allowing to be created, caused or maintained, any noise or vibration in a manner prohibited by or not in conformity with the provisions of this chapter, is a public nuisance and shall be punishable as such. [Ord. 772 § 17.78.010, 1986. Code 1987 § 17.78.010].

17.176.020 Definitions.

All terminology used in this chapter, not defined below, shall be in conformance with applicable publications of the. American National Standards Institute (ANSI) or its successor body.

The following words, phrases and terms as used in this chapter shall have the meaning as indicated below:

“A-weighted sound level” means the sound level in decibels as measured on a sound level meter using the A-weighting network. The level so read is designated dB(A) or dBA.

“Agricultural property” means a parcel of real property of not less than 10 contiguous acres in size, which is undeveloped for any use other than agricultural purposes.

“Ambient noise level” means the composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal of existing level of environmental noise at a given location.

“Commercial area” means property which is zoned for commercial purposes, including, but not limited to, retail and wholesale businesses, personal services, and professional offices.

“Construction” means any site preparation, assembly, erection, substantial repair, alteration, or similar action, for or of public or private rights-of-way, structures, utilities or similar property.

“Cumulative period” means an additive period of time composed of individual time segments which may be continuous or interrupted.

“Decibel” means a unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the ratio of the sound measured to the reference pressure, which is 20 micropascals.

“Demolition” means any dismantling, intentional destruction or removal of structures, utilities, public or private right-of-way surfaces, or similar property.

“Emergency work” means any work performed for the purpose of preventing or alleviating the physical trauma or property damage threatened or caused by an emergency.

“Fixed noise source” means a stationary device which creates sounds while fixed or motionless, including, but not limited to, residential, agricultural, industrial and commercial machinery and equipment, pumps, fans, compressors, air conditioners, and refrigeration.

“Gross vehicle weight rating (GVWR)” means the value specified by the manufacturer as the recommended maximum loaded weight of a single motor vehicle. In cases where trailers and tractors are separable, the gross combination weight rating, which is the value specified by the manufacturer as the recommended maximum loaded weight of the combination vehicle, shall be used.

“Impulsive sound” means sound of short duration, usually less than one second, with an abrupt onset and rapid decay. Examples of sources of impulsive sound include explosions, drop forge impacts, and the discharge of firearms.

“Industrial area” means property which is zoned for manufacturing and related uses.

“Intrusive noise” means that noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency and time of occurrence, and tonal or informational content as well as the prevailing ambient noise level.

“Licensed” means the possession of a formal license or a permit issued by the appropriate jurisdictional authority; or, where no permits or licenses are issued, the sanctioning of the activity by the jurisdiction as noted in public record.

“Mobile noise source” means any noise source other than a fixed source.

“Motor vehicle” shall include any and all self-propelled vehicles as defined in the California Motor Vehicle Code, including all on-highway type motor vehicles subject to registration under said code, and all off-highway type motor vehicles subject to identification under said code.

“Motorboat” means any vessel propelled by machinery, whether or not such machinery is the principal source of propulsion but shall not include a vessel which has a valid marine document issued by the Bureau of Customs of the United States government or any Federal agency successor thereto (Section 651(d), Harbors and Navigation Code).

“Muffler or sound dissipative device” means a device consisting of a series of chambers or baffle plates, or other mechanical design, for the purpose of receiving exhaust gas from an internal combustion engine, and effective in reducing noise.

“Noise Control Officer (NCO)” means a person or persons designated by the Community Development Director as responsible for enforcement of this chapter.

“Noise disturbance” means any sound which, as judged by the Noise Control Officer, (1) endangers or injures the safety or health of human beings or animals, or (2) annoys or disturbs reasonable persons of normal sensitivities, or (3) endangers or injures personal or real property, or (4) violates the factors set forth in LEMC 17.176.040. Compliance with the quantitative standards as listed herein shall constitute elimination of a noise disturbance.

“Noise sensitive zone” means any area designated pursuant to LEMC 17.176.070 for the purpose of ensuring exceptional quiet.

“Noise zone” means any defined areas or regions of a generally consistent land use wherein the ambient noise levels are within a range of five dB.

“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.

“Powered model vehicle” means any self-propelled, airborne, waterborne, or land-borne plane, vessel, or vehicle, which is not designed to carry persons, including, but not limited to, any model airplane, boat, car, or rocket.

“Public right-of-way” means any street, avenue, boulevard, highway, sidewalk or alley or similar place which is owned or controlled by a governmental entity.

“Public space” means any real property or structures thereon which are owned or controlled by a governmental entity.

“Pure tone” means any sound which can be judged as audible as a single pitch or a set of single pitches by the Noise Control Officer. For the purposes of this chapter, a pure tone shall exist if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the sound pressure levels of the two contiguous one-third octave bands by five dB for center frequencies of 500 Hz and above and by eight dB for center frequencies between 160 and 400 Hz and by 15 dB for center frequencies less than or equal to 125 Hz.

“Real property boundary” means an imaginary line along the ground surface, and its vertical extension, which separates the real property owned by one person from that owned by another person, but not including intrabuilding real property divisions.

“Residential area” means property which is zoned for residential uses.

“Sound amplifying equipment” means any device for the amplification of the human voice, music, or any other sound, excluding standard automobile radios when used and heard only by the occupants of the vehicle in which the radio is installed, and, as used in this chapter, warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes.

“Sound level meter” means an instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement of sound levels, which meets or exceeds the requirements pertinent for type S2A meters in American National Standards Institute specifications for sound level meters, S1.4-1971, or the most recent revision thereof.

“Sound truck” means any motor vehicle, or any other vehicle, regardless of motive power, whether in motion or stationary, having mounted thereon, or attached thereto, any sound amplifying equipment.

“Vibration perception threshold” means the minimum ground- or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such direct means as, but not limited to, sensation by touch or visual observation of moving objects. The perception threshold shall be presumed to be a motion velocity of 0.01 inches per second over the range of one to 100 Hz.

"Weekday" means any day, Monday through Friday, which is not a legal holiday. [Ord. 772 § 17.78.020, 1986. Code 1987 § 17.78.020].

17.176.030 Authority and duties of the Noise Control Office(r) (NCO).

A. Lead Agency. The noise control program established by this chapter shall be administered by the Community Development Director.

B. Powers. In order to implement and enforce this chapter and for the general purpose of noise abatement and control, the NCO shall have, in addition to any other authority vested in it, the power to:

1. Conduct, or cause to be conducted, studies, research, and monitoring related to noise, including joint cooperative investigation with public or private agencies, and the application for, and acceptance of, grants.

2. On all public and private projects which are likely to cause noise in violation of this chapter and which are subject to mandatory review or approval by other departments.

a. Review for compliance with the intent and provisions of this chapter.

b. Require sound analyses which identify existing and projected noise sources and associated noise levels.

c. Require usage of adequate measures to avoid violation of any provision of this chapter.

3. Upon presentation of proper credentials, enter and/or inspect any private property, place, report, or records at any time when granted permission by the owner or by some other person with apparent authority to act for the owner. When permission is refused or cannot be obtained, a search warrant may be obtained from a court of competent jurisdiction upon showing of probable cause to believe that a violation of this chapter may exist. Such inspection may include administration of any necessary tests.

4. Prepare recommendations, to be approved by the City Council, for the designation of noise sensitive zones which contain noise sensitive activities.

5. Prepare recommendations, based upon noise survey data and analytical studies, to be approved by the City Council, for the designation of zones of similar ambient environmental noise within regions of generally consistent land use. These zones shall be identified in terms of their day and nighttime ambient noise levels and their land use classifications as given in LEMC 17.176.060, Table 1. [Ord. 772 § 17.78.030, 1986. Code 1987 § 17.78.030].

17.176.040 General noise regulations.

Notwithstanding any other provision of this chapter, and in addition thereto, it shall be unlawful for any person to willfully or negligently make or continue, or cause to be made or continued, any loud, unnecessary, or unusual noise which disturbs the peace and quiet of any neighborhood or which causes any discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

The factors which shall be considered in determining whether a violation of the provisions of this section exists shall include, but not be limited to, the following:

A. The sound level of the objectionable noise.

B. The sound level of the ambient noise.

C. The proximity of the noise to residential sleeping facilities.

D. The nature and zoning of the area within which the noise emanates.

E. The number of persons affected by the noise source.

F. The time of day or night the noise occurs.

G. The duration of the noise and its tonal, informational or musical content.

H. Whether the noise is continuous, recurrent, or intermittent.

I. Whether the noise is produced by a commercial or noncommercial activity. [Ord. 772 § 17.78.040, 1986. Code 1987 § 17.78.040].

17.176.050 Noise measurement procedure.

A. Upon receipt of a complaint from a citizen, the Noise Control Office(r) or his agent, equipped with sound level measurement equipment satisfying the requirements specified in LEMC 17.176.020, shall investigate the complaint. The investigation shall consist of a measurement and the gathering of data to adequately define the noise problem and shall include the following:

1. Nonacoustic Data.

a. Type of noise source.

b. Location of noise source relative to complainant's property.

c. Time period during which noise source is considered by complainant to be intrusive.

d. Total duration of noise produced by noise source.

e. Date and time of noise measurement survey.

B. Noise Measurement Procedure. Utilizing the A-weighting scale of the sound level meter and the "slow" meter response (use "fast" response for impulsive type sounds), the noise level shall be measured at a position or positions at any point on the receiver's property.

In general, the microphone shall be located four to five feet above the ground; 10 feet or more from the nearest reflective surface where possible. However, in those cases where another elevation is deemed appropriate, the latter shall be utilized. If the noise complaint is related to interior noise levels, interior noise measurements shall be made within the affected residential unit. The measurements shall be made at a point at least four feet from the wall, ceiling, or floor nearest the noise source, with windows in the normal seasonal configuration. Calibration of the measurement equipment, utilizing an acoustic calibration, shall be performed immediately prior to recording any noise data. [Ord. 772 § 17.78.050, 1986. Code 1987 § 17.78.050].

17.176.060 Exterior noise limits.

A. Maximum Permissible Sound Levels by Receiving Land Use.

1. The noise standards for the various categories of land use identified by the Noise Control Office(r) as presented in Table 1 shall, unless otherwise specifically indicated, apply to all such property within a designated zone.

2. No person shall operate, or cause to be operated, any source of sound at any location within the incorporated City or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any other property, either incorporated or unincorporated, to exceed:

a. The noise standard for that land use as specified in Table 1 for a cumulative period of more than 30 minutes in any hour; or

b. The noise standard plus five dB for a cumulative period of more than 15 minutes in any hour; or

c. The noise standard plus 10 dB for a cumulative period of more than five minutes in any hour; or

d. The noise standard plus 15 dB for a cumulative period of more than one minute in any hour; or

e. The noise standard plus 20 dB or the maximum measured ambient level, for any period of time.

3. If the measured ambient level differs from that permissible within any of the fast four noise limit categories above, the allowable noise exposure standard shall be adjusted in five dB increments in each category as appropriate to encompass or reflect said ambient noise level.

In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level

4. If the measurement location is on a boundary between two different zones, the noise level limit applicable to the lower noise zone plus six dB shall apply.

5. If possible, the ambient noise shall be measured at the same location along the property line utilized in subsection (A)(2) of this section with the alleged offending noise source inoperative. If, for any reason, the alleged offending noise source cannot be shut down, the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance such that the noise from the source is at least 10 dB below the ambient in order that only the ambient level be measured. If the difference between the ambient and the noise source is five to 10 dB, then the level of the ambient itself can be reasonably determined by subtracting a one-decibel correction to account for the contribution of the source.

B. Correction for Character of Sound. In the event the alleged offensive noise, as judged by the Noise Control Officer, contains a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, or contains music or speech conveying informational content, the standard limits set forth in Table 1 shall be reduced by five dB.

TABLE 1
EXTERIOR NOISE LIMITS
(Levels Not to Be Exceeded More Than 30 Minutes in Any Hour)

Receiving Land Use Category	Time Period	Noise Level (dBA)
Single-Family Residential	10:00 p.m. – 7:00 a.m.	40
	7:00 a.m. – 10:00 p.m.	50
Multiple Dwelling Residential	10:00 p.m. – 7:00 a.m.	45
	7:00 a.m. – 10:00 p.m.	50
Public Space		
Limited Commercial and Office	10:00 p.m. – 7:00 a.m.	55
	7:00 a.m. – 10:00 p.m.	60
General Commercial	10:00 p.m. – 7:00 a.m.	60
	7:00 a.m. – 10:00 p.m.	65
Light Industrial	Anytime	70
Heavy Industrial	Anytime	75

[Ord. 772 § 17.78.060, 1986. Code 1987 § 17.78.060].

17.176.070 Interior noise standards.

A. Maximum Permissible Dwelling Interior Sound Levels.

1. The interior noise standards for multifamily residential dwellings as presented in Table 2 shall apply, unless otherwise specifically indicated, within all such dwellings with windows in their normal seasonal configuration.

TABLE 2

Noise Zone	Type of Land Use	Time Internal	Allowable Interior Noise Level (dBA)
All	Multifamily Residential	10:00 p.m. – 7:00 a.m.	35
		7:00 a.m. – 10:00 p.m.	45

2. No person shall operate or cause to be operated within a dwelling unit, any source of sound or allow the creation of any noise which causes the noise level when measured inside a neighboring receiving dwelling unit to exceed:

a. The noise standard as specified in Table 2 for a cumulative period of more than five minutes in any hour; or

b. The noise standard plus five dB for a cumulative period of more than one minute in any hour; or

c. The noise standard plus 10 dB or the maximum measured ambient, for any period of time.

3. If the measured ambient level differs from that permissible within any of the noise limit categories above, the allowable noise exposure standard shall be adjusted in five dB increments in each category as appropriate to reflect said ambient noise level.

B. Correction for Character of Sound. In the event the alleged offensive noise, as judged by the Noise Control Officer, contains a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, or contains music or speech conveying informational content, the standard limits set forth in Table 2 shall be reduced by five dB. [Ord. 772 § 17.78.070, 1986. Code 1987 § 17.78.070].

17.176.080 Prohibited acts.

No person shall unnecessarily make, continue, or cause to be made or continued, any noise disturbance. The following acts, and the causing or permitting thereof, are declared to be in violation of this chapter:

A. Operating, playing or permitting the operation or playing of any radio, television set, phonograph, drum, musical instrument, or similar device which produces or reproduces sound:

1. Between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to create a noise disturbance across a residential or commercial real property line or at any time to violate the provisions of LEMC 17.176.060(A), except for which a variance has been issued by the City.

2. In such a manner as to exceed the levels set forth for public space in Table 1, measured at a distance of at least 50 feet (15 meters) from such device operating on a public right-of-way or public space.

B. Using or operating for any purpose any loudspeaker, 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 real property line, or at any time violates the provisions of LEMC 17.176.060(A), except for any noncommercial public speaking, public assembly or other activity for which a variance has been issued by the City.

C. Offering for sale, selling anything, or advertising by shouting or outcry within any residential or commercial area or noise sensitive zone of the City except by variance issued by the City. The provisions of this section shall not be construed to prohibit the selling by outcry of merchandise, food, and beverages at licensed sporting events, parades, fairs, circuses, or other similar licensed public entertainment events.

D. Owning, possessing or harboring any animal or bird which frequently or for long duration, howls, barks, meows, squawks, or makes other sounds which create a noise disturbance across a residential or commercial real property line or within a noise sensitive zone. This provision shall not apply to public zoos.

E. Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects 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 real property line or at any time to violate the provisions of LEMC 17.176.060(A).

F. Construction/Demolition.

1. Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on weekends or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance issued by the City.

2. Noise Restrictions at Affected Properties. Where technically and economically feasible, construction activities shall be conducted in such a manner that the maximum noise levels at affected properties will not exceed those listed in the following schedule:

AT RESIDENTIAL PROPERTIES:

Mobile Equipment

Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment:

	Type I Areas Single-Family Residential	Type II Areas Multifamily Residential	Type III Areas Semi-Residential/Commercial
Daily, except Sundays and Legal Holidays 7:00 a.m. to 7:00 p.m.	75 dBA	80 dBA	85 dBA
Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and Legal Holidays	60 dBA	65 dBA	70 dBA

Stationary Equipment

Maximum noise levels for repetitively scheduled and relatively long-term operation (period of 10 days or more) of stationary equipment:

	Type I Areas Single-Family Residential	Type II Areas Multifamily Residential	Type III Areas Semi-Residential/Commercial
Daily, except Sundays and Legal Holidays 7:00 a.m. to 7:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and Legal Holidays	50 dBA	55 dBA	60 dBA

AT BUSINESS PROPERTIES:

Mobile Equipment

Maximum noise levels for nonscheduled, intermittent, short-term operation of mobile equipment:

Daily, including Sundays and Legal Holidays, all hours: maximum of 85 dBA.

Stationary Equipment

Maximum noise levels for repetitively scheduled and relatively long-term operation of stationary equipment:

Daily, including Sundays and Legal Holidays, all hours: maximum of 75 dBA.

3. All mobile or stationary internal combustion engine powered equipment or machinery shall be equipped with suitable exhaust and air intake silencers in proper working order.

G. Operating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property or at 150 feet (46 meters) from the source if on a public space or public right-of-way.

H. Powered Model Vehicles. Operating or permitting the operation of powered model vehicles:

1. 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 real property line or at any time to violate the provisions of LEMC 17.176.060(A).

2. In such a manner as to exceed the levels set forth for public space land use in Table 1, measured at a distance not less than 100 feet (30 meters) from any point on the path of a vehicle operating on public space or public right-of-way.

I. Stationary Nonemergency Signaling Devices.

1. Sounding or permitting the sounding of any electronically amplified signal from any stationary bell, chime, siren, whistle, or similar device, intended primarily for nonemergency purposes, from any place, for more than 10 seconds in any hourly period.

2. Houses of religious worship shall be exempt from the operation of this provision.

3. Sound sources covered by this provision and not exempted under subsection (I)(2) of this section shall be exempted by a variance issued by the City.

J. Emergency Signaling Devices.

1. 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, as provided in subsection (J)(2) of this section.

2. a. Testing of a stationary emergency signaling system shall not occur before 7:00 a.m. or after 7:00 p.m. Any such testing shall use only the minimum cycle test time. In no case shall such test time exceed 60 seconds.

b. Testing of the complete emergency signaling system, including the functioning of the signaling device and the personnel response to the signaling device, shall not occur more than once in each calendar month. Such testing shall not occur before 7:00 a.m., or after 10:00 p.m. The time limit specified in subsection (J)(2)(a) of this section shall not apply to such complete system testing.

3. Sounding or permitting the sounding of any exterior burglar or fire alarm or any motor vehicle burglar alarm unless such alarm is terminated within 15 minutes of activation.

K. Noise Sensitive Zones.

1. Creating or causing the creation of any sound within any noise sensitive zone, so as to exceed the specified land use noise standards set forth in LEMC 17.176.060(A); provided, that conspicuous signs are displayed indicating the zone; or

2. Creating or causing the creation of any sound within or adjacent to any noise sensitive zone, containing a hospital, nursing home, school, court or other designated area, so as to interfere with the functions of such activity or annoy the occupants in the activity; provided, that conspicuous signs are displayed indicating the presence of the zone.

L. Domestic Power Tools and Machinery.

1. 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 real property line.

2. Any motor, machinery, pump, such as swimming pool equipment, etc., shall be sufficiently enclosed or muffled and maintained so as not to create a noise disturbance in accordance with LEMC 17.176.060.

M. Residential Air-Conditioning or Air-Handling Equipment. Operating or permitting the operation of any air-conditioning or air-handling equipment in such a manner as to exceed any of the following sound levels:

Measurement Location	Units Installed before 1-1-80 dB(A)	Units Installed on or after 1-1-80 dB(A)
Any point on neighboring property line, 5 feet above grade level, no closer than 3 feet from any wall.	60	55
Center of neighboring patio, 5 feet above grade level, no closer than 3 feet from any wall.	55	50
Outside the neighboring living area window nearest the equipment location, not more than 3 feet from the window opening, but at least 3 feet from any other surface.	55	50

N. Places of Public Entertainment. Operating or permitting the operation or playing of any loudspeaker, musical instrument, motorized racing vehicle, or other source of sound in any place of public entertainment that exceeds

95 dBA as read on the slow response of a sound level meter at any point normally occupied by a customer, without a conspicuous and legible sign stating:

> WARNING! SOUND LEVELS WITHIN MAY CAUSE HEARING IMPAIRMENT.

[Ord. 772 § 17.78.080, 1986. Code 1987 § 17.78.080].

17.176.090 Motor vehicles operating on public right-of-way.

Motor vehicles noise limits on a public right-of-way are regulated as set forth in the California Motor Vehicle Code, Sections 23130 and 23130.5. Equipment violations which create noise problems are covered under Sections 27150 and 27151. Any peace officer of any jurisdiction in California may enforce these provisions. Therefore, it shall be the policy of the City to enforce these sections of the California Motor Vehicle Code.

A. Refuse Collection Vehicles.

1. No person shall collect refuse with a refuse collection vehicle between the hours of 7:00 p.m. and 7:00 a.m. within or adjacent to a residential area or noise sensitive zone.

2. No person authorized to engage in waste disposal service or garbage collection shall operate any truck-mounted waste or garbage loading and/or compacting equipment or similar device in any manner so as to create any noise exceeding the following levels, measured at a distance of 50 feet from the equipment in an open area:

a. New equipment purchased or leased on or after a date six months from the effective date of the ordinance codified in this chapter: 80 dBA.

b. New equipment purchased or leased on or after 36 months from the effective date of the ordinance codified in this chapter: 75 dBA.

c. Existing equipment, on or after five years from the effective date of the ordinance codified in this chapter: 80 dBA.

B. Motor Vehicle Horns. It is unlawful for any person to sound a vehicular horn except as a warning signal (Motor Vehicle Code, Section 27001).

C. Motorized Recreational Vehicles Operating off Public Right-of-Way. No person shall operate or cause to be operated any motorized recreational vehicle off a public right-of-way in such a manner that the sound levels emitted therefrom violate the provisions of LEMC 17.176.060(A). This section shall apply to all motorized recreational vehicles whether or not duly licensed and registered, including, but not limited to, commercial or noncommercial racing vehicles, motorcycles, go carts, amphibious craft, campers, snowmobiles and dune buggies, but not including motorboats.

D. *Reserved*.

E. Vehicle, Motorboat, or Aircraft Repair and Testing.

1. Repairing, rebuilding, modifying, or testing any motor vehicle, motorboat, or aircraft in such a manner as to create a noise disturbance across a residential real property line, or at any time to violate the provisions of LEMC 17.176.060(A).

2. Nothing in this section shall be construed to prohibit, restrict, penalize, enjoin, or in any manner regulate the movement of aircraft which are in all respects conducted in accordance with, or pursuant to, applicable Federal laws or regulations.

F. Standing Motor Vehicles. No person shall operate or permit the operation of any motor vehicle with a gross vehicle weight rating (GVWR) in excess of 10,000 pounds, or any auxiliary equipment attached to such a vehicle, for a period longer than 15 minutes in any hour while the vehicle is stationary, for reasons other than traffic congestion, on a public right-of-way or public space within 150 feet (46 meters) of a residential area or designated noise sensitive zone, between the hours of 10:00 p.m. and 7:00 a.m. [Ord. 984, 1994; Ord. 772 § 17.78.090, 1986. Code 1987 § 17.78.090].

17.176.100 Special provisions – Exemptions.

The following activities shall be exempted from the provisions of this chapter:

A. The emission of sound for the purpose of alerting persons to the existence of an emergency.

B. The emission of sound in the performance of emergency work.

C. Warning devices necessary for the protection of public safety, as for example, police, fire and ambulance sirens, and train horns.

D. Regularly scheduled school bands, school athletic and school entertainment events between the hours of 8:45 a.m. and 10:00 p.m., provided a special events permit is also required for band activities on City streets.

E. Regularly scheduled activities conducted on public parks, public playgrounds, and public or private school grounds. However, the use of public address or amplified music systems is not permitted to exceed the exterior noise standard of adjacent property at the property line.

F. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions.

G. Mobile noise sources associated with agricultural pest control through pesticide application; provided, that the application is made in accordance with restricted material permits issued by or regulations enforced by the Agricultural Commissioner.

H. Mobile noise sources associated with agricultural operations, provided such operations take place on Monday through Friday, excepting legal holidays, between the hours of 7:00 a.m. and 6:00 p.m. All other operations shall comply with this chapter.

I. Noise sources associated with the maintenance of real property, provided such operations take place on Monday through Friday, excepting legal holidays, between the hours of 7:00 a.m. and 6:00 p.m., or on holidays and weekends between the hours of 9:00 a.m. and 6:00 p.m. All other operations shall comply with this chapter.

J. Any activity to the extent that regulation thereof has been preempted by State or Federal law. [Ord. 772 § 17.78.100, 1986. Code 1987 § 17.78.100].

17.176.110 Special variances.

A. The NCO is authorized to grant variances for exemption from any provision of this chapter, subject to limitations as to area, noise levels, time limits, and other terms and conditions as the NCO determines are appropriate to protect the public health, safety, and welfare from the noise emanating therefrom. 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 NCO. The application shall contain information which demonstrates that bringing the source of sound or activity for which the variance is sought into compliance with this chapter would constitute an unreasonable hardship on the applicant, on the community, or on other persons. The application shall be accompanied by a fee. A separate application shall be filed for each noise source; provided, however, that several mobile sources under common ownership, or several

fixed sources on a single property may be combined into one application. Notice of an application for a variance shall be published according to City code. Any individual who claims to be adversely affected by allowance of the variance may file a statement with the NCO containing any information to support his claim. If at any time the NCO finds that a sufficient controversy exists regarding an application, a public hearing will be held.

C. In determining whether to grant or deny the application, the NCO shall balance the hardship on the applicant, the community, and other persons of not granting the variance against the adverse impact on the health, safety, and welfare of persons affected, the adverse impact on property affected, and any other adverse impacts of granting the variance. Applicants for variances and persons contesting variances may be required to submit such information as the NCO may reasonably require. In granting or denying an application, the NCO shall keep on public file a copy of the decision and the reasons for denying or granting the variance.

D. Variances shall be granted by notice to the applicant containing all necessary conditions, including a time limit on the permitted activity. The variance shall not become effective until all 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.

E. A variance will not exceed 365 days from the date on which it was granted. Application for extension of time limits specified in variances or for modification of other substantial conditions shall be treated like applications for initial variances under subsection (B) of this section. [Ord. 772 § 17.78.110, 1986. Code 1987 § 17.78.110].

Mobile Version

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APPENDIX 5.1:

STUDY AREA PHOTOS

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16357 - Riverside Drive

16357_L1_A_East
33, 40' 26.420000",117, 22' 35.690000"



16357_L1_A_North
33, 40' 26.370000",117, 22' 35.710000"



16357_L1_A_South
33, 40' 26.420000",117, 22' 35.690000"



16357_L1_A_West
33, 40' 26.420000",117, 22' 35.690000"



16357 - Riverside Drive

16357_L2_B_East
33, 40' 29.480000",117, 22' 39.800000"



16357_L2_B_North
33, 40' 29.450000",117, 22' 39.530000"



16357_L2_B_South
33, 40' 28.320000",117, 22' 39.310000"



16357_L2_B_West
,



16357 - Riverside Drive

16357_L3_C_East
33, 40' 28.530000",117, 22' 39.860000"



16357_L3_C_North
33, 40' 19.780000",117, 22' 37.330000"



16357_L3_C_South
33, 40' 19.940000",117, 22' 37.280000"



16357_L4_P_East
33, 40' 24.250000",117, 22' 46.340000"



16357 - Riverside Drive

16357_L4_P_North
33, 40' 24.250000",117, 22' 46.340000"



16357_L4_P_South
33, 40' 24.250000",117, 22' 46.340000"



16357_L4_P_West
33, 40' 21.680000",117, 22' 43.180000"



16357_L5_U_East
33, 40' 24.270000",117, 22' 46.310000"



16357 - Riverside Drive

16357_L5_U_North
33, 40' 24.310000",117, 22' 46.230000"



16357_L5_U_South
33, 40' 24.270000",117, 22' 46.310000"



16357_L5_U_West
33, 40' 24.260000",117, 22' 46.290000"



16357_L6_R_East
33, 40' 26.070000",117, 22' 44.860000"



16357 - Riverside Drive

16357_L6_R_North
33, 40' 25.580000",117, 22' 43.430000"



16357_L6_R_South
33, 40' 25.970000",117, 22' 44.920000"



16357_L6_R_West
33, 40' 25.920000",117, 22' 44.970000"



APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

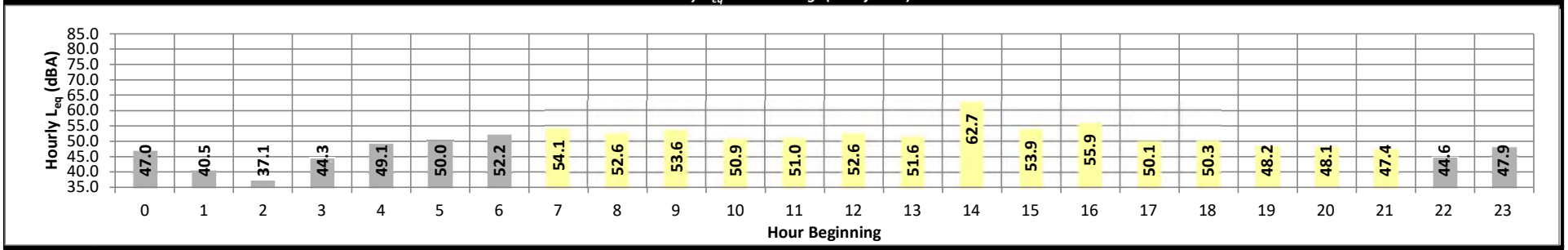
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24-Hour Noise Level Measurement Summary

Date: Wednesday, November 6, 2024 *Location:* L1 - Located northwest of the site near the residence at 3511 *Meter:* Piccolo II *JN:* 16357

Project: Riverside Drive *Source:* Lake Crest Dr. *Analyst:* N. Johnson

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	47.0	59.2	34.5	58.6	57.6	55.1	51.8	42.4	38.3	35.6	35.1	34.6	47.0	10.0	57.0
	1	40.5	51.1	34.0	51.0	50.3	47.8	46.0	37.4	35.5	34.4	34.2	34.0	40.5	10.0	50.5
	2	37.1	42.6	34.8	42.0	41.3	39.8	39.2	37.5	36.5	35.2	35.0	34.9	37.1	10.0	47.1
	3	44.3	54.5	37.8	54.1	53.4	51.0	48.4	43.0	40.8	38.3	38.1	37.9	44.3	10.0	54.3
	4	49.1	60.7	41.2	60.2	59.6	56.7	53.7	45.6	43.6	41.9	41.6	41.3	49.1	10.0	59.1
	5	50.0	61.5	42.7	61.0	60.2	57.1	54.3	47.1	45.4	43.4	43.1	42.8	50.0	10.0	60.0
	6	52.2	63.7	43.9	63.3	62.4	59.4	56.9	49.8	46.6	44.7	44.3	44.0	52.2	10.0	62.2
Day	7	54.1	65.3	45.1	65.0	64.3	61.5	59.0	52.0	48.2	46.0	45.6	45.2	54.1	0.0	54.1
	8	52.6	62.2	46.8	61.8	61.1	58.1	56.0	52.1	50.2	47.6	47.3	46.9	52.6	0.0	52.6
	9	53.6	66.6	44.9	65.1	64.0	60.5	57.8	50.7	48.3	45.8	45.5	45.0	53.6	0.0	53.6
	10	50.9	63.2	42.1	62.5	61.4	57.8	55.1	48.5	45.3	43.0	42.6	42.2	50.9	0.0	50.9
	11	51.0	61.9	43.1	61.5	60.8	57.8	55.4	49.2	46.7	44.0	43.6	43.2	51.0	0.0	51.0
	12	52.6	64.3	42.9	63.8	63.0	60.1	57.7	49.5	46.2	43.7	43.4	43.0	52.6	0.0	52.6
	13	51.6	63.5	39.1	63.1	62.3	59.7	57.0	47.7	43.4	40.1	39.7	39.2	51.6	0.0	51.6
	14	62.7	77.9	39.8	77.2	75.6	69.3	65.6	53.0	45.8	41.1	40.5	40.0	62.7	0.0	62.7
	15	53.9	66.8	40.4	66.3	65.4	61.6	58.7	48.9	44.1	41.3	41.0	40.6	53.9	0.0	53.9
	16	55.9	69.0	40.1	68.6	67.8	63.9	60.4	49.9	44.6	41.1	40.6	40.2	55.9	0.0	55.9
	17	50.1	61.5	40.3	61.1	60.4	57.7	55.1	46.9	43.6	41.3	41.0	40.4	50.1	0.0	50.1
	18	50.3	60.3	41.7	59.9	59.3	56.8	54.9	49.7	46.1	42.6	42.2	41.8	50.3	0.0	50.3
	19	48.2	58.0	42.3	57.7	57.0	54.6	52.6	47.1	44.9	43.0	42.8	42.4	48.2	5.0	53.2
	20	48.1	60.3	36.7	60.0	59.2	56.1	53.1	43.8	40.4	37.5	37.1	36.8	48.1	5.0	53.1
	21	47.4	58.5	37.0	58.3	57.9	55.4	52.7	44.5	40.6	38.0	37.6	37.1	47.4	5.0	52.4
Night	22	44.6	56.5	36.4	56.0	55.1	51.7	48.9	42.0	39.1	37.3	37.0	36.5	44.6	10.0	54.6
	23	47.9	59.6	35.1	59.3	58.8	56.4	53.4	43.8	38.3	35.7	35.5	35.2	47.9	10.0	57.9

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	47.4	58.0	36.7	57.7	57.0	54.6	52.6	43.8	40.4	37.5	37.1	36.8
	Max	62.7	77.9	46.8	77.2	75.6	69.3	65.6	53.0	50.2	47.6	47.3	46.9
Energy Average		54.4	Average:		63.4	62.6	59.4	56.7	48.9	45.2	42.4	42.0	41.6
Night	Min	37.1	42.6	34.0	42.0	41.3	39.8	39.2	37.4	35.5	34.4	34.2	34.0
	Max	52.2	63.7	43.9	63.3	62.4	59.4	56.9	49.8	46.6	44.7	44.3	44.0
Energy Average		47.7	Average:		56.2	55.4	52.8	50.3	43.2	40.5	38.5	38.2	37.9

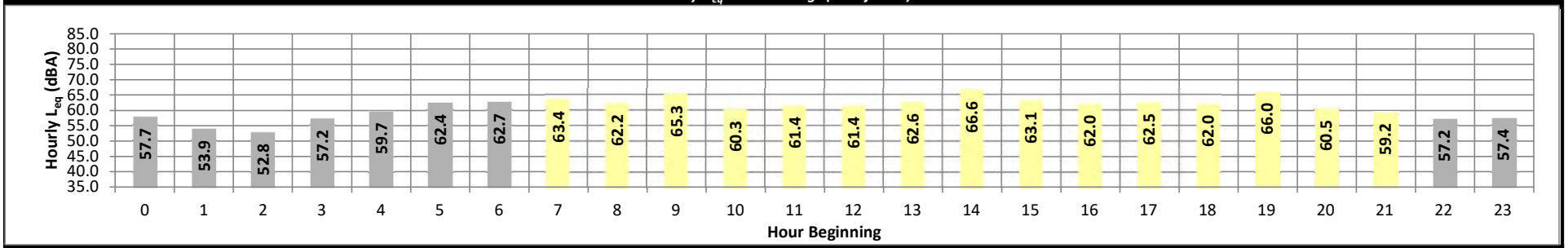
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
56.1	**54.4**	**47.7**

24-Hour Noise Level Measurement Summary

Date: Wednesday, November 6, 2024 *Location:* L2 - Located northeast of the site near the residence at 3499 *Meter:* Piccolo II *JN:* 16357

Project: Riverside Drive *Source:* Lake Crest Dr. *Analyst:* N. Johnson

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	57.7	70.8	36.1	70.4	69.3	66.0	62.2	52.5	44.0	37.2	36.7	36.3	57.7	10.0	67.7
	1	53.9	65.9	34.7	65.4	64.6	61.9	60.1	50.2	41.1	35.5	35.1	34.8	53.9	10.0	63.9
	2	52.8	65.0	34.6	64.5	63.7	60.6	58.2	50.2	40.3	35.2	34.9	34.7	52.8	10.0	62.8
	3	57.2	68.8	38.7	68.4	67.7	65.1	63.2	54.8	46.4	39.5	39.1	38.8	57.2	10.0	67.2
	4	59.7	68.9	42.9	68.5	67.9	66.4	65.3	60.4	53.4	44.4	43.6	43.0	59.7	10.0	69.7
	5	62.4	70.2	47.2	69.8	69.1	67.5	66.6	63.8	60.5	50.6	48.6	47.6	62.4	10.0	72.4
	6	62.7	70.6	48.0	70.2	69.5	67.8	66.8	64.0	60.8	51.7	50.0	48.3	62.7	10.0	72.7
Day	7	63.4	71.7	51.9	71.1	70.4	68.3	66.9	64.5	61.9	55.0	53.5	52.2	63.4	0.0	63.4
	8	62.2	69.8	50.8	69.4	68.7	67.0	66.1	63.4	60.6	53.6	52.2	51.0	62.2	0.0	62.2
	9	65.3	77.1	52.2	76.8	76.2	72.6	68.4	63.1	60.8	55.8	54.2	52.5	65.3	0.0	65.3
	10	60.3	68.2	45.8	67.8	67.1	65.3	64.4	61.7	58.4	48.6	47.2	46.0	60.3	0.0	60.3
	11	61.4	70.2	47.2	69.8	69.1	66.7	65.5	62.4	59.3	50.4	48.7	47.4	61.4	0.0	61.4
	12	61.4	69.5	48.3	69.1	68.5	66.9	65.8	62.3	59.2	51.1	49.6	48.6	61.4	0.0	61.4
	13	62.6	72.1	50.3	71.6	70.8	68.1	66.3	63.4	60.3	52.7	51.4	50.4	62.6	0.0	62.6
	14	66.6	76.5	49.8	76.3	76.0	74.8	73.1	64.2	60.3	53.4	51.5	50.0	66.6	0.0	66.6
	15	63.1	74.0	53.5	73.3	72.3	69.0	66.5	62.5	60.5	56.1	54.8	53.7	63.1	0.0	63.1
	16	62.0	70.4	51.3	70.1	69.6	67.5	65.8	62.8	59.9	54.0	52.7	51.5	62.0	0.0	62.0
	17	62.5	71.8	50.8	71.3	70.5	67.7	65.9	63.2	60.6	53.9	52.4	51.0	62.5	0.0	62.5
	18	62.0	70.4	48.5	69.9	69.3	67.0	65.6	63.0	60.4	53.2	51.0	48.9	62.0	0.0	62.0
	19	66.0	76.9	53.3	76.4	74.9	71.5	70.7	66.0	61.6	55.2	54.3	53.5	66.0	5.0	71.0
	20	60.5	69.7	41.1	69.3	68.6	66.2	64.8	61.7	57.0	46.0	43.4	41.4	60.5	5.0	65.5
	21	59.2	68.4	40.4	67.9	67.2	65.5	64.3	60.6	54.7	42.5	41.3	40.6	59.2	5.0	64.2
Night	22	57.2	66.3	37.3	65.9	65.4	63.9	62.9	58.1	50.6	39.0	38.2	37.5	57.2	10.0	67.2
	23	57.4	70.1	35.7	69.2	68.1	65.1	62.7	54.4	45.4	36.8	36.2	35.7	57.4	10.0	67.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	59.2	68.2	40.4	67.8	67.1	65.3	64.3	60.6	54.7	42.5	41.3	40.6
	Max	66.6	77.1	53.5	76.8	76.2	74.8	73.1	66.0	61.9	56.1	54.8	53.7
Energy Average		63.1	Average:		71.3	70.6	68.3	66.7	63.0	59.7	52.1	50.5	49.3
Night	Min	52.8	65.0	34.6	64.5	63.7	60.6	58.2	50.2	40.3	35.2	34.9	34.7
	Max	62.7	70.8	48.0	70.4	69.5	67.8	66.8	64.0	60.8	51.7	50.0	48.3
Energy Average		59.0	Average:		68.0	67.3	64.9	63.1	56.5	49.2	41.1	40.3	39.6

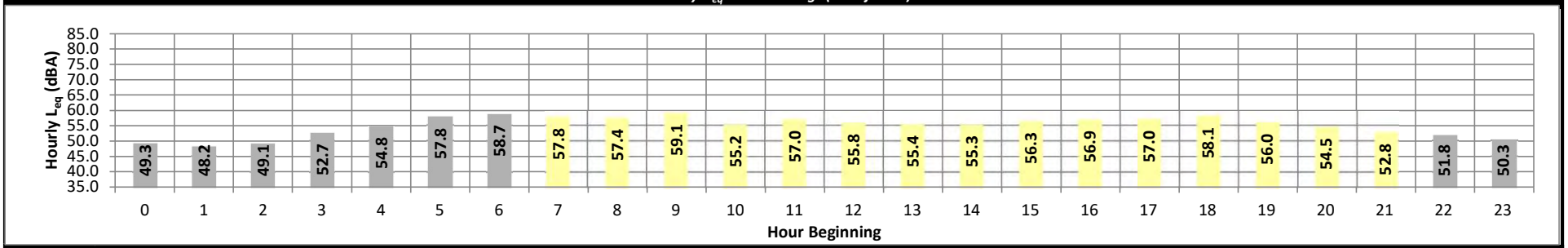
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
66.8	**63.1**	**59.0**

24-Hour Noise Level Measurement Summary

Date: Wednesday, November 6, 2024 *Location:* L3 - Located southeast of the site near the RV Park at 32390 *Meter:* Piccolo II *JN:* 16357

Project: Riverside Drive *Source:* Riverside Dr. *Analyst:* N. Johnson

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	49.3	58.5	41.5	58.1	57.6	55.8	54.1	48.9	45.4	42.1	41.8	41.5	49.3	10.0	59.3
	1	48.2	57.1	40.9	56.7	56.3	54.6	53.2	48.2	44.0	41.2	41.1	40.9	48.2	10.0	58.2
	2	49.1	60.2	41.1	59.7	59.3	56.9	54.1	46.6	43.3	41.4	41.2	41.0	49.1	10.0	59.1
	3	52.7	62.8	43.4	62.4	62.0	60.0	58.0	51.6	47.6	44.0	43.7	43.4	52.7	10.0	62.7
	4	54.8	63.1	46.3	62.7	62.1	60.4	59.0	55.7	52.0	47.4	46.8	46.4	54.8	10.0	64.8
	5	57.8	67.2	48.6	66.5	65.8	63.2	61.6	58.3	55.8	50.3	49.4	48.7	57.8	10.0	67.8
	6	58.7	68.5	48.4	68.1	67.5	64.8	62.7	58.7	56.1	50.0	49.2	48.5	58.7	10.0	68.7
Day	7	57.8	66.1	49.5	65.1	64.4	62.7	61.5	58.6	56.1	51.4	50.6	49.7	57.8	0.0	57.8
	8	57.4	64.4	50.2	64.0	63.5	62.2	61.1	58.4	55.9	51.7	51.0	50.4	57.4	0.0	57.4
	9	59.1	69.2	50.3	68.7	67.9	65.8	63.8	57.8	55.7	52.0	51.2	50.5	59.1	0.0	59.1
	10	55.2	63.4	46.4	62.9	62.4	60.4	58.9	56.0	53.6	47.9	47.1	46.5	55.2	0.0	55.2
	11	57.0	66.6	47.4	66.2	65.6	63.1	61.0	57.0	54.2	49.0	48.1	47.5	57.0	0.0	57.0
	12	55.8	64.0	47.5	63.7	63.2	61.2	59.6	56.5	53.9	49.0	48.2	47.6	55.8	0.0	55.8
	13	55.4	63.5	49.7	62.9	62.2	60.3	59.0	55.8	53.8	50.5	50.1	49.7	55.4	0.0	55.4
	14	55.3	61.8	51.9	61.4	61.0	59.6	58.1	55.5	54.1	52.4	52.1	51.9	55.3	0.0	55.3
	15	56.3	63.9	52.5	63.3	62.7	60.9	59.1	56.4	55.0	53.2	52.9	52.6	56.3	0.0	56.3
	16	56.9	67.2	46.8	66.7	66.2	63.0	61.1	56.4	53.7	48.8	48.0	47.0	56.9	0.0	56.9
	17	57.0	66.3	47.5	65.8	65.2	62.9	61.0	56.9	54.5	49.7	48.7	47.6	57.0	0.0	57.0
	18	58.1	68.9	48.1	68.5	67.7	64.0	61.5	57.4	55.2	50.4	49.3	48.3	58.1	0.0	58.1
	19	56.0	63.5	47.0	63.1	62.5	61.0	60.2	57.1	54.2	48.7	47.9	47.2	56.0	5.0	61.0
	20	54.5	63.3	43.7	62.9	62.3	60.4	59.0	55.1	51.6	45.3	44.5	43.8	54.5	5.0	59.5
	21	52.8	62.2	42.4	61.5	60.9	58.5	57.0	53.6	49.7	43.2	42.7	42.4	52.8	5.0	57.8
Night	22	51.8	60.9	41.5	60.4	59.8	58.1	56.6	52.6	47.8	42.3	41.9	41.5	51.8	10.0	61.8
	23	50.3	59.1	40.9	58.7	58.2	56.5	55.4	50.8	46.1	41.7	41.2	40.9	50.3	10.0	60.3

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	52.8	61.8	42.4	61.4	60.9	58.5	57.0	53.6	49.7	43.2	42.7	42.4
	Max	59.1	69.2	52.5	68.7	67.9	65.8	63.8	58.6	56.1	53.2	52.9	52.6
Energy Average		56.6	Average:		64.5	63.9	61.7	60.1	56.6	54.1	49.6	48.8	48.2
Night	Min	48.2	57.1	40.9	56.7	56.3	54.6	53.2	46.6	43.3	41.2	41.1	40.9
	Max	58.7	68.5	48.6	68.1	67.5	64.8	62.7	58.7	56.1	50.3	49.4	48.7
Energy Average		54.1	Average:		61.5	61.0	58.9	57.2	52.4	48.7	44.5	44.0	43.6

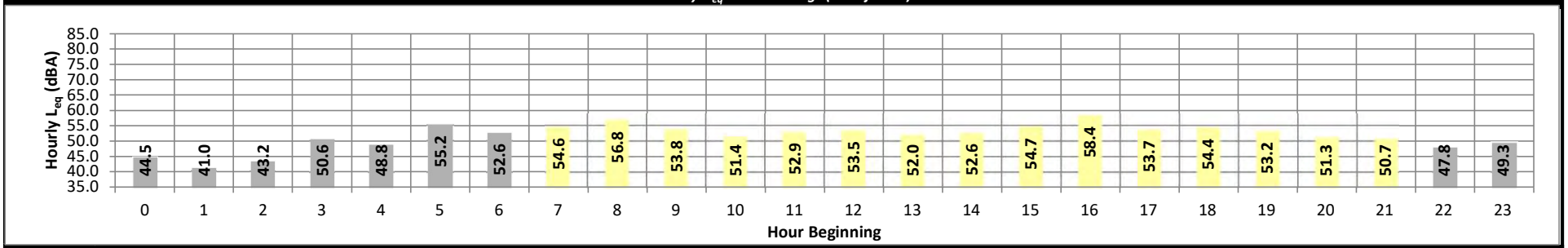
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
61.3	**56.6**	**54.1**

24-Hour Noise Level Measurement Summary

Date: Wednesday, November 6, 2024 *Location:* L4 - Located Southwest of the site near the residence at 3506 *Meter:* Piccolo II *JN:* 16357

Project: Riverside Drive *Source:* Eisenhower Dr. *Analyst:* N Johnson

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	44.5	55.7	33.6	55.2	54.5	53.1	50.5	41.2	38.2	34.9	34.5	33.7	44.5	10.0	54.5
	1	41.0	51.6	32.3	51.2	50.7	49.3	46.6	38.8	34.9	32.9	32.7	32.4	41.0	10.0	51.0
	2	43.2	55.7	32.2	55.2	54.2	52.0	48.7	37.0	34.2	32.6	32.4	32.2	43.2	10.0	53.2
	3	50.6	63.6	36.9	63.3	62.5	58.8	55.4	44.9	41.1	37.5	37.2	37.0	50.6	10.0	60.6
	4	48.8	59.5	40.5	59.0	58.2	56.2	53.9	47.2	44.4	41.4	41.0	40.6	48.8	10.0	58.8
	5	55.2	67.1	46.4	65.7	64.3	61.3	59.3	54.5	52.0	47.8	47.1	46.5	55.2	10.0	65.2
	6	52.6	62.7	43.9	62.2	61.4	59.4	57.3	51.9	49.1	45.3	44.7	44.1	52.6	10.0	62.6
Day	7	54.6	63.8	46.4	63.3	62.7	60.9	59.3	54.3	51.2	47.6	47.1	46.5	54.6	0.0	54.6
	8	56.8	67.8	48.3	66.9	65.7	63.2	61.2	56.0	53.2	49.7	49.2	48.5	56.8	0.0	56.8
	9	53.8	63.5	46.0	63.0	62.2	59.9	57.9	53.3	51.0	47.7	46.8	46.1	53.8	0.0	53.8
	10	51.4	60.6	43.3	60.2	59.6	57.5	55.7	51.1	48.8	44.8	44.1	43.5	51.4	0.0	51.4
	11	52.9	61.4	45.1	61.0	60.5	58.9	57.1	53.0	50.4	46.6	46.0	45.3	52.9	0.0	52.9
	12	53.5	62.1	46.1	61.7	61.2	59.8	58.0	53.3	50.9	47.6	47.0	46.3	53.5	0.0	53.5
	13	52.0	62.2	40.9	61.8	61.2	59.6	57.9	50.6	46.6	42.6	41.9	41.2	52.0	0.0	52.0
	14	52.6	62.6	41.6	62.3	61.7	60.3	58.2	51.1	46.9	43.0	42.4	41.7	52.6	0.0	52.6
	15	54.7	65.0	42.4	64.7	64.2	62.8	60.6	52.6	48.3	44.0	43.3	42.6	54.7	0.0	54.7
	16	58.4	73.1	40.8	71.9	70.2	65.2	60.9	53.0	47.3	42.2	41.6	41.0	58.4	0.0	58.4
	17	53.7	64.6	40.0	64.3	63.6	61.4	59.2	52.1	46.3	42.1	41.2	40.4	53.7	0.0	53.7
	18	54.4	64.8	42.7	64.4	63.8	61.4	60.0	53.2	49.1	44.3	43.6	42.9	54.4	0.0	54.4
	19	53.2	65.6	42.1	64.7	63.6	60.6	57.5	50.9	46.5	43.2	42.7	42.2	53.2	5.0	58.2
	20	51.3	63.1	36.3	62.5	61.6	59.5	56.8	48.5	42.7	37.7	37.0	36.5	51.3	5.0	56.3
	21	50.7	61.0	35.5	60.6	60.2	59.0	57.6	48.3	41.7	36.7	36.1	35.6	50.7	5.0	55.7
Night	22	47.8	58.9	34.1	58.4	57.8	56.4	53.7	45.4	39.5	34.9	34.5	34.1	47.8	10.0	57.8
	23	49.3	60.9	33.6	60.4	59.9	58.0	55.6	45.5	38.6	34.6	34.1	33.7	49.3	10.0	59.3

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	50.7	60.6	35.5	60.2	59.6	57.5	55.7	48.3	41.7	36.7	36.1	35.6
	Max	58.4	73.1	48.3	71.9	70.2	65.2	61.2	56.0	53.2	49.7	49.2	48.5
Energy Average		54.1	Average:		63.5	62.8	60.7	58.5	52.1	48.1	44.0	43.3	42.7
Night	Min	41.0	51.6	32.2	51.2	50.7	49.3	46.6	37.0	34.2	32.6	32.4	32.2
	Max	55.2	67.1	46.4	65.7	64.3	61.3	59.3	54.5	52.0	47.8	47.1	46.5
Energy Average		50.1	Average:		59.0	58.2	56.1	53.5	45.2	41.3	38.0	37.6	37.2

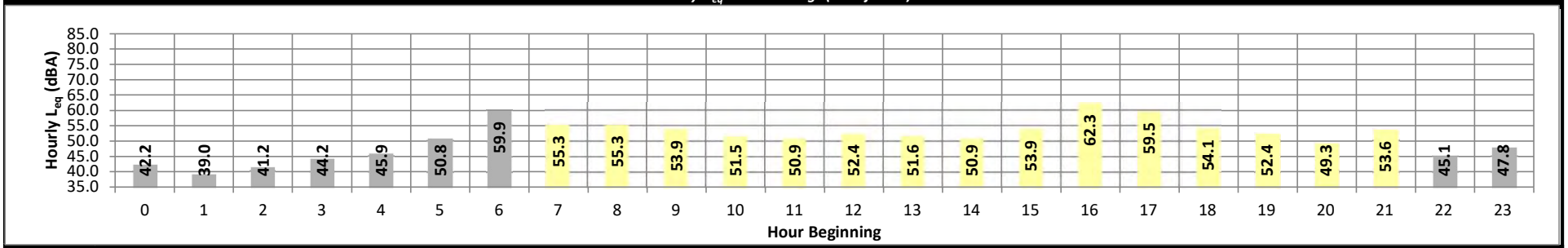
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
57.7	**54.1**	**50.1**

24-Hour Noise Level Measurement Summary

Date: Wednesday, November 6, 2024 *Location:* L5 - Located southwest of the site near the residence at 3706 *Meter:* Piccolo II *JN:* 16357

Project: Riverside Drive *Source:* Eisenhower Drive. *Analyst:* N. Johnson

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	42.2	51.5	34.1	51.1	50.6	48.8	47.3	41.4	38.0	35.2	34.9	34.4	42.2	10.0	52.2
	1	39.0	49.4	32.9	48.9	48.2	46.3	44.7	36.0	34.4	33.3	33.2	33.0	39.0	10.0	49.0
	2	41.2	48.3	34.8	47.6	47.2	46.3	45.7	41.9	39.0	35.7	35.3	35.0	41.2	10.0	51.2
	3	44.2	52.0	37.5	51.5	51.1	49.7	49.0	44.6	41.6	38.0	37.8	37.6	44.2	10.0	54.2
	4	45.9	54.2	40.6	53.9	53.5	52.0	50.8	45.1	43.0	41.3	41.0	40.7	45.9	10.0	55.9
	5	50.8	60.2	42.5	59.8	59.3	57.4	55.4	50.3	47.5	43.3	43.0	42.6	50.8	10.0	60.8
	6	59.9	67.6	51.8	66.8	66.2	64.7	63.3	60.6	58.4	54.4	53.5	52.3	59.9	10.0	69.9
Day	7	55.3	64.8	46.8	64.4	63.9	61.2	59.3	55.4	52.4	48.9	48.2	47.2	55.3	0.0	55.3
	8	55.3	65.1	46.5	64.6	64.0	61.9	59.7	54.5	51.7	47.8	47.3	46.7	55.3	0.0	55.3
	9	53.9	65.4	44.0	64.3	63.6	61.2	57.9	52.4	48.7	45.1	44.6	44.1	53.9	0.0	53.9
	10	51.5	60.8	42.8	60.1	59.5	57.9	56.7	51.3	47.7	44.3	43.7	43.0	51.5	0.0	51.5
	11	50.9	59.1	43.6	58.4	57.9	56.4	55.4	51.4	48.2	45.0	44.4	43.7	50.9	0.0	50.9
	12	52.4	62.2	43.6	61.6	61.0	59.1	57.3	51.7	48.1	44.8	44.3	43.8	52.4	0.0	52.4
	13	51.6	61.6	39.3	61.2	60.8	59.1	57.4	50.9	45.7	40.5	40.0	39.5	51.6	0.0	51.6
	14	50.9	61.7	42.0	60.8	59.9	57.8	56.1	50.2	46.0	42.8	42.5	42.1	50.9	0.0	50.9
	15	53.9	63.5	41.4	63.0	62.3	61.1	59.3	53.8	48.9	44.0	42.8	41.7	53.9	0.0	53.9
	16	62.3	74.6	41.5	73.9	72.9	70.6	68.0	58.3	51.6	43.6	42.6	41.8	62.3	0.0	62.3
	17	59.5	70.6	39.1	69.9	69.2	67.3	65.5	57.5	49.1	40.4	39.8	39.3	59.5	0.0	59.5
	18	54.1	65.2	42.3	64.9	64.5	61.8	58.7	52.2	47.8	43.3	42.9	42.4	54.1	0.0	54.1
	19	52.4	64.2	42.9	63.1	62.0	58.7	56.6	51.5	47.9	44.2	43.7	43.2	52.4	5.0	57.4
	20	49.3	59.2	37.0	58.7	58.2	56.2	54.3	49.3	45.0	38.7	38.1	37.2	49.3	5.0	54.3
	21	53.6	65.8	35.3	65.7	65.0	62.3	59.0	48.4	40.3	36.1	35.7	35.4	53.6	5.0	58.6
Night	22	45.1	55.3	34.1	54.7	53.8	52.2	51.1	43.7	39.1	34.9	34.6	34.2	45.1	10.0	55.1
	23	47.8	59.1	34.8	58.8	58.2	55.6	53.0	45.2	39.7	35.7	35.3	34.9	47.8	10.0	57.8

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	49.3	59.1	35.3	58.4	57.9	56.2	54.3	48.4	40.3	36.1	35.7	35.4
	Max	62.3	74.6	46.8	73.9	72.9	70.6	68.0	58.3	52.4	48.9	48.2	47.2
Energy Average		55.4	Average:		63.6	63.0	60.8	58.7	52.6	47.9	43.3	42.7	42.1
Night	Min	39.0	48.3	32.9	47.6	47.2	46.3	44.7	36.0	34.4	33.3	33.2	33.0
	Max	59.9	67.6	51.8	66.8	66.2	64.7	63.3	60.6	58.4	54.4	53.5	52.3
Energy Average		51.5	Average:		54.8	54.2	52.6	51.2	45.4	42.3	39.1	38.7	38.3

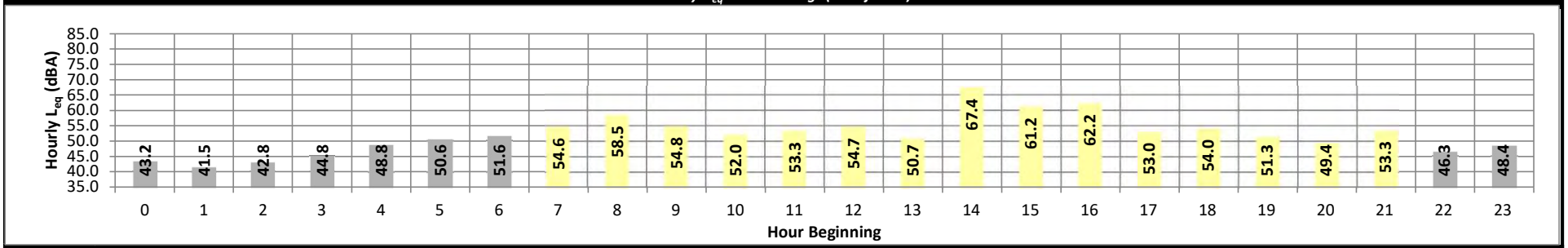
24-Hour CNEL	*Leq (dBA) Daytime (7am-10pm)*	*Leq (dBA) Nighttime (10pm-7am)*
59.0	**55.4**	**51.5**

24-Hour Noise Level Measurement Summary

Date: Wednesday, November 6, 2024 *Location:* L6 - Located northwest of the site near the residence at 1114 *Meter:* Piccolo II *JN:* 16357

Project: Riverside Drive *Source:* Monroe St. *Analyst:* N. Johnson

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	43.2	52.0	40.0	51.7	51.2	48.5	46.6	41.9	40.9	40.1	40.0	39.9	43.2	10.0	53.2
	1	41.5	48.6	39.9	48.3	47.8	45.1	43.9	40.6	40.3	39.9	39.8	39.8	41.5	10.0	51.5
	2	42.8	52.9	40.0	52.5	51.6	48.1	45.7	40.8	40.3	40.0	40.0	39.9	42.8	10.0	52.8
	3	44.8	54.3	41.2	54.0	53.2	50.4	48.3	43.5	42.1	41.3	41.2	41.1	44.8	10.0	54.8
	4	48.8	57.7	43.7	57.2	56.4	54.2	52.7	48.7	46.4	44.3	44.0	43.8	48.8	10.0	58.8
	5	50.6	59.6	44.9	59.2	58.5	56.3	54.8	50.3	48.0	45.6	45.3	45.0	50.6	10.0	60.6
	6	51.6	61.5	45.8	61.0	60.2	57.8	55.6	50.7	48.6	46.6	46.2	45.9	51.6	10.0	61.6
Day	7	54.6	62.5	48.8	62.0	61.4	59.6	58.4	55.0	52.6	49.9	49.4	49.0	54.6	0.0	54.6
	8	58.5	70.0	48.9	69.6	68.7	66.1	62.4	56.2	53.8	50.3	49.7	49.1	58.5	0.0	58.5
	9	54.8	64.5	47.8	64.1	63.3	61.0	59.0	54.4	52.0	49.0	48.5	47.9	54.8	0.0	54.8
	10	52.0	60.3	45.8	59.6	59.0	57.2	55.9	52.2	50.1	47.1	46.5	45.9	52.0	0.0	52.0
	11	53.3	60.4	47.6	60.0	59.5	58.0	56.9	53.9	51.7	48.7	48.2	47.8	53.3	0.0	53.3
	12	54.7	63.9	48.4	63.5	62.8	60.0	58.3	54.5	52.7	49.6	49.1	48.6	54.7	0.0	54.7
	13	50.7	61.3	44.0	60.9	60.3	57.2	54.7	49.4	46.9	44.8	44.5	44.0	50.7	0.0	50.7
	14	67.4	71.2	64.0	70.9	70.6	69.9	69.5	68.2	67.2	64.7	64.5	64.1	67.4	0.0	67.4
	15	61.2	67.5	50.0	67.0	66.5	65.4	64.9	61.5	60.0	52.0	51.1	50.3	61.2	0.0	61.2
	16	62.2	76.2	47.4	75.7	74.5	70.0	65.0	55.1	52.5	49.1	48.4	47.6	62.2	0.0	62.2
	17	53.0	65.6	43.0	64.3	62.8	60.0	57.9	50.9	46.5	43.6	43.3	43.1	53.0	0.0	53.0
	18	54.0	62.7	48.0	62.3	61.6	59.5	58.0	53.8	51.8	48.9	48.5	48.2	54.0	0.0	54.0
	19	51.3	61.5	44.9	61.1	60.3	57.6	55.5	50.2	48.0	45.7	45.4	45.0	51.3	5.0	56.3
	20	49.4	60.9	41.6	60.5	59.7	56.6	54.4	46.2	43.9	42.1	41.8	41.6	49.4	5.0	54.4
	21	53.3	64.2	41.6	63.6	63.0	61.1	59.5	50.1	46.0	42.7	42.1	41.6	53.3	5.0	58.3
Night	22	46.3	56.6	40.6	56.2	55.7	52.8	51.2	44.5	42.3	40.7	40.6	40.5	46.3	10.0	56.3
	23	48.4	60.1	40.5	59.6	59.0	55.9	53.2	44.8	42.0	40.6	40.5	40.5	48.4	10.0	58.4

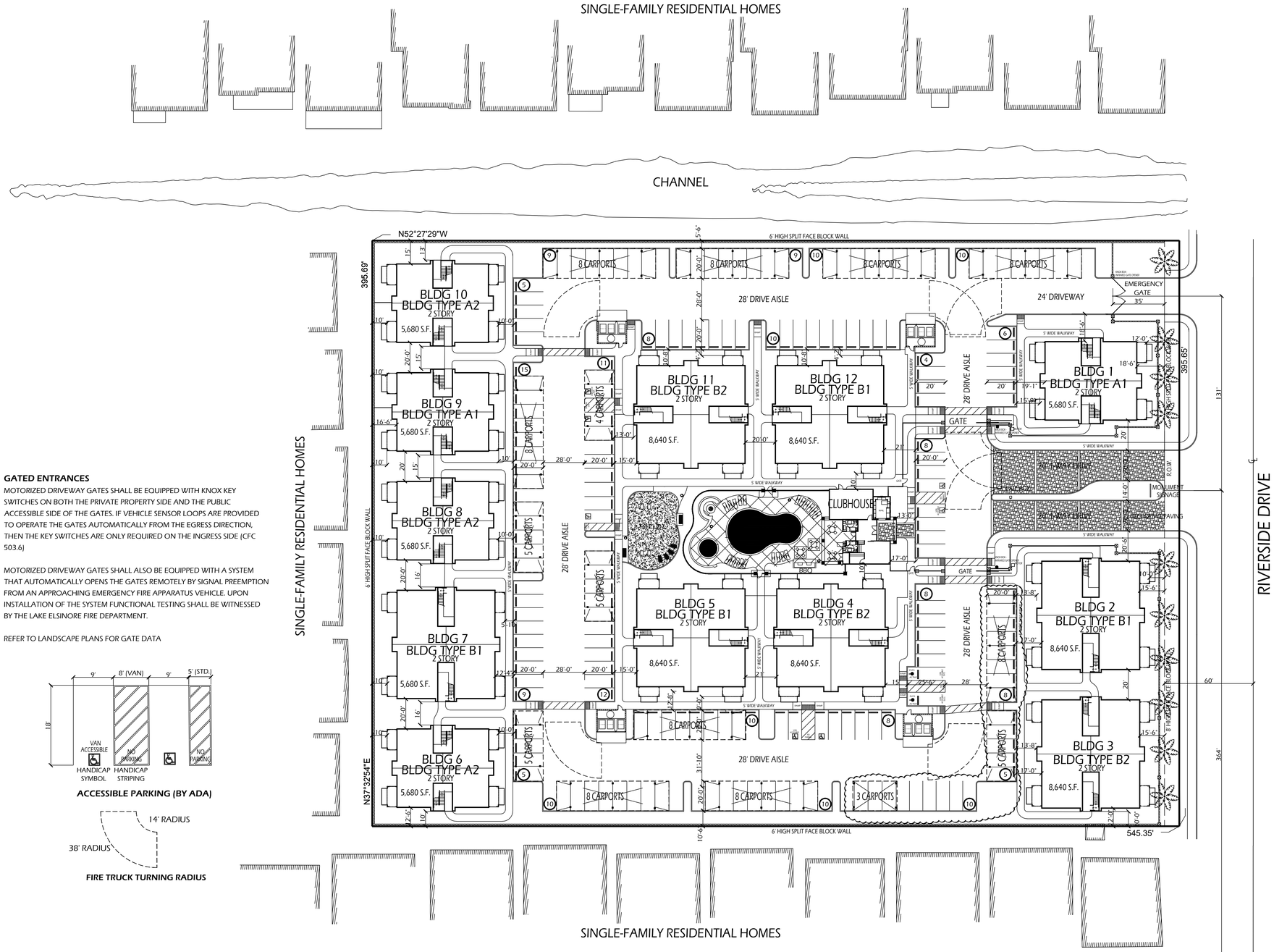
Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	49.4	60.3	41.6	59.6	59.0	56.6	54.4	46.2	43.9	42.1	41.8	41.6
	Max	67.4	76.2	64.0	75.7	74.5	70.0	69.5	68.2	67.2	64.7	64.5	64.1
Energy Average		58.8	Average:		64.4	63.6	61.3	59.4	54.1	51.7	48.5	48.1	47.6
Night	Min	41.5	48.6	39.9	48.3	47.8	45.1	43.9	40.6	40.3	39.9	39.8	39.8
	Max	51.6	61.5	45.8	61.0	60.2	57.8	55.6	50.7	48.6	46.6	46.2	45.9
Energy Average		47.7	Average:		55.5	54.9	52.1	50.2	45.1	43.4	42.1	42.0	41.8

24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
58.7	**58.8**	**47.7**

APPENDIX 6.1:

SITE PLAN

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GATED ENTRANCES

MOTORIZED DRIVEWAY GATES SHALL BE EQUIPPED WITH KNOX KEY SWITCHES ON BOTH THE PRIVATE PROPERTY SIDE AND THE PUBLIC ACCESSIBLE SIDE OF THE GATES. IF VEHICLE SENSOR LOOPS ARE PROVIDED TO OPERATE THE GATES AUTOMATICALLY FROM THE EGRESS DIRECTION, THEN THE KEY SWITCHES ARE ONLY REQUIRED ON THE INGRESS SIDE (CFC 503.6)

MOTORIZED DRIVEWAY GATES SHALL ALSO BE EQUIPPED WITH A SYSTEM THAT AUTOMATICALLY OPENS THE GATES REMOTELY BY SIGNAL PREEMPTION FROM AN APPROACHING EMERGENCY FIRE APPARATUS VEHICLE. UPON INSTALLATION OF THE SYSTEM FUNCTIONAL TESTING SHALL BE WITNESSED BY THE LAKE ELSINORE FIRE DEPARTMENT.

REFER TO LANDSCAPE PLANS FOR GATE DATA

ACCESSIBLE PARKING (BY ADA)

FIRE TRUCK TURNING RADIUS

PARKING ANALYSIS

PARKING REQUIRED:

1 BDRM:	40 D.U. X 1.67 SPACES =	67 SPACES
2 BDRMS:	56 D.U. X 2.33 SPACES =	131 SPACES
TOTAL:	**96 D.U.**	**198 SPACES**

QUANTITY PROVIDED: **200 SPACES**

TYPE	QUANTITY REQUIRED	QUANTITY PROVIDED
CARPORTS:	96 SPACES	99 SPACES
OPEN SPACES:	102 SPACES	101 SPACES
HANDICAP SPACES:		
CARPORTS: 99 X 2%	2 SPACES	2 SPACES
OPEN SPACES:		
ASSIGNED: 62 X 2%	2 SPACES	2 SPACES
GUEST: 40 X 5%	2 SPACES	3 SPACES

ELECTRIC VEHICLE PARKING:
ACTIVE EVCS SPACES REQUIRED: 21 SPACES
21 ACTIVE EVCS (1 VAN SPACE) PROVIDED

PARKING SPACE SIZES:

ALL OPEN NON-HANDICAP PARKING SPACES SHALL BE 9' WIDE BY 18' DEEP WITH WHEEL STOPS WHEN PARKING SPACES ARE ADJACENT TO WALKWAYS. STRIPING SHALL BE 4" WIDE PAINTED ON TOP OF PAVING.

ALL CARPORTS SHALL BE 9'-6" WIDE BY 20' DEEP. HANDICAP SPACES SHALL BE 10' WIDE IN CARPORTS.

BUILDINGS SUMMARY

BUILDING TYPE A

PLAN NO.:	D.U. S.F.	COVERED PATIO S.F.	BALCONY S.F.	QUANTITY
1	710 S.F.	60 S.F.	84 S.F.	8 D.U.
TOTAL:	5,680 S.F.	240 S.F.	336 S.F.	8 D.U.

BUILDING TYPE B

PLAN NO.:	D.U. S.F.	COVERED PATIO S.F.	BALCONY S.F.	QUANTITY
2	1,080 S.F.	60 S.F.	84 S.F.	8 D.U.
TOTAL:	8,640 S.F.	240 S.F.	336 S.F.	8 D.U.

CLUBHOUSE

PLAN NO.:	S.F.	COVERED. PATIO S.F.	QUANTITY
CLUBHOUSE	1,597 S.F.	490 S.F.	1

BUILDINGS

BLDG. NO.:	D.U. S.F.	COVERED PATIO S.F.	BALCONY S.F.	QUANTITY
A	28,400 S.F.	1,200 S.F.	1,200 S.F.	5 BLDGS.
B	60,480 S.F.	1,680 S.F.	1,680 S.F	7 BLDGS.
CLUB	1,597 S.F.	490 S.F.		1 BLDG.
TOTAL:	87,517 S.F.	3,370 S.F.	4,032 S.F.	13 BLDGS.

TOTAL 1ST FLOOR PRIVATE SPACE SHALL BE 125 S.F. PER UNIT INCLUDING OPEN AND COVERED PRIVATE SPACE

1ST FLOOR PRIVATE OPEN SPACE SUMMARY

TOTAL 1ST FLOOR PRIVATE OPEN SPACE 6,000 S.F.

PARKING LOT LANDSCAPE SUMMARY

PARKING LOT AREA:	79,009 S.F.
REQUIRED LANDSCAPE AREA:	
79009 S.F. X 5%	3,950 S.F. (5%)
PROVIDED LANDSCAPE AREA:	
	5,042 S.F. (6.24%)

COMMON OPEN SPACE ANALYSIS & SUMMARY

NET SITE AREA:	213,415 S.F.
DRIVEWAYS & PARKING:	79,009 S.F.
PARKING LOT LANDSCAPE:	5,042 S.F.
BUILDING ROOFS:	52,652 S.F.
PRIVATE OPEN SPACE:	6,420 S.F.
COMMON OPEN SPACE:	70,292 S.F. S.F. (33%)

PLAN	SQ. FTG.	BDRMS	BATHS	BALCONY	QUANTITY
1	730 S.F.	1	1	60 S.F	40 D.U. [41.6 PERCENT]
2	1,090 S.F.	2	2	60 S.F	56 D.U. [58.4 PERCENT]
TOTAL:					96 D.U.

TRASH ENCLOSURES

TRASH BINS REQUIRED: 1 3 C.Y. BIN PER 8 D.U.	12 3 C.Y. BINS
TRASH BINS PROVIDED:	12 3 C.Y. BINS

PROJECT SUMMARY

ZONE:	RMU
APN:	379-315-033
GROSS SITE AREA:	4.95 ACRES (215,793 S.F.)
NET SITE AREA:	4.90 ACRES (213,415 S.F.)
NO. OF DWELLING UNITS:	96 D.U.
ALLOWABLE DENSITY:	19-24 D.U./ ACRE
DENSITY PROVIDED:	19.6 D.U./ ACRE
CONSTRUCTION TYPE:	TYPE V-B, SPRINKLERED
OCCUPANCY TYPE:	R-2, B, U

RIVERSIDE DRIVE APARTMENTS

32281 RIVERSIDE DRIVE, ELSINORE, CA

96 Apartment Homes

WJK DEVELOPMENT CO. / RSI EQUITY

GRANT KEENE (949)677-0668

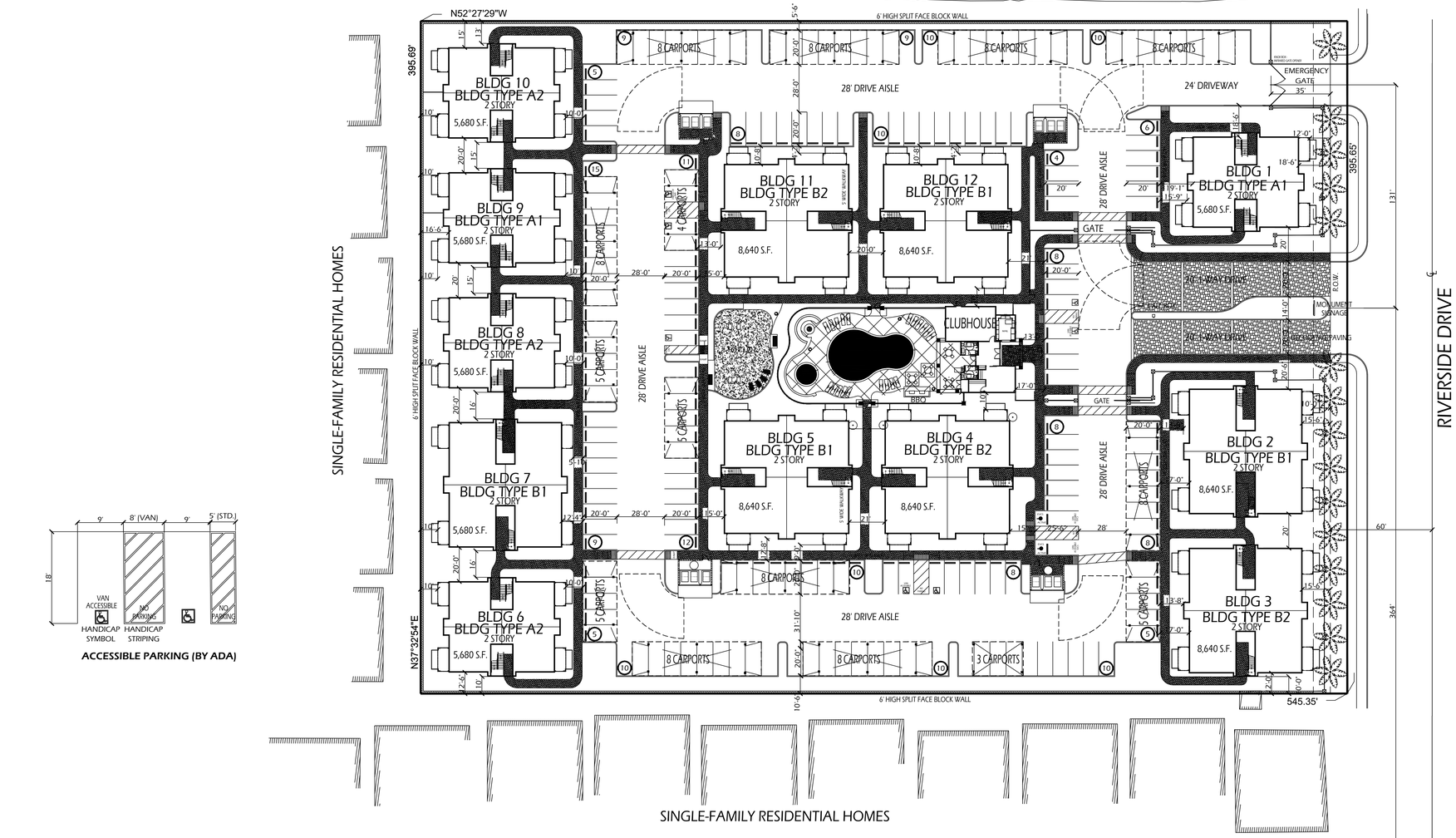
SCHEMATIC SITE PLAN 14

MICHAEL McHALE, ARCHITECT
(949) 566-4951
3/13/24
SCALE: 1" = 30' - 0"

1

SINGLE-FAMILY RESIDENTIAL HOMES

CHANNEL



ACCESSIBLE PARKING (BY ADA)

PATH OF TRAVEL

A.D.A. PATH OF TRAVEL SHALL COMPLY WITH ALL REQUIREMENTS OF DIV.II, CHAPTER11A & 11B

- ALL SIDEWALKS ARE A PATH OF TRAVEL
- SEE A.D.A. SHEETS A.D.A-1 THROUGH A.D.A-5 FOR ACCESSIBILITY DETAILS
- ALL WALKWAYS SHALL HAVE MAX. SLOPE OF 2%.

RIVERSIDE DRIVE APARTMENTS

32281 RIVERSIDE DRIVE, ELSINORE, CA

96 Apartment Homes

WJK DEVELOPMENT CO. / RSI EQUITY

GRANT KEENE (949)677-0668

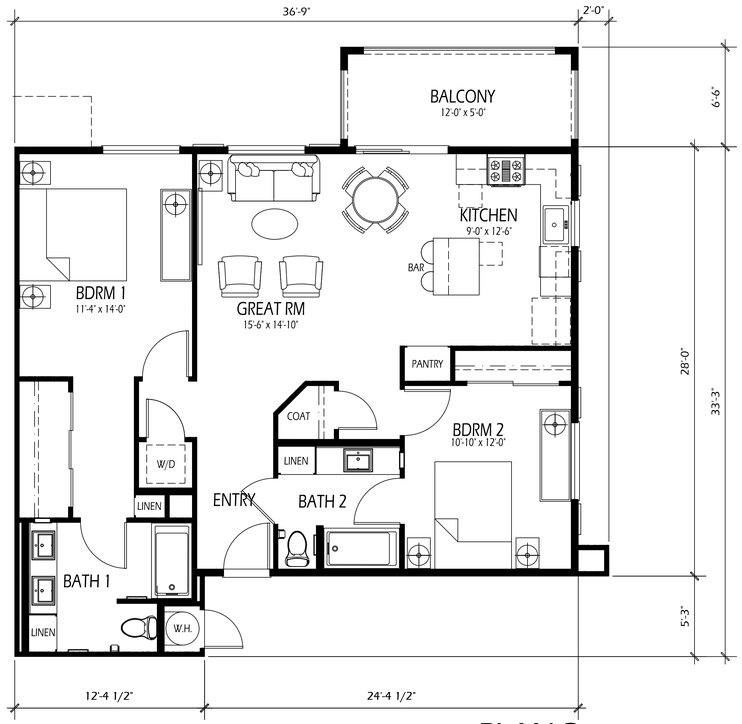
SCHEMATIC SITE PLAN 14 PATH OF TRAVEL

MICHAEL McHALE, ARCHITECT
(949) 566-4951

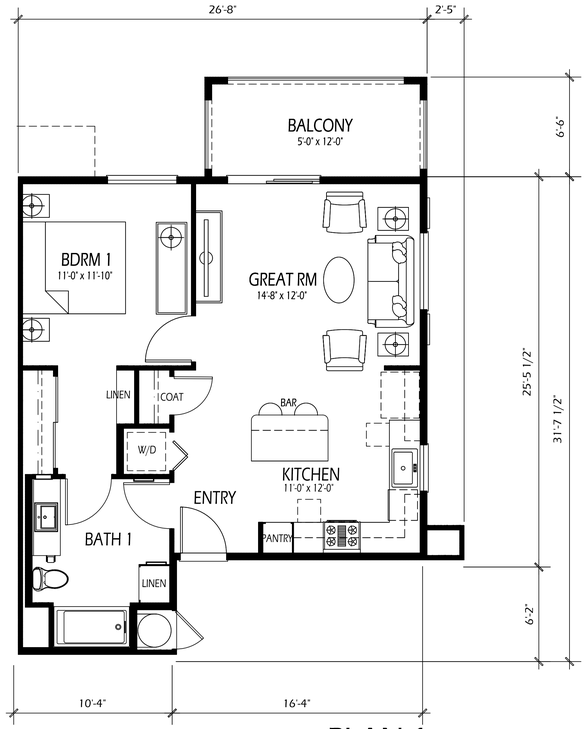
3/22/24

SCALE: 1" = 30' - 0"

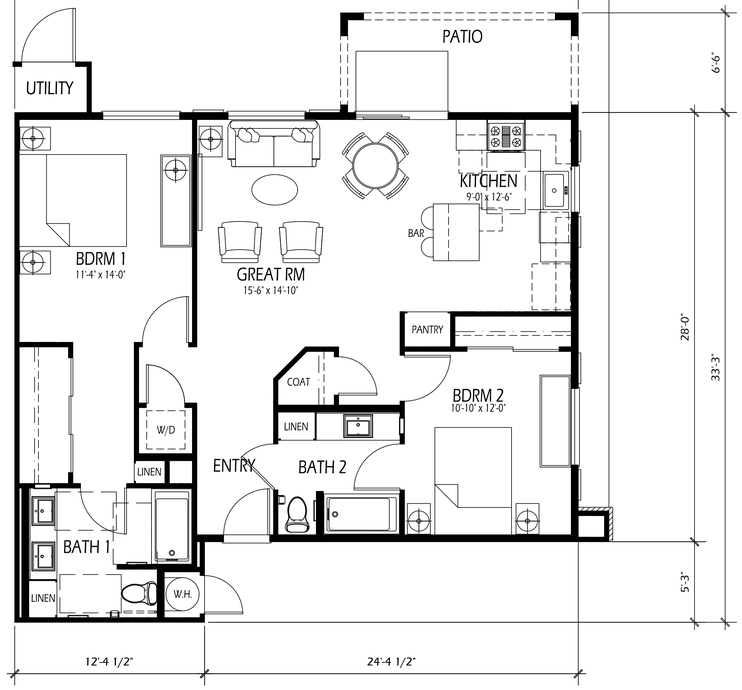
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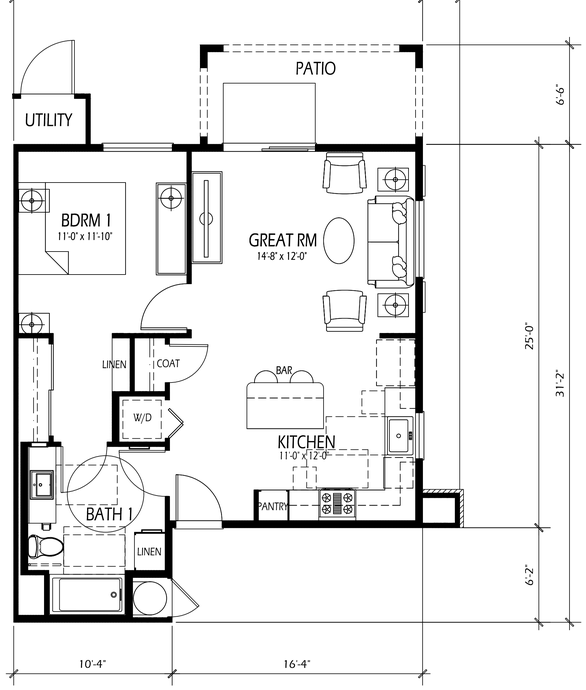
PLAN 2
2ND FLOOR PLAN



PLAN 1
2ND FLOOR PLAN



PLAN 2
1ST FLOOR PLAN



PLAN 1
1ST FLOOR PLAN

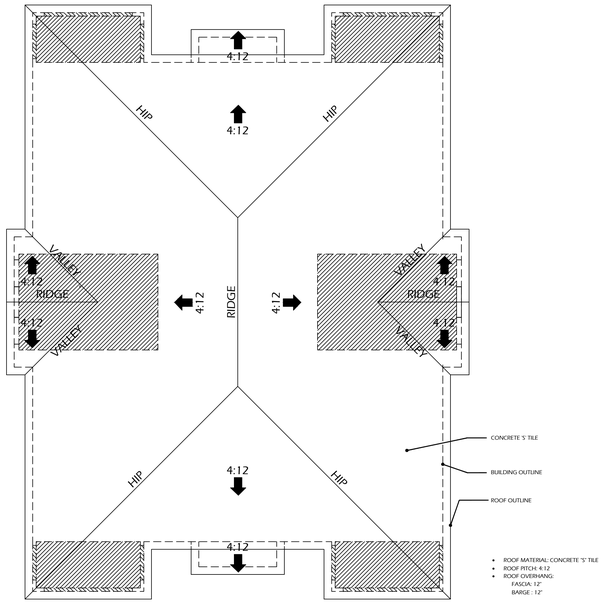
DWELLING UNITS SUMMARY

PLAN NO.	SQ. FTG.	BDRMS	BATHS
1	730 S.F.	1	1
2	1,092 S.F.	2	2

PLAN 1 & PLAN 2
FLOOR PLANS

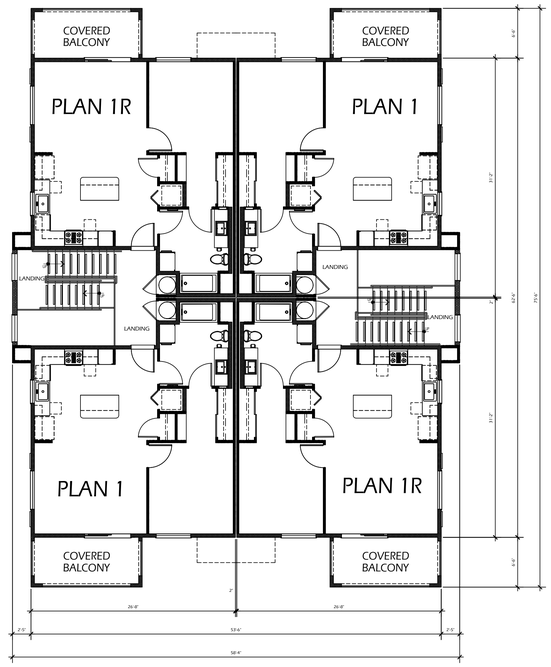
ELSINORE APARTMENTS
LAKE ELSINORE , CA
96 Apartment Homes
WJK DEVELOPMENT CO. / RSI EQUITY
GRANT KEENE (949) 677-0668

MICHAEL McHALE, ARCHITECT
(949) 566-4951
8/9/23
SCALE: 1" = 4' - 0"



- ROOF MATERIAL: CONCRETE "S" TILE
- ROOF PITCH: 4:12
- ROOF OVERHANG:
  FASCIA: 12"
  BARGE: 12"

BUILDING A1
ROOF PLAN



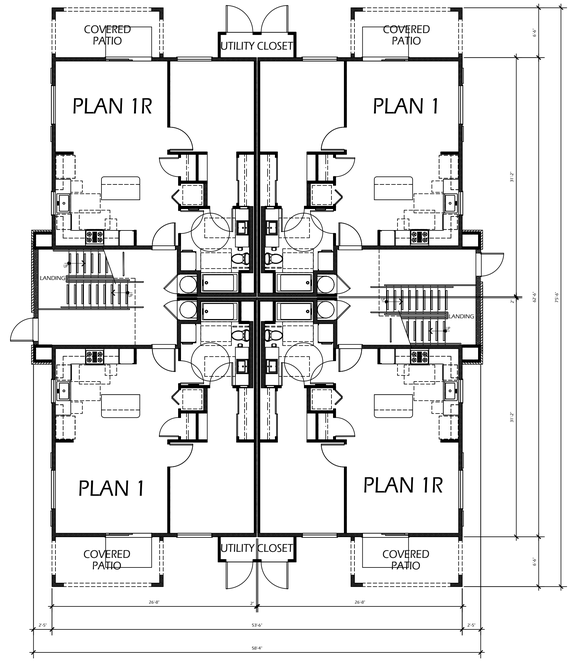
BUILDING A1
2ND FLOOR PLAN



BUILDING A1
SIDES EXTERIOR ELEVATIONS



BUILDING A1
FRONT & REAR EXTERIOR ELEVATIONS



BUILDING A1
1ST FLOOR PLAN

DWELLING UNITS SUMMARY

PLAN NO.	SQ. FTG.	QUANTITY	BDRMS	BATHS
1	730 S.F.	8 D.U.	1	1
2	1,092 S.F.	0 D.U.	2	2

BUILDING SUMMARY

1ST FLOOR:

DWELLING UNITS:	2,920 S.F.
COVERED PATIOS:	380 S.F.
STAIRS:	182 S.F.
UTILITY:	68 S.F.

2ND FLOOR:

DWELLING UNITS:	2,920 S.F.
BALCONIES:	380 S.F.
LANDINGS:	137 S.F.

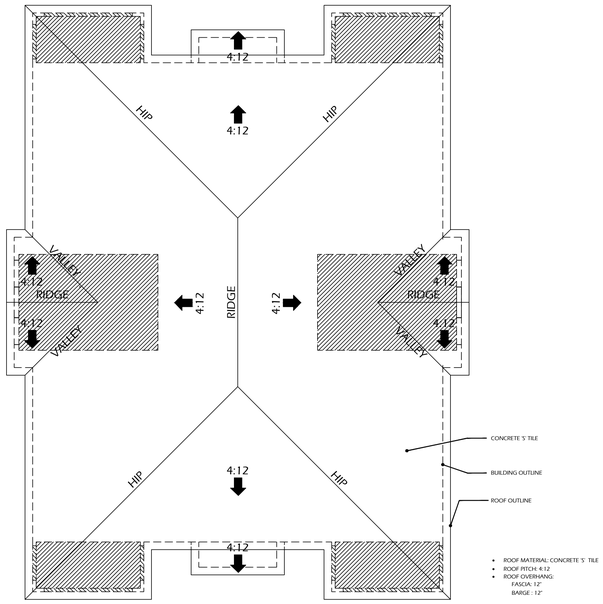
TOTAL:

DWELLING UNITS:	5,840 S.F.
COVERED PATIOS:	380 S.F.
BALCONIES:	380 S.F.
UTILITY:	68 S.F.
TOTAL NO. D.U.	8 D.U.

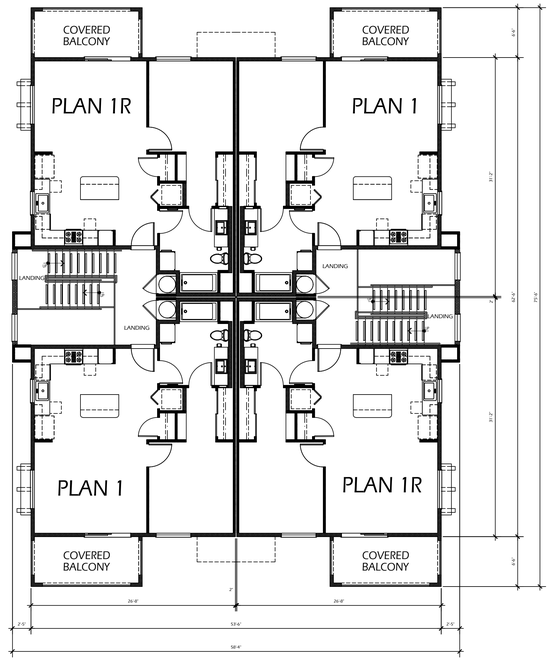
BLDG. TYPE A1
2 STORY
FLOOR PLANS, ROOF PLAN & EXTERIOR ELEVATIONS

ELSINORE APARTMENTS
LAKE ELSINORE , CA
96 Apartment Homes
WJK DEVELOPMENT CO. / RSI EQUITY
GRANT KEENE (949) 677-0668

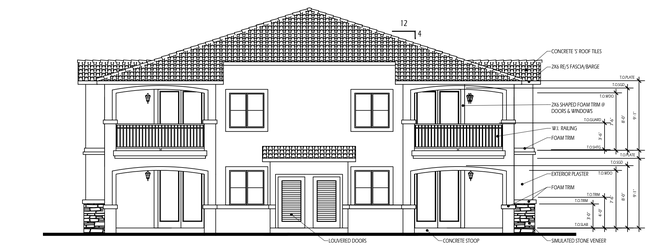
MICHAEL McHALE, ARCHITECT
(949) 566-4951
8/9/23
SCALE: 1" = 8' - 0"



BUILDING A2
ROOF PLAN



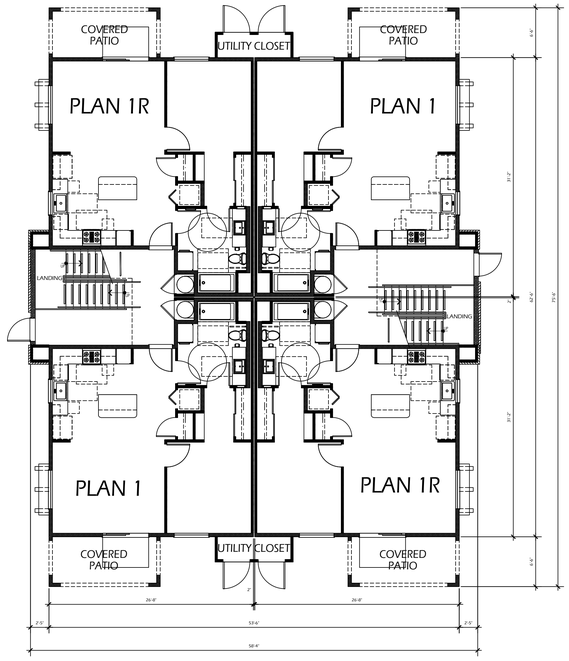
BUILDING A2
2ND FLOOR PLAN



BUILDING A2
SIDES EXTERIOR ELEVATIONS



BUILDING A2
FRONT & REAR EXTERIOR ELEVATIONS



BUILDING A2
1ST FLOOR PLAN

DWELLING UNITS SUMMARY

PLAN NO.	SQ. FTG.	QUANTITY	BDRMS	BATHS
1	730 S.F.	8 D.U.	1	1
2	1,092 S.F.	0 D.U.	2	2

BUILDING SUMMARY

1ST FLOOR:

DWELLING UNITS:	2,920 S.F.
COVERED PATIOS:	380 S.F.
STAIRS:	182 S.F.
UTILITY:	68 S.F.

2ND FLOOR:

DWELLING UNITS:	2,920 S.F.
BALCONIES:	380 S.F.
LANDINGS:	137 S.F.

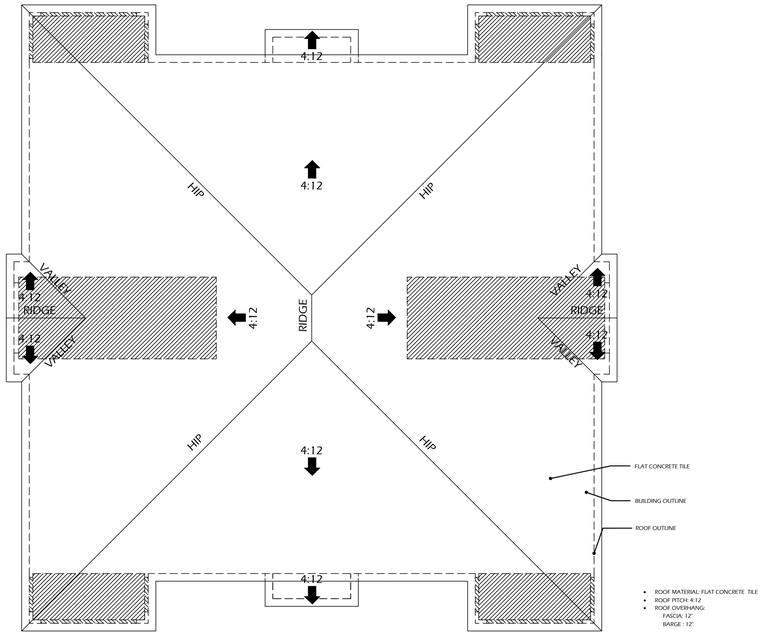
TOTAL:

DWELLING UNITS:	5,840 S.F.
COVERED PATIOS:	380 S.F.
BALCONIES:	380 S.F.
UTILITY:	68 S.F.
TOTAL NO. D.U.	8 D.U.

BLDG. TYPE A2
2 STORY
FLOOR PLANS, ROOF PLAN & EXTERIOR ELEVATIONS

ELSINORE APARTMENTS
LAKE ELSINORE , CA
96 Apartment Homes
WJK DEVELOPMENT CO. / RSI EQUITY
GRANT KEENE (949) 677-0668

MICHAEL McHALE, ARCHITECT
(949) 566-4951
8/9/23
SCALE: 1" = 8' - 0"



- ROOF MATERIAL: FLAT CONCRETE TILE
- ROOF PITCH: 4:12
- ROOF OVERHANG
  FASCIA: 12"
  BARGE : 12"

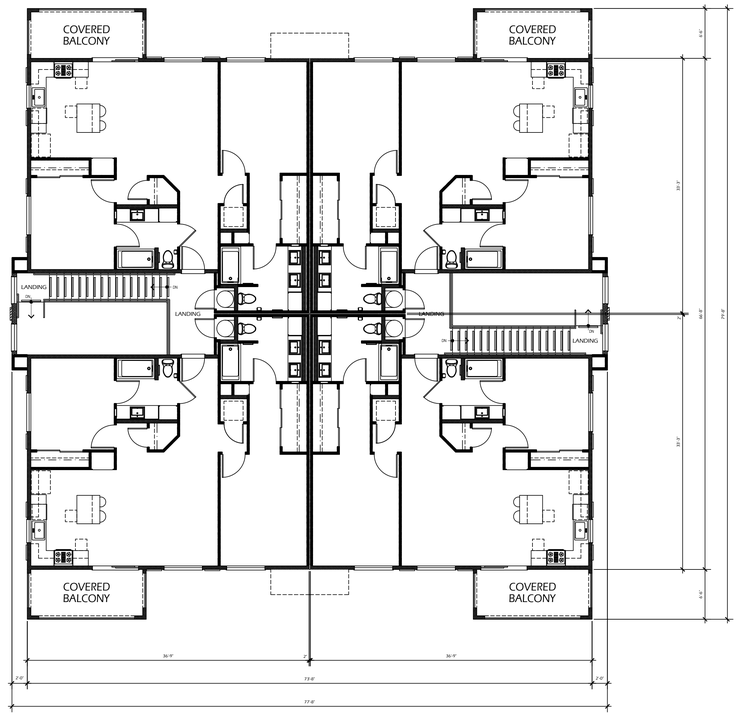
BUILDING A1
ROOF PLAN



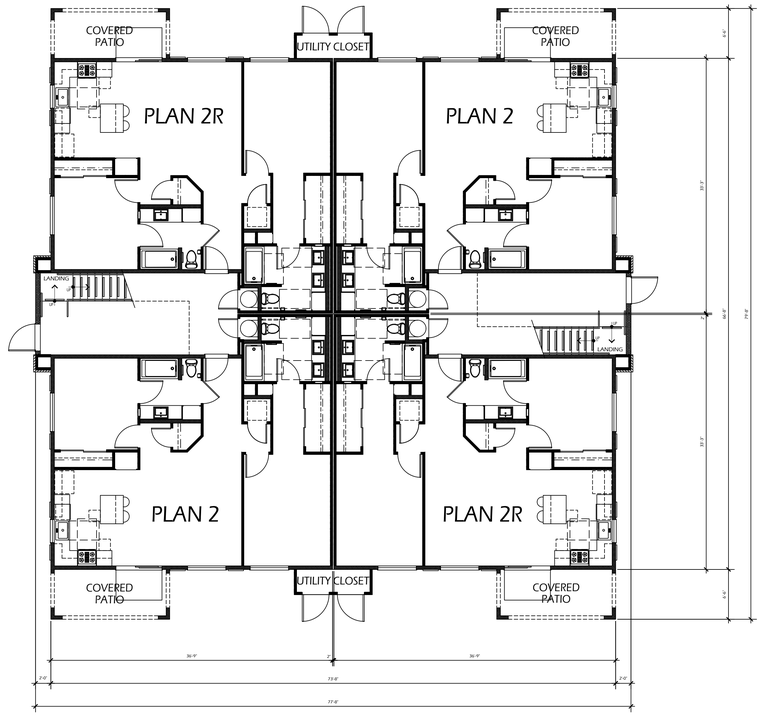
BUILDING B1
SIDES EXTERIOR ELEVATIONS



BUILDING B1
FRONT & REAR EXTERIOR ELEVATIONS



BUILDING B1
2ND FLOOR PLAN



BUILDING B1
1ST FLOOR PLAN

DWELLING UNITS SUMMARY

PLAN NO.	SQ. FTG.	QUANTITY	BDRMS	BATHS
1	730 S.F.	0 D.U.	1	1
2	1,092 S.F.	8 D.U.	2	2

BUILDING SUMMARY

1ST FLOOR:

DWELLING UNITS:	4,368 S.F.
COVERED PATIOS:	400 S.F.
STAIRS:	142 S.F.
UTILITY:	68 S.F.

2ND FLOOR:

DWELLING UNITS:	4,368 S.F.
BALCONIES:	400 S.F.
LANDINGS:	135 S.F.

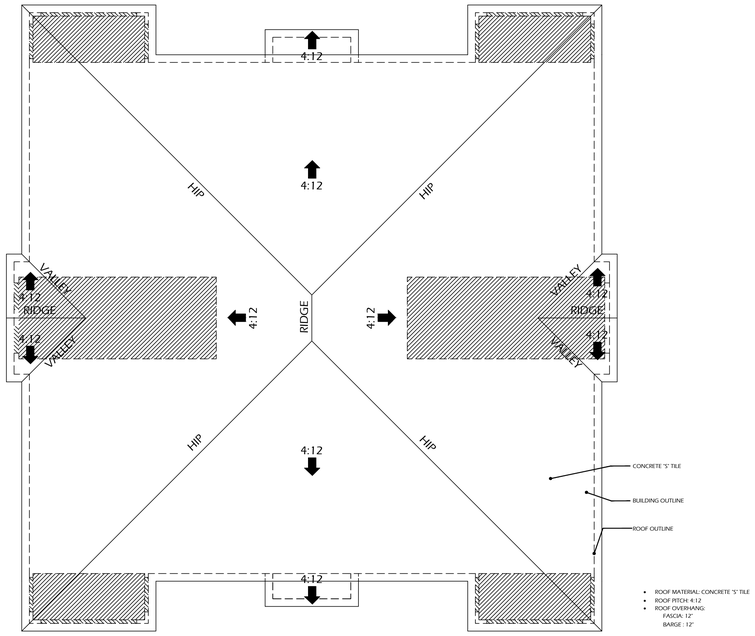
TOTAL:

DWELLING UNITS:	8,736 S.F.
COVERED PATIOS:	400 S.F.
BALCONIES:	400 S.F.
UTILITY:	68 S.F.
TOTAL NO. D.U.	8 D.U.

ELSINORE APARTMENTS
LAKE ELSINORE , CA
96 Apartment Homes
WJK DEVELOPMENT CO. / RSI EQUITY
GRANT KEENE (949) 677-0668

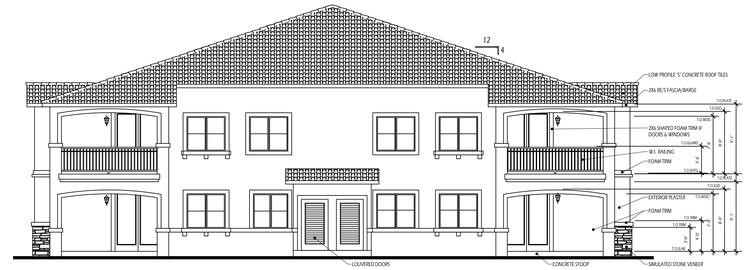
BLDG. TYPE B1
2 STORY
FLOOR PLANS, ROOF PLAN & EXTERIOR ELEVATIONS

MICHAEL McHALE, ARCHITECT
(949) 566-4951
8/9/23
SCALE: 1" = 8' - 0"

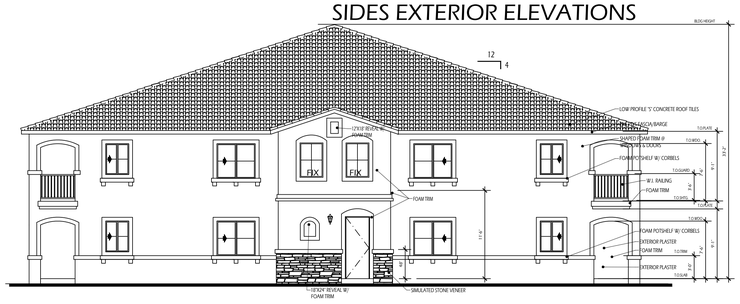


- ROOF MATERIAL: CONCRETE "S" TILE
- ROOF PITCH: 4:12
- ROOF OVERHANG
  FASCIA: 12"
  BARGE : 12"

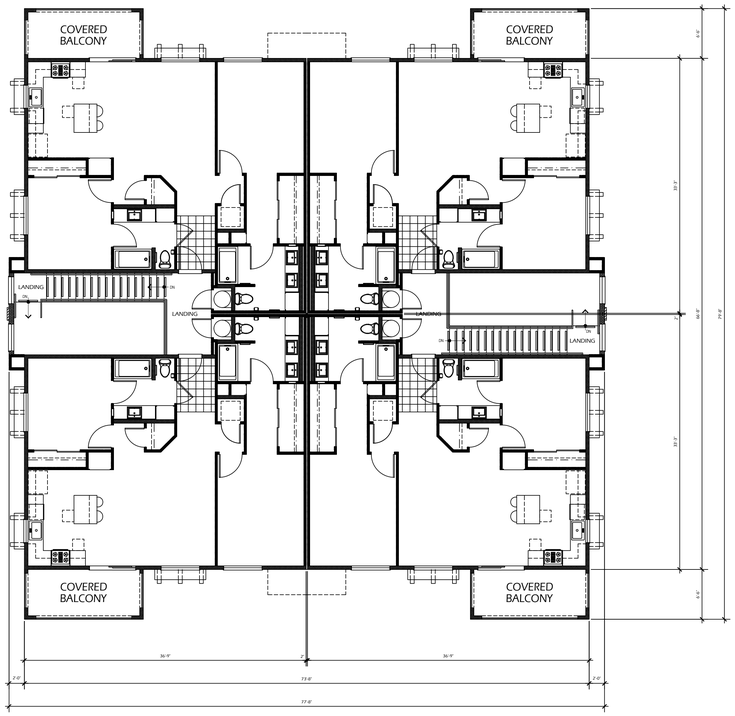
BUILDING B2
ROOF PLAN



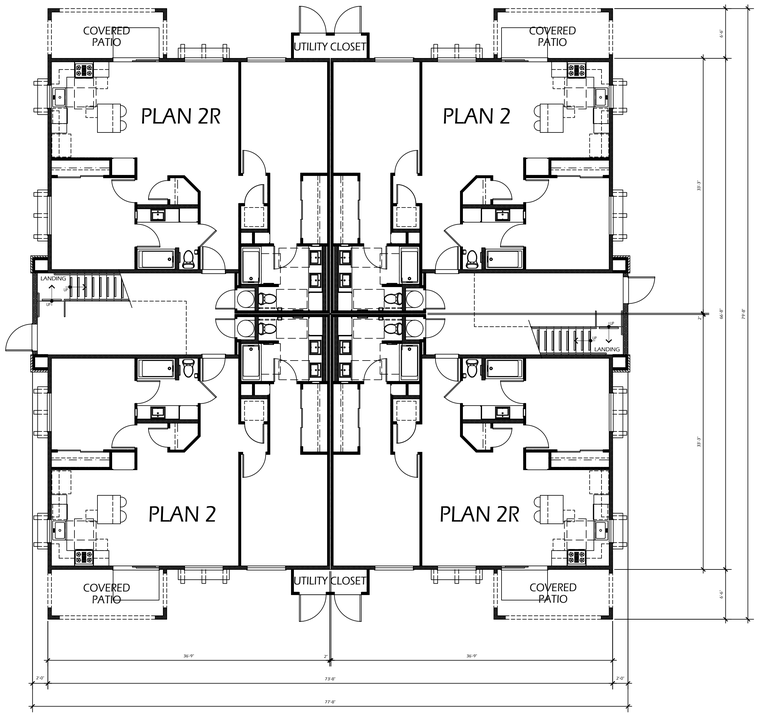
BUILDING B2
SIDES EXTERIOR ELEVATIONS



BUILDING B2
FRONT & REAR EXTERIOR ELEVATIONS



BUILDING B2
2ND FLOOR PLAN



BUILDING B2
1ST FLOOR PLAN

DWELLING UNITS SUMMARY

PLAN NO.	SQ. FTG.	QUANTITY	BDRMS	BATHS
1	730 S.F.	0 D.U.	1	1
2	1,092 S.F.	8 D.U.	2	2

BUILDING SUMMARY

1ST FLOOR:

DWELLING UNITS:	4,368 S.F.
COVERED PATIOS:	240 S.F.
STAIRS:	142 S.F.
UTILITY:	68 S.F.

2ND FLOOR:

DWELLING UNITS:	4368 S.F.
BALCONIES:	240 S.F.
LANDINGS:	135 S.F.

TOTAL:

DWELLING UNITS:	8,736 S.F.
COVERED PATIOS:	240 S.F.
BALCONIES:	240 S.F..
UTILITY:	68 S.F.
TOTAL NO. D.U.	8 D.U.

BLDG. TYPE B2
2 STORY
FLOOR PLANS, ROOF PLAN & EXTERIOR ELEVATIONS

ELSINORE APARTMENTS

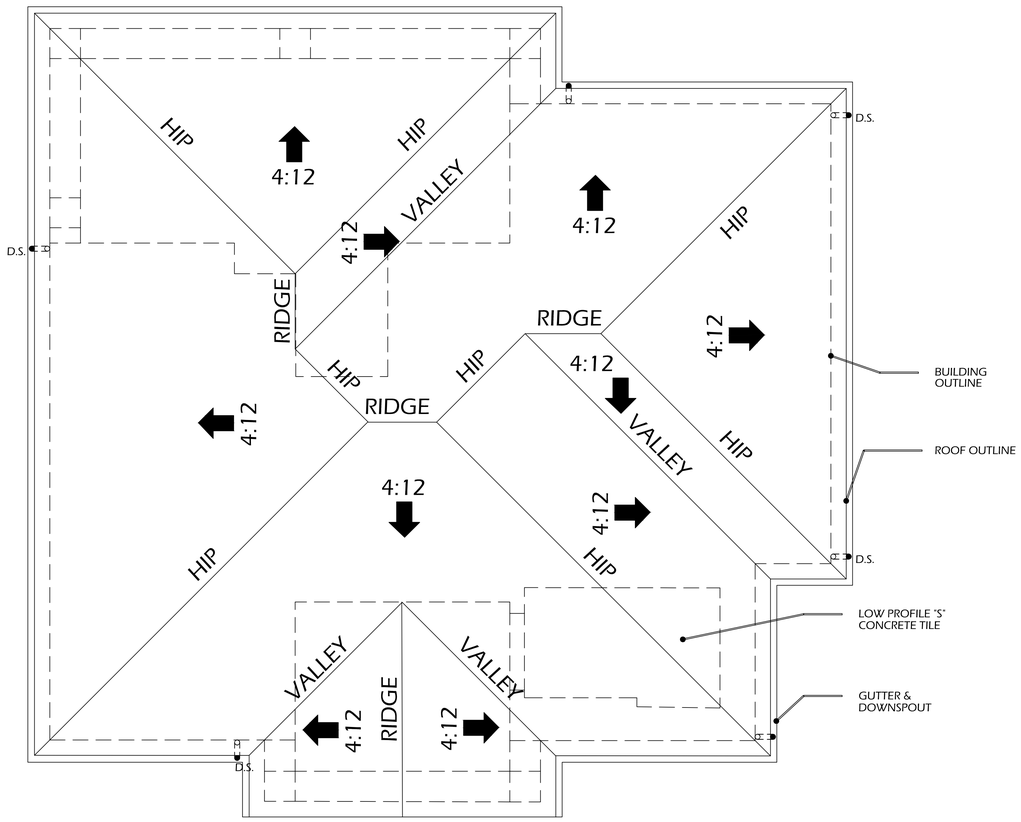
LAKE ELSINORE , CA

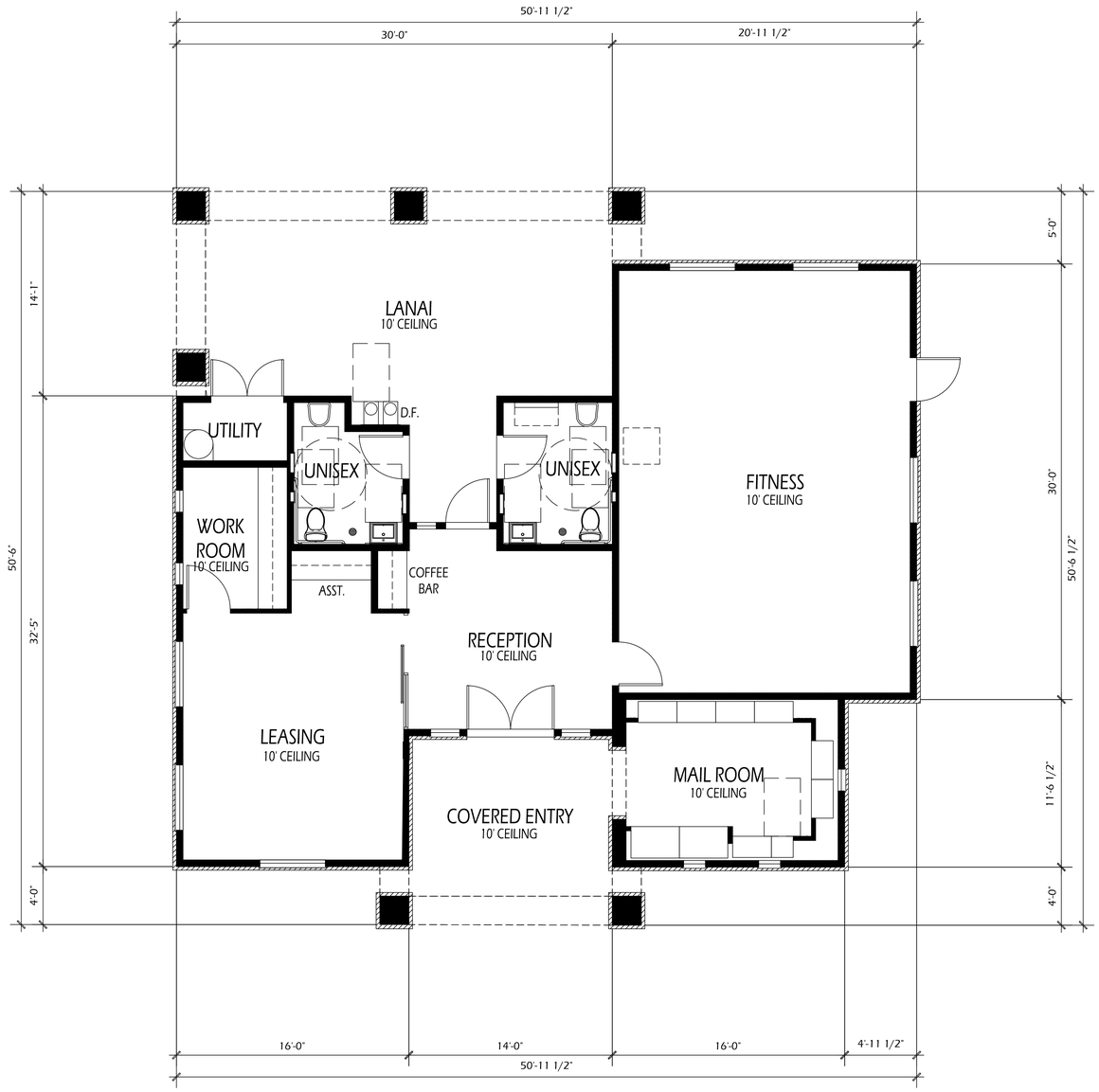
96 Apartment Homes

WJK DEVELOPMENT CO. / RSI EQUITY

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MICHAEL McHALE, ARCHITECT
(949) 566-4951
8/9/23
SCALE: 1" = 8' - 0"





ROOF PLAN

- ROOF MATERIAL: CONCRETE "S" TILE
- ROOF PITCH: 4:12
- ROOF OVERHANG:
  FASCIA: 12"
  BARGE : 12"

FLOOR PLAN

CLUBHOUSE:	1,460 S.F.
MAIL ROOM:	182 S.F.
LANAI:	490 S.F.

CLUBHOUSE FLOOR PLAN & ROOF PLAN

ELSINORE APARTMENTS

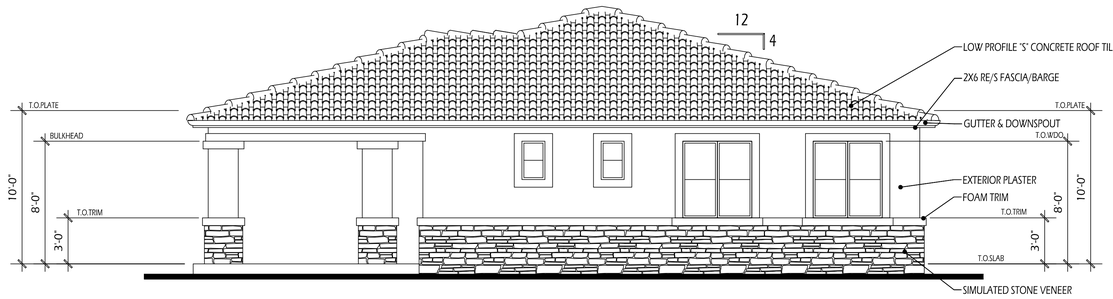
LAKE ELSINORE , CA

96 Apartment Homes

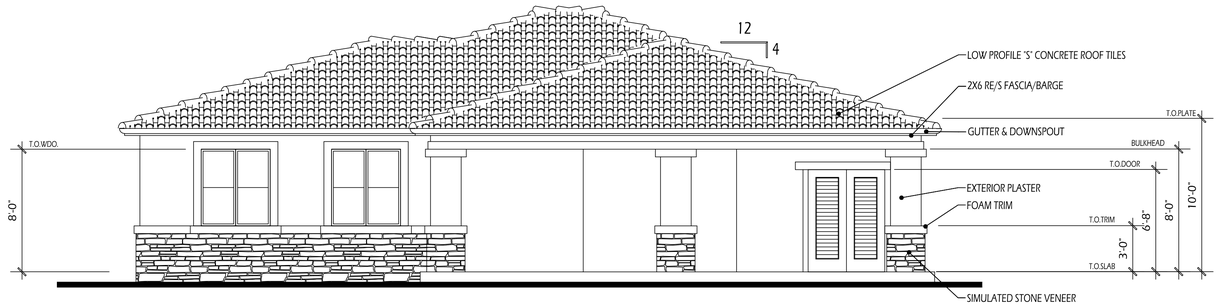
WJK DEVELOPMENT CO. / RSI EQUITY

GRANT KEENE (949) 677-0668

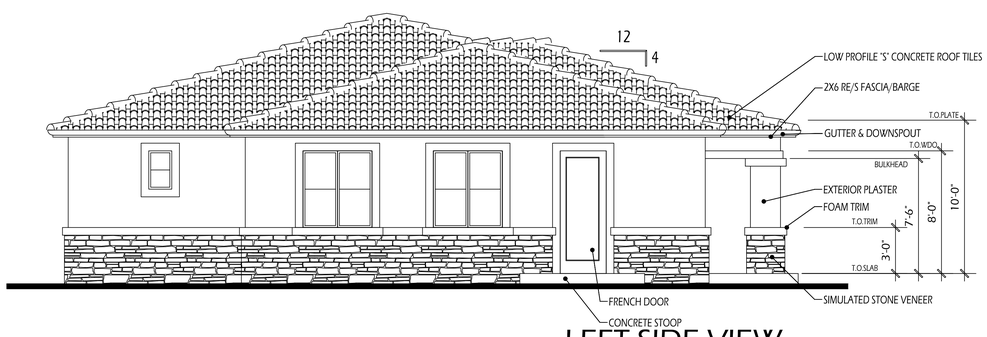
MICHAEL McHALE, ARCHITECT
(949) 566-4951
8/9/23
SCALE: 1" = 4' - 0"



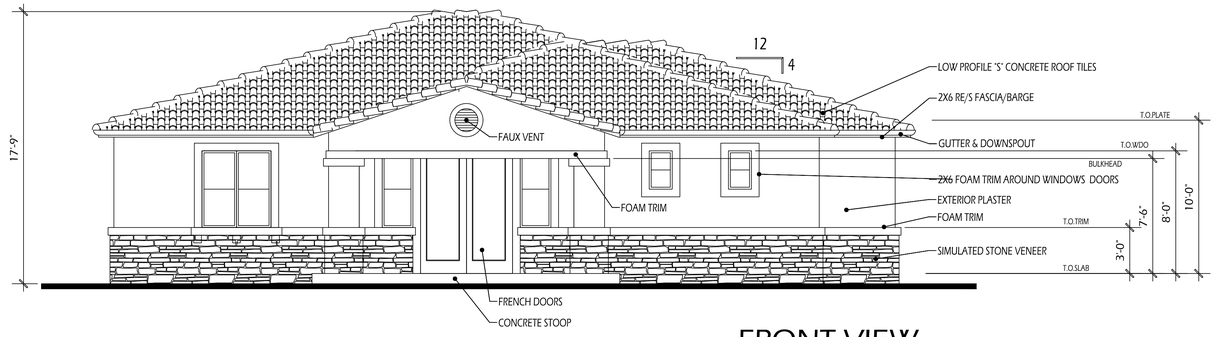
RIGHT SIDE VIEW



REAR VIEW



LEFT SIDE VIEW



FRONT VIEW

ELSINORE APARTMENTS

LAKE ELSINORE , CA

96 Apartment Homes

WJK DEVELOPMENT CO. / RSI EQUITY

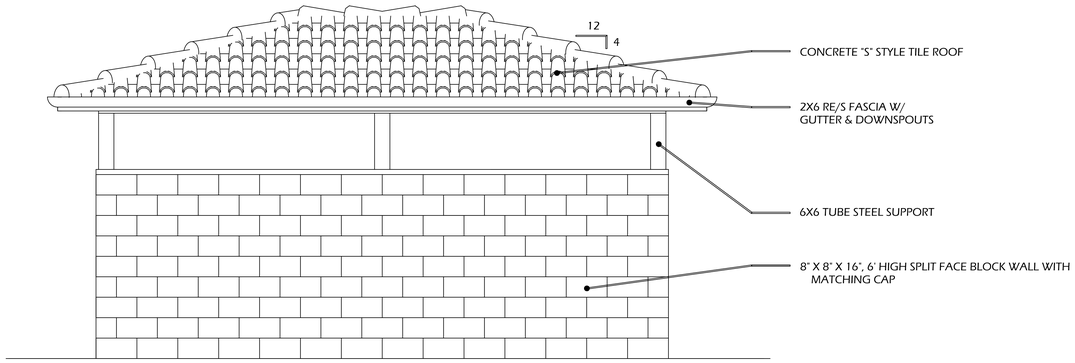
GRANT KEENE (949) 677-0668

CLUBHOUSE EXTERIOR ELEVATIONS

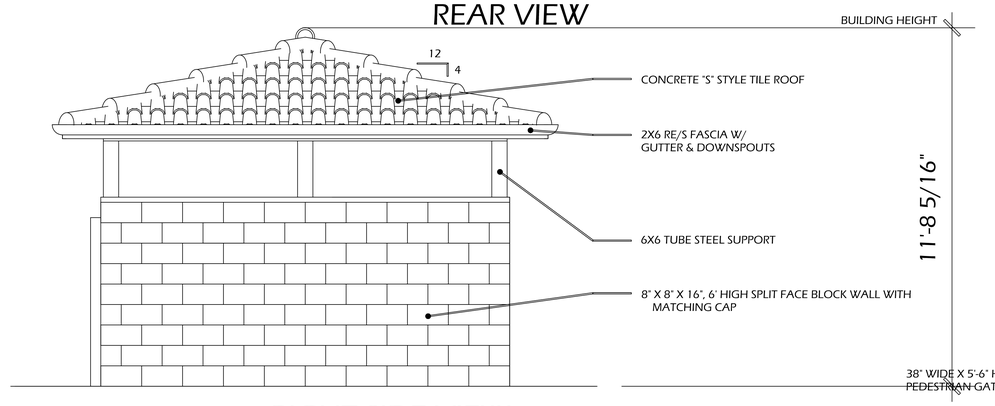
MICHAEL McHALE, ARCHITECT
(949) 566-4951

8/9/23

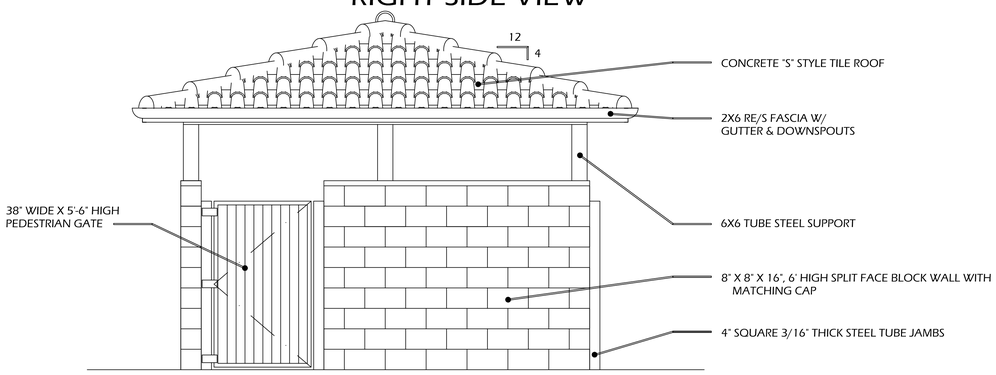
SCALE: 1" = 4' - 0"



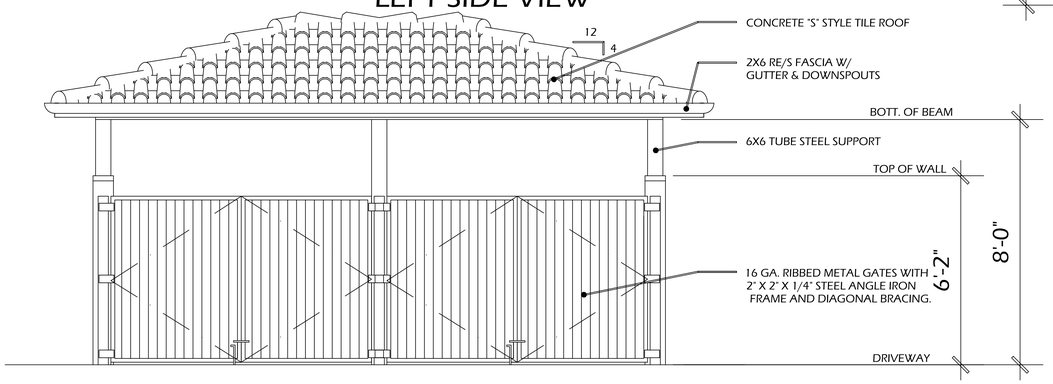
REAR VIEW



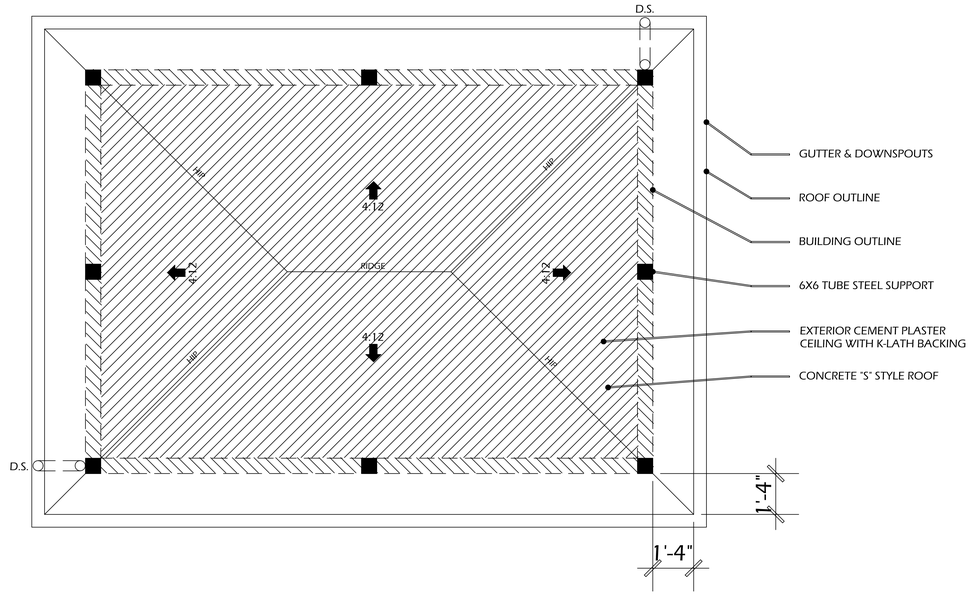
RIGHT SIDE VIEW



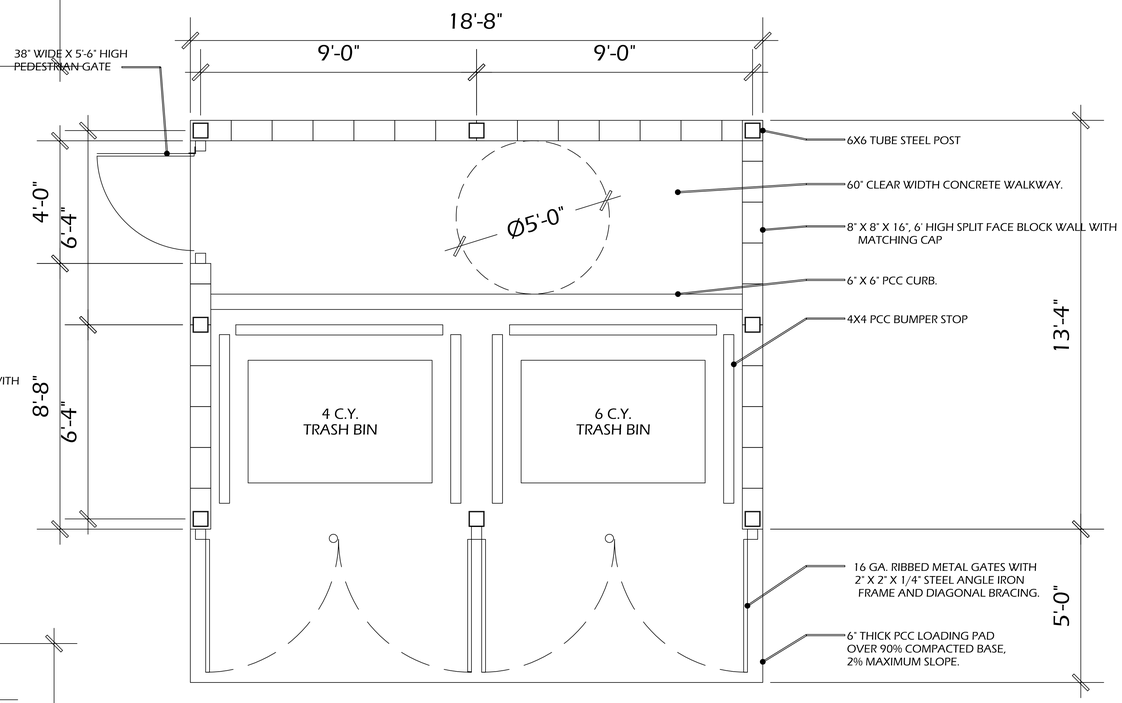
LEFT SIDE VIEW



DRIVEWAY VIEW



ROOF & CEILING PLAN



FLOOR PLAN

ELSINORE APARTMENTS

LAKE ELSINORE , CA

96 Apartment Homes

WJK DEVELOPMENT CO. / RSI EQUITY

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TRASH ENCLOSURE TYPE 1

MICHAEL McHALE, ARCHITECT
(949) 566-4951

8/9/23

SCALE: 1" = 2' - 0"

APPENDIX 8.1:

ON-SITE NOISE MODEL

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard
Road Name: Riverside Dr.
Project Name: Riverside Drive
Job Number: 16357
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,000 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	2,414 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	26 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	54.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	39.205
Medium Trucks:	38.978
Heavy Trucks:	39.000

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	1.88	1.48	-1.20	*-0.86*	0.000	0.000
Medium Trucks:	77.62	-15.36	1.52	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	82.14	-19.32	1.52	-1.20	*-2.04*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	71.5	71.1	69.3	63.3	71.9	72.5
Medium Trucks:	62.6	62.6	56.2	54.7	63.1	63.3
Heavy Trucks:	63.1	63.2	54.2	55.4	63.8	63.9
Vehicle Noise:	72.6	72.2	69.7	64.4	73.0	73.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	71.5	71.1	69.3	63.3	71.9	72.5
Medium Trucks:	62.6	62.6	56.2	54.7	63.1	63.3
Heavy Trucks:	63.1	63.2	54.2	55.4	63.8	63.9
Vehicle Noise:	72.6	72.2	69.7	64.4	73.0	73.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard With Wall
Road Name: Riverside Dr.
Project Name: Riverside Drive
Job Number: 16357
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,000 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	2,414 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	26 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	6.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	54.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	38.825
Medium Trucks:	38.435
Heavy Trucks:	38.264

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	1.88	1.54	-1.20	*0.31*	-7.550	-10.550
Medium Trucks:	77.62	-15.36	1.61	-1.20	*0.18*	-6.640	-9.640
Heavy Trucks:	82.14	-19.32	1.64	-1.20	*0.00*	-4.900	-7.900

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	71.6	71.2	69.4	63.3	72.0	72.6
Medium Trucks:	62.7	62.7	56.3	54.7	63.2	63.4
Heavy Trucks:	63.3	63.3	54.3	55.5	63.9	64.0
Vehicle Noise:	72.6	72.3	69.7	64.5	73.1	73.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.0	60.6	58.8	52.8	61.4	62.0
Medium Trucks:	53.0	53.0	46.6	45.1	53.6	53.8
Heavy Trucks:	55.4	55.4	46.4	47.6	56.0	56.1
Vehicle Noise:	62.6	62.3	59.3	54.5	63.0	63.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: First Floor With Wall
Road Name: Riverside Dr.
Project Name: Riverside Drive
Job Number: 16357
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,000 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	2,414 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	26 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	6.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	54.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	38.825
Medium Trucks:	38.435
Heavy Trucks:	38.264

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	1.88	1.54	-1.20	*0.31*	-7.550	-10.550
Medium Trucks:	77.62	-15.36	1.61	-1.20	*0.18*	-6.640	-9.640
Heavy Trucks:	82.14	-19.32	1.64	-1.20	*0.00*	-4.900	-7.900

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	71.6	71.2	69.4	63.3	72.0	72.6
Medium Trucks:	62.7	62.7	56.3	54.7	63.2	63.4
Heavy Trucks:	63.3	63.3	54.3	55.5	63.9	64.0
Vehicle Noise:	72.6	72.3	69.7	64.5	73.1	73.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.0	60.6	58.8	52.8	61.4	62.0
Medium Trucks:	53.0	53.0	46.6	45.1	53.6	53.8
Heavy Trucks:	55.4	55.4	46.4	47.6	56.0	56.1
Vehicle Noise:	62.6	62.3	59.3	54.5	63.0	63.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Second Floor With Wall
Road Name: Riverside Dr.
Project Name: Riverside Drive
Job Number: 16357
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,000 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	2,414 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	26 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	6.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	54.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	41.328
Medium Trucks:	40.607
Heavy Trucks:	39.344

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	1.88	1.14	-1.20	*-1.03*	0.000	0.000
Medium Trucks:	77.62	-15.36	1.25	-1.20	*-1.36*	0.000	0.000
Heavy Trucks:	82.14	-19.32	1.46	-1.20	*-2.38*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	71.2	70.7	69.0	62.9	71.5	72.2
Medium Trucks:	62.3	62.3	55.9	54.4	62.8	63.1
Heavy Trucks:	63.1	63.1	54.1	55.4	63.7	63.8
Vehicle Noise:	72.3	71.9	69.3	64.1	72.7	73.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	71.2	70.7	69.0	62.9	71.5	72.2
Medium Trucks:	62.3	62.3	55.9	54.4	62.8	63.1
Heavy Trucks:	63.1	63.1	54.1	55.4	63.7	63.8
Vehicle Noise:	72.3	71.9	69.3	64.1	72.7	73.2

APPENDIX 10.1:

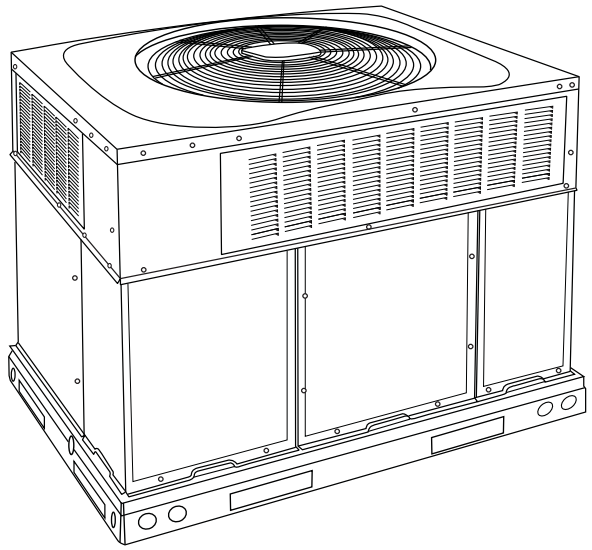
SAMPLE AIR CONDITIONING UNIT

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50VR–A, C
Performance™ 15 SEER 2–Stage Packaged Heat Pump System with Puron® (R–410A) Refrigerant
Single and Three Phase
2 to 5 Nominal Tons (Sizes 24–60)

Carrier
Turn to the experts

Product Data



A09033

Fig. 1 – Unit 50VR

Single-Packaged Products with Energy-Saving Features and Puron® refrigerant.

- 15.0–15.5 SEER / 12.0–12.5 EER at 95°F (35°C) OD
- 8.2 to 8.5 HSPF
- Factory-Installed TXV
- Multi-speed ECM Blower Motor – Standard
- Sound levels as low as 68dBA
- Two Stages of Cooling/Heating
- Dehumidification Feature – Standard
- Advanced Dehumidification Feature – Offered as a FIOP only
- Cabinet air leakage of 2.0% or less at .5 in. W.C. when tested in accordance with ASHRAE standard 193. (Low leak FIOP models only.)

FEATURES/BENEFITS

One-piece heat pump unit with optional electric heater, low sound levels, easy installation, low maintenance, and dependable performance.

Carrier's unique refrigerant designed to be environmentally balanced. Puron is an HFC refrigerant which does not contain chlorine that can harm the ozone layer. Puron refrigerant is in service in millions of systems proving highly reliable and is non-ozone depleting.

Easy Installation

Factory-assembled package is a compact, fully self-contained, electric cooling unit that is prewired, pre-piped, and pre-charged for minimum installation expense. These units are available in a variety of standard cooling sizes with voltage options to meet residential and light commercial requirements. Units are lightweight and install easily on a rooftop or at ground level. The high tech composite base eliminates rust problems associated with ground level applications.

Innovative Unit Base Design

On the inside a high-tech composite material will not rust and incorporates a sloped drain pan which improves drainage and helps inhibit mold, algae and bacterial growth. On the outside metal base rails provide added stability as well as easier handling and rigging.

Convertible duct configuration

Unit is designed for use in either downflow or horizontal applications. Each unit is converted from horizontal to downflow and includes horizontal duct covers. Downflow operation is provided in the field to allow vertical ductwork connections. The basepan seals on the bottom openings to ensure a positive seal in the vertical airflow mode.

Efficient operation High-efficiency design offers SEER (Seasonal Energy Efficiency Ratios) of up to 15.5 and HSPF of up to 8.5. (See page 4.)

Durable, dependable components

Scroll Compressors have 2 stages of cooling/heating and are designed for high efficiency. Each compressor is hermetically sealed against contamination to help promote longer life and dependable operation. Each compressor also has vibration isolation to provide quieter operation. All compressors have internal high pressure and overcurrent protection.

Multi-speed ECM Blower Motor is standard on all 50VR.

Direct-drive PSC (Permanent Split Capacitor) condenser-fan motors are designed to help reduce energy consumption and provide for cooing operation down to 40°F (4.4°C) outdoor temperature. Motormaster® II low ambient kit is available as a field-installed accessory.

Thermostatic Expansion Valve – A hard shutoff, balance port TXV maintains a constant superheat at the evaporator exit (cooling cycle) resulting in higher overall system efficiency.

Refrigerant system is designed to provide dependability. Liquid filter driers are used to promote clean, unrestricted operation. Each unit leaves the factory with a full refrigerant charge. Refrigerant service connections make checking operating pressures easier.

High and Low Pressure Switches provide added reliability for the compressor.

Indoor and Outdoor coils are computer-designed for optimum heat transfer and efficiency. The indoor coil is fabricated from copper tube and aluminum fins and is located inside the unit for protection against damage. The outdoor coil is internally mounted on the top tier of the unit.

Low sound ratings ensure a quiet indoor and outdoor environment with sound ratings as low as 68dBA. (See Page 4.)

Easy to service cabinets provide easy 3 panel accessibility to serviceable components during maintenance and installation. The basepan with integrated drain pan provides easy ground level installation with a mounting pad. A nesting feature ensures a positive basepan to roof curb seal when the unit is roof mounted. A

convenient 3/4-in. (19.05 mm) wide perimeter flange makes frame mounting on a rooftop easy.

Dehumidification Feature - Standard

This unit has independent fan speeds for low stage cooling and high stage cooling. In addition, 208/230 VAC models have the field-selectable capability to run a dehumidification ('DHUM') speed on high stage cooling (as low as 320CFM per ton). Coupled with the improved dehumidification associated with low stage cooling, the DHUM speed allows for a complete dehumidification solution independent of cooling stage. The dehumidification control must open the control circuit on humidity rise above the dehumidification set point.

NOTE: The dehumidification feature on high stage cooling does not support use of an economizer.

Advanced Dehumidification Feature (FIOP)

Units with the Advanced Dehumidification FIOP feature independent normal and dehumidification fan speeds for low stage cooling and high stage cooling.

Standard horizontal metal duct covers with insulation come with the unit and cover the horizontal duct openings. These can be left in place if the units are converted to downflow.

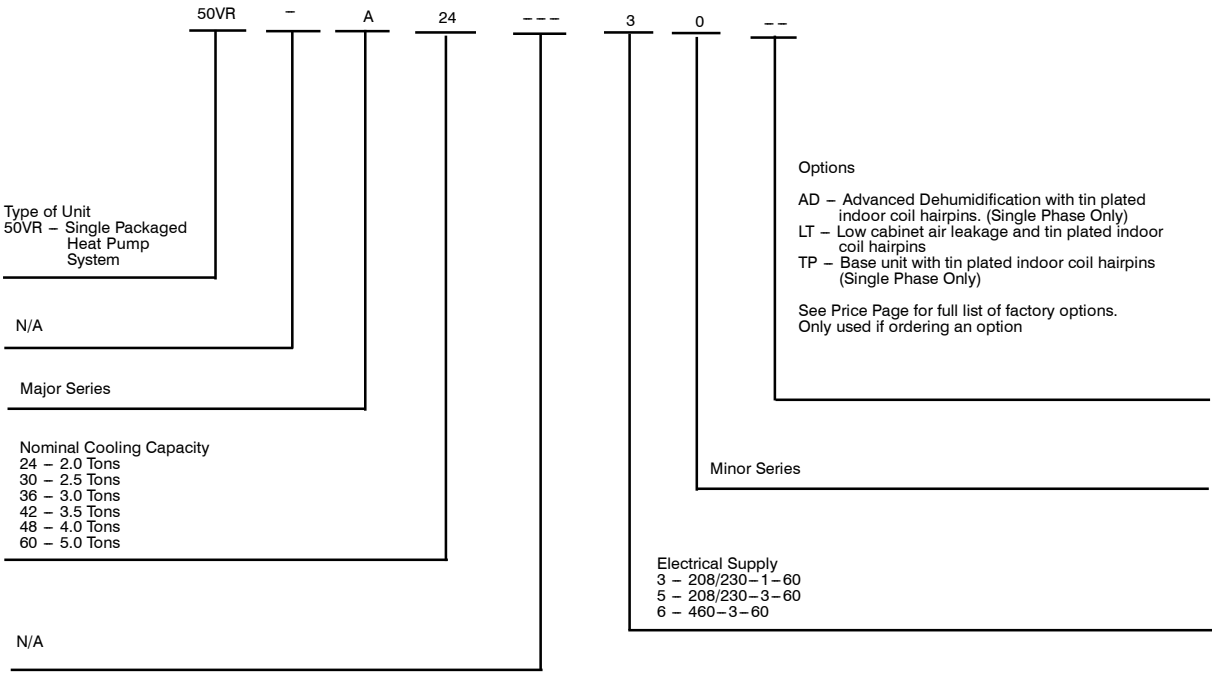
Cabinets are constructed of heavyduty, phosphated, zinc-coated prepainted steel capable of withstanding 500 hours in salt spray. Interior surfaces of the evaporator/electric heater compartment are insulated with foil-faced insulation, which keeps the conditioned air from being affected by the outdoor ambient temperature and provides improved indoor air quality. (Conforms to American Society of Heating, Refrigeration and Air Conditioning Engineers No. 62P.) The sloped drain pan minimizes standing water in the drain. An external drain is provided.

Short-Cycling protection for the compressor is incorporated into our defrost control board ensuring a five minute delay (+/-2 minutes) before restarting compressor after shutdown for any reason.

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MODEL NUMBER NOMENCLATURE



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program For verification of certification for individual products, go to www.ahridirectory.org.

AHRI* CAPACITIES

Cooling Capacities and Efficiencies

Unit Model 50VR–C	Nominal Tons	Standard CFM (High / Low Stage)	Net Cooling Capacities - Btuh (High Stage)	EER @A**	SEER†
24	2	855 / 675	22800	12.0	15.0
30	2-1/2	1000 / 775	29400	12.0	15.0

Unit Model 50VR–A	Nominal Tons	Standard CFM (High / Low Stage)	Net Cooling Capacities - Btuh (High Stage)	EER @A**	SEER†
36	3	1200 / 900	34000	12.0	15.0
42	3-1/2	1400 / 1050	42000	12.0	15.0
48	4	1600 / 1200	47500	12.5	15.5
60	5	1750 / 1400	57000	12.0	15.0

Heat Pump Heating Capacities and Efficiencies

Unit Model 50VR–C	Heating Capacity (BTUH) @ 47_F (8.3_C)	COP @ 47_F (8.3_C)	Heating Capacity (BTUH) @ 17_F (---8.3_C)	COP @ 17_F (---8.3_C)	HSPF	Heating Cd
24	23,400	3.9	12200	2.3	8.2	0.25
30	30,000	3.7	16200	2.3	8.2	0.25

Unit Model 50VR–A	Heating Capacity (BTUH) @ 47_F (8.3_C)	COP @ 47_F (8.3_C)	Heating Capacity (BTUH) @ 17_F (---8.3_C)	COP @ 17_F (---8.3_C)	HSPF	Heating Cd
36	34,000	3.7	17200	2.3	8.2	0.25
42	42,000	3.6	24000	2.5	8.2	0.25
48	47,000	3.7	26000	2.3	8.2	0.25
60	57,000	3.5	32400	2.4	8.5	0.25

LEGEND
dB–Sound Levels (decibels)
db—Dry Bulb
SEER—Seasonal Energy Efficiency Ratio
wb—Wet Bulb
COP–Coefficient of Performance
* Air Conditioning, Heating & Refrigeration Institute.
**At "A" conditions–80°F (26.7°C) indoor db/67°F (19.4°C) indoor wb & 95°F (35°C) outdoor db.
† Rated in accordance with U.S. Government DOE Department of Energy) test procedures and/or AHRI Standards 210/240.

Notes:
1. Ratings are net values, reflecting the effects of circulating fan heat. Ratings are based on:
Cooling Standard: 80°F (26.7°C) db, 67°F wb (19.4°C) indoor entering–air temperature and 95°F db (35°C) outdoor entering–air temperature.
2. Before purchasing this appliance, read important energy cost and efficiency information available from AHRIdirectory.org.

A-WEIGHTED SOUND POWER LEVEL (dBA)

Model 50VR–C	Sound Ratings (dBA)	TYPICAL OCTAVE BAND SPECTRUM(dBA without tone adjustment)						
		125	250	500	1000	2000	4000	8000
24	68	77	65	65	63	57	52	48
30	69	70	66	67	65	58	56	54

Model 50VR–A	Sound Ratings (dBA)	TYPICAL OCTAVE BAND SPECTRUM(dBA without tone adjustment)						
		125	250	500	1000	2000	4000	8000
36	73	64	63.5	68	68	65.5	60.5	52.5
42	71	64	62	65	66	63.5	59.5	52.5
48	74	59.5	65	70	67	64.5	60.5	52.5
60	73	68	63	66	66	65	59.5	52.5

NOTE: Tested in accordance with AHRI Standard 270–1995 (not listed in AHRI).

PHYSICAL DATA

MODEL FAMILY	50VR–C		50VR–A			
UNIT SIZE	**24**	**30**	**36**	**42**	**48**	**60**
NOMINAL CAPACITY (ton)	2	2–1/2	3	3–1/2	4	5
SHIPPING WEIGHT lb.	347	393	420	466	462	511
SHIPPING WEIGHT (kg)	157	178	191	212	210	232
COMPRESSORS	Scroll					
Quantity	1					
REFRIGERANT (R–410A)						
Quantity lb	8.2	11.2	11.0	14.6	12.0	14.8
Quantity (kg)	3.7	5.1	5.0	6.6	5.4	6.7
REFRIGERANT METERING DEVICE	TXV, Indoor TXV					
ORIFICE						
ID (in.)	.032 (2)	.035 (1) .038 (1)	.042 (2)	.042 (2)	.042 (2)	.052 (2)
ID (mm)	0.81 (2)	.89 (1) .97 (1)	1.07 (2)	1.07 (2)	1.07 (2)	1.32 (2)
OUTDOOR COIL						
Rows...Fins/in.	1...21	2...21	2...21	2...21	2...21	2...21
Face Area (sq ft)	18.8	18.8	13.6	19.4	17.5	23.3
OUTDOOR FAN						
Nominal Cfm	2100	2500	3000	3000	3300	3600
Diameter in.	24	24	26	26	26	26
Diameter (mm)	609.6	609.6	660.4	660.4	660.4	660.4
Motor Hp (Rpm)	1/12 (800)	1/8 (810)	1/5 (810)	1/5 (810)	1/5 (810)	1/5 (810)
INDOOR COIL						
Rows...Fins/in.	3...17	3...17	3...17	3...17	3...17	4...17
Face Area (sq ft)	3.7	3.7	4.7	4.7	5.7	5.7
INDOOR BLOWER						
Nominal Low Stage Cooling Airflow (Cfm)	675	775	900	1050	1200	1400
Nominal High Stage Cooling Airflow (Cfm)	855	1000	1200	1400	1600	1750
Size in.	10x10	10x10	11x10	11x10	11x10	11x10
Size (mm.)	254x254	254x254	279.4x254	279.4x254	279.4x254	279.4x254
Motor HP (RPM)	1/2 (1050)	1/2 (1050)	3/4 (1000)	3/4 (1075)	1.0 (1075)	1.0 (1075)
HIGH–PRESSURE SWITCH (psig) Cut–out Reset (Auto)	650 +/– 15 420 +/– 25					
LOW–PRESSURE SWITCH (psig) cut–out Reset (auto)	20 +/– 5 45 +/– 5					
RETURN–AIR FILTERS†‡						
Throwaway Size in.	20x20x1	20x24x1	24x30x1		24x36x1	
Throwaway Size (mm)	508x508x25	508x610x25	610x762x25		610x914x25	

† Required filter sizes shown are based on the larger of the AHRI (Air Conditioning Heating and Refrigeration Institute) rated cooling airflow or the heating airflow velocity of 300 ft/minute for throwaway type or 450 ft/minute for high–capacity type. Air filter pressure drop for non–standard filters must not exceed 0.08 in. W.C.

‡ If using accessory filter rack refer to the filter rack installation instructions for correct filter sizes and quantity.

Electric Heat Pressure Drop Tables (IN. W.C.)

Small Cabinet: 24–30

STATIC	STANDARD CFM (SCFM)											
	500	**600**	**700**	**800**	**900**	**1000**	**1100**	**1200**	**1300**	**1400**	**1500**	**1600**
5 kW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.06	0.07
10 kW	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.06	0.07	0.09	0.10	0.11
15 kW	0.00	0.00	0.00	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18
20 kW	0.00	0.00	0.02	0.04	0.06	0.08	0.09	0.11	0.13	0.15	0.17	0.19

Large Cabinet: 36–60

STATIC	STANDARD CFM (SCFM)														
	1100	**1200**	**1300**	**1400**	**1500**	**1600**	**1700**	**1800**	**1900**	**2000**	**2100**	**2200**	**2300**	**2400**	**2500**
5 kW	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12
10 kW	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13
15 kW	0.00	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15
20 kW	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16

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Catalog No: 50VR–13PD

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

Replaces: 50VR–12PD

APPENDIX 10.2:

CADNAA OPERATION NOISE MODEL INPUTS

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16357 - Riverside Drive

CadnaA Noise Prediction Model: 16357-02_Operation.cna
Date: 21.11.24
Analyst: B. Maddux

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (ft)	**6561.70**
Min. Dist Src to Rcvr	**0.00**
Partition	
Raster Factor	**0.50**
Max. Length of Section (ft)	**3280.80**
Min. Length of Section (ft)	**3.30**
Min. Length of Section (%)	**0.00**
Proj. Line Sources	**On**
Proj. Area Sources	**On**
Ref. Time	
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**0.00**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**2**
Search Radius Src	**328.08**
Search Radius Rcvr	**328.08**
Max. Distance Source - Rcvr	**3280.84 3280.84**
Min. Distance Rvcr - Reflector	**3.28 3.28**
Min. Distance Source - Reflector	**0.33**
Industrial (ISO 9613 (1996))	
Lateral Diffraction	**some Obj**
Obst. within Area Src do not shield	**On**
Screening	**Incl. Ground Att. over Barrier**
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	**3.0 20.0 0.0**
Temperature (°F)	**50**
rel. Humidity (%)	**70**
Ground Absorption G	**0.50**
Wind Speed for Dir. (mph)	**6.7**
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates			
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)	
R1		R1	44.6	42.1	48.8	0.0	0.0	0.0		x	Total	5.00	r	6218542.73	2190843.47	5.00	
R2		R2	44.0	41.4	48.1	0.0	0.0	0.0		x	Total	5.00	r	6218825.02	2190626.80	5.00	
R3		R3	38.2	35.4	42.1	0.0	0.0	0.0		x	Total	5.00	r	6218912.17	2190247.29	5.00	
R4		R4	44.9	42.3	49.0	0.0	0.0	0.0		x	Total	5.00	r	6218408.65	2190308.33	5.00	
R5		R5	44.3	41.7	48.4	0.0	0.0	0.0		x	Total	5.00	r	6218209.76	2190470.33	5.00	
R6		R6	45.5	42.7	49.4	0.0	0.0	0.0		x	Total	5.00	r	6218282.33	2190695.51	5.00	

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
TRASH1		TRASH1	88.9	88.9	88.9	Lw	88.9		150.00	0.00	90.00	8.00	r	6218507.98	2190692.32	8.00
TRASH2		TRASH2	88.9	88.9	88.9	Lw	88.9		150.00	0.00	90.00	8.00	r	6218340.10	2190473.66	8.00
TRASH3		TRASH3	88.9	88.9	88.9	Lw	88.9		150.00	0.00	90.00	8.00	r	6218506.34	2190341.15	8.00
TRASH4		TRASH4	88.9	88.9	88.9	Lw	88.9		150.00	0.00	90.00	8.00	r	6218675.52	2190560.77	8.00
AC001		AC001	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218510.85	2190643.67	27.00
AC002		AC002	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218503.04	2190635.42	27.00
AC003		AC003	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218550.35	2190613.72	27.00
AC004		AC004	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218542.54	2190604.17	27.00
AC005		AC005	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218486.55	2190614.16	27.00
AC006		AC006	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218478.73	2190604.61	27.00
AC007		AC007	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218526.04	2190582.91	27.00
AC008		AC008	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218519.10	2190574.23	27.00
AC009		AC009	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218585.50	2190583.78	27.00
AC010		AC010	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218578.13	2190574.66	27.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
AC011		AC011	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218625.00	2190555.56	27.00
AC012		AC012	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218616.75	2190546.01	27.00
AC013		AC013	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218563.37	2190555.56	27.00
AC014		AC014	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218555.99	2190546.88	27.00
AC015		AC015	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218601.56	2190525.18	27.00
AC016		AC016	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218594.19	2190515.20	27.00
AC017		AC017	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218495.66	2190465.29	27.00
AC018		AC018	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218487.41	2190455.74	27.00
AC019		AC019	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218534.72	2190435.34	27.00
AC020		AC020	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218527.78	2190425.36	27.00
AC021		AC021	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218509.12	2190404.52	27.00
AC022		AC022	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218501.74	2190396.28	27.00
AC023		AC023	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218471.36	2190436.21	27.00
AC024		AC024	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218462.67	2190426.22	27.00
AC025		AC025	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218417.10	2190524.31	27.00
AC026		AC026	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218410.16	2190515.20	27.00
AC027		AC027	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218459.64	2190493.93	27.00
AC028		AC028	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218451.39	2190484.82	27.00
AC029		AC029	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218433.16	2190464.42	27.00
AC030		AC030	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218425.35	2190455.74	27.00
AC031		AC031	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218393.66	2190496.10	27.00
AC032		AC032	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218386.72	2190487.42	27.00
AC033		AC033	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218419.27	2190802.09	27.00
AC034		AC034	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218411.46	2190792.54	27.00
AC035		AC035	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218402.34	2190778.65	27.00
AC036		AC036	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218395.83	2190771.71	27.00
AC037		AC037	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218451.39	2190779.09	27.00
AC038		AC038	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218444.88	2190770.84	27.00
AC039		AC039	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218431.42	2190754.35	27.00
AC040		AC040	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218424.91	2190746.97	27.00
AC041		AC041	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218388.02	2190695.32	27.00
AC042		AC042	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218407.99	2190720.06	27.00
AC043		AC043	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218358.94	2190719.63	27.00
AC044		AC044	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218401.48	2190711.81	27.00
AC045		AC045	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218352.43	2190712.68	27.00
AC046		AC046	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218368.06	2190733.51	27.00
AC047		AC047	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218375.87	2190743.06	27.00
AC048		AC048	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218381.51	2190687.94	27.00
AC049		AC049	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218312.50	2190661.03	27.00
AC050		AC050	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218321.62	2190674.92	27.00
AC051		AC051	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218361.55	2190661.47	27.00
AC052		AC052	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218341.58	2190636.73	27.00
AC053		AC053	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218335.07	2190629.35	27.00
AC054		AC054	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218355.04	2190653.22	27.00
AC055		AC055	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218305.99	2190654.09	27.00
AC056		AC056	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218329.43	2190684.47	27.00
AC057		AC057	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218315.97	2190602.00	27.00
AC058		AC058	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218276.04	2190615.46	27.00
AC059		AC059	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218309.46	2190593.76	27.00
AC060		AC060	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218283.86	2190625.01	27.00
AC061		AC061	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218204.86	2190523.01	27.00
AC062		AC062	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218211.37	2190529.96	27.00
AC063		AC063	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218233.94	2190498.27	27.00
AC064		AC064	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218228.30	2190553.39	27.00
AC065		AC065	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218260.42	2190530.39	27.00
AC066		AC066	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218220.49	2190543.84	27.00
AC067		AC067	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218240.45	2190505.65	27.00
AC068		AC068	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218253.91	2190522.14	27.00
AC069		AC069	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218253.91	2190584.64	27.00
AC070		AC070	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218282.99	2190559.90	27.00
AC071		AC071	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218289.50	2190567.28	27.00
AC072		AC072	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218260.42	2190591.59	27.00
AC073		AC073	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218736.55	2190477.87	27.00
AC074		AC074	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218750.00	2190432.30	27.00
AC075		AC075	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218720.92	2190457.04	27.00
AC076		AC076	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218727.43	2190463.98	27.00
AC077		AC077	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218744.36	2190487.42	27.00
AC078		AC078	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218776.48	2190464.42	27.00
AC079		AC079	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218756.51	2190439.68	27.00
AC080		AC080	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218769.97	2190456.17	27.00
AC081		AC081	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218658.86	2190312.07	27.00
AC082		AC082	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218623.26	2190329.43	27.00
AC083		AC083	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218652.34	2190304.70	27.00
AC084		AC084	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218638.89	2190350.27	27.00
AC085		AC085	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218672.31	2190328.57	27.00
AC086		AC086	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218629.78	2190336.38	27.00
AC087		AC087	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218678.82	2190336.81	27.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
AC088		AC088	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218646.70	2190359.82	27.00
AC089		AC089	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218594.19	2190230.04	27.00
AC090		AC090	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218588.54	2190285.16	27.00
AC091		AC091	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218600.70	2190237.42	27.00
AC092		AC092	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218614.15	2190253.91	27.00
AC093		AC093	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218571.62	2190261.73	27.00
AC094		AC094	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218620.66	2190262.16	27.00
AC095		AC095	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218565.11	2190254.78	27.00
AC096		AC096	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218580.73	2190275.62	27.00
AC097		AC097	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6218562.07	2190476.14	27.00

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)		
PARK01		PARK01	78.0	78.0	78.0	56.7	56.7	56.7	Lw	78		900.00	0.00	270.00	0.	r
PARK02		PARK02	76.0	76.0	76.0	56.6	56.6	56.6	Lw	76		900.00	0.00	270.00	0.	r
PARK03		PARK03	78.0	78.0	78.0	56.4	56.4	56.4	Lw	78		900.00	0.00	270.00	0.	r
PARK04		PARK04	79.0	79.0	79.0	56.0	56.0	56.0	Lw	79		900.00	0.00	270.00	0.	r
PARK05		PARK05	79.0	79.0	79.0	55.9	55.9	55.9	Lw	79		900.00	0.00	270.00	0.	r
PARK06		PARK06	76.0	76.0	76.0	56.4	56.4	56.4	Lw	76		900.00	0.00	270.00	0.	r
PARK07		PARK07	79.0	79.0	79.0	56.7	56.7	56.7	Lw	79		900.00	0.00	270.00	0.	r
PARK08		PARK08	79.0	79.0	79.0	56.8	56.8	56.8	Lw	79		900.00	0.00	270.00	0.	r
PARK09		PARK09	79.0	79.0	79.0	56.9	56.9	56.9	Lw	79		900.00	0.00	270.00	0.	r
PARK10		PARK10	82.0	82.0	82.0	56.8	56.8	56.8	Lw	82		900.00	0.00	270.00	0.	r
PARK11		PARK11	76.0	76.0	76.0	56.5	56.5	56.5	Lw	76		900.00	0.00	270.00	0.	r
PARK12		PARK12	78.0	78.0	78.0	56.5	56.5	56.5	Lw	78		900.00	0.00	270.00	0.	r
PARK13		PARK13	79.0	79.0	79.0	56.6	56.6	56.6	Lw	79		900.00	0.00	270.00	0.	r
PARK14		PARK14	78.0	78.0	78.0	56.2	56.2	56.2	Lw	78		900.00	0.00	270.00	0.	r
PARK15		PARK15	75.0	75.0	75.0	56.5	56.5	56.5	Lw	75		900.00	0.00	270.00	0.	r
PARK16		PARK16	76.0	76.0	76.0	56.1	56.1	56.1	Lw	76		900.00	0.00	270.00	0.	r
PARK17		PARK17	79.0	79.0	79.0	56.7	56.7	56.7	Lw	79		900.00	0.00	270.00	0.	r
PARK18		PARK18	79.0	79.0	79.0	56.5	56.5	56.5	Lw	79		900.00	0.00	270.00	0.	r
PARK19		PARK19	78.0	78.0	78.0	56.0	56.0	56.0	Lw	78		900.00	0.00	270.00	0.	r
PARK20		PARK20	78.0	78.0	78.0	56.8	56.8	56.8	Lw	78		900.00	0.00	270.00	0.	r
PARK21		PARK21	78.0	78.0	78.0	56.0	56.0	56.0	Lw	78		900.00	0.00	270.00	0.	r
PARK22		PARK22	78.0	78.0	78.0	56.0	56.0	56.0	Lw	78		900.00	0.00	270.00	0.	r
PARK23		PARK23	75.0	75.0	75.0	56.0	56.0	56.0	Lw	75		900.00	0.00	270.00	0.	r

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
PARK01	PARK01	0.00	r	6218434.26	2190703.82	0.00	0.00
				6218447.71	2190692.10	0.00	0.00
				6218401.27	2190630.91	0.00	0.00
				6218386.51	2190644.80	0.00	0.00
PARK02	PARK02	0.00	r	6218380.87	2190636.55	0.00	0.00
				6218396.93	2190623.96	0.00	0.00
				6218367.42	2190587.50	0.00	0.00
				6218351.79	2190599.22	0.00	0.00
PARK03	PARK03	0.00	r	6218362.64	2190583.16	0.00	0.00
				6218314.03	2190518.49	0.00	0.00
				6218298.41	2190530.21	0.00	0.00
				6218347.89	2190594.45	0.00	0.00
PARK04	PARK04	0.00	r	6218489.38	2190665.63	0.00	0.00
				6218461.17	2190628.74	0.00	0.00
				6218423.41	2190579.26	0.00	0.00
				6218407.78	2190591.84	0.00	0.00
				6218474.19	2190677.78	0.00	0.00
PARK05	PARK05	0.00	r	6218420.80	2190575.57	0.00	0.00
				6218353.31	2190487.24	0.00	0.00
				6218337.47	2190500.26	0.00	0.00
				6218406.26	2190588.16	0.00	0.00
PARK06	PARK06	0.00	r	6218294.72	2190525.44	0.00	0.00
				6218310.99	2190513.29	0.00	0.00
				6218281.26	2190474.87	0.00	0.00

Name	ID	Height				Coordinates			
		Begin		End		x	y	z	Ground
		(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
						6218265.42	2190487.68	0.00	0.00
PARK07	PARK07	0.00	r			6218280.74	2190473.62	0.00	0.00
						6218357.56	2190415.54	0.00	0.00
						6218345.58	2190400.31	0.00	0.00
						6218268.63	2190459.29	0.00	0.00
PARK08	PARK08	0.00	r			6218362.21	2190411.29	0.00	0.00
						6218439.03	2190352.70	0.00	0.00
						6218427.53	2190337.94	0.00	0.00
						6218350.49	2190396.97	0.00	0.00
PARK09	PARK09	0.00	r			6218442.94	2190349.01	0.00	0.00
						6218518.02	2190291.28	0.00	0.00
						6218506.31	2190276.09	0.00	0.00
						6218432.52	2190334.03	0.00	0.00
PARK10	PARK10	0.00	r			6218360.69	2190474.22	0.00	0.00
						6218504.14	2190364.63	0.00	0.00
						6218491.98	2190349.22	0.00	0.00
						6218348.10	2190459.25	0.00	0.00
PARK11	PARK11	0.00	r			6218525.19	2190288.24	0.00	0.00
						6218554.05	2190326.00	0.00	0.00
						6218569.89	2190314.07	0.00	0.00
						6218541.03	2190275.87	0.00	0.00
PARK12	PARK12	0.00	r			6218557.74	2190330.78	0.00	0.00
						6218604.83	2190391.11	0.00	0.00
						6218620.45	2190378.95	0.00	0.00
						6218573.58	2190319.06	0.00	0.00
PARK13	PARK13	0.00	r			6218566.85	2190423.88	0.00	0.00
						6218583.56	2190411.51	0.00	0.00
						6218533.87	2190346.62	0.00	0.00
						6218512.38	2190363.11	0.00	0.00
						6218528.22	2190382.86	0.00	0.00
						6218532.56	2190379.60	0.00	0.00
PARK14	PARK14	0.00	r			6218577.92	2190438.20	0.00	0.00
						6218627.18	2190501.78	0.00	0.00
						6218643.46	2190489.41	0.00	0.00
						6218593.54	2190426.26	0.00	0.00
PARK15	PARK15	0.00	r			6218639.99	2190519.14	0.00	0.00
						6218662.56	2190548.01	0.00	0.00
						6218679.27	2190535.85	0.00	0.00
						6218656.70	2190506.56	0.00	0.00
PARK16	PARK16	0.00	r			6218695.76	2190476.18	0.00	0.00
						6218680.35	2190488.55	0.00	0.00
						6218714.20	2190531.08	0.00	0.00
						6218728.74	2190519.14	0.00	0.00
PARK17	PARK17	0.00	r			6218803.61	2190528.26	0.00	0.00
						6218791.90	2190513.07	0.00	0.00
						6218716.37	2190572.10	0.00	0.00
						6218727.44	2190587.29	0.00	0.00
PARK18	PARK18	0.00	r			6218723.32	2190589.89	0.00	0.00
						6218710.95	2190574.05	0.00	0.00
						6218635.86	2190632.86	0.00	0.00
						6218647.80	2190648.49	0.00	0.00
PARK19	PARK19	0.00	r			6218653.66	2190557.56	0.00	0.00
						6218582.26	2190612.46	0.00	0.00
						6218593.54	2190627.65	0.00	0.00
						6218664.94	2190572.31	0.00	0.00
PARK20	PARK20	0.00	r			6218513.90	2190664.98	0.00	0.00
						6218524.97	2190679.95	0.00	0.00
						6218584.43	2190635.46	0.00	0.00
						6218572.49	2190619.84	0.00	0.00
PARK21	PARK21	0.00	r			6218643.46	2190651.52	0.00	0.00
						6218631.31	2190635.46	0.00	0.00
						6218562.51	2190689.72	0.00	0.00
						6218574.66	2190704.69	0.00	0.00
PARK22	PARK22	0.00	r			6218570.32	2190707.51	0.00	0.00
						6218559.04	2190691.89	0.00	0.00
						6218489.38	2190744.62	0.00	0.00
						6218501.10	2190760.25	0.00	0.00
PARK23	PARK23	0.00	r			6218473.32	2190756.78	0.00	0.00
						6218487.21	2190746.58	0.00	0.00
						6218460.95	2190709.03	0.00	0.00
						6218444.67	2190721.40	0.00	0.00

Barrier(s)

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
				left	right		horz.	vert.	Begin	End		x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)
B1			B1						6.00	r		6218409.44	2190837.14	6.00	0.00
												6218170.39	2190523.91	6.00	0.00
												6218603.15	2190190.06	6.00	0.00

Building(s)

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING			BUILDING00001	x	0		24.00	r	6218504.14	2190657.82	24.00	0.00
									6218529.74	2190639.15	24.00	0.00
									6218531.91	2190642.19	24.00	0.00
									6218540.59	2190635.68	24.00	0.00
									6218537.99	2190632.64	24.00	0.00
									6218563.16	2190613.11	24.00	0.00
									6218548.41	2190592.71	24.00	0.00
									6218549.71	2190590.98	24.00	0.00
									6218541.03	2190579.69	24.00	0.00
									6218539.29	2190580.56	24.00	0.00
									6218523.67	2190560.16	24.00	0.00
									6218497.19	2190580.13	24.00	0.00
									6218496.32	2190577.52	24.00	0.00
									6218488.08	2190583.16	24.00	0.00
									6218489.81	2190586.64	24.00	0.00
									6218464.20	2190606.17	24.00	0.00
									6218480.70	2190627.43	24.00	0.00
									6218477.66	2190629.17	24.00	0.00
									6218486.77	2190640.02	24.00	0.00
									6218488.94	2190638.29	24.00	0.00
BUILDING			BUILDING00002	x	0		24.00	r	6218580.09	2190599.66	24.00	0.00
									6218605.70	2190580.13	24.00	0.00
									6218608.74	2190583.60	24.00	0.00
									6218616.98	2190577.09	24.00	0.00
									6218615.25	2190574.48	24.00	0.00
									6218639.12	2190555.39	24.00	0.00
									6218623.06	2190533.68	24.00	0.00
									6218624.79	2190531.51	24.00	0.00
									6218616.98	2190521.53	24.00	0.00
									6218615.25	2190523.70	24.00	0.00
									6218599.62	2190503.30	24.00	0.00
									6218573.15	2190521.97	24.00	0.00
									6218571.41	2190520.23	24.00	0.00
									6218564.03	2190524.14	24.00	0.00
									6218565.77	2190527.17	24.00	0.00
									6218540.16	2190548.01	24.00	0.00
									6218557.09	2190568.84	24.00	0.00
									6218554.92	2190571.01	24.00	0.00
									6218563.16	2190580.13	24.00	0.00
									6218564.90	2190579.26	24.00	0.00
BUILDING			BUILDING00003	x	0		24.00	r	6218558.82	2190509.81	24.00	0.00
									6218571.41	2190500.26	24.00	0.00
									6218571.41	2190501.57	24.00	0.00
									6218583.56	2190492.89	24.00	0.00
									6218580.52	2190488.98	24.00	0.00
									6218589.20	2190480.73	24.00	0.00
									6218580.09	2190469.45	24.00	0.00
									6218572.71	2190474.22	24.00	0.00
									6218564.90	2190462.94	24.00	0.00
									6218570.98	2190458.60	24.00	0.00
									6218560.99	2190446.45	24.00	0.00
									6218535.39	2190464.67	24.00	0.00
									6218542.76	2190474.66	24.00	0.00
									6218544.93	2190473.35	24.00	0.00
									6218547.10	2190476.83	24.00	0.00
									6218552.31	2190472.92	24.00	0.00
									6218555.78	2190477.26	24.00	0.00
									6218549.27	2190482.90	24.00	0.00
									6218553.61	2190490.28	24.00	0.00
									6218546.24	2190496.36	24.00	0.00
BUILDING			BUILDING00004	x	0		24.00	r	6218547.97	2190433.86	24.00	0.00
									6218533.21	2190413.89	24.00	0.00
									6218534.95	2190410.85	24.00	0.00
									6218526.70	2190400.44	24.00	0.00
									6218524.53	2190403.04	24.00	0.00
									6218508.91	2190381.78	24.00	0.00
									6218482.87	2190401.31	24.00	0.00
									6218479.83	2190399.14	24.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6218472.89	2190404.78	24.00	0.00
									6218474.19	2190408.25	24.00	0.00
									6218448.58	2190428.65	24.00	0.00
									6218465.51	2190448.18	24.00	0.00
									6218462.03	2190450.79	24.00	0.00
									6218471.58	2190460.77	24.00	0.00
									6218473.32	2190459.47	24.00	0.00
									6218490.25	2190479.87	24.00	0.00
									6218513.68	2190461.64	24.00	0.00
									6218516.72	2190462.94	24.00	0.00
									6218524.97	2190456.86	24.00	0.00
									6218522.36	2190454.26	24.00	0.00
BUILDING			BUILDING00005	x	0		24.00	r	6218471.58	2190492.89	24.00	0.00
									6218455.52	2190471.18	24.00	0.00
									6218457.69	2190469.45	24.00	0.00
									6218450.75	2190460.33	24.00	0.00
									6218447.71	2190462.50	24.00	0.00
									6218431.65	2190440.37	24.00	0.00
									6218405.61	2190459.90	24.00	0.00
									6218403.01	2190457.73	24.00	0.00
									6218395.63	2190463.37	24.00	0.00
									6218397.36	2190465.54	24.00	0.00
									6218372.19	2190485.51	24.00	0.00
									6218387.82	2190506.34	24.00	0.00
									6218386.08	2190508.51	24.00	0.00
									6218394.76	2190520.23	24.00	0.00
									6218397.80	2190518.49	24.00	0.00
									6218411.69	2190538.46	24.00	0.00
									6218437.73	2190518.93	24.00	0.00
									6218439.03	2190521.10	24.00	0.00
									6218447.71	2190515.89	24.00	0.00
									6218445.11	2190513.29	24.00	0.00
BUILDING			BUILDING00006	x	0		24.00	r	6218737.64	2190498.96	24.00	0.00
									6218756.74	2190485.94	24.00	0.00
									6218758.91	2190487.24	24.00	0.00
									6218771.93	2190477.26	24.00	0.00
									6218769.76	2190475.09	24.00	0.00
									6218787.99	2190460.77	24.00	0.00
									6218774.97	2190444.28	24.00	0.00
									6218778.01	2190441.24	24.00	0.00
									6218771.93	2190434.29	24.00	0.00
									6218769.76	2190436.46	24.00	0.00
									6218756.31	2190419.10	24.00	0.00
									6218737.21	2190433.42	24.00	0.00
									6218735.91	2190431.25	24.00	0.00
									6218722.02	2190440.80	24.00	0.00
									6218724.19	2190443.84	24.00	0.00
									6218705.09	2190456.43	24.00	0.00
									6218718.54	2190474.66	24.00	0.00
									6218716.37	2190475.96	24.00	0.00
									6218721.58	2190483.34	24.00	0.00
									6218725.49	2190481.60	24.00	0.00
BUILDING			BUILDING00007	x	0		24.00	r	6218645.63	2190382.64	24.00	0.00
									6218666.90	2190367.02	24.00	0.00
									6218668.20	2190368.32	24.00	0.00
									6218679.05	2190360.07	24.00	0.00
									6218677.75	2190357.90	24.00	0.00
									6218699.45	2190341.84	24.00	0.00
									6218680.35	2190316.67	24.00	0.00
									6218682.95	2190314.07	24.00	0.00
									6218677.31	2190307.12	24.00	0.00
									6218673.41	2190309.73	24.00	0.00
									6218654.31	2190284.12	24.00	0.00
									6218633.91	2190299.74	24.00	0.00
									6218632.17	2190298.01	24.00	0.00
									6218620.89	2190307.12	24.00	0.00
									6218623.06	2190308.86	24.00	0.00
									6218600.49	2190324.48	24.00	0.00
									6218620.02	2190349.66	24.00	0.00
									6218617.85	2190352.26	24.00	0.00
									6218623.49	2190359.64	24.00	0.00
									6218626.53	2190357.04	24.00	0.00
BUILDING			BUILDING00008	x	0		24.00	r	6218588.34	2190307.99	24.00	0.00
									6218609.17	2190292.80	24.00	0.00
									6218611.34	2190294.10	24.00	0.00
									6218623.06	2190285.85	24.00	0.00
									6218620.89	2190282.82	24.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6218641.72	2190267.63	24.00	0.00
									6218623.49	2190243.32	24.00	0.00
									6218625.66	2190239.85	24.00	0.00
									6218619.59	2190232.47	24.00	0.00
									6218616.98	2190233.77	24.00	0.00
									6218596.58	2190209.90	24.00	0.00
									6218575.75	2190225.09	24.00	0.00
									6218574.45	2190223.79	24.00	0.00
									6218564.46	2190232.90	24.00	0.00
									6218566.20	2190234.21	24.00	0.00
									6218544.07	2190251.57	24.00	0.00
									6218563.16	2190275.00	24.00	0.00
									6218560.12	2190278.04	24.00	0.00
									6218566.20	2190286.29	24.00	0.00
									6218569.24	2190283.68	24.00	0.00
BUILDING			BUILDING00009	x	0		24.00	r	6218222.89	2190563.63	24.00	0.00
									6218241.55	2190550.61	24.00	0.00
									6218243.72	2190553.22	24.00	0.00
									6218257.17	2190541.06	24.00	0.00
									6218254.57	2190540.20	24.00	0.00
									6218272.36	2190525.44	24.00	0.00
									6218259.78	2190508.51	24.00	0.00
									6218262.38	2190506.34	24.00	0.00
									6218256.31	2190499.83	24.00	0.00
									6218254.14	2190501.57	24.00	0.00
									6218240.68	2190484.21	24.00	0.00
									6218223.32	2190499.40	24.00	0.00
									6218220.71	2190496.36	24.00	0.00
									6218207.69	2190506.78	24.00	0.00
									6218209.43	2190508.51	24.00	0.00
									6218190.33	2190523.27	24.00	0.00
									6218203.35	2190539.76	24.00	0.00
									6218200.75	2190541.50	24.00	0.00
									6218206.83	2190549.31	24.00	0.00
									6218209.43	2190546.71	24.00	0.00
BUILDING			BUILDING00010	x	0		24.00	r	6218279.74	2190637.42	24.00	0.00
									6218301.88	2190621.36	24.00	0.00
									6218304.05	2190623.53	24.00	0.00
									6218314.03	2190616.15	24.00	0.00
									6218312.29	2190614.41	24.00	0.00
									6218333.13	2190597.92	24.00	0.00
									6218315.33	2190572.75	24.00	0.00
									6218317.07	2190569.71	24.00	0.00
									6218311.43	2190563.63	24.00	0.00
									6218308.39	2190565.37	24.00	0.00
									6218288.86	2190540.63	24.00	0.00
									6218268.02	2190556.69	24.00	0.00
									6218266.29	2190554.52	24.00	0.00
									6218256.31	2190561.90	24.00	0.00
									6218258.48	2190564.07	24.00	0.00
									6218235.47	2190580.56	24.00	0.00
									6218254.57	2190605.73	24.00	0.00
									6218251.96	2190607.04	24.00	0.00
									6218258.04	2190615.28	24.00	0.00
									6218261.95	2190613.55	24.00	0.00
BUILDING			BUILDING00011	x	0		24.00	r	6218294.07	2190654.78	24.00	0.00
									6218306.22	2190671.71	24.00	0.00
									6218303.18	2190674.74	24.00	0.00
									6218308.82	2190682.56	24.00	0.00
									6218312.29	2190680.39	24.00	0.00
									6218324.01	2190696.88	24.00	0.00
									6218342.68	2190683.86	24.00	0.00
									6218344.41	2190685.59	24.00	0.00
									6218358.74	2190675.18	24.00	0.00
									6218356.57	2190672.14	24.00	0.00
									6218375.23	2190657.82	24.00	0.00
									6218361.77	2190643.06	24.00	0.00
									6218365.68	2190639.15	24.00	0.00
									6218359.17	2190632.21	24.00	0.00
									6218355.70	2190633.95	24.00	0.00
									6218342.68	2190616.15	24.00	0.00
									6218324.88	2190630.91	24.00	0.00
									6218322.28	2190628.30	24.00	0.00
									6218308.39	2190639.15	24.00	0.00
									6218310.56	2190640.46	24.00	0.00
BUILDING			BUILDING00012	x	0		24.00	r	6218337.90	2190713.37	24.00	0.00
									6218350.92	2190729.87	24.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6218347.45	2190732.04	24.00	0.00
									6218353.96	2190740.28	24.00	0.00
									6218357.87	2190737.68	24.00	0.00
									6218369.15	2190755.47	24.00	0.00
									6218388.68	2190741.58	24.00	0.00
									6218389.99	2190743.75	24.00	0.00
									6218403.87	2190733.77	24.00	0.00
									6218402.14	2190730.73	24.00	0.00
									6218419.50	2190716.84	24.00	0.00
									6218406.91	2190700.79	24.00	0.00
									6218409.52	2190697.75	24.00	0.00
									6218403.44	2190689.50	24.00	0.00
									6218400.40	2190691.67	24.00	0.00
									6218388.68	2190674.31	24.00	0.00
									6218370.02	2190689.93	24.00	0.00
									6218368.28	2190686.46	24.00	0.00
									6218355.26	2190695.14	24.00	0.00
									6218358.30	2190698.62	24.00	0.00
BUILDING			BUILDING00013	x	0		24.00	r	6218381.74	2190771.97	24.00	0.00
									6218396.06	2190789.33	24.00	0.00
									6218393.89	2190791.50	24.00	0.00
									6218399.10	2190798.88	24.00	0.00
									6218402.57	2190796.71	24.00	0.00
									6218415.16	2190814.50	24.00	0.00
									6218432.52	2190800.18	24.00	0.00
									6218434.69	2190802.35	24.00	0.00
									6218448.15	2190791.50	24.00	0.00
									6218445.98	2190788.46	24.00	0.00
									6218464.64	2190775.44	24.00	0.00
									6218451.62	2190758.95	24.00	0.00
									6218455.09	2190755.91	24.00	0.00
									6218448.58	2190748.53	24.00	0.00
									6218445.98	2190750.70	24.00	0.00
									6218432.52	2190733.77	24.00	0.00
									6218415.16	2190747.66	24.00	0.00
									6218412.99	2190745.49	24.00	0.00
									6218399.53	2190755.04	24.00	0.00
									6218400.40	2190756.78	24.00	0.00

Ground Absorption(s)

Name	Sel.	M.	ID	G	Coordinates	
					x	y
					(ft)	(ft)

Contour(s)

Name	Sel.	M.	ID	OnlyPts	Height		Coordinates		
					Begin	End	x	y	z
					(ft)	(ft)	(ft)	(ft)	(ft)

Vertical Area Source(s)

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Rail

Name	Sel.	M.	ID	Lw'		Train Class	Correct.	Vmax
				Day	Night		Track	
				(dBA)	(dBA)		(dB)	(km(mph)

Sound Level Spectra

Name	ID	Type	Oktave Spectrum (dB)											Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	

Roads

Name	Sel.	M.	ID	Lme			Count Data		exact Count Data						Speed Limit		SCS	Surface		Gradient	Mult. Reflection		
				Day	Evening	Night	DTV	Str.class.	M			p (%)			Auto	Truck	Dist.	Dstro	Type		Drefl	Hbuild	Dist.
				(dBA)	(dBA)	(dBA)			Day	Evening	Night	Day	Evening	Night	(mph)	(mph)		(dB)		(%)	(dB)	(ft)	(ft)

RoadsGeo

Name	Height		Coordinates				Dist	LSlope
	Begin	End	x	y	z	Ground	(ft)	(%)
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)		

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APPENDIX 11.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS

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16357 - Riverside Drive

CadnaA Noise Prediction Model: 16357-02_Construction.cna
Date: 21.11.24
Analyst: B. Maddux

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (ft)	**6561.70**
Min. Dist Src to Rcvr	**0.00**
Partition	
Raster Factor	**0.50**
Max. Length of Section (ft)	**3280.80**
Min. Length of Section (ft)	**3.30**
Min. Length of Section (%)	**0.00**
Proj. Line Sources	**On**
Proj. Area Sources	**On**
Ref. Time	
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**0.00**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**2**
Search Radius Src	**328.08**
Search Radius Rcvr	**328.08**
Max. Distance Source - Rcvr	**3280.84 3280.84**
Min. Distance Rvcr - Reflector	**3.28 3.28**
Min. Distance Source - Reflector	**0.33**
Industrial (ISO 9613 (1996))	
Lateral Diffraction	**some Obj**
Obst. within Area Src do not shield	**On**
Screening	**Incl. Ground Att. over Barrier**
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	**3.0 20.0 0.0**
Temperature (°F)	**50**
rel. Humidity (%)	**70**
Ground Absorption G	**0.50**
Wind Speed for Dir. (mph)	**6.7**
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
R1		R1	63.9	-36.1	60.9	0.0	0.0	0.0		x	Total	5.00	r	6218542.73	2190843.47	5.00
R2		R2	63.9	-36.1	60.9	0.0	0.0	0.0		x	Total	5.00	r	6218825.02	2190626.80	5.00
R3		R3	59.7	-40.3	56.7	0.0	0.0	0.0		x	Total	5.00	r	6218912.17	2190247.29	5.00
R4		R4	68.7	-31.3	65.7	0.0	0.0	0.0		x	Total	5.00	r	6218408.65	2190308.33	5.00
R5		R5	69.0	-31.0	66.0	0.0	0.0	0.0		x	Total	5.00	r	6218209.76	2190470.33	5.00
R6		R6	69.7	-30.3	66.7	0.0	0.0	0.0		x	Total	5.00	r	6218282.33	2190695.51	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed		
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)	

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)		
CA1		CA1	115.6	15.6	15.6	72.6	-27.4	-27.4	PWL-Pt	115.6					5	r

Name	ID	Height				Coordinates			
		Begin		End		x	y	z	Ground
		(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
CA1	CA1	5.00	r			6218409.56	2190837.13	5.00	0.00
						6218845.62	2190503.66	5.00	0.00
						6218602.48	2190190.02	5.00	0.00
						6218169.57	2190522.76	5.00	0.00

Barrier(s)

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height		Coordinates			
				left	right		horz.	vert.	Begin	End	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Building(s)

Name	Sel.	M.	ID	RB	Residents	Absorption	Height	Coordinates				
							Begin	x	y	z	Ground	
							(ft)	(ft)	(ft)	(ft)	(ft)	

Ground Absorption(s)

Name	Sel.	M.	ID	G	Coordinates	
					x	y
					(ft)	(ft)

Contour(s)

Name	Sel.	M.	ID	OnlyPts	Height		Coordinates		
					Begin	End	x	y	z
					(ft)	(ft)	(ft)	(ft)	(ft)

Vertical Area Source(s)

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Rail

Name	Sel.	M.	ID	Lw'		Train Class	Correct.	Vmax
				Day	Night		Track	
				(dBA)	(dBA)		(dB)	(km(mph)

Sound Level Spectra

Name	ID	Type	Oktave Spectrum (dB)											Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	

Roads

Name	Sel.	M.	ID	Lme			Count Data		exact Count Data						Speed Limit		SCS	Surface		Gradient	Mult. Reflection		
				Day	Evening	Night	DTV	Str.class.	M			p (%)			Auto	Truck	Dist.	Dstro	Type		Drefl	Hbuild	Dist.
				(dBA)	(dBA)	(dBA)			Day	Evening	Night	Day	Evening	Night	(mph)	(mph)		(dB)		(%)	(dB)	(ft)	(ft)

RoadsGeo

Name	Height				Coordinates				Dist	LSlope
	Begin		End		x	y	z	Ground	(ft)	(%)
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)		

Appendix I – Vehicle Miles Travelled Screening Analysis Memorandum

translutions, inc.
17632 Irvine Boulevard, Suite 200
Tustin, California 92780
(949) 656 3131
solutions@translutions.com

November 1, 2023

Mr. Kevin Kohan, Principal Planner
Elevated Entitlements
280 E. Thousand Oaks Blvd. Suite H
Thousand Oaks, CA 91360

Subject: 32281 Riverside Drive Apartments – VMT Screening Analysis

Dear Kevin,

Translutions, Inc. (Translutions) is pleased to provide this letter discussing the Vehicle Miles Traveled (VMT) screening analysis for a proposed 96-unit apartment development to be located at 32281 Riverside Drive in the City of Lake Elsinore.

INTRODUCTION

The city has adopted guidelines for evaluation of transportation impacts under Senate Bill 743 (SB-743) and this analysis has been conducted based on the *City of Lake Elsinore Traffic Impact Analysis Preparation Guide*, Adopted June 23, 2020 Revised November 14, 2022. The Guide includes a CEQA Assessment for VMT analysis and lists the VMT thresholds, screening thresholds and methodologies. The City also maintains LOS policies as part of the General Plan and discretionary review process. The following discussion includes a trip generation evaluation and VMT screening analysis consistent with the guidelines.

PROJECT DESCRIPTION

The project is located at 32281 Riverside Drive in the City of Lake Elsinore. The project will include 96 apartment units, with up to two storey buildings. Figure 1 shows a site plan for the proposed project.

PROJECT SCREENING FOR VMT ANALYSIS

Based on the Guidelines, Multi Family Low Rise Residential (Up to 2 levels) development projects of up to 200 Dwelling Units are screened out of requiring a detailed analysis and the impacts are considered to be less than significant. **Since the project proposes less than 200 units of low-rise multifamily residential use, it screens out from further VMT analyses and the impacts are presumed to be less than significant.**

CONCLUSION

The project is screened out of a VMT analysis, and therefore is exempt from further VMT analyses.

We hope you will find this information helpful. Should you have any questions, please don't hesitate to call me at (949) 656-3131 or by email at sandipan@translutions.com.

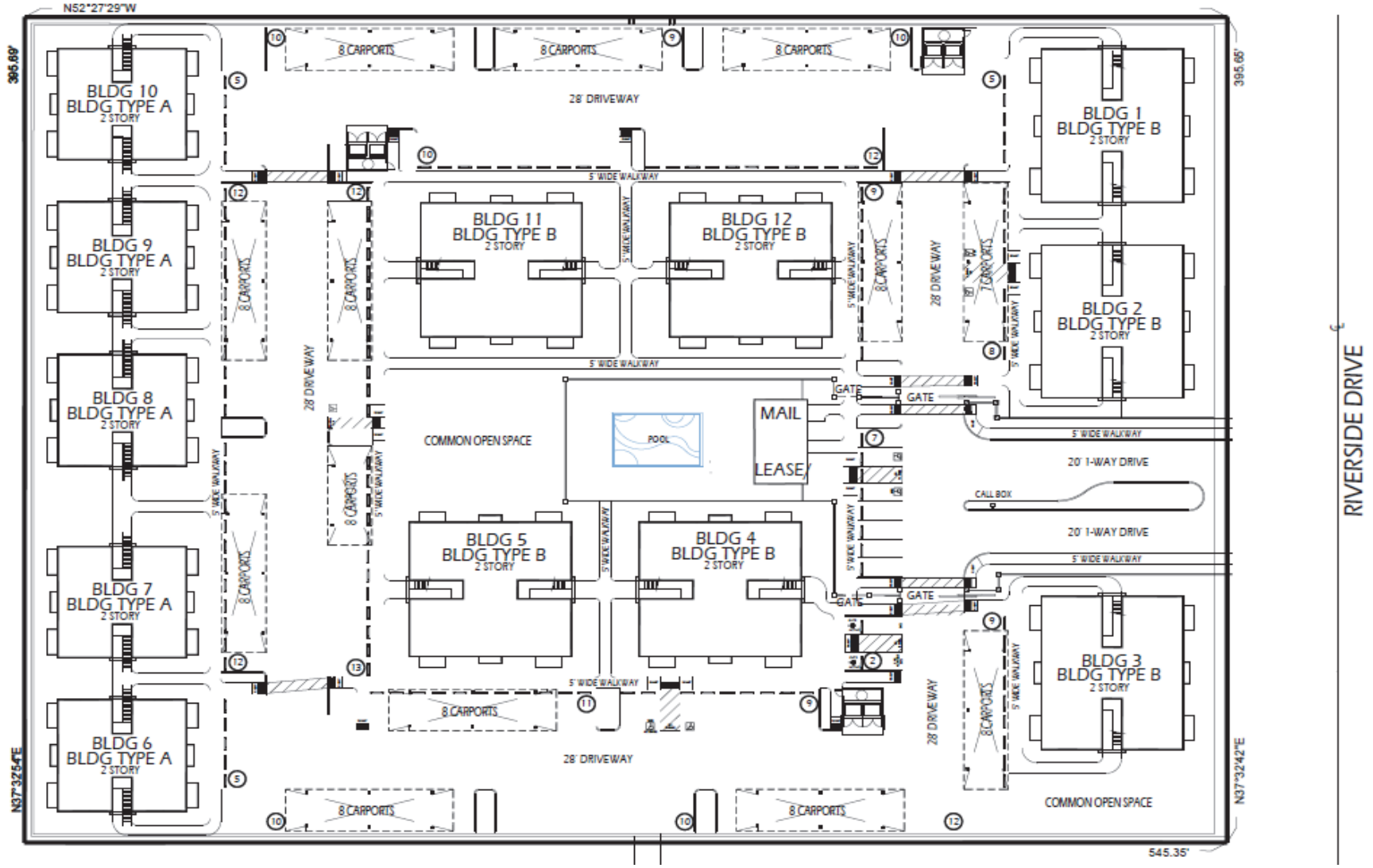
Sincerely,

translutions, Inc.

Sandipan Bhattacharjee, P.E., T.E., AICP, ENV SP
Principal







ATTACHMENT 1

Riverside Drive Apartments
Site Plan

translutions
the transportation solutions company...