Highland Park

AIR QUALITY IMPACT ANALYSIS

CITY OF HIGHLAND

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LIST OF ABBREVIATED TERMS

(1)	Reference
µg/m3	Microgram per Cubic Meter
AADT	Annual Average Daily Trips
AQIA	Air Quality Impact Analysis
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BACM	Best Available Control Measures
BMPs	Best Management Practices
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DPM	Diesel Particulate Matter
EPA	Environmental Protection Agency
LST	Localized Significance Threshold
NAAQS	National Ambient Air Quality Standards
NO2	Nitrogen Dioxide
NOx	Oxides of Nitrogen
Pb	Lead
PM10	Particulate Matter 10 microns in diameter or less
PM2.5	Particulate Matter 2.5 microns in diameter or less
PPM	Parts Per Million
Project	Highland Park
ROG	Reactive Organic Gases
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SIPs	State Implementation Plans
SRA	Source Receptor Area
TAC	Toxic Air Contaminant

TIA	Traffic Impact Analysis
TOG	Total Organic Gases
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds

1 INTRODUCTION

This report presents the results of the air quality impact analysis (AQIA) prepared by Urban Crossroads, Inc., for the Highland Park Project (referred to as "Project"). The Project site is located north of Base Line Street and west of Weaver Street in the City of Highland.

The purpose of this AQIA is to evaluate the potential impacts to air quality associated with construction and operation of the proposed Project, and recommend measures to mitigate impacts considered potentially significant in comparison to established regulatory thresholds.

1.1 SITE LOCATION

The proposed Highland Park site is located north of Base Line Street and west of Weaver Street in the City of Highland, as shown on Exhibit 1-A. The Project site is currently occupied by an existing single-family residential dwelling. Existing residential land uses are located to the north, west, east, and south of the Project site across Base Line Street. The Project site is located approximately 3.5 miles northeast of the San Bernardino International Airport and approximately 2.5 miles north of the Redlands Municipal Airport.

1.2 PROJECT DESCRIPTION

The Project consists of the development of up to 44 single-family detached dwelling units, as shown on Exhibit 1-B. A water quality basin is proposed at the southwest corner of the site on lot 46, and a park is proposed for lot 45 within the Project site.

1.3 SUMMARY OF FINDINGS

Short-Term Construction

For regional emissions, the Project would not exceed the numerical thresholds of significance established by the South Coast Air Quality Management District (SCAQMD). Although not required, best available control measures (BACM AQ-1 and BACM AQ-2) are recommended to further reduce the impacts.

Without BACMs, emissions during construction activity will exceed the SCAQMD's localized significance threshold for PM10 and PM2.5. It should be noted that the impacts without BACMs do not take credit for reductions achieved through standard regulatory requirements (Rule 403). A less than significant impact would occur with the application of BACM AQ-1 and BACM AQ-2.

Project construction-source emissions would not conflict with the applicable Air Quality Management Plan (AQMP).

Established requirements addressing construction equipment operations, and construction material use, storage, and disposal requirements act to minimize odor impacts that may result from construction activities. Moreover, construction-source odor emissions would be temporary, short-term, and intermittent in nature and would not result in persistent impacts

EXHIBIT 1-A: LOCATION MAP

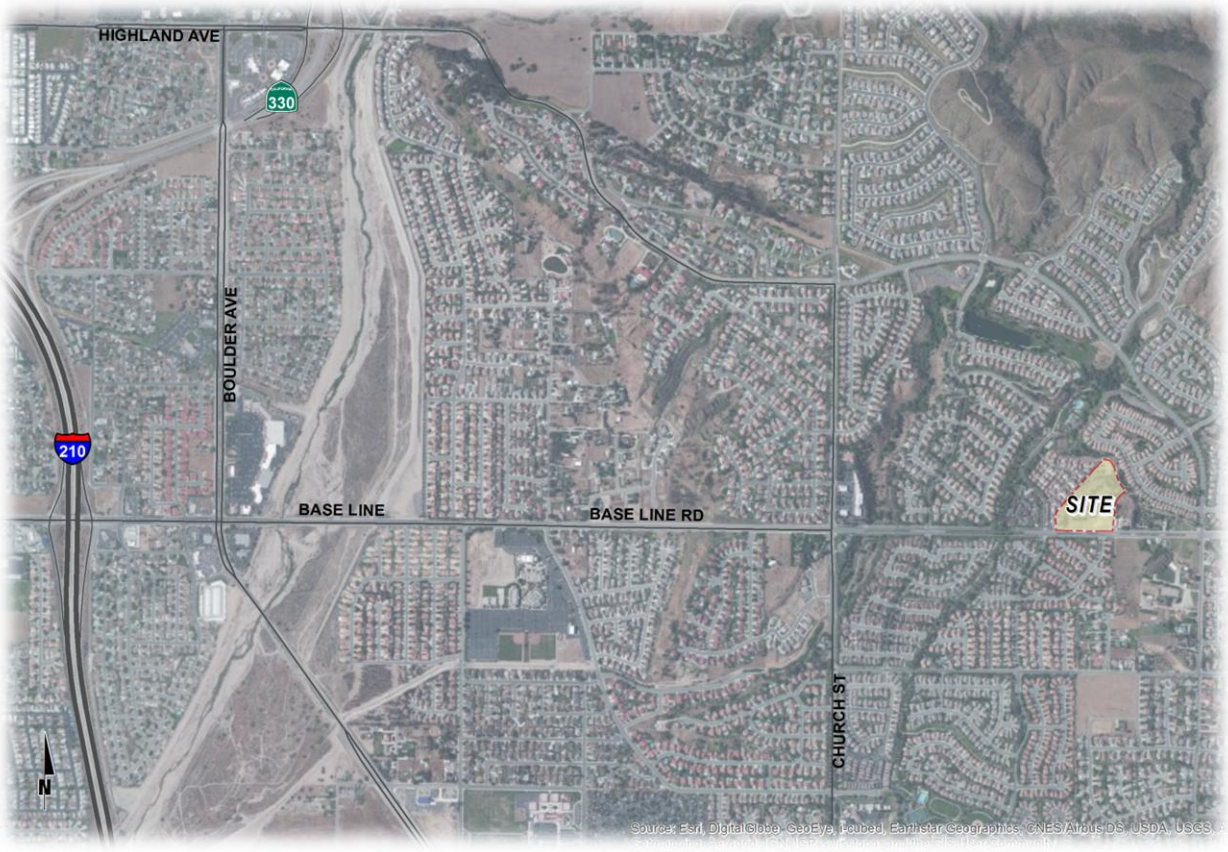

EXHIBIT 1-B: SITE PLAN

that would affect substantial numbers of people. Potential construction-source odor impacts are therefore considered less-than-significant.

Long-Term Operational

For regional emissions, the Project would not exceed the numerical thresholds of significance established by the SCAQMD. Thus a less than significant impact would occur for Project-related operational-source emissions without the application of mitigation measures.

Project operational-source emissions would not result in or cause a significant localized air quality impact as discussed in the operational LSTs section of this report. The proposed Project would not result in a significant CO "hotspot" as a result of Project related traffic during ongoing operations, nor would the Project result in a significant adverse health impact as discussed in Section 3.8, thus a less than significant impact to sensitive receptors during operational activity is expected. Project operational-source emissions would not conflict with the AQMP.

Substantial odor-generating sources include land uses such as agricultural activities, feedlots, wastewater treatment facilities, landfills or various heavy industrial uses. The Project does not propose any such uses or activities that would result in potentially significant operational-source odor impacts. Potential sources of operational odors generated by the Project would include disposal of miscellaneous residential refuse. Moreover, SCAQMD Rule 402 acts to prevent occurrences of odor nuisances (1). Consistent with County requirements, all Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with solid waste regulations. Potential operational-source odor impacts are therefore considered less-than-significant.

1.4 STANDARD REGULATORY REQUIREMENTS/BEST AVAILABLE CONTROL MEASURES (BACMS)

Measures listed below (or equivalent language) shall appear on all Project grading plans, construction specifications and bid documents, and the County shall ensure such language is incorporated prior to issuance of any development permits. County monitoring of construction activities shall be conducted to ensure mitigation compliance.

SCAQMD Rules that are currently applicable during construction activity for this Project include but are not limited to: Rule 1113 (Architectural Coatings) (2); Rule 431.2 (Low Sulfur Fuel) (3); Rule 403 (Fugitive Dust) (4); and Rule 1186 / 1186.1 (Street Sweepers) (5). In order to facilitate monitoring and compliance, applicable SCAQMD regulatory requirements are summarized below.

BACM AQ-1

The following measures shall be incorporated into Project plans and specifications as implementation of Rule 403 (4):

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Project are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and Project site areas are reduced to 15 miles per hour or less

Additional regulatory requirements that are in effect during Project construction include the following:

BACM AQ-2

The California Air Resources Board, in Title 13, Chapter 10, Section 2485, Division 3 of the of the California Code of Regulations, imposes a requirement that heavy duty trucks accessing the site shall not idle for greater than five minutes at any location. This measure is intended to apply to construction traffic. Grading plans shall reference that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling (6).

1.5 CONSTRUCTION-SOURCE MITIGATION MEASURES

No significant impacts were identified and no mitigation measures are required

1.6 OPERATIONAL-SOURCE MITIGATION MEASURES

No significant impacts were identified and no mitigation measures are required

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2 AIR QUALITY SETTING

This section provides an overview of the existing air quality conditions in the Project area and region.

2.1 SOUTH COAST AIR BASIN

The Project site is located in the South Coast Air Basin (SCAB) within the jurisdiction of SCAQMD (7). The SCAQMD was created by the 1977 Lewis-Presley Air Quality Management Act, which merged four county air pollution control bodies into one regional district. Under the Act, the SCAQMD is responsible for bringing air quality in areas under its jurisdiction into conformity with federal and state air quality standards. As discussed above, the Project site is located within the South Coast Air Basin, a 6,745-square mile subregion of the SCAQMD, which includes portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County. The larger South Coast district boundary includes 10,743 square miles.

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

2.2 EXISTING AIR QUALITY

Existing air quality is measured at established SCAQMD air quality monitoring stations. Monitored air quality is evaluated and in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect, as well health effects of each pollutant regulated under these standards are shown in Table 2-1 (8)(9).

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state and federal standards presented in Table 2-1. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for O3, CO, SO2, NO2, PM10, and PM2.5 are not equaled or exceeded at any time in any consecutive three-year period; and the federal standards (other than O3, PM10, PM2.5, and those based on annual averages or arithmetic mean) are not exceeded more than once per year. The O3 standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

TABLE 2-1: AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	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)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM10)[8]	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)[8]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[9]	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)[10]	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)[10]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[10]	—	
Lead[11,12]	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[13]	8 Hour	See footnote 13	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[11]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes at: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

For more information please call ARB-PIO at (916) 322-2990 — California Air Resources Board (6/4/13)

2.3 REGIONAL AIR QUALITY

The SCAQMD monitors levels of various criteria pollutants at 30 monitoring stations throughout the air district. In 2012, the federal and state ambient air quality standards (NAAQS and CAAQS) were exceeded on one or more days for ozone, PM10, and PM2.5 at most monitoring locations (10). No areas of the SCAB exceeded federal or state standards for NO2, SO2, CO, sulfates or lead. See Table 2-2 for attainment designations for the SCAB (11). Appendix 3.2 provides geographic representation of the state and federal attainment status for applicable criteria pollutants within the SCAB.

2.4 LOCAL AIR QUALITY

Relative to the Project site, the nearest long-term air quality monitoring site for Ozone (O_3), Carbon Monoxide (CO), Nitrogen Dioxide (NO_2), Inhalable Particulates (PM_{10}) and Ultra-Fine Particulates ($PM_{2.5}$) is the South Coast Air Quality Management District Central San Bernardino Valley 2 monitoring station, located approximately 6.50 miles southwest of the Project site in San Bernardino (SRA 34) (12).

The most recent three (3) years of data available is shown on Table 2-3 and identifies the number of days ambient air quality standards were exceeded for the study area, which is was considered to be representative of the local air quality at the Project site (10) (13). Additionally, data for SO2 has been omitted as attainment is regularly met in the South Coast Air Basin and few monitoring stations measure SO2 concentrations.

Criteria pollutants are pollutants that are regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. Criteria pollutants, their typical sources, and effects are identified below:

- Carbon Monoxide (CO): Is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, motor vehicles operating at slow speeds are the primary source of CO in the Basin. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.
- Sulfur Dioxide (SO2): Is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO2 oxidizes in the atmosphere, it forms sulfates (SO4). Collectively, these pollutants are referred to as sulfur oxides (SOX).

  Nitrogen Oxides (Oxides of Nitrogen, or NOx): Nitrogen oxides (NOx) consist of nitric oxide (NO), nitrogen dioxide (NO2) and nitrous oxide (N2O) and are formed when nitrogen (N2) combines with oxygen (O2). Their lifespan in the atmosphere ranges from one to seven days for nitric oxide and nitrogen dioxide, to 170 years for nitrous oxide. Nitrogen oxides are typically created during combustion processes, and are major contributors to smog formation and acid deposition. NO2 is a criteria air pollutant, and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility. Of the seven types of nitrogen oxide compounds, NO2 is the most abundant in the atmosphere. As

ambient concentrations of NO2 are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO2 than those indicated by regional monitors.

- Ozone (O3): Is a highly reactive and unstable gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NOX), both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.
- PM10 (Particulate Matter less than 10 microns): A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be deposited, resulting in adverse health effects. PM10 also causes visibility reduction and is a criteria air pollutant.
- PM2.5 (Particulate Matter less than 2.5 microns): A similar air pollutant consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include sulfates formed from SO2 release from power plants and industrial facilities and nitrates that are formed from NOX release from power plants, automobiles and other types of combustion sources. The chemical composition of fine particles highly depends on location, time of year, and weather conditions. PM2.5 is a criteria air pollutant.
- Volatile Organic Compounds (VOC): Volatile organic compounds are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form ozone to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include: carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to O3, which is a criteria pollutant. The SCAQMD uses the terms VOC and ROG (see below) interchangeably.
- Reactive Organic Gases (ROG): Similar to VOC, Reactive Organic Gases (ROG) are also precursors in forming ozone and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and nitrogen oxides react in the presence of sunlight. ROGs are a criteria pollutant since they are a precursor to O3, which is a criteria pollutant. The SCAQMD uses the terms ROG and VOC (see previous) interchangeably.
- Lead (Pb): Lead is a heavy metal that is highly persistent in the environment. In the past, the primary source of lead in the air was emissions from vehicles burning leaded gasoline. As a result of the removal of lead from gasoline, there have been no violations at any of the SCAQMD's regular air monitoring stations since 1982. Currently, emissions of lead are largely limited to stationary sources such as lead smelters. It should be noted that the Project is not anticipated to generate a quantifiable amount of lead emissions. Lead is a criteria air pollutant.

TABLE 2-2: ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SOUTH COAST AIR BASIN (SCAB)

Criteria Pollutant	State Designation	Federal Designation
Ozone - 1hour standard	Nonattainment	No Standard
Ozone - 8 hour standard	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Nonattainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead[1]	Attainment	Attainment

Source: State/Federal designations were taken from http://www.arb.ca.gov/desig/adm/adm.htm
Note: See Appendix 3.2 for a detailed map of State/National Area Designations within the South Coast Air Basin

[1] The State and Federal nonattainment designation for lead is only applicable towards the Los Angeles County portion of the SCAB.

TABLE 2-3: PROJECT AREA AIR QUALITY MONITORING SUMMARY 2011-2013

POLLUTANT	STANDARD	YEAR		
		2011	2012	2013
Ozone (O_3)				
Maximum 1-Hour Concentration (ppm)		0.135	0.124	0.139
Maximum 8-Hour Concentration (ppm)		0.121	0.109	0.112
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	40	41	--
Number of Days Exceeding State 8-Hour Standard	> 0.07 ppm	66	77	--
Number of Days Exceeding Federal 1-Hour Standard	> 0.12 ppm	2	0	2
Number of Days Exceeding Federal 8-Hour Standard	> 0.075 ppm	39	54	36
Number of Days Exceeding Health Advisory	≥ 0.15 ppm	0	0	0
Carbon Monoxide (CO)				
Maximum 1-Hour Concentration (ppm)		2.3	3.1	4.8
Maximum 8-Hour Concentration (ppm)		1.7	1.7	1.7
Number of Days Exceeding State 1-Hour Standard	> 20 ppm	0	0	0
Number of Days Exceeding Federal / State 8-Hour Standard	> 9.0 ppm	0	0	0
Number of Days Exceeding Federal 1-Hour Standard	> 35 ppm	0	0	0
Nitrogen Dioxide (NO_2)				
Maximum 1-Hour Concentration (ppm)		0.0619	0.067	0.072
Annual Arithmetic Mean Concentration (ppm)		0.0169	--	--
Number of Days Exceeding State 1-Hour Standard	> 0.18 ppm	0	0	0
Particulate Matter ≤ 10 Microns (PM_{10})				
Maximum 24-Hour Concentration ($\mu g/m^3$)		56	53	102
Number of Samples		58	55	60
Number of Samples Exceeding State Standard	> 50 $\mu g/m^3$	3	--	--
Number of Samples Exceeding Federal Standard	> 150 $\mu g/m^3$	0	0	0
Particulate Matter ≤ 2.5 Microns ($PM_{2.5}$)				
Maximum 24-Hour Concentration ($\mu g/m^3$)		65.0	34.8	55.3
Annual Arithmetic Mean ($\mu g/m^3$)		12.2	11.8	11.4
Number of Samples Exceeding Federal 24-Hour Standard	> 35 $\mu g/m^3$	2	0	--

-- = data not available from either SCAQMD or EPA

Health Effects of Air Pollutants

Ozone

Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible sub-groups for ozone effects. Short-term exposure (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in communities with high ozone levels.

Ozone exposure under exercising conditions is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

Carbon Monoxide

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of decreased oxygen supply to the heart. Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport and competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (oxygen deficiency) as seen at high altitudes.

Reduction in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO, resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels; these include pre-term births and heart abnormalities.

Particulate Matter

A consistent correlation between elevated ambient fine particulate matter (PM10 and PM2.5) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in PM2.5 concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children, and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with longterm exposure to particulate matter.

The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM10 and PM2.5.

Nitrogen Dioxide

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.

In animals, exposure to levels of NO2 considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO2.

Sulfur Dioxide

A few minutes of exposure to low levels of SO2 can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO2.

Animal studies suggest that despite SO2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO2 levels. In these studies, efforts to separate the effects of SO2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

Lead

Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of

the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure.

Pb poisoning can cause anemia, lethargy, seizures, and death; although it appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.

Odors

The science of odor as a health concern is still new. Merely identifying the hundreds of VOCs that cause odors poses a big challenge. Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, studies have shown that the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

2.5 REGULATORY BACKGROUND

2.5.1 FEDERAL REGULATIONS

The U.S. EPA is responsible for setting and enforcing the NAAQS for O3, CO, NOx, SO2, PM10, and lead (8). The U.S. EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The U.S. EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the CARB.

The Federal Clean Air Act (CAA) was first enacted in 1955, and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance (14). The CAA also mandates that states submit and implement State Implementation Plans (SIPs) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment and incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the Project site include Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions). Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O3, NO2, SO2, PM10, CO, PM2.5, and lead. The NAAQS were amended in July 1997 to include an

additional standard for O3 and to adopt a NAAQS for PM2.5. Table 3-1 (previously presented) provides the NAAQS within the basin.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and nitrogen oxides (NOx). NOx is a collective term that includes all forms of nitrogen oxides (NO, NO2, NO3) which are emitted as byproducts of the combustion process.

2.5.2 CALIFORNIA REGULATIONS

The CARB, which became part of the California EPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. The California CAA mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date. The CARB established the CAAQS for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for sulfates, visibility, hydrogen sulfide, and vinyl chloride. However at this time, hydrogen sulfide and vinyl chloride are not measured at any monitoring stations in the SCAB because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS (9)(8).

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

Serious non-attainment areas are required to prepare air quality management plans that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include:

- Application of Best Available Retrofit Control Technology to existing sources;
- Developing control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g. motor vehicle use generated by residential and commercial development);
- A District permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implementing reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled;
- Significant use of low emissions vehicles by fleet operators;
- Sufficient control strategies to achieve a five percent or more annual reduction in emissions or 15 percent or more in a period of three years for ROGs, NOx, CO and PM10. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than five percent per year under certain circumstances.

2.5.3 AIR QUALITY MANAGEMENT PLANNING

Currently, the NAAQS and CAAQS are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the state and

federal ambient air quality standards (15). AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy. A detailed discussion on the AQMP and Project consistency with the AQMP is provided in Section 3.8.

2.6 EXISTING PROJECT SITE AIR QUALITY CONDITIONS

The Project site is assumed to not generate quantifiable emissions. Existing air quality conditions at the Project site would generally reflect ambient monitored conditions as presented previously at Table 2-3.

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3 PROJECT AIR QUALITY IMPACT

3.1 INTRODUCTION

The Project has been evaluated to determine if it will violate an air quality standard or contribute to an existing or projected air quality violation. Additionally, the Project has been evaluated to determine if it will result in a cumulatively considerable net increase of a criteria pollutant for which the SCAB is non-attainment under an applicable federal or state ambient air quality standard. The significance of these potential impacts is described in the following section.

3.2 STANDARDS OF SIGNIFICANCE

The criteria used to determine the significance of potential Project-related air quality impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 California Code of Regulations §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to air quality if it would (16):

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

Within the context of the above threshold considerations, and based on the SCAQMD's CEQA Air Quality Handbook (1993), a project's localized CO emissions impacts would be significant if they exceed the following California standards for localized CO concentrations (17):

- 1-hour CO standard of 20.0 parts per million (ppm)
- 8-hour CO standard of 9.0 ppm.

The SCAQMD has also developed regional and localized significance thresholds for other regulated pollutants, as summarized at Table 3-1 (18). The SCAQMD's CEQA Air Quality Significance Thresholds (March 2011) indicate that any projects in the SCAB with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact.

TABLE 3-1: MAXIMUM DAILY EMISSIONS REGIONAL THRESHOLDS

Pollutant	Construction	Operations
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
Sox	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day

3.3 PROJECT-RELATED SOURCES OF POTENTIAL IMPACT

Land uses such as the Project affect air quality through construction-source and operational-source emissions.

On October 2, 2013, the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) released the latest version of the California Emissions Estimator Model™ (CalEEMod™) v2013.2.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO) and greenhouse gas (GHG) emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (19). Accordingly, the latest version of CalEEMod™ has been used for this Project to determine construction and operational air quality emissions. Output from the model runs for both construction and operational activity are provided in Appendix 3.1.

3.4 CONSTRUCTION EMISSIONS

Construction activities associated with the Project will result in emissions of CO, VOCs, NOx, SOx, PM10, and PM2.5. Construction related emissions are expected from the following construction activities:

- Demolition
- Grading
- Building Construction
- Architectural Coatings (Painting)
- Paving (curb, gutter, flatwork, and parking lot)
- Construction Workers Commuting

Construction duration by phase is shown on Table 3-2. The construction schedule utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases. The duration of construction activity and associated equipment represents a

reasonable approximation of the expected construction fleet as required per CEQA guidelines. Site specific construction fleet may vary due to specific project needs at the time of construction. The duration of construction activity was based on a mid 2015 construction start date and a 2016 full Project build-out. The associated construction equipment was estimated based on CalEEMod defaults. Please refer to specific detailed modeling inputs/outputs contained in Appendix 3.1 of this analysis. A detailed summary of construction equipment assumptions by phase is provided at Table 3-2. It should be noted that the construction equipment estimates provided at Table 3-3 represent a "worst-case" (i.e. overestimation) of actual construction equipment that will likely be used during construction activities.

Dust is typically a major concern during rough grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity.

Construction emissions for construction worker vehicles traveling to and from the Project site, as well as vendor trips (construction materials delivered to the Project site) were estimated based on information from the applicant and the CalEEMod model.

TABLE 3-2: CONSTRUCTION DURATION

Phase	Duration (working days)
Demolition	20
Grading	30
Building Construction	300
Architectural Coatings	305
Paving	20

TABLE 3-3: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Activity	Equipment	Number	Hours Per Day
Demolition	Concrete/Industrial Saws	1	8
	Excavators	3	8
	Rubber Tired Dozers	2	8
Grading	Excavator	2	8
	Graders	1	8
	Water Trucks	1	8
	Rubber Tired Dozers	1	8
	Scrapers	2	8
	Tractors/Loaders/Backhoes	2	8
Building Construction	Cranes	1	8
	Forklifts	3	8
	Generator Sets	1	8
	Tractors/Loaders/Backhoes	3	8
	Welders	1	8
Architectural Coatings	Air Compressors	1	8
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8

3.4.1 CONSTRUCTION EMISSIONS SUMMARY

Impacts Without BACMs and Regulatory Requirements

The estimated maximum daily construction emissions without BACMs are summarized on Table 3-4. Detailed construction model outputs are presented in Appendix 3.1. Under the assumed scenarios, emissions resulting from the Project construction will not exceed any criteria pollutant thresholds established by the SCAQMD. It should be noted that the impacts without BACMs and do not take credit for reductions achieved through standard regulatory requirements (SCAQMD's Rule 403). Therefore, a less than significant impact would occur without the application of BACMs and standard regulatory requirements.

TABLE 3-4: EMISSIONS SUMMARY OF OVERALL CONSTRUCTION (WITHOUT BACMS)

Year	VOC	NOx	CO	SOx	PM10	PM2.5
2015	7.67	87.93	55.77	0.07	13.11	7.51
2016	8.72	57.53	41.69	0.06	4.30	3.59
Maximum Daily Emissions	**8.72**	**87.93**	**55.77**	**0.07**	**13.11**	**7.51**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Impacts With BACMs and Regulatory Requirements

The estimated maximum daily construction emissions with BACMs are summarized on Table 3-5. Detailed construction model outputs are presented in Appendix 3.1. Under the assumed scenarios, emissions resulting from the Project construction will be further reduced with implementation of BACMs and standard regulatory requirements (SCAQMD's Rule 403).

TABLE 3-5: EMISSIONS SUMMARY OF OVERALL CONSTRUCTION (WITH BACMS)

Year	Emissions (pounds per day)					
	VOC	NOx	CO	SOx	PM10	PM2.5
2015	7.67	87.93	55.77	0.07	7.82	5.32
2016	8.72	57.53	41.69	0.06	4.30	3.59
Maximum Daily Emissions	**7.67**	**87.93**	**55.77**	**0.07**	**7.82**	**5.32**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

3.5 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of ROG, NOX, CO, SOX, PM10, and PM2.5. Operational emissions would be expected from the following primary sources:

- Area Source Emissions
- Energy Source Emissions
- Mobile Source Emissions

3.5.1 AREA SOURCE EMISSIONS

Architectural Coatings

Over a period of time the buildings that are part of this Project will be subject to emissions resulting from the evaporation of solvents contained in paints, varnishes, primers, and other surface coatings as part of Project maintenance. The emissions associated with architectural coatings were calculated using the CalEEMod model.

Consumer Products

Consumer products include, but are not limited to detergents, cleaning compounds, polishes, personal care products, and lawn and garden products. Many of these products contain organic compounds which when released in the atmosphere can react to form ozone and other photochemically reactive pollutants. The emissions associated with use of consumer products were calculated based on defaults provided within the CalEEMod model.

Hearths/Fireplaces

The emissions associated with use of hearths/fireplaces were calculated based on assumptions provided in the CalEEMod model. The Project is required to comply with SCAQMD Rule 445, which prohibits the use of wood burning stoves and fireplaces in new development. In order to account for the requirements of this Rule, the unmitigated CalEEMod model estimates were adjusted to remove wood burning stoves and fireplaces. As the project is required to comply with SCAQMD Rule 445, the removal of wood burning stoves and fireplaces is not considered "mitigation" although it must be identified as such in CalEEMod in order to treat the case appropriately.

Landscape Maintenance Equipment

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in the CalEEMod model.

3.5.2 ENERGY SOURCE EMISSIONS

Combustion Emissions Associated with Natural Gas and Electricity

Electricity and natural gas are used by almost every project. Criteria pollutant emissions are emitted through the generation of electricity and consumption of natural gas. However, because electrical generating facilities for the Project area are located either outside the region (state) or offset through the use of pollution credits (RECLAIM) for generation within the SCAB, criteria pollutant emissions from offsite generation of electricity is generally excluded from the evaluation of significance and only natural gas use is considered. The emissions associated with natural gas use were calculated using the CalEEMod model.

3.5.3 MOBILE SOURCE EMISSIONS

Vehicles

Project operational (vehicular) impacts are dependent on both overall daily vehicle trip generation and the effect of the Project on peak hour traffic volumes and traffic operations in the vicinity of the Project. The Project related operational air quality impacts derive primarily from vehicle trips generated by the Project. Trip characteristics available from the report,

Highland Park Trip Generation Assessment (Urban Crossroads, Inc.) 2014 were utilized in this analysis (20).

Fugitive Dust Related to Vehicular Travel

Vehicles traveling on paved roads would be a source of fugitive emissions due to the generation of road dust inclusive of tire wear particulates. The emissions estimates for travel on paved roads were calculated using the CalEEMod model.

3.5.4 OPERATIONAL EMISSIONS SUMMARY

Operational-source emissions are summarized on Table 3-6. Prior to implementation of appropriate mitigation measures, Project operational-source emissions would not exceed applicable SCAQMD regional thresholds of significance. Therefore, a less than significant impact would occur and no mitigation measures would be required.

TABLE 3-6: SUMMARY OF PEAK OPERATIONAL EMISSIONS

Operational Activities – Summer Emissions	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source Emissions	2.64	0.04	3.69	1.90e-4	0.08	0.08
Energy Source Emissions	0.04	0.36	0.15	2.27e-3	0.03	0.03
Mobile Emissions	1.81	5.62	21.75	0.05	3.24	0.91
Maximum Daily Emissions	**4.50**	**6.02**	**25.59**	**0.05**	**3.34**	**1.02**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Operational Activities – Winter Emissions	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source Emissions	2.64	0.04	3.69	1.90e-4	0.08	0.08
Energy Source Emissions	0.04	0.36	0.15	2.27e-3	0.03	0.03
Mobile Emissions	1.75	5.88	20.08	0.04	3.24	0.91
Maximum Daily Emissions	**4.44**	**6.28**	**23.93**	**0.04**	**3.34**	**1.02**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

3.6 LOCALIZED SIGNIFIANCE - CONSTRUCTION ACTIVITY

BACKGROUND ON LOCALIZED SIGNIFICANCE THRESHOLD (LST) DEVELOPMENT

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (Methodology) (21). The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the federal and/or state ambient air quality standards (NAAQS/CAAQS). Collectively, these are referred to as Localized Significance Thresholds (LSTs).

The significance of localized emissions impacts depends on whether ambient levels in the vicinity of any given project are above or below State standards. In the case of CO and NO2, if ambient levels are below the standards, a project is considered to have a significant impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a state or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. This would apply to PM10 and PM2.5; both of which are non-attainment pollutants.

The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice Initiative I-4. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

LSTs were developed in response to environmental justice and health concerns raised by the public regarding exposure of individuals to criteria pollutants in local communities. To address the issue of localized significance, the SCAQMD adopted LSTs that show whether a project would cause or contribute to localized air quality impacts and thereby cause or contribute to potential localized adverse health effects. The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (LST Methodology) (22).

APPLICABILITY OF LSTS FOR THE PROJECT

For this Project, the appropriate Source Receptor Area (SRA) for the LST is the Central San Bernardino Valley 2 monitoring station (SRA 34). LSTs apply to carbon monoxide (CO), nitrogen dioxide (NO2), particulate matter ≤ 10 microns (PM10), and particulate matter ≤ 2.5 microns (PM2.5). The SCAQMD produced look-up tables for projects less than or equal to 5 acres in size.

In order to determine the appropriate methodology for determining localized impacts that could occur as a result of Project-related construction, the following process is undertaken:

- The CalEEMod model is utilized to determine the maximum daily on-site emissions that will occur during construction activity.
- The SCAQMD's Fact Sheet for Applying CalEEMod to Localized Significance Thresholds (23) is used to determine the maximum site acreage that is actively disturbed based on the construction equipment fleet and equipment hours as estimated in CalEEMod.

- If the total acreage disturbed is less than or equal to five acres per day, then the SCAQMD's screening look-up tables are utilized to determine if a Project has the potential to result in a significant impact (the SCAQMD recommends that Projects exceeding the screening look-up tables undergo dispersion modeling to determine actual impacts). The look-up tables establish a maximum daily emissions threshold in pounds per day that can be compared to CalEEMod outputs.
- If the total acreage disturbed is greater than five acres per day, then the SCAQMD recommends dispersion modeling to be conducted to determine the actual pollutant concentrations for applicable LSTs in the air. In other words, the maximum daily on-site emissions as calculated in CalEEMod are modeled via air dispersion modeling to calculate the actual concentration in the air (e.g., parts per million or micrograms per cubic meter) in order to determine if any applicable thresholds are exceeded.

EMISSIONS CONSIDERED

SCAQMD's Methodology clearly states that "off-site mobile emissions from the Project should NOT be included in the emissions compared to LSTs (22)." Therefore, for purposes of the construction LST analysis only emissions included in the CalEEMod "on-site" emissions outputs were considered.

MAXIMUM DAILY DISTURBED-ACREAGE

Table 3-7 is used to determine the maximum daily disturbed-acreage for use in determining the applicability of the SCAQMD's LST look-up tables. Based on Table 3-7, the proposed Project could actively disturb approximately 4.0 acres per day during grading. Site specific construction fleet may vary due to specific project needs at the time of construction. The SCAQMD produced look-up tables for projects less than or equal to 5 acres in size; since the Project does not exceed a disturbance area of 5 acres in size, SCAQMD LST look-up tables will be used to determine localized impacts consistent with SCAQMD protocol.

TABLE 3-7 MAXIMUM DAILY DISTURBED-ACREAGE

Construction Phase	Equipment Type	Equipment Quantity	Acres grader per 8 hour day	Operating Hours per Day	Acres graded per day
Grading	Tractors/Loaders/Backhoes	2	0.5	8	1.0
	Graders	1	0.5	8	0.5
	Rubber Tired Dozers	1	0.5	8	0.5
	Scrapers	2	1.0	8	2.0
Total acres graded per day					4.0
Applicable LST Mass Rate Look-up Table					4.0

Receptors

The nearest sensitive receptor land use (where an individual could remain for 24 hours) is the residential units located immediately adjacent to the site to the west. Notwithstanding, the *Methodology* explicitly states that "*It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters* (24)." Accordingly, LSTs for receptors at 25 meters are utilized in this analysis and provide for a conservative i.e. "health protective" standard of care

Impacts without BACMs

Without implementation of BACMs, emissions during construction activity will exceed SCAQMD's localized significance thresholds for PM10 and PM2.5. Table 3-8 identifies the localized impacts at the nearest receptor location in the vicinity of the Project. It should be noted that the impacts without BACMs do not take credit for reductions achieved through standard regulatory requirements (SCAQMD's Rule 403).

TABLE 3-8: LOCALIZED SIGNIFICANCE SUMMARY CONSTRUCTION (WITHOUT BACMS)

On-Site Grading Emissions	NO_x	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**87.78**	**54.01**	**12.85**	**7.44**
SCAQMD Localized Threshold	236.67	1,488	11.67	6.67
Threshold Exceeded?	**NO**	**NO**	**YES**	**YES**

Impacts with BACMs

After implementation of BACMs, emissions during construction activity will not exceed any of the SCAQMD's localized significance thresholds. Table 3-9 identifies the localized impacts at the nearest receptor location in the vicinity of the Project with implementation of BACMs and standard regulatory requirements. A less than significant impact would occur with the application BACMs and standard regulatory requirements.

TABLE 3-9: LOCALIZED SIGNIFICANCE SUMMARY CONSTRUCTION (WITH BACMS)

On-Site Grading Emissions	NO_x	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**87.78**	**54.01**	**7.56**	**5.25**
SCAQMD Localized Threshold	236.67	1,488	11.67	6.67
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

3.7 LOCALIZED SIGNIFICANCE – LONG-TERM OPERATIONAL ACTIVITY

The proposed project involves the construction and operation of 44 single family detached units. 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., warehouse or transfer facilities). The proposed project does not include such uses, and thus, due to the lack of stationary source emissions, no long-term localized significance threshold analysis is needed.

3.8 CO "HOT SPOT" ANALYSIS

As discussed below, the Project would not result in potentially adverse CO concentrations or "hot spots." Further, detailed modeling of Project-specific carbon monoxide (CO) "hot spots" is not needed to reach this conclusion.

It has long been recognized that adverse localized CO concentrations ("hot spots") are caused by vehicular emissions, primarily when idling at congested intersections. In response, vehicle emissions standards have become increasingly stringent in the last twenty years. Currently, the allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of increasingly sophisticated and efficient emissions control technologies, CO concentrations in the Project vicinity have steadily declined, as indicated by historical emissions data presented previously at Table 2-3.

A CO "hotspot" would occur if an exceedance of the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur. At the time of the 1993 Handbook, the SCAB was designated nonattainment under the California AAQS and National AAQS for CO (17). As identified within SCAQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), peak carbon monoxide concentrations in the SCAB were a result of unusual meteorological and topographical conditions and not a result of congestion at a particular intersection (25). To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO "hot spot" analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods. This hot spot analysis did not predict any violation of CO standards. It can therefore be reasonably concluded that projects (such as the proposed Highland Park Project) that are not subject to the extremes in vehicle volumes and vehicle congestion that was evidenced in the 2003 Los Angeles hot spot analysis would similarly not create or result in CO hot spots. Similar considerations are also employed by other Air Districts when evaluating potential CO concentration impacts. More specifically, the Bay Area Air Quality Management District (BAAQMD) concludes that under existing and future vehicle emission rates, a given project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact (26). The proposed Project considered herein would not produce the volume of traffic required to generate a CO hotspot either in the context of the 2003 Los Angeles hot spot study, or based on representative BAAQMD CO threshold considerations. Therefore, CO hotspots are not an environmental impact of concern for the proposed Project. Localized air quality impacts related to mobile-source emissions would therefore be less than significant.

3.9 AIR QUALITY MANAGEMENT PLANNING

The Project site is located within the SCAB, which is characterized by relatively poor air quality. The SCAQMD has jurisdiction over an approximately 10,743 square-mile area consisting of the four-county Basin and the Los Angeles County and Riverside County portions of what use to be referred to as the Southeast Desert Air Basin. In these areas, the SCAQMD is principally responsible for air pollution control, and works directly with the Southern California Association of Governments (SCAG), county transportation commissions, local governments, as well as state and federal agencies to reduce emissions from stationary, mobile, and indirect sources to meet state and federal ambient air quality standards.

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

The Final 2012 AQMP was adopted by the AQMD Governing Board on December 7, 2012 (15). The 2012 AQMP incorporates the latest scientific and technological information and planning assumptions, including the 2012 Regional Transportation Plan/Sustainable Communities Strategy and updated emission inventory methodologies for various source categories.

Similar to the 2007 AQMP, the 2012 AQMP was based on assumptions provided by both CARB and SCAG in the latest available EMFAC model for the most recent motor vehicle and demographics information, respectively. The air quality levels projected in the 2012 AQMP are based on several assumptions. For example, the 2012 AQMP has assumed that development associated with general plans, specific plans, residential projects, and wastewater facilities will be constructed in accordance with population growth projections identified by SCAG in its 2012 RTP. The 2012 AQMP also has assumed that such development projects will implement strategies to reduce emissions generated during the construction and operational phases of development. The Project's consistency with the 2012 AQMP is discussed as follows:

Criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's CEQA Air Quality Handbook (1993) (17). These indicators are discussed below:

- Consistency Criterion No. 1: The proposed Project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

Construction Impacts

The violations that Consistency Criterion No. 1 refers to are the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if localized significance thresholds (LSTs) were exceeded. As evaluated as part of the Project LST analysis (previously presented), the Project's localized

construction-source emissions will not exceed applicable LSTs with implementation of BACMs, and a less than significant impact is expected.

Operational Impacts

Project operational-source emissions would not result in exceedances of applicable SCAQMD regional thresholds.

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

- Consistency Criterion No. 2: The Project will not exceed the assumptions in the AQMP based on the years of Project build-out phase.

Construction and Operational Impacts

The 2012 Air Quality Management Plan (AQMP) demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under federal law. Growth projections from local general plans adopted by cities in the district are provided to the Southern California Association of Governments (SCAG), which develops regional growth forecasts, which are then used to develop future air quality forecasts for the AQMP. The Project site is zoned Planned Development (PD). The Project proposes a residential land use which is generally consistent with this designation based on the City of Highland's General Plan Land Use Element which states, "Within the Planned Development designated areas, all residential land uses are considered to be appropriate." It should be noted that the proposed residential development would not exceed regional thresholds for construction and operational emissions. In addition, Project construction source emissions would not exceed localized thresholds and would therefore be considered to have a less than significant impact. Thus it is assumed that the Project is consistent with the growth projections included in the AQMP.

AQMP Consistency Conclusion

The Project would not result in or cause NAAQS or CAAQS violations. The Project's land use designation for the subject site does not materially affect the uses allowed or their development intensities as reflected in the adopted zoning. The Project is therefore considered to be consistent with the AQMP.

3.10 POTENTIAL IMPACTS TO SENSITIVE RECEPTORS

The potential impact of Project-generated air pollutant emissions at sensitive receptors has also been considered. Sensitive receptors can include uses such as long term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, child care centers, and athletic facilities can also be considered as sensitive receptors.

Results of the LST analysis indicate that the Project will not exceed the SCAQMD localized significance thresholds during construction (with BACMs). Therefore sensitive receptors would not be subject to a significant air quality impact during Project construction.

The proposed Project would not result in a CO "hotspot" as a result of Project related traffic during ongoing operations, nor would the Project result in a significant adverse health impact as discussed in Section 3.8. Thus a less than significant impact to sensitive receptors during operational activity is expected.

3.11 ODORS

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

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

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

3.12 CUMULATIVE IMPACTS

The Project area is designated as an extreme non-attainment area for ozone, and a non-attainment area for PM_{10} and $PM_{2.5}$.

The SCAQMD has recognized that there is typically insufficient information to quantitatively evaluate the cumulative contributions of multiple projects because each project applicant has no control over nearby projects. Nevertheless, the potential cumulative impacts from the Project and other projects are discussed below.

Related projects could contribute to an existing or projected air quality exceedance because the Basin is currently nonattainment for ozone, PM10, and PM2.5. With regard to determining the significance of the contribution from the Project, the SCAQMD recommends that any given project's potential contribution to cumulative impacts should be assessed using the same significance criteria as for project-specific impacts. Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also not cause a commutatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable. As previously noted, the Project will not exceed the applicable SCAQMD regional threshold for construction and operational-source emissions. As such, the Project will result in a cumulatively less than significant impact.

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4 REFERENCES

1. **South Coast Air Quality Management District.** RULE 402. Nuisance. [Online] May 7, 1976. [Cited: November 13, 2013.] http://www.aqmd.gov/rules/reg/reg04/r402.pdf.
2. —. RULE 1113. Architectural Coatings. [Online] http://www.aqmd.gov/rules/reg/reg11/r1113.pdf.
3. —. RULE 431.2. Sulfur Content of Liquid Fuels. [Online] http://www.aqmd.gov/rules/siprules/sr431-2.pdf.
4. —. RULE 403. Fugitive Dust. [Online] http://www.aqmd.gov/rules/reg/reg04/r403.pdf.
5. —. RULE 1186. PM10 Emissions From Paved and Unpaved Roads, and Livestock Operations. [Online] http://www.aqmd.gov/rules/reg/reg11/r1186.pdf.
6. **State of California.** California Code of Regulations. *Department of Industrial Relations.* [Online] http://www.dir.ca.gov/dlse/ccr.htm.
7. **South Coast Air Quality Management District.** Southern California Air Basins. [Online] [Cited: November 13, 2013.] http://www.aqmd.gov/map/mapaqmd1.pdf.
8. **Environmental Protection Agency.** National Ambient Air Quality Standards (NAAQS). [Online] 1990. [Cited: November 13, 2013.] http://www.epa.gov/air/criteria.html.
9. **Air Resources Board.** California Ambient Air Quality Standards (CAAQS). [Online] 2009. [Cited: November 13, 2013.] http://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm.
10. **Environmental Protection Agency.** Monitor Values Report. [Online] [Cited: November 13, 2013.] http://www.epa.gov/airdata/ad_rep_mon.html.
11. **Air Resources Board.** Air Quality Standards and Area Designations. [Online] 2012. [Cited: November 13, 2013.] http://www.arb.ca.gov/desig/desig.htm.
12. **South Coast Air Quality Management District.** *Air Quality Reporting.* [pdf] Diamond Bar : Sierra Wade Associates, 1999.
13. **Air Resources Board.** [Online] [Cited: November 13, 2013.] http://www.arb.ca.gov/adam/select8/sc8start.php.
14. **Environmental Protection Agency.** Air Pollution and the Clean Air Act. [Online] [Cited: November 13, 2013.] http://www.epa.gov/air/caa/.
15. **South Coast Air Quality Management District.** 2012 Air Quality Management Plan (AQMP). [Online] 2012. [Cited: November 13, 2013.] http://www.aqmd.gov/aqmp/2012aqmp/draft/index.html.
16. **California Environmental Quality Act.** Checklist. [Online] [Cited: Nnovember 13, 2013.] http://ceres.ca.gov/ceqa/guidelines/Appendix_G.html.
17. **South coast Air Quality Management District.** CEQA Air Quality Handbook (1993). [Online] 1993. [Cited: November 13, 2013.] http://www.aqmd.gov/ceqa/oldhdbk.html.
18. **South Coast Air Quality Management District.** Greenhouse Gases (GHG) CEQA Significance Thresholds. [Online] [Cited: November 13, 2013.] http://www.aqmd.gov/ceqa/handbook/GHG/GHG.html.
19. —. California Emissions Estimator Model. [Online] 2013. [Cited: November 13, 2013.] http://www.caleemod.com/.
20. **Urban Crossroads, Inc.** *Highland Park Trip Generation Assessment .* Irvine : s.n., 2014.

21. **Lake Environmental.** US EPA Models. *Lake Environmental.* [Online] http://www.weblakes.com/download/us_epa.html.

22. **South Coast Air Quality Management District.** *Final Localized Significance Threshold Methodology.* 2003.

23. —. Fact Sheet for Applying CalEEMod to Localized Significance Thresholds. [Online] [Cited: December 9, 2013.] http://aqmd.gov/ceqa/handbook/LST/CalEEModguidance.pdf.

24. —. *Localized Significance Thresholds Methodology.* s.l. : South Coast Air Quality Managment District, 2003.

25. —. 2003 Air Quality Management Plan. [Online] 2003. http://www.aqmd.gov/aqmp/aqmd03aqmp.htm.

26. **Bay Area Air Quality Management District.** [Online] http://www.baaqmd.gov/.

5 CERTIFICATION

The contents of this air study report represent an accurate depiction of the environmental impacts associated with the proposed Highland Park. The information contained in this air quality impact assessment report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 660-1994 ext. 217.

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EDUCATION

Master of Science in Environmental Studies
California State University, Fullerton • May, 2010

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University of California, Irvine • June, 2006

PROFESSIONAL AFFILIATIONS

AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
ASTM – American Society for Testing and Materials

PROFESSIONAL CERTIFICATIONS

Environmental Site Assessment – American Society for Testing and Materials • June, 2013
Planned Communities and Urban Infill – Urban Land Institute • June, 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April, 2008
Principles of Ambient Air Monitoring – California Air Resources Board • August, 2007
AB2588 Regulatory Standards – Trinity Consultants • November, 2006
Air Dispersion Modeling – Lakes Environmental • June, 2006

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APPENDIX 3.1:

CALEEMOD EMISSIONS MODEL OUTPUTS

Highland Park Development

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	88.00	Space	0.79	35,200.00	0
Single Family Housing	44.00	Dwelling Unit	14.29	79,200.00	126

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	533.36	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Source: CPUC GHG Calculator version 3c, worksheet tab “CO2 Allocations,” cells AH/AQ 35-44.

Land Use - assumed 2 parking spaces per dwelling unit

Construction Phase - based on a mid 2015 construction start date and an end of 2016 completion

Off-road Equipment - 8 hour work day

Off-road Equipment - 8 hour work day

Off-road Equipment -

Off-road Equipment - added a water truck

Off-road Equipment -

Demolition -

Vehicle Trips - TR based on the the ITE Trip Generation Manual 9th edition and the Highland Park Trip Generation Assessment Letter

Woodstoves - no woodstoves. all natural gas fireplaces

Energy Use - Title-24 Electricity Energy Intensity and Title-24 Natural Gas Energy Intensity were adjusted by 36.4% and 6.5% respectively, to reflect 2013 Title 24 requirements. Source: Impact Analysis California's 2013 Building Energy Efficiency Standards (CEC 2013)

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	305.00
tblConstructionPhase	PhaseEndDate	12/1/2017	11/30/2016
tblConstructionPhase	PhaseEndDate	12/28/2016	9/28/2016
tblConstructionPhase	PhaseStartDate	10/1/2016	10/1/2015
tblConstructionPhase	PhaseStartDate	12/1/2016	9/1/2016
tblEnergyUse	T24E	980.99	623.91
tblEnergyUse	T24NG	27,816.78	26,008.69
tblFireplaces	NumberGas	37.40	44.00
tblFireplaces	NumberNoFireplace	4.40	0.00
tblFireplaces	NumberWood	2.20	0.00
tblOffRoadEquipment	HorsePower	400.00	189.00
tblOffRoadEquipment	LoadFactor	0.38	0.50
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	630.89	533.36
tblProjectCharacteristics	OperationalYear	2014	2016
tblVehicleTrips	ST_TR	10.08	9.91
tblVehicleTrips	SU_TR	8.77	8.62
tblVehicleTrips	WD_TR	9.57	9.52
tblWoodstoves	NumberCatalytic	2.20	0.00
tblWoodstoves	NumberNoncatalytic	2.20	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	7.6748	87.9182	55.7685	0.0730	8.9304	4.1821	13.1125	3.6647	3.8475	7.5122	0.0000	7,611.1936	7,611.1936	2.2037	0.0000	7,657.4711
2016	8.7282	57.4875	41.6882	0.0644	0.6441	3.6516	4.2957	0.1721	3.4189	3.5910	0.0000	6,380.8712	6,380.8712	1.4954	0.0000	6,412.2752
Total	**16.4030**	**145.4057**	**97.4567**	**0.1375**	**9.5745**	**7.8337**	**17.4082**	**3.8368**	**7.2665**	**11.1032**	**0.0000**	**13,992.0648**	**13,992.0648**	**3.6991**	**0.0000**	**14,069.7463**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	7.6748	87.9182	55.7685	0.0730	3.6397	4.1821	7.8218	1.4708	3.8475	5.3183	0.0000	7,611.1936	7,611.1936	2.2037	0.0000	7,657.4711
2016	8.7282	57.4875	41.6882	0.0644	0.6441	3.6516	4.2957	0.1721	3.4189	3.5910	0.0000	6,380.8712	6,380.8712	1.4954	0.0000	6,412.2752
Total	**16.4030**	**145.4057**	**97.4567**	**0.1375**	**4.2838**	**7.8337**	**12.1175**	**1.6429**	**7.2665**	**8.9094**	**0.0000**	**13,992.0648**	**13,992.0648**	**3.6991**	**0.0000**	**14,069.7463**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**55.26**	**0.00**	**30.39**	**57.18**	**0.00**	**19.76**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.6438	0.0432	3.6945	1.9000e-004		0.0789	0.0789		0.0783	0.0783	0.0000	938.3203	938.3203	0.0246	0.0171	944.1319
Energy	0.0416	0.3550	0.1511	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.2437	453.2437	8.6900e-003	8.3100e-003	456.0021
Mobile	1.8116	5.6224	21.7484	0.0483	3.1600	0.0766	3.2366	0.8439	0.0705	0.9143		4,243.8593	4,243.8593	0.1586		4,247.1901
Total	**4.4969**	**6.0206**	**25.5939**	**0.0507**	**3.1600**	**0.1842**	**3.3442**	**0.8439**	**0.1774**	**1.0213**	**0.0000**	**5,635.4232**	**5,635.4232**	**0.1919**	**0.0254**	**5,647.3240**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.6438	0.0432	3.6945	1.9000e-004		0.0789	0.0789		0.0783	0.0783	0.0000	938.3203	938.3203	0.0246	0.0171	944.1319
Energy	0.0416	0.3550	0.1511	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.2437	453.2437	8.6900e-003	8.3100e-003	456.0021
Mobile	1.8116	5.6224	21.7484	0.0483	3.1600	0.0766	3.2366	0.8439	0.0705	0.9143		4,243.8593	4,243.8593	0.1586		4,247.1901
Total	**4.4969**	**6.0206**	**25.5939**	**0.0507**	**3.1600**	**0.1842**	**3.3442**	**0.8439**	**0.1774**	**1.0213**	**0.0000**	**5,635.4232**	**5,635.4232**	**0.1919**	**0.0254**	**5,647.3240**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2015	6/26/2015	5	20	
2	Grading	Grading	6/27/2015	8/7/2015	5	30	
3	Building Construction	Building Construction	8/8/2015	9/30/2016	5	300	
4	Architectural Coating	Architectural Coating	10/1/2015	11/30/2016	5	305	
5	Paving	Paving	9/1/2016	9/28/2016	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 160,380; Residential Outdoor: 53,460; Non-Residential Indoor: 1,584; Non-Residential Outdoor: 528 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	8.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	8.00	78	0.48
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Grading	Off-Highway Trucks	1	8.00	189	0.50

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	27.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	23.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	31.00	10.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	6.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2953	0.0000	0.2953	0.0447	0.0000	0.0447			0.0000			0.0000
Off-Road	4.5083	48.3629	36.0738	0.0399		2.4508	2.4508		2.2858	2.2858		4,127.1934	4,127.1934	1.1188		4,150.6886
Total	**4.5083**	**48.3629**	**36.0738**	**0.0399**	**0.2953**	**2.4508**	**2.7461**	**0.0447**	**2.2858**	**2.3305**		**4,127.1934**	**4,127.1934**	**1.1188**		**4,150.6886**

3.2 Demolition - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0265	0.4219	0.2861	9.9000e-004	0.0235	7.2200e-003	0.0307	6.4400e-003	6.6400e-003	0.0131		100.8916	100.8916	8.0000e-004		100.9084
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0722	0.0876	1.1491	2.1100e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2000e-003	0.0457		181.6880	181.6880	9.5200e-003		181.8880
Total	**0.0987**	**0.5095**	**1.4352**	**3.1000e-003**	**0.1912**	**8.5300e-003**	**0.1997**	**0.0509**	**7.8400e-003**	**0.0587**		**282.5796**	**282.5796**	**0.0103**		**282.7963**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1152	0.0000	0.1152	0.0174	0.0000	0.0174			0.0000			0.0000
Off-Road	4.5083	48.3629	36.0738	0.0399		2.4508	2.4508		2.2858	2.2858	0.0000	4,127.1934	4,127.1934	1.1188		4,150.6886
Total	**4.5083**	**48.3629**	**36.0738**	**0.0399**	**0.1152**	**2.4508**	**2.5660**	**0.0174**	**2.2858**	**2.3032**	**0.0000**	**4,127.1934**	**4,127.1934**	**1.1188**		**4,150.6886**

3.2 Demolition - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0265	0.4219	0.2861	9.9000e-004	0.0235	7.2200e-003	0.0307	6.4400e-003	6.6400e-003	0.0131		100.8916	100.8916	8.0000e-004		100.9084
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0722	0.0876	1.1491	2.1100e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2000e-003	0.0457		181.6880	181.6880	9.5200e-003		181.8880
Total	**0.0987**	**0.5095**	**1.4352**	**3.1000e-003**	**0.1912**	**8.5300e-003**	**0.1997**	**0.0509**	**7.8400e-003**	**0.0587**		**282.5796**	**282.5796**	**0.0103**		**282.7963**

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	7.5641	87.7840	54.0066	0.0698		4.1801	4.1801		3.8457	3.8457		7,332.6054	7,332.6054	2.1891		7,378.5762
Total	**7.5641**	**87.7840**	**54.0066**	**0.0698**	**8.6733**	**4.1801**	**12.8534**	**3.5965**	**3.8457**	**7.4422**		**7,332.6054**	**7,332.6054**	**2.1891**		**7,378.5762**

3.3 Grading - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1107	0.1343	1.7620	3.2300e-003	0.2571	2.0100e-003	0.2591	0.0682	1.8400e-003	0.0700		278.5882	278.5882	0.0146		278.8949
Total	**0.1107**	**0.1343**	**1.7620**	**3.2300e-003**	**0.2571**	**2.0100e-003**	**0.2591**	**0.0682**	**1.8400e-003**	**0.0700**		**278.5882**	**278.5882**	**0.0146**		**278.8949**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000
Off-Road	7.5641	87.7840	54.0066	0.0698		4.1801	4.1801		3.8457	3.8457	0.0000	7,332.6054	7,332.6054	2.1891		7,378.5762
Total	**7.5641**	**87.7840**	**54.0066**	**0.0698**	**3.3826**	**4.1801**	**7.5627**	**1.4026**	**3.8457**	**5.2483**	**0.0000**	**7,332.6054**	**7,332.6054**	**2.1891**		**7,378.5762**

3.3 Grading - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1107	0.1343	1.7620	3.2300e-003	0.2571	2.0100e-003	0.2591	0.0682	1.8400e-003	0.0700		278.5882	278.5882	0.0146		278.8949
Total	**0.1107**	**0.1343**	**1.7620**	**3.2300e-003**	**0.2571**	**2.0100e-003**	**0.2591**	**0.0682**	**1.8400e-003**	**0.0700**		**278.5882**	**278.5882**	**0.0146**		**278.8949**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8870	32.4182	20.0375	0.0287		2.2678	2.2678		2.1293	2.1293		2,886.4292	2,886.4292	0.7336		2,901.8345
Total	**3.8870**	**32.4182**	**20.0375**	**0.0287**		**2.2678**	**2.2678**		**2.1293**	**2.1293**		**2,886.4292**	**2,886.4292**	**0.7336**		**2,901.8345**

3.4 Building Construction - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0966	0.9895	1.0818	2.1800e-003	0.0628	0.0174	0.0802	0.0179	0.0160	0.0339		220.5588	220.5588	1.7400e-003		220.5953
Worker	0.1492	0.1810	2.3748	4.3600e-003	0.3465	2.7100e-003	0.3492	0.0919	2.4800e-003	0.0944		375.4885	375.4885	0.0197		375.9018
Total	**0.2458**	**1.1705**	**3.4566**	**6.5400e-003**	**0.4093**	**0.0201**	**0.4294**	**0.1098**	**0.0185**	**0.1283**		**596.0473**	**596.0473**	**0.0214**		**596.4971**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8870	32.4182	20.0375	0.0287		2.2678	2.2678		2.1293	2.1293	0.0000	2,886.4292	2,886.4292	0.7336		2,901.8345
Total	**3.8870**	**32.4182**	**20.0375**	**0.0287**		**2.2678**	**2.2678**		**2.1293**	**2.1293**	**0.0000**	**2,886.4292**	**2,886.4292**	**0.7336**		**2,901.8345**

3.4 Building Construction - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0966	0.9895	1.0818	2.1800e-003	0.0628	0.0174	0.0802	0.0179	0.0160	0.0339		220.5588	220.5588	1.7400e-003		220.5953
Worker	0.1492	0.1810	2.3748	4.3600e-003	0.3465	2.7100e-003	0.3492	0.0919	2.4800e-003	0.0944		375.4885	375.4885	0.0197		375.9018
Total	**0.2458**	**1.1705**	**3.4566**	**6.5400e-003**	**0.4093**	**0.0201**	**0.4294**	**0.1098**	**0.0185**	**0.1283**		**596.0473**	**596.0473**	**0.0214**		**596.4971**

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6240	30.7934	19.7845	0.0287		2.1098	2.1098		1.9794	1.9794		2,863.9447	2,863.9447	0.7208		2,879.0804
Total	**3.6240**	**30.7934**	**19.7845**	**0.0287**		**2.1098**	**2.1098**		**1.9794**	**1.9794**		**2,863.9447**	**2,863.9447**	**0.7208**		**2,879.0804**

3.4 Building Construction - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0848	0.8734	0.9922	2.1700e-003	0.0628	0.0145	0.0773	0.0179	0.0133	0.0312		218.0413	218.0413	1.5700e-003		218.0742
Worker	0.1334	0.1621	2.1354	4.3600e-003	0.3465	2.5700e-003	0.3491	0.0919	2.3600e-003	0.0943		362.0111	362.0111	0.0180		362.3888
Total	**0.2181**	**1.0354**	**3.1276**	**6.5300e-003**	**0.4093**	**0.0170**	**0.4264**	**0.1098**	**0.0157**	**0.1255**		**580.0524**	**580.0524**	**0.0196**		**580.4630**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6240	30.7934	19.7845	0.0287		2.1098	2.1098		1.9794	1.9794	0.0000	2,863.9447	2,863.9447	0.7208		2,879.0804
Total	**3.6240**	**30.7934**	**19.7845**	**0.0287**		**2.1098**	**2.1098**		**1.9794**	**1.9794**	**0.0000**	**2,863.9447**	**2,863.9447**	**0.7208**		**2,879.0804**

3.4 Building Construction - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0848	0.8734	0.9922	2.1700e-003	0.0628	0.0145	0.0773	0.0179	0.0133	0.0312		218.0413	218.0413	1.5700e-003		218.0742
Worker	0.1334	0.1621	2.1354	4.3600e-003	0.3465	2.5700e-003	0.3491	0.0919	2.3600e-003	0.0943		362.0111	362.0111	0.0180		362.3888
Total	**0.2181**	**1.0354**	**3.1276**	**6.5300e-003**	**0.4093**	**0.0170**	**0.4264**	**0.1098**	**0.0157**	**0.1255**		**580.0524**	**580.0524**	**0.0196**		**580.4630**

3.5 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.5421	3.4271	2.5357	3.9600e-003		0.2945	0.2945		0.2945	0.2945		375.2641	375.2641	0.0489		376.2902
Total	**2.6534**	**3.4271**	**2.5357**	**3.9600e-003**		**0.2945**	**0.2945**		**0.2945**	**0.2945**		**375.2641**	**375.2641**	**0.0489**		**376.2902**

3.5 Architectural Coating - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0289	0.0350	0.4596	8.4000e-004	0.0671	5.2000e-004	0.0676	0.0178	4.8000e-004	0.0183		72.6752	72.6752	3.8100e-003		72.7552
Total	**0.0289**	**0.0350**	**0.4596**	**8.4000e-004**	**0.0671**	**5.2000e-004**	**0.0676**	**0.0178**	**4.8000e-004**	**0.0183**		**72.6752**	**72.6752**	**3.8100e-003**		**72.7552**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.5421	3.4271	2.5357	3.9600e-003		0.2945	0.2945		0.2945	0.2945	0.0000	375.2641	375.2641	0.0489		376.2902
Total	**2.6534**	**3.4271**	**2.5357**	**3.9600e-003**		**0.2945**	**0.2945**		**0.2945**	**0.2945**	**0.0000**	**375.2641**	**375.2641**	**0.0489**		**376.2902**

3.5 Architectural Coating - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0289	0.0350	0.4596	8.4000e-004	0.0671	5.2000e-004	0.0676	0.0178	4.8000e-004	0.0183		72.6752	72.6752	3.8100e-003		72.7552
Total	**0.0289**	**0.0350**	**0.4596**	**8.4000e-004**	**0.0671**	**5.2000e-004**	**0.0676**	**0.0178**	**4.8000e-004**	**0.0183**		**72.6752**	**72.6752**	**3.8100e-003**		**72.7552**

3.5 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.4913	3.1630	2.5119	3.9600e-003		0.2622	0.2622		0.2622	0.2622		375.2641	375.2641	0.0442		376.1932
Total	**2.6026**	**3.1630**	**2.5119**	**3.9600e-003**		**0.2622**	**0.2622**		**0.2622**	**0.2622**		**375.2641**	**375.2641**	**0.0442**		**376.1932**

3.5 Architectural Coating - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0258	0.0314	0.4133	8.4000e-004	0.0671	5.0000e-004	0.0676	0.0178	4.6000e-004	0.0182		70.0667	70.0667	3.4800e-003		70.1398
Total	**0.0258**	**0.0314**	**0.4133**	**8.4000e-004**	**0.0671**	**5.0000e-004**	**0.0676**	**0.0178**	**4.6000e-004**	**0.0182**		**70.0667**	**70.0667**	**3.4800e-003**		**70.1398**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.4913	3.1630	2.5119	3.9600e-003		0.2622	0.2622		0.2622	0.2622	0.0000	375.2641	375.2641	0.0442		376.1932
Total	**2.6026**	**3.1630**	**2.5119**	**3.9600e-003**		**0.2622**	**0.2622**		**0.2622**	**0.2622**	**0.0000**	**375.2641**	**375.2641**	**0.0442**		**376.1932**

3.5 Architectural Coating - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0258	0.0314	0.4133	8.4000e-004	0.0671	5.0000e-004	0.0676	0.0178	4.6000e-004	0.0182		70.0667	70.0667	3.4800e-003		70.1398
Total	**0.0258**	**0.0314**	**0.4133**	**8.4000e-004**	**0.0671**	**5.0000e-004**	**0.0676**	**0.0178**	**4.6000e-004**	**0.0182**		**70.0667**	**70.0667**	**3.4800e-003**		**70.1398**

3.6 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0898	22.3859	14.8176	0.0223		1.2610	1.2610		1.1601	1.1601		2,316.3767	2,316.3767	0.6987		2,331.0495
Paving	0.1035					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.1933**	**22.3859**	**14.8176**	**0.0223**		**1.2610**	**1.2610**		**1.1601**	**1.1601**		**2,316.3767**	**2,316.3767**	**0.6987**		**2,331.0495**

3.6 Paving - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0645	0.0784	1.0333	2.1100e-003	0.1677	1.2400e-003	0.1689	0.0445	1.1400e-003	0.0456		175.1667	175.1667	8.7000e-003		175.3494
Total	**0.0645**	**0.0784**	**1.0333**	**2.1100e-003**	**0.1677**	**1.2400e-003**	**0.1689**	**0.0445**	**1.1400e-003**	**0.0456**		**175.1667**	**175.1667**	**8.7000e-003**		**175.3494**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0898	22.3859	14.8176	0.0223		1.2610	1.2610		1.1601	1.1601	0.0000	2,316.3767	2,316.3767	0.6987		2,331.0495
Paving	0.1035					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.1933**	**22.3859**	**14.8176**	**0.0223**		**1.2610**	**1.2610**		**1.1601**	**1.1601**	**0.0000**	**2,316.3767**	**2,316.3767**	**0.6987**		**2,331.0495**

3.6 Paving - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0645	0.0784	1.0333	2.1100e-003	0.1677	1.2400e-003	0.1689	0.0445	1.1400e-003	0.0456		175.1667	175.1667	8.7000e-003		175.3494
Total	**0.0645**	**0.0784**	**1.0333**	**2.1100e-003**	**0.1677**	**1.2400e-003**	**0.1689**	**0.0445**	**1.1400e-003**	**0.0456**		**175.1667**	**175.1667**	**8.7000e-003**		**175.3494**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.8116	5.6224	21.7484	0.0483	3.1600	0.0766	3.2366	0.8439	0.0705	0.9143		4,243.8593	4,243.8593	0.1586		4,247.1901
Unmitigated	1.8116	5.6224	21.7484	0.0483	3.1600	0.0766	3.2366	0.8439	0.0705	0.9143		4,243.8593	4,243.8593	0.1586		4,247.1901

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Single Family Housing	418.88	436.04	379.28	1,420,422	1,420,422
Total	418.88	436.04	379.28	1,420,422	1,420,422

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.473353	0.065861	0.172473	0.156037	0.055870	0.009076	0.016433	0.039903	0.001120	0.001336	0.004897	0.000716	0.002924

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0416	0.3550	0.1511	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.2437	453.2437	8.6900e-003	8.3100e-003	456.0021
NaturalGas Unmitigated	0.0416	0.3550	0.1511	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.2437	453.2437	8.6900e-003	8.3100e-003	456.0021

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3852.57	0.0416	0.3550	0.1511	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.2437	453.2437	8.6900e-003	8.3100e-003	456.0021
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0416**	**0.3550**	**0.1511**	**2.2700e-003**		**0.0287**	**0.0287**		**0.0287**	**0.0287**		**453.2437**	**453.2437**	**8.6900e-003**	**8.3100e-003**	**456.0021**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	3.85257	0.0416	0.3550	0.1511	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.2437	453.2437	8.6900e-003	8.3100e-003	456.0021
Total		**0.0416**	**0.3550**	**0.1511**	**2.2700e-003**		**0.0287**	**0.0287**		**0.0287**	**0.0287**		**453.2437**	**453.2437**	**8.6900e-003**	**8.3100e-003**	**456.0021**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.6438	0.0432	3.6945	1.9000e-004		0.0789	0.0789		0.0783	0.0783	0.0000	938.3203	938.3203	0.0246	0.0171	944.1319
Unmitigated	2.6438	0.0432	3.6945	1.9000e-004		0.0789	0.0789		0.0783	0.0783	0.0000	938.3203	938.3203	0.0246	0.0171	944.1319

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1764					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.2651					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0854	0.0000	4.6600e-003	0.0000		0.0590	0.0590		0.0584	0.0584	0.0000	931.7647	931.7647	0.0179	0.0171	937.4353
Landscaping	0.1168	0.0432	3.6899	1.9000e-004		0.0199	0.0199		0.0199	0.0199		6.5556	6.5556	6.7200e-003		6.6966
Total	**2.6438**	**0.0432**	**3.6945**	**1.9000e-004**		**0.0789**	**0.0789**		**0.0783**	**0.0783**	**0.0000**	**938.3203**	**938.3203**	**0.0246**	**0.0171**	**944.1319**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1764					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.2651					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0854	0.0000	4.6600e-003	0.0000		0.0590	0.0590		0.0584	0.0584	0.0000	931.7647	931.7647	0.0179	0.0171	937.4353
Landscaping	0.1168	0.0432	3.6899	1.9000e-004		0.0199	0.0199		0.0199	0.0199		6.5556	6.5556	6.7200e-003		6.6966
Total	**2.6438**	**0.0432**	**3.6945**	**1.9000e-004**		**0.0789**	**0.0789**		**0.0783**	**0.0783**	**0.0000**	**938.3203**	**938.3203**	**0.0246**	**0.0171**	**944.1319**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Vegetation

Highland Park Development

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	88.00	Space	0.79	35,200.00	0
Single Family Housing	44.00	Dwelling Unit	14.29	79,200.00	126

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	533.36	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Source: CPUC GHG Calculator version 3c, worksheet tab “CO2 Allocations,” cells AH/AQ 35-44.

Land Use - assumed 2 parking spaces per dwelling unit

Construction Phase - based on a mid 2015 construction start date and an end of 2016 completion

Off-road Equipment - 8 hour work day

Off-road Equipment - 8 hour work day

Off-road Equipment -

Off-road Equipment - added a water truck

Off-road Equipment -

Demolition -

Vehicle Trips - TR based on the the ITE Trip Generation Manual 9th edition and the Highland Park Trip Generation Assessment Letter

Woodstoves - no woodstoves. all natural gas fireplaces

Energy Use - Title-24 Electricity Energy Intensity and Title-24 Natural Gas Energy Intensity were adjusted by 36.4% and 6.5% respectively, to reflect 2013 Title 24 requirements. Source: Impact Analysis California's 2013 Building Energy Efficiency Standards (CEC 2013)

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	305.00
tblConstructionPhase	PhaseEndDate	12/1/2017	11/30/2016
tblConstructionPhase	PhaseEndDate	12/28/2016	9/28/2016
tblConstructionPhase	PhaseStartDate	10/1/2016	10/1/2015
tblConstructionPhase	PhaseStartDate	12/1/2016	9/1/2016
tblEnergyUse	T24E	980.99	623.91
tblEnergyUse	T24NG	27,816.78	26,008.69
tblFireplaces	NumberGas	37.40	44.00
tblFireplaces	NumberNoFireplace	4.40	0.00
tblFireplaces	NumberWood	2.20	0.00
tblOffRoadEquipment	HorsePower	400.00	189.00
tblOffRoadEquipment	LoadFactor	0.38	0.50
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	630.89	533.36
tblProjectCharacteristics	OperationalYear	2014	2016
tblVehicleTrips	ST_TR	10.08	9.91
tblVehicleTrips	SU_TR	8.77	8.62
tblVehicleTrips	WD_TR	9.57	9.52
tblWoodstoves	NumberCatalytic	2.20	0.00
tblWoodstoves	NumberNoncatalytic	2.20	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	7.6684	87.9275	55.5176	0.0728	8.9304	4.1821	13.1125	3.6647	3.8475	7.5122	0.0000	7,586.4099	7,586.4099	2.2037	0.0000	7,632.6875
2016	8.7200	57.5297	41.3169	0.0638	0.6441	3.6518	4.2959	0.1721	3.4191	3.5912	0.0000	6,324.9420	6,324.9420	1.4955	0.0000	6,356.3470
Total	**16.3884**	**145.4572**	**96.8345**	**0.1365**	**9.5745**	**7.8339**	**17.4084**	**3.8368**	**7.2666**	**11.1033**	**0.0000**	**13,911.3519**	**13,911.3519**	**3.6992**	**0.0000**	**13,989.0344**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	7.6684	87.9275	55.5176	0.0728	3.6397	4.1821	7.8218	1.4708	3.8475	5.3183	0.0000	7,586.4099	7,586.4099	2.2037	0.0000	7,632.6874
2016	8.7200	57.5297	41.3169	0.0638	0.6441	3.6518	4.2959	0.1721	3.4191	3.5912	0.0000	6,324.9420	6,324.9420	1.4955	0.0000	6,356.3470
Total	**16.3884**	**145.4572**	**96.8345**	**0.1365**	**4.2838**	**7.8339**	**12.1176**	**1.6429**	**7.2666**	**8.9095**	**0.0000**	**13,911.3519**	**13,911.3519**	**3.6992**	**0.0000**	**13,989.0344**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**55.26**	**0.00**	**30.39**	**57.18**	**0.00**	**19.76**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.6438	0.0432	3.6945	1.9000e-004		0.0789	0.0789		0.0783	0.0783	0.0000	938.3203	938.3203	0.0246	0.0171	944.1319
Energy	0.0416	0.3550	0.1511	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.2437	453.2437	8.6900e-003	8.3100e-003	456.0021
Mobile	1.7530	5.8771	20.0849	0.0449	3.1600	0.0770	3.2369	0.8439	0.0708	0.9146		3,965.6383	3,965.6383	0.1588		3,968.9721
Total	**4.4383**	**6.2753**	**23.9305**	**0.0474**	**3.1600**	**0.1846**	**3.3445**	**0.8439**	**0.1777**	**1.0216**	**0.0000**	**5,357.2023**	**5,357.2023**	**0.1920**	**0.0254**	**5,369.1060**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.6438	0.0432	3.6945	1.9000e-004		0.0789	0.0789		0.0783	0.0783	0.0000	938.3203	938.3203	0.0246	0.0171	944.1319
Energy	0.0416	0.3550	0.1511	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.2437	453.2437	8.6900e-003	8.3100e-003	456.0021
Mobile	1.7530	5.8771	20.0849	0.0449	3.1600	0.0770	3.2369	0.8439	0.0708	0.9146		3,965.6383	3,965.6383	0.1588		3,968.9721
Total	**4.4383**	**6.2753**	**23.9305**	**0.0474**	**3.1600**	**0.1846**	**3.3445**	**0.8439**	**0.1777**	**1.0216**	**0.0000**	**5,357.2023**	**5,357.2023**	**0.1920**	**0.0254**	**5,369.1060**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2015	6/26/2015	5	20	
2	Grading	Grading	6/27/2015	8/7/2015	5	30	
3	Building Construction	Building Construction	8/8/2015	9/30/2016	5	300	
4	Architectural Coating	Architectural Coating	10/1/2015	11/30/2016	5	305	
5	Paving	Paving	9/1/2016	9/28/2016	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 160,380; Residential Outdoor: 53,460; Non-Residential Indoor: 1,584; Non-Residential Outdoor: 528 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	8.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	8.00	78	0.48
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Grading	Off-Highway Trucks	1	8.00	189	0.50

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	27.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	23.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	31.00	10.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	6.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2953	0.0000	0.2953	0.0447	0.0000	0.0447			0.0000			0.0000
Off-Road	4.5083	48.3629	36.0738	0.0399		2.4508	2.4508		2.2858	2.2858		4,127.1934	4,127.1934	1.1188		4,150.6886
Total	**4.5083**	**48.3629**	**36.0738**	**0.0399**	**0.2953**	**2.4508**	**2.7461**	**0.0447**	**2.2858**	**2.3305**		**4,127.1934**	**4,127.1934**	**1.1188**		**4,150.6886**

3.2 Demolition - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0276	0.4387	0.3135	9.9000e-004	0.0235	7.2500e-003	0.0308	6.4400e-003	6.6600e-003	0.0131		100.6511	100.6511	8.1000e-004		100.6680
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0680	0.0936	0.9855	1.9200e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2000e-003	0.0457		165.5247	165.5247	9.5200e-003		165.7247
Total	**0.0955**	**0.5323**	**1.2990**	**2.9100e-003**	**0.1912**	**8.5600e-003**	**0.1997**	**0.0509**	**7.8600e-003**	**0.0588**		**266.1758**	**266.1758**	**0.0103**		**266.3927**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1152	0.0000	0.1152	0.0174	0.0000	0.0174			0.0000			0.0000
Off-Road	4.5083	48.3629	36.0738	0.0399		2.4508	2.4508		2.2858	2.2858	0.0000	4,127.1934	4,127.1934	1.1188		4,150.6886
Total	**4.5083**	**48.3629**	**36.0738**	**0.0399**	**0.1152**	**2.4508**	**2.5660**	**0.0174**	**2.2858**	**2.3032**	**0.0000**	**4,127.1934**	**4,127.1934**	**1.1188**		**4,150.6886**

3.2 Demolition - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0276	0.4387	0.3135	9.9000e-004	0.0235	7.2500e-003	0.0308	6.4400e-003	6.6600e-003	0.0131		100.6511	100.6511	8.1000e-004		100.6680
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0680	0.0936	0.9855	1.9200e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2000e-003	0.0457		165.5247	165.5247	9.5200e-003		165.7247
Total	**0.0955**	**0.5323**	**1.2990**	**2.9100e-003**	**0.1912**	**8.5600e-003**	**0.1997**	**0.0509**	**7.8600e-003**	**0.0588**		**266.1758**	**266.1758**	**0.0103**		**266.3927**

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	7.5641	87.7840	54.0066	0.0698		4.1801	4.1801		3.8457	3.8457		7,332.6054	7,332.6054	2.1891		7,378.5762
Total	**7.5641**	**87.7840**	**54.0066**	**0.0698**	**8.6733**	**4.1801**	**12.8534**	**3.5965**	**3.8457**	**7.4422**		**7,332.6054**	**7,332.6054**	**2.1891**		**7,378.5762**

3.3 Grading - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1042	0.1436	1.5110	2.9400e-003	0.2571	2.0100e-003	0.2591	0.0682	1.8400e-003	0.0700		253.8046	253.8046	0.0146		254.1112
Total	**0.1042**	**0.1436**	**1.5110**	**2.9400e-003**	**0.2571**	**2.0100e-003**	**0.2591**	**0.0682**	**1.8400e-003**	**0.0700**		**253.8046**	**253.8046**	**0.0146**		**254.1112**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000
Off-Road	7.5641	87.7840	54.0066	0.0698		4.1801	4.1801		3.8457	3.8457	0.0000	7,332.6054	7,332.6054	2.1891		7,378.5762
Total	**7.5641**	**87.7840**	**54.0066**	**0.0698**	**3.3826**	**4.1801**	**7.5627**	**1.4026**	**3.8457**	**5.2483**	**0.0000**	**7,332.6054**	**7,332.6054**	**2.1891**		**7,378.5762**

3.3 Grading - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1042	0.1436	1.5110	2.9400e-003	0.2571	2.0100e-003	0.2591	0.0682	1.8400e-003	0.0700		253.8046	253.8046	0.0146		254.1112
Total	**0.1042**	**0.1436**	**1.5110**	**2.9400e-003**	**0.2571**	**2.0100e-003**	**0.2591**	**0.0682**	**1.8400e-003**	**0.0700**		**253.8046**	**253.8046**	**0.0146**		**254.1112**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8870	32.4182	20.0375	0.0287		2.2678	2.2678		2.1293	2.1293		2,886.4292	2,886.4292	0.7336		2,901.8345
Total	**3.8870**	**32.4182**	**20.0375**	**0.0287**		**2.2678**	**2.2678**		**2.1293**	**2.1293**		**2,886.4292**	**2,886.4292**	**0.7336**		**2,901.8345**

3.4 Building Construction - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1028	1.0171	1.2261	2.1600e-003	0.0628	0.0176	0.0804	0.0179	0.0162	0.0341		218.7185	218.7185	1.7900e-003		218.7560
Worker	0.1405	0.1935	2.0366	3.9700e-003	0.3465	2.7100e-003	0.3492	0.0919	2.4800e-003	0.0944		342.0844	342.0844	0.0197		342.4977
Total	**0.2433**	**1.2106**	**3.2627**	**6.1300e-003**	**0.4093**	**0.0203**	**0.4296**	**0.1098**	**0.0186**	**0.1285**		**560.8029**	**560.8029**	**0.0215**		**561.2537**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8870	32.4182	20.0375	0.0287		2.2678	2.2678		2.1293	2.1293	0.0000	2,886.4292	2,886.4292	0.7336		2,901.8345
Total	**3.8870**	**32.4182**	**20.0375**	**0.0287**		**2.2678**	**2.2678**		**2.1293**	**2.1293**	**0.0000**	**2,886.4292**	**2,886.4292**	**0.7336**		**2,901.8345**

3.4 Building Construction - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1028	1.0171	1.2261	2.1600e-003	0.0628	0.0176	0.0804	0.0179	0.0162	0.0341		218.7185	218.7185	1.7900e-003		218.7560
Worker	0.1405	0.1935	2.0366	3.9700e-003	0.3465	2.7100e-003	0.3492	0.0919	2.4800e-003	0.0944		342.0844	342.0844	0.0197		342.4977
Total	**0.2433**	**1.2106**	**3.2627**	**6.1300e-003**	**0.4093**	**0.0203**	**0.4296**	**0.1098**	**0.0186**	**0.1285**		**560.8029**	**560.8029**	**0.0215**		**561.2537**

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6240	30.7934	19.7845	0.0287		2.1098	2.1098		1.9794	1.9794		2,863.9447	2,863.9447	0.7208		2,879.0804
Total	**3.6240**	**30.7934**	**19.7845**	**0.0287**		**2.1098**	**2.1098**		**1.9794**	**1.9794**		**2,863.9447**	**2,863.9447**	**0.7208**		**2,879.0804**

3.4 Building Construction - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0902	0.8969	1.1394	2.1600e-003	0.0628	0.0146	0.0774	0.0179	0.0134	0.0314		216.2128	216.2128	1.6200e-003		216.2467
Worker	0.1253	0.1732	1.8263	3.9600e-003	0.3465	2.5700e-003	0.3491	0.0919	2.3600e-003	0.0943		329.7588	329.7588	0.0180		330.1365
Total	**0.2154**	**1.0701**	**2.9657**	**6.1200e-003**	**0.4093**	**0.0172**	**0.4265**	**0.1098**	**0.0158**	**0.1256**		**545.9715**	**545.9715**	**0.0196**		**546.3832**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6240	30.7934	19.7845	0.0287		2.1098	2.1098		1.9794	1.9794	0.0000	2,863.9447	2,863.9447	0.7208		2,879.0804
Total	**3.6240**	**30.7934**	**19.7845**	**0.0287**		**2.1098**	**2.1098**		**1.9794**	**1.9794**	**0.0000**	**2,863.9447**	**2,863.9447**	**0.7208**		**2,879.0804**

3.4 Building Construction - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0902	0.8969	1.1394	2.1600e-003	0.0628	0.0146	0.0774	0.0179	0.0134	0.0314		216.2128	216.2128	1.6200e-003		216.2467
Worker	0.1253	0.1732	1.8263	3.9600e-003	0.3465	2.5700e-003	0.3491	0.0919	2.3600e-003	0.0943		329.7588	329.7588	0.0180		330.1365
Total	**0.2154**	**1.0701**	**2.9657**	**6.1200e-003**	**0.4093**	**0.0172**	**0.4265**	**0.1098**	**0.0158**	**0.1256**		**545.9715**	**545.9715**	**0.0196**		**546.3832**

3.5 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.5421	3.4271	2.5357	3.9600e-003		0.2945	0.2945		0.2945	0.2945		375.2641	375.2641	0.0489		376.2902
Total	**2.6534**	**3.4271**	**2.5357**	**3.9600e-003**		**0.2945**	**0.2945**		**0.2945**	**0.2945**		**375.2641**	**375.2641**	**0.0489**		**376.2902**

3.5 Architectural Coating - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0272	0.0375	0.3942	7.7000e-004	0.0671	5.2000e-004	0.0676	0.0178	4.8000e-004	0.0183		66.2099	66.2099	3.8100e-003		66.2899
Total	**0.0272**	**0.0375**	**0.3942**	**7.7000e-004**	**0.0671**	**5.2000e-004**	**0.0676**	**0.0178**	**4.8000e-004**	**0.0183**		**66.2099**	**66.2099**	**3.8100e-003**		**66.2899**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.5421	3.4271	2.5357	3.9600e-003		0.2945	0.2945		0.2945	0.2945	0.0000	375.2641	375.2641	0.0489		376.2902
Total	**2.6534**	**3.4271**	**2.5357**	**3.9600e-003**		**0.2945**	**0.2945**		**0.2945**	**0.2945**	**0.0000**	**375.2641**	**375.2641**	**0.0489**		**376.2902**

3.5 Architectural Coating - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0272	0.0375	0.3942	7.7000e-004	0.0671	5.2000e-004	0.0676	0.0178	4.8000e-004	0.0183		66.2099	66.2099	3.8100e-003		66.2899
Total	**0.0272**	**0.0375**	**0.3942**	**7.7000e-004**	**0.0671**	**5.2000e-004**	**0.0676**	**0.0178**	**4.8000e-004**	**0.0183**		**66.2099**	**66.2099**	**3.8100e-003**		**66.2899**

3.5 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.4913	3.1630	2.5119	3.9600e-003		0.2622	0.2622		0.2622	0.2622		375.2641	375.2641	0.0442		376.1932
Total	**2.6026**	**3.1630**	**2.5119**	**3.9600e-003**		**0.2622**	**0.2622**		**0.2622**	**0.2622**		**375.2641**	**375.2641**	**0.0442**		**376.1932**

3.5 Architectural Coating - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0242	0.0335	0.3535	7.7000e-004	0.0671	5.0000e-004	0.0676	0.0178	4.6000e-004	0.0182		63.8243	63.8243	3.4800e-003		63.8974
Total	**0.0242**	**0.0335**	**0.3535**	**7.7000e-004**	**0.0671**	**5.0000e-004**	**0.0676**	**0.0178**	**4.6000e-004**	**0.0182**		**63.8243**	**63.8243**	**3.4800e-003**		**63.8974**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.4913	3.1630	2.5119	3.9600e-003		0.2622	0.2622		0.2622	0.2622	0.0000	375.2641	375.2641	0.0442		376.1932
Total	**2.6026**	**3.1630**	**2.5119**	**3.9600e-003**		**0.2622**	**0.2622**		**0.2622**	**0.2622**	**0.0000**	**375.2641**	**375.2641**	**0.0442**		**376.1932**

3.5 Architectural Coating - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0242	0.0335	0.3535	7.7000e-004	0.0671	5.0000e-004	0.0676	0.0178	4.6000e-004	0.0182		63.8243	63.8243	3.4800e-003		63.8974
Total	**0.0242**	**0.0335**	**0.3535**	**7.7000e-004**	**0.0671**	**5.0000e-004**	**0.0676**	**0.0178**	**4.6000e-004**	**0.0182**		**63.8243**	**63.8243**	**3.4800e-003**		**63.8974**

3.6 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0898	22.3859	14.8176	0.0223		1.2610	1.2610		1.1601	1.1601		2,316.3767	2,316.3767	0.6987		2,331.0495
Paving	0.1035					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.1933**	**22.3859**	**14.8176**	**0.0223**		**1.2610**	**1.2610**		**1.1601**	**1.1601**		**2,316.3767**	**2,316.3767**	**0.6987**		**2,331.0495**

3.6 Paving - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0606	0.0838	0.8837	1.9200e-003	0.1677	1.2400e-003	0.1689	0.0445	1.1400e-003	0.0456		159.5607	159.5607	8.7000e-003		159.7434
Total	**0.0606**	**0.0838**	**0.8837**	**1.9200e-003**	**0.1677**	**1.2400e-003**	**0.1689**	**0.0445**	**1.1400e-003**	**0.0456**		**159.5607**	**159.5607**	**8.7000e-003**		**159.7434**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0898	22.3859	14.8176	0.0223		1.2610	1.2610		1.1601	1.1601	0.0000	2,316.3767	2,316.3767	0.6987		2,331.0495
Paving	0.1035					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.1933**	**22.3859**	**14.8176**	**0.0223**		**1.2610**	**1.2610**		**1.1601**	**1.1601**	**0.0000**	**2,316.3767**	**2,316.3767**	**0.6987**		**2,331.0495**

3.6 Paving - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0606	0.0838	0.8837	1.9200e-003	0.1677	1.2400e-003	0.1689	0.0445	1.1400e-003	0.0456		159.5607	159.5607	8.7000e-003		159.7434
Total	**0.0606**	**0.0838**	**0.8837**	**1.9200e-003**	**0.1677**	**1.2400e-003**	**0.1689**	**0.0445**	**1.1400e-003**	**0.0456**		**159.5607**	**159.5607**	**8.7000e-003**		**159.7434**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.7530	5.8771	20.0849	0.0449	3.1600	0.0770	3.2369	0.8439	0.0708	0.9146		3,965.6383	3,965.6383	0.1588		3,968.9721
Unmitigated	1.7530	5.8771	20.0849	0.0449	3.1600	0.0770	3.2369	0.8439	0.0708	0.9146		3,965.6383	3,965.6383	0.1588		3,968.9721

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Single Family Housing	418.88	436.04	379.28	1,420,422	1,420,422
Total	418.88	436.04	379.28	1,420,422	1,420,422

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.473353	0.065861	0.172473	0.156037	0.055870	0.009076	0.016433	0.039903	0.001120	0.001336	0.004897	0.000716	0.002924

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0416	0.3550	0.1511	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.2437	453.2437	8.6900e-003	8.3100e-003	456.0021
NaturalGas Unmitigated	0.0416	0.3550	0.1511	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.2437	453.2437	8.6900e-003	8.3100e-003	456.0021

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3852.57	0.0416	0.3550	0.1511	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.2437	453.2437	8.6900e-003	8.3100e-003	456.0021
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0416**	**0.3550**	**0.1511**	**2.2700e-003**		**0.0287**	**0.0287**		**0.0287**	**0.0287**		**453.2437**	**453.2437**	**8.6900e-003**	**8.3100e-003**	**456.0021**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	3.85257	0.0416	0.3550	0.1511	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.2437	453.2437	8.6900e-003	8.3100e-003	456.0021
Total		**0.0416**	**0.3550**	**0.1511**	**2.2700e-003**		**0.0287**	**0.0287**		**0.0287**	**0.0287**		**453.2437**	**453.2437**	**8.6900e-003**	**8.3100e-003**	**456.0021**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.6438	0.0432	3.6945	1.9000e-004		0.0789	0.0789		0.0783	0.0783	0.0000	938.3203	938.3203	0.0246	0.0171	944.1319
Unmitigated	2.6438	0.0432	3.6945	1.9000e-004		0.0789	0.0789		0.0783	0.0783	0.0000	938.3203	938.3203	0.0246	0.0171	944.1319

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1764					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.2651					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0854	0.0000	4.6600e-003	0.0000		0.0590	0.0590		0.0584	0.0584	0.0000	931.7647	931.7647	0.0179	0.0171	937.4353
Landscaping	0.1168	0.0432	3.6899	1.9000e-004		0.0199	0.0199		0.0199	0.0199		6.5556	6.5556	6.7200e-003		6.6966
Total	**2.6438**	**0.0432**	**3.6945**	**1.9000e-004**		**0.0789**	**0.0789**		**0.0783**	**0.0783**	**0.0000**	**938.3203**	**938.3203**	**0.0246**	**0.0171**	**944.1319**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1764					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.2651					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0854	0.0000	4.6600e-003	0.0000		0.0590	0.0590		0.0584	0.0584	0.0000	931.7647	931.7647	0.0179	0.0171	937.4353
Landscaping	0.1168	0.0432	3.6899	1.9000e-004		0.0199	0.0199		0.0199	0.0199		6.5556	6.5556	6.7200e-003		6.6966
Total	**2.6438**	**0.0432**	**3.6945**	**1.9000e-004**		**0.0789**	**0.0789**		**0.0783**	**0.0783**	**0.0000**	**938.3203**	**938.3203**	**0.0246**	**0.0171**	**944.1319**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Vegetation

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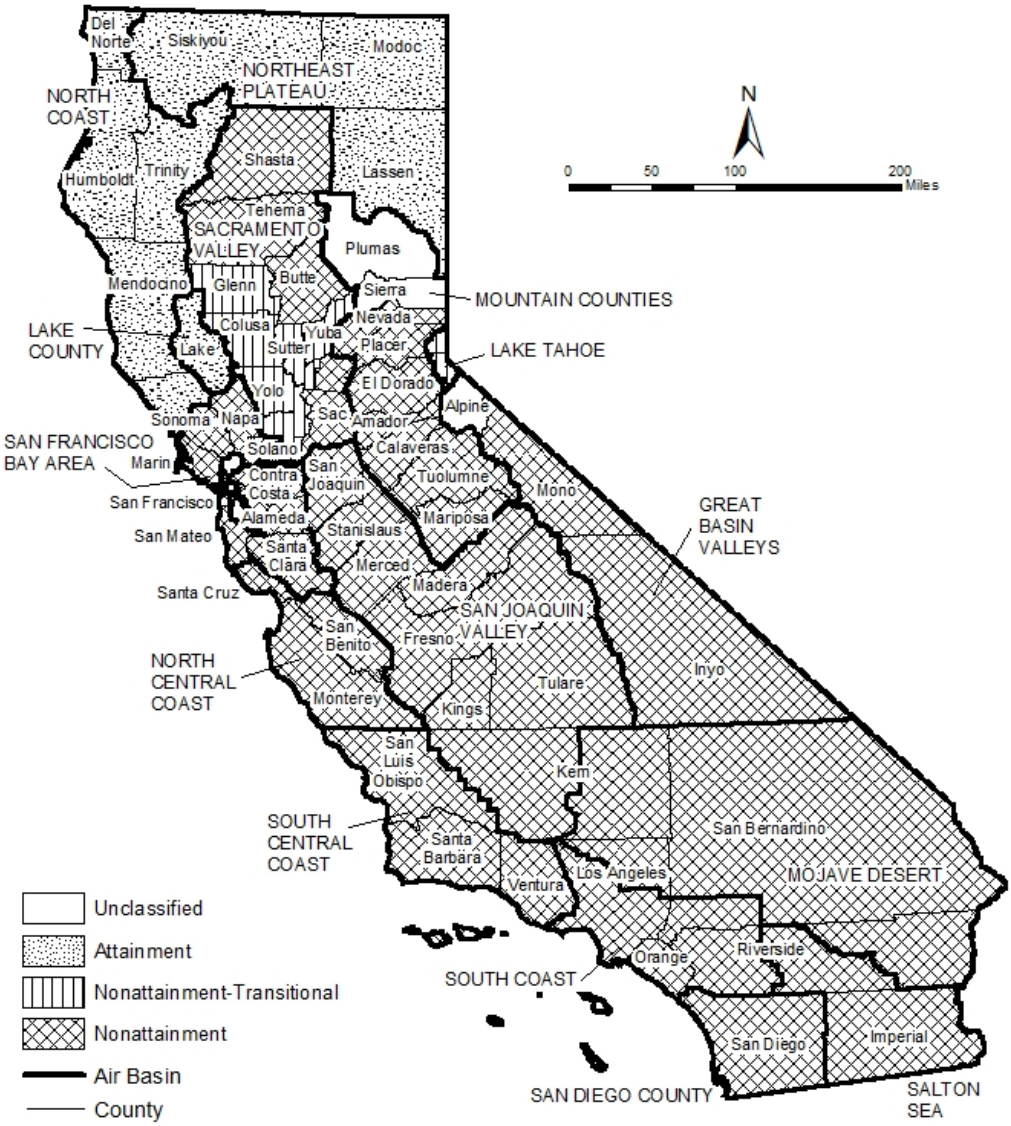
APPENDIX 3.2:

STATE/FEDERAL ATTAINMENT STATUS OF CRITERIA POLLUTANTS

2012
Area Designations for State Ambient Air Quality Standards
OZONE

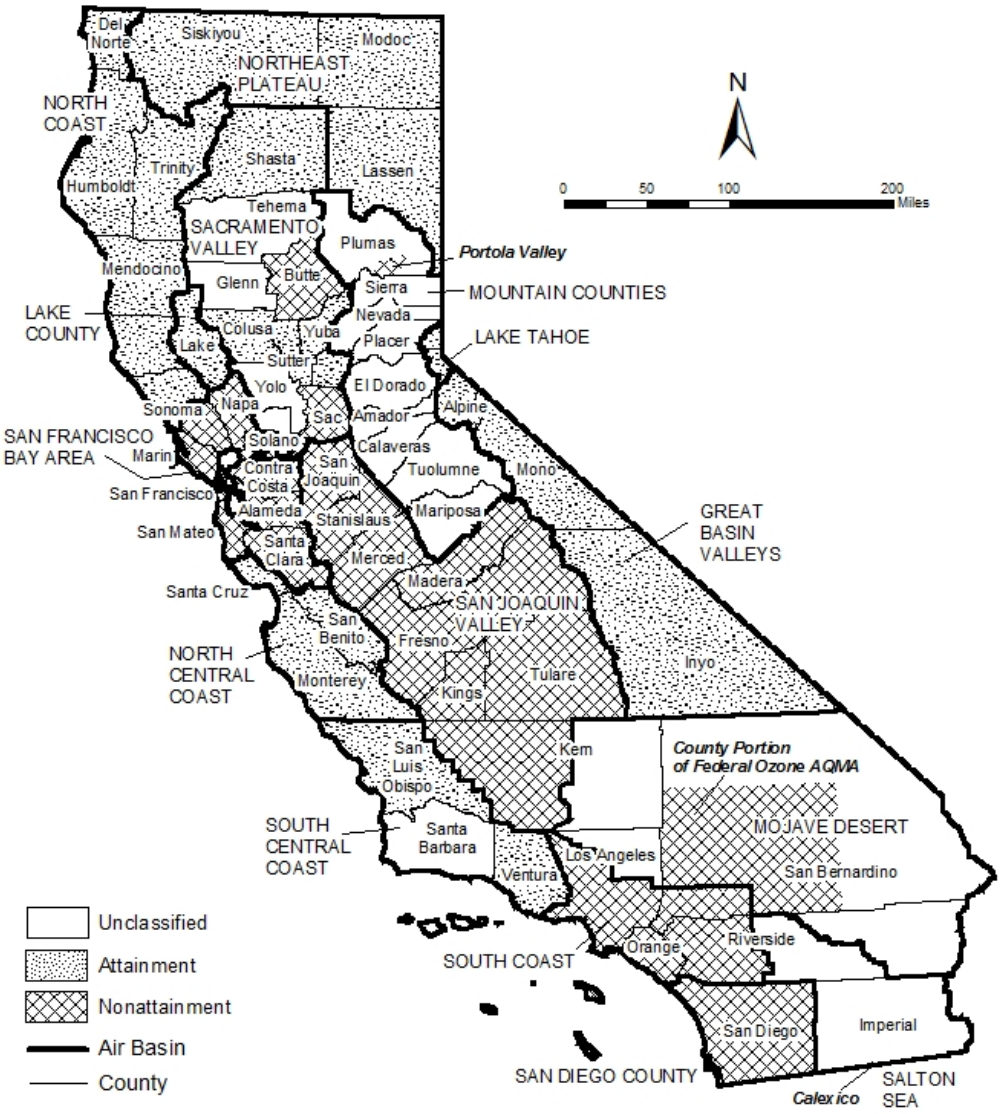


Source Date:
February 2012
Air Quality Data Branch, PTSD

2012
Area Designations for State Ambient Air Quality Standards
PM10

Source Date:
February 2012
Air Quality Data Branch, PTSD

2012
Area Designations for State Ambient Air Quality Standards
PM2.5



Source Date:
February 2012
Air Quality Data Branch, PTSD

2012
Area Designations for State Ambient Air Quality Standards
CARBON MONOXIDE

Source Date:
February 2012
Air Quality Data Branch, PTSD

2012
Area Designations for State Ambient Air Quality Standards
NITROGEN DIOXIDE

Source Date:
February 2012
Air Quality Data Branch, PTSD

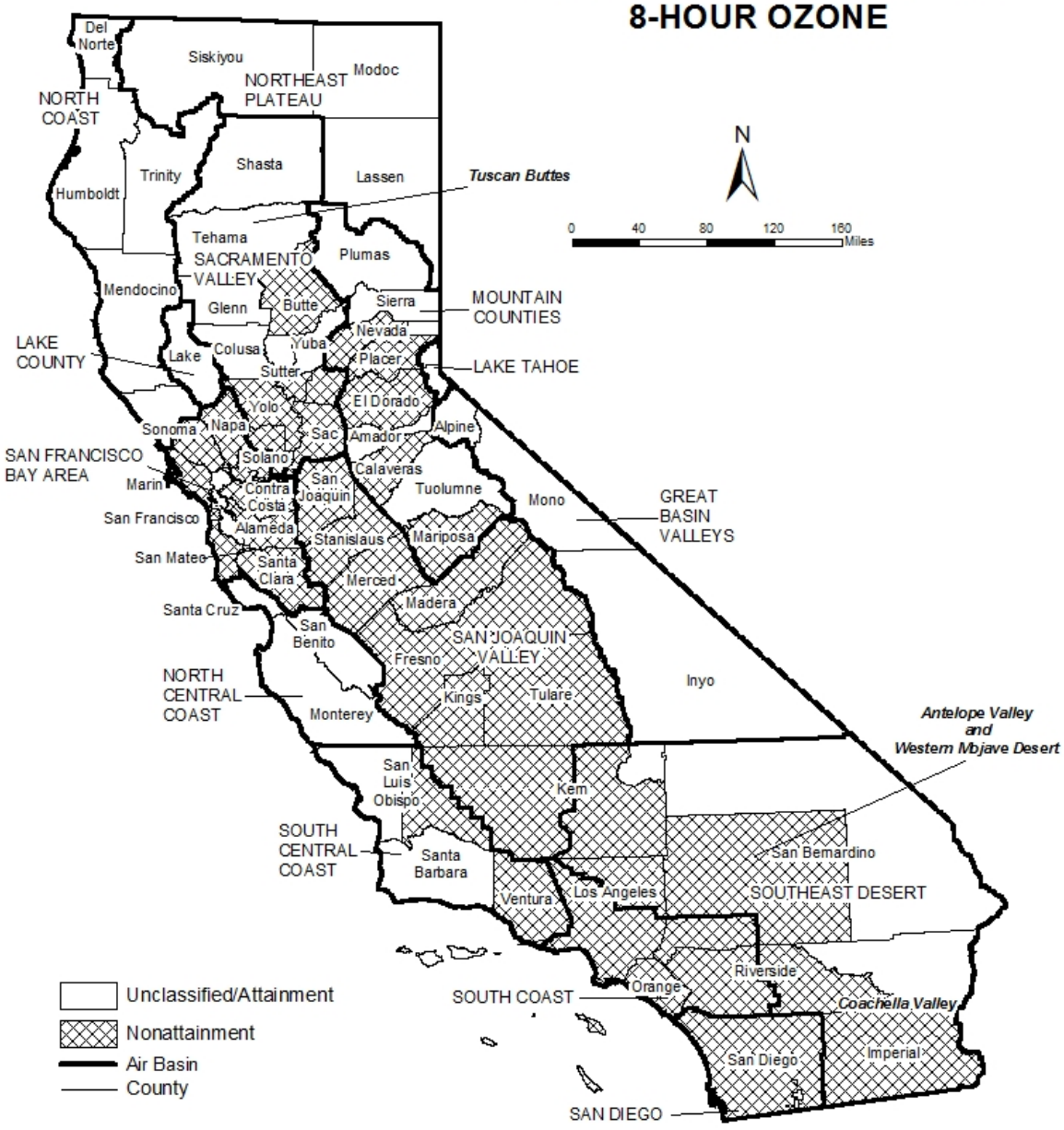
2012
Area Designations for State Ambient Air Quality Standards
SULFUR DIOXIDE

Source Date:
February 2012
Air Quality Data Branch, PTSD

2012
Area Designations for State Ambient Air Quality Standards
LEAD

Source Date:
February 2012
Air Quality Data Branch, PTSD

Area Designations for National Ambient Air Quality Standards 8-HOUR OZONE



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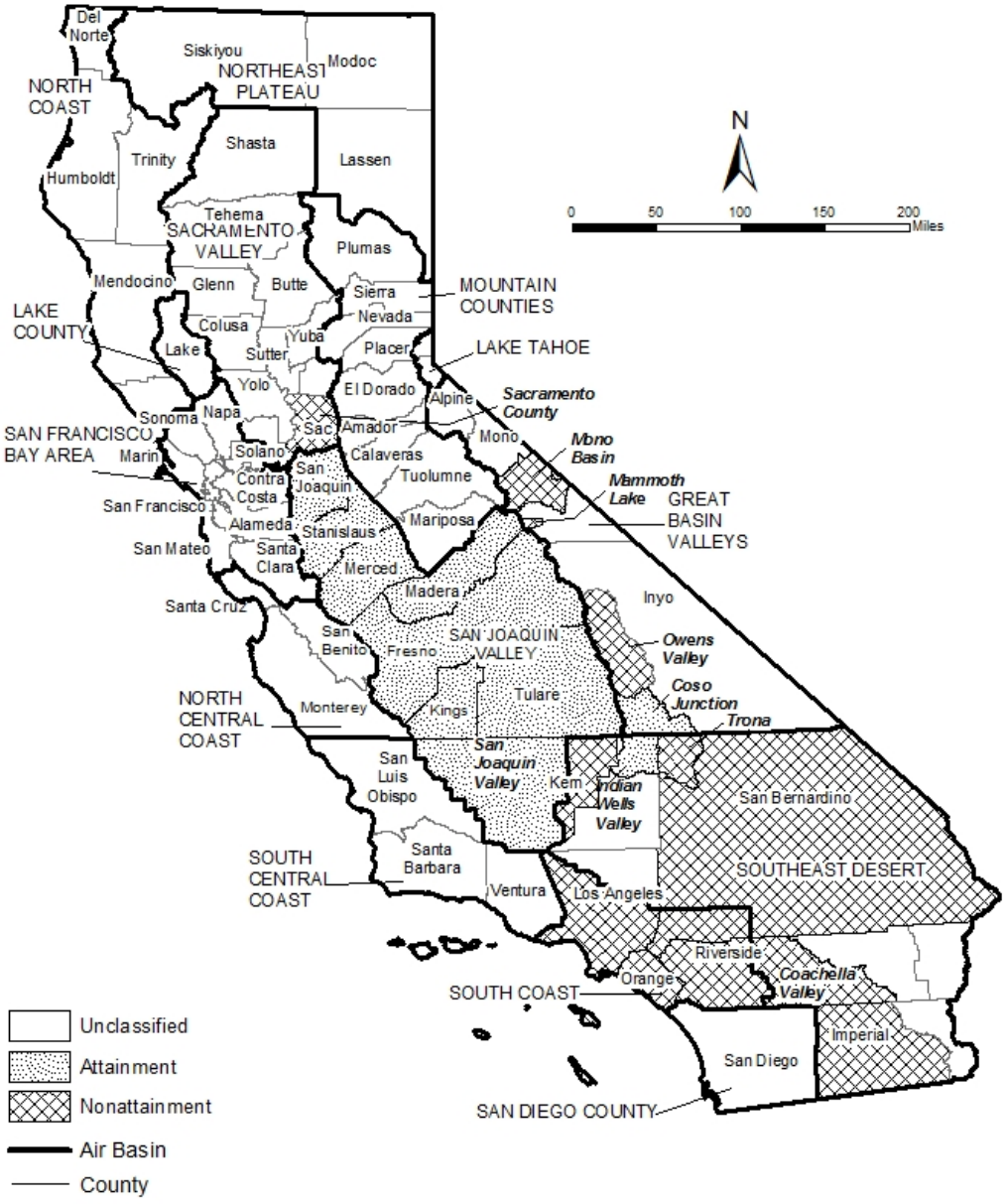
Area Designations for National Ambient Air Quality Standards PM10



Source Date:
February 2012
Air Quality Data Branch, PTSD

Area Designations for National Ambient Air Quality Standards PM2.5

Source Date:
February 2012
Air Quality Data Branch, PTSD

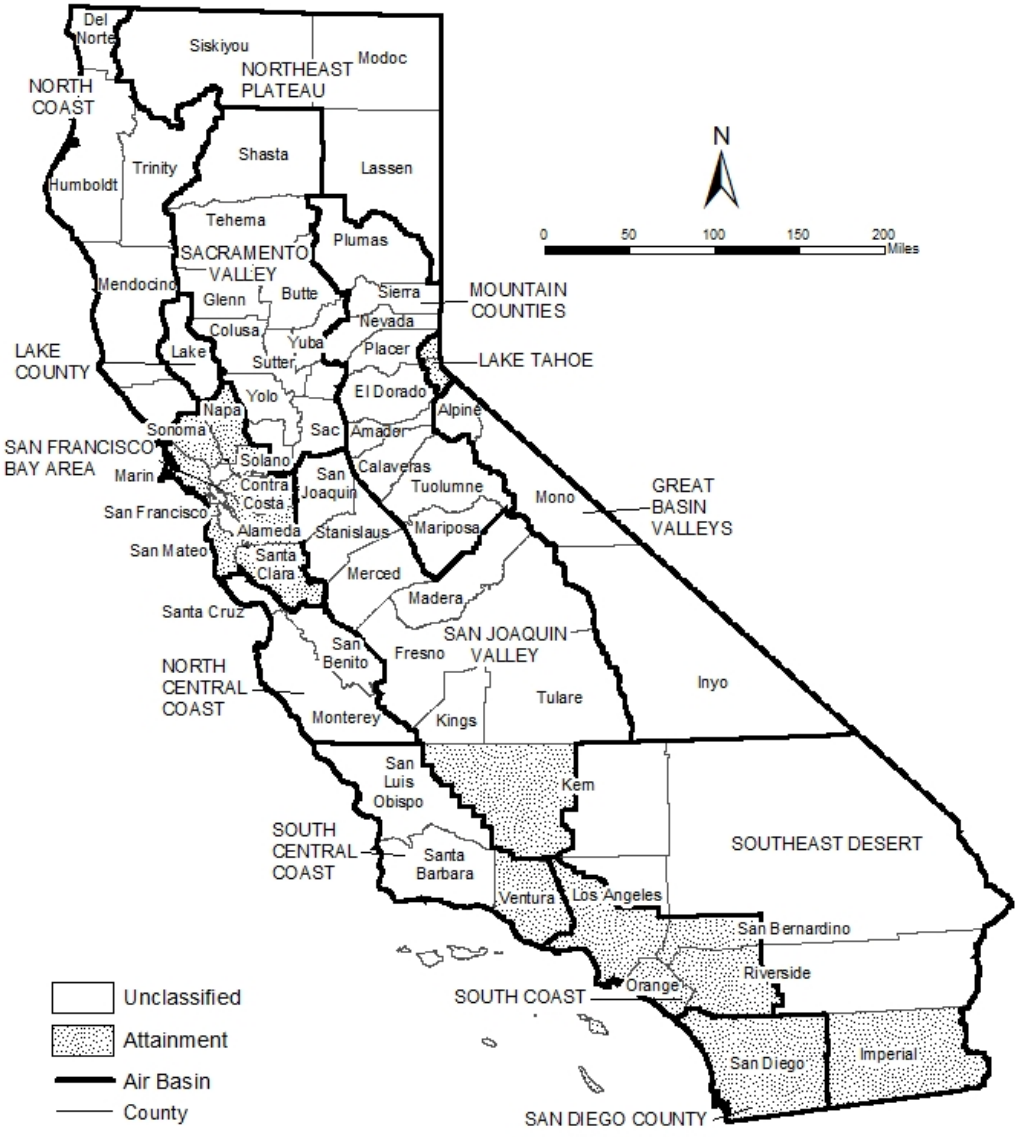
Area Designations for National Ambient Air Quality Standards CARBON MONOXIDE

Source Date:
February 2012
Air Quality Data Branch, PTSD

Area Designations for National Ambient Air Quality Standards NITROGEN DIOXIDE

Source Date:
February 2012
Air Quality Data Branch, PTSD

Area Designations for National Ambient Air Quality Standards SULFUR DIOXIDE



Source Date:
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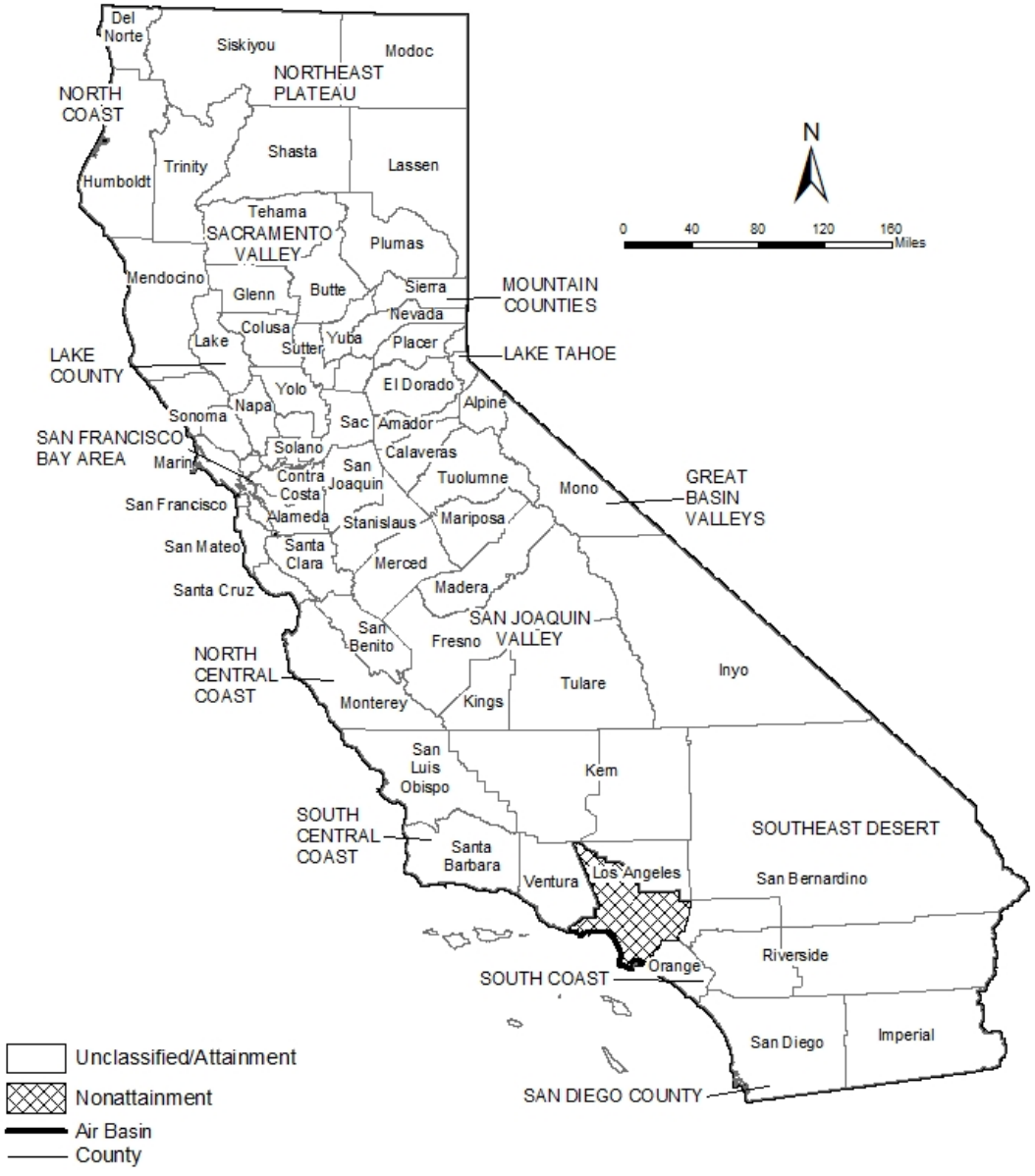
Area Designations for National Ambient Air Quality Standards LEAD



Source Date:
February 2012
Air Quality Data Branch, PTSD

APPENDIX A

Qualifications of Key Personnel

Brian F. Smith, MA

Owner, Principal Investigator
Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: bsmith@bfsa-ca.com

Education

Master of Arts, History, University of San Diego, California **1982**

Bachelor of Arts, History and Anthropology, University of San Diego, California **1975**

Experience

Principal Investigator **1977–Present**
Brian F. Smith and Associates, Inc.

Brian F. Smith is the owner and principal historical and archaeological consultant for Brian F. Smith and Associates. In the past 35 years, he has conducted over 2,500 cultural resource studies in California, Arizona, Nevada, Montana, and Texas. These studies include every possible aspect of archaeology from literature searches and large-scale surveys to intensive data recovery excavations. Reports prepared by Brian Smith have been submitted to all facets of local, state, and federal review agencies, including the US Army Crops of Engineers (USACE), the Bureau of Land Management (BLM), Bureau of Reclamation (BR), the Department of Defense (DOD), and Department of Homeland Security. In addition, Mr. Smith has conducted studies for utility companies (Sempra Energy) and state highway departments (CalTrans).

Professional Accomplishments

These selected major professional accomplishments represent research efforts which have added significantly to the body of knowledge concerning the prehistoric lifeways of cultures once present in the southern California area and historic settlement since the late 18th century. Mr. Smith has been principal investigator on the following select projects, except where noted.

Downtown San Diego Mitigation and Monitoring Reporting Programs: Large number of downtown San Diego mitigation and monitoring projects submitted to the Centre City Development Corporation, some of which included Strata (2008), Hotel Indigo (2008), Lofts at 707 10th Avenue Project (2007), Breeza (2007), Bayside at the Embarcadero (2007), Aria (2007), Icon (2007), Vantage Pointe (2007), Aperture (2007), Sapphire Tower (2007), Lofts at 655 Sixth Avenue (2007), Metrowork (2007), The Legend (2006), The Mark (2006), Smart Corner (2006), Lofts at 677 7th Avenue (2005), Aloft on Cortez Hill (2005), Front and Beech Apartments (2003), Bella Via Condominiums (2003), Acqua Vista Residential Tower (2003), Northblock Lofts (2003), Westin Park Place Hotel (2001), Parkloft Apartment Complex (2001), Renaissance Park (2001), and Laurel Bay Apartments (2001).

Archaeology at the Padres Ballpark: Involved the analysis of historic resources within a seven block area of the "East Village" area of San Diego, where occupation spanned a period from the 1870s to

the 1940s. Over a period of two years, BFSA recovered over 200,000 artifacts and hundreds of pounds of metal, construction debris, unidentified broken glass, and wood. Collectively, the Ballpark project and the other downtown mitigation and monitoring projects represent the largest historical archaeological program anywhere in the country in the past decade. 2000-2007.

The Navy Broadway Complex: Architectural and historical assessment of over 25 structures that comprise the Naval Supply Depot, many of which have been in use since World War I and were used extensively during World War II. The EIR/EIS which was prepared included National Register evaluations of all structures. The archaeological component of the project involved the excavation of backhoe trenches to search for evidence of the remains of elements of the historic waterfront features that characterized the bay front in the latter half of the 19th century. This study was successful in locating portions of wharves and shanties that existed on the site prior to capping of this area after construction of the sea wall in the early 20th century.

4S Ranch Archaeological and Historical Cultural Resources Study: Data recovery program consisted of the excavation of over 2,000 square meters of archaeological deposits that produced over one million artifacts, primarily prehistoric materials. The archaeological program at 4S Ranch is the largest archaeological study ever undertaken in the San Diego County area and has produced data that has exceeded expectations regarding the resolution of long-standing research questions and regional prehistoric settlement patterns.

Charles H. Brown Site: Attracted international attention to the discovery of evidence of the antiquity of man in North America. Site located in Mission Valley, in the City of San Diego.

Del Mar Man Site: Study of the now famous Early Man Site in Del Mar, California, for the San Diego Science Foundation and the San Diego Museum of Man, under the direction of Dr. Spencer Rogers and Dr. James R. Moriarty.

Old Town State Park Projects: Consulting Historical Archaeologist. Projects completed in the Old Town State Park involved development of individual lots for commercial enterprises. The projects completed in Old Town include Archaeological and Historical Site Assessment for the Great Wall Cafe (1992), Archaeological Study for the Old Town Commercial Project (1991), and Cultural Resources Site Survey at the Old San Diego Inn (1988).

Site W-20, Del Mar, California: A two-year-long investigation of a major prehistoric site in the Del Mar area of the City of San Diego. This research effort documented the earliest practice of religious/ceremonial activities in San Diego County (circa 6,000 years ago), facilitated the projection of major non-material aspects of the La Jolla Complex, and revealed the pattern of civilization at this site over a continuous period of 5,000 years. The report for the investigation included over 600 pages, with nearly 500,000 words of text, illustrations, maps, and photographs which document this major study.

City of San Diego Reclaimed Water Distribution System: A cultural resource study of nearly 400 miles of pipeline in the City and County of San Diego.

Master Environmental Assessment Project, City of Poway: Conducted for the City of Poway to produce a complete inventory of all recorded historic and prehistoric properties within the City. The information was used in conjunction with the City's General Plan Update to produce a map matrix of the City showing areas of high, moderate, and low potential for the presence of cultural resources. The effort also included the development of the City's Cultural Resource Guidelines, which were adopted as City policy.

Draft of the City of Carlsbad Historical and Archaeological Guidelines: Contracted by the City of Carlsbad to produce the draft of the City's historical and archaeological guidelines for use by the Planning Department of the City.

The Midbayfront Project for the City of Chula Vista: Involved a large expanse of undeveloped agricultural land situated between the railroad and San Diego Bay in the northwestern portion of the City. The study included the analysis of some potentially historic features and numerous prehistoric sites.

Cultural resources survey and test of sites within the proposed development of the Audie Murphy Ranch, Riverside County, California: Project Manager/Director of the investigation of 1,113.4 acres and 43 sites, both prehistoric and historic—included project coordination; direction of field crews; evaluation of sites for significance based on County of Riverside and CEQA guidelines; assessment of cupule, pictograph, and rock shelter sites, co-authoring of cultural resources project report. February-September 2002.

Cultural resources evaluation of sites within the proposed development of the Otay Ranch Village 13 Project, San Diego County, California: Project Manager/Director of the investigation of 1,947 acres and 76 sites, both prehistoric and historic—included project coordination and budgeting; direction of field crews; assessment of sites for significance based on County of San Diego and CEQA guidelines; co-authoring of cultural resources project report. May-November 2002.

Cultural resources survey for the Remote Video Surveillance Project, El Centro Sector, Imperial County: Project Manager/Director for a survey of 29 individual sites near the U.S./Mexico Border for proposed video surveillance camera locations associated with the San Diego Border barrier Project—project coordination and budgeting; direction of field crews; site identification and recordation; assessment of potential impacts to cultural resources; meeting and coordinating with U.S. Army Corps of Engineers, U.S. Border Patrol, and other government agencies involved; co-authoring of cultural resources project report. January, February, and July 2002.

Cultural resources survey and test of sites within the proposed development of the Menifee West GPA, Riverside County, California: Project Manager/Director of the investigation of nine sites, both prehistoric and historic—included project coordination and budgeting; direction of field crews; assessment of sites for significance based on County of Riverside and CEQA guidelines; historic research; co-authoring of cultural resources project report. January-March 2002.

Mitigation of a Archaic cultural resource for the Eastlake III Woods Project for the City of Chula Vista, California: Project Archaeologist/ Director—included direction of field crews; development and completion of data recovery program including collection of material for specialized faunal and botanical analyses; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; co-authoring of cultural resources project report, in prep. September 2001-March 2002.

Cultural resources survey and test of sites within the proposed French Valley Specific Plan/EIR, Riverside County, California: Project Manager/Director of the investigation of two prehistoric and three historic sites—included project coordination and budgeting; survey of project area; Native American consultation; direction of field crews; assessment of sites for significance based on CEQA guidelines; cultural resources project report in prep. July-August 2000.

Cultural resources survey and test of sites within the proposed Lawson Valley Project, San Diego County, California: Project Manager/Director of the investigation of 28 prehistoric and two historic sites—included project coordination; direction of field crews; assessment of sites for significance based on CEQA guidelines; cultural resources project report in prep. July-August 2000.

Cultural resource survey and geotechnical monitoring for the Mohyi Residence Project, La Jolla, California: Project Manager/Director of the investigation of a single-dwelling parcel—included project coordination; field survey; assessment of parcel for potentially buried cultural deposits; monitoring of geotechnichal borings; authoring of cultural resources project report. Brian F. Smith and Associates, San Diego, California. June 2000.

Enhanced cultural resource survey and evaluation for the Prewitt/Schmucker/Cavadias Project, La Jolla, California: Project Manager/Director of the investigation of a single-dwelling parcel—included project coordination; direction of field crews; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. June 2000.

Cultural resources survey and test of sites within the proposed development of the Menifee Ranch, Riverside County, California: Project Manager/Director of the investigation of one prehistoric and five historic sites—included project coordination and budgeting; direction of field crews; feature recordation; historic structure assessments; assessment of sites for significance based on CEQA guidelines; historic research; co-authoring of cultural resources project report. February-June 2000.

Salvage mitigation of a portion of the San Diego Presidio identified during water pipe construction for the City of San Diego, California: Project Archaeologist/Director—included direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. April 2000.

Enhanced cultural resource survey and evaluation for the Tyrian 3 Project, La Jolla, California: Project Manager/Director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced cultural resource survey and evaluation for the Lamont 5 Project, Pacific Beach, California: Project Manager/Director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced cultural resource survey and evaluation for the Reiss Residence Project, La Jolla, California: Project Manager/Director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. March-April 2000.

Salvage mitigation of a portion of Site SDM-W-95 (CA-SDI-211) for the Poinsettia Shores Santalina Development Project and Caltrans, Carlsbad, California: Project Archaeologist/ Director—included direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. December 1999-January 2000.

Survey and testing of two prehistoric cultural resources for the Airway Truck Parking Project, Otay Mesa, California: Project Archaeologist/Director—included direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; authoring of cultural resources project report, in prep. December 1999-January 2000.

Cultural resources Phase I and II investigations for the Tin Can Hill Segment of the Immigration and Naturalization Services Triple Fence Project along the International Border, San Diego County,

California: Project Manager/Director for a survey and testing of a prehistoric quarry site along the border—NRHP eligibility assessment; project coordination and budgeting; direction of field crews; feature recordation; meeting and coordinating with U.S. Army Corps of Engineers; co-authoring of cultural resources project report. December 1999-January 2000.

Mitigation of a prehistoric cultural resource for the Westview High School Project for the City of San Diego, California: Project Archaeologist/ Director—included direction of field crews; development and completion of data recovery program including collection of material for specialized faunal and botanical analyses; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; co-authoring of cultural resources project report, in prep. October 1999-January 2000.

Mitigation of a prehistoric cultural resource for the Otay Ranch SPA-One West Project for the City of Chula Vista, California: Project Archaeologist/Director—included direction of field crews; development of data recovery program; management of artifact collections cataloging and curation; assessment of site for significance based on CEQA guidelines; data synthesis; authoring of cultural resources project report, in prep. September 1999-January 2000.

Monitoring of grading for the Herschel Place Project, La Jolla, California: Project Archaeologist/ Monitor—included monitoring of grading activities associated with the development of a single-dwelling parcel. September 1999.

Survey and testing of an historic resource for the Osterkamp Development Project, Valley Center, California: Project Archaeologist/ Director—included direction of field crews; development and completion of data recovery program; budget development; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and testing of a prehistoric cultural resource for the Proposed College Boulevard Alignment Project, Carlsbad, California: Project Manager/Director —included direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report, in prep. July-August 1999.

Survey and evaluation of cultural resources for the Palomar Christian Conference Center Project, Palomar Mountain, California: Project Archaeologist—included direction of field crews; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and evaluation of cultural resources at the Village 2 High School Site, Otay Ranch, City of Chula Vista, California: Project Manager/Director —management of artifact collections cataloging and curation; assessment of site for significance based on CEQA guidelines; data synthesis; authoring of cultural resources project report. July 1999.

Cultural resources Phase I, II, and III investigations for the Immigration and Naturalization Services Triple Fence Project along the International Border, San Diego County, California: Project Manager/Director for the survey, testing, and mitigation of sites along border—supervision of multiple field crews, NRHP eligibility assessments, Native American consultation, contribution to Environmental Assessment document, lithic and marine shell analysis, authoring of cultural resources project report. August 1997-January 2000.

Phase I, II, and II investigations for the Scripps Poway Parkway East Project, Poway California: Project

Archaeologist/Project Director—included recordation and assessment of multicomponent prehistoric and historic sites; direction of Phase II and III investigations; direction of laboratory analyses including prehistoric and historic collections; curation of collections; data synthesis; coauthorship of final cultural resources report. February 1994; March-September 1994; September-December 1995.

Archaeological evaluation of cultural resources within the proposed corridor for the San Elijo Water Reclamation System Project, San Elijo, California: Project Manager/Director —test excavations; direction of artifact identification and analysis; graphics production; coauthorship of final cultural resources report. December 1994-July 1995.

Evaluation of Cultural Resources for the Environmental Impact Report for the Rose Canyon Trunk Sewer Project, San Diego, California: Project Manager/Director —direction of test excavations; identification and analysis of prehistoric and historic artifact collections; data synthesis; co-authorship of final cultural resources report, San Diego, California. June 1991-March 1992.

Reports/Papers

Author, coauthor, or contributor, to over 2,500 cultural resources management publications, a selection of which are presented below.

2009 Cultural Resource Assessment of the North Ocean Beach Gateway Project City of San Diego #64A-003A; Project #154116.

2009 Archaeological constraints study of the Morgan Valley Wind Assessment Project, Lake County, California.

2008 Results of an archaeological review of the Helen Park Lane 3.1-acre Property (APN 314-561-31), Poway, California.

2008 Archaeological Letter Report for a Phase I Archaeological Assessment of the Valley Park Condominium Project, Ramona, California; APN 282-262-75-00.

2007 Archaeology at the Ballpark. Brian F. Smith and Associates, San Diego, California. Submitted to the Centre City Development Corporation.

2007 Result of an Archaeological Survey for the Villages at Promenade Project (APNs 115-180-007-3,115-180-049-1, 115-180-042-4, 115-180-047-9) in te City of Corona, Riverside County.

2007 Monitoring Results for the Capping of Site CA-SDI-6038/SDM-W-5517 within the Katzer Jamul Center Project; P00-017.

2006 Archaeological Assessment for The Johnson Project (APN 322-011-10), Poway, California.

2005 Results of archaeological monitoring at the El Camino Del Teatro Accelerated Sewer Replacement Project (Bid No. K041364; WO # 177741; CIP # 46-610.6.

2005 Results of archaeological monitoring at the Baltazar Draper Avenue Project (Project No. 15857; APN: 351-040-09).

2004 TM 5325 ER #03-14-043 Cultural Resources.

Jennifer R. Kraft, BA

Field Services Manager, Faunal Analyst
Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 484-0915 • Fax: (858) 679-9896 • E-Mail: jenni.kraft@gmail.com

Education

Master of Arts, Cultural Resource Management Archaeology — **In Progress**
Saint Cloud State University, Saint Cloud, Minnesota — **2015**

Bachelor of Arts, Anthropology — **2004**
University of California, Santa Cruz

Research Interests

California Coastal Archaeology

Medical Anthropology

Human Behavioral Ecology

Zooarchaeology

Historical Archaeology

Taphonomic Studies

Experience

Field Services Manager, Faunal Analyst — **November 2006–Present**
Brian F. Smith and Associates, Inc.

Duties include report writing, editing and production; construction monitoring management; coordination of field survey and excavation crews; laboratory and office management. Currently conducts faunal, prehistoric, and historic laboratory analysis and has conducted such analysis for over 500 projects over the past 7 years. Knowledgeable in the most recent archaeological and paleontological monitoring requirements for all Southern California lead agencies, as well as Native American monitoring requirements.

UC Santa Cruz Monterey Bay Archaeology Archives Supervisor — **December 2003–March 2004**
Santa Cruz, California

Supervising intern for archaeological collections housed at UC Santa Cruz. Supervised undergraduate interns and maintained curated archaeological materials recovered from the greater Monterey Bay region.

Faunal Analyst, Research Assistant **June 2003–December 2003**
University of California, Santa Cruz

Intern assisting in laboratory analysis and cataloging for faunal remains collected from CA-MNT-234. Analysis included detailed zoological identification and taphonomic analysis of prehistoric marine and terrestrial mammals, birds, and fish inhabiting the greater Monterey Bay region.

Archaeological Technician, Office Manager **January 2000-December 2001**
Archaeological Resource Management

Conducted construction monitoring, field survey, excavation, report editing, report production, monitoring coordination and office management.

Certifications

City of San Diego Certified Archaeological and Paleontological Monitor

40-Hour Hazardous Waste/Emergency Response OSHA 29 CFR 1910.120 (e)

Technical Reports

Kennedy, George L., Todd A. Wirths and Jennifer R. **Kraft**

2013 *Negative Paleontological, Archaeological, and Native American Monitoring and Mitigation Report, Tri-City Christian High School, 302 North Emerald Drive, Vista, San Diego County, California (APN 166-411-75).* Prepared for Tri-City Christian School. Report on file at the California South Coastal Information Center.

Kraft, Jennifer R.

2012 *Cultural Resources Monitoring Report for the Pottery Court Project (TPM 36193) City of Lake Elsinore*. Prepared for BRIDGE Housing Corporation. Report on file at the California Eastern Information Center.

Kraft, Jennifer R. and Brian F. Smith

2013 *Archaeological Monitoring Report for the Webster Residence, La Jolla, California.* Prepared for KW Building and Development. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Alvarado Trunk Sewer Phase III Project, City of San Diego.* Prepared for Ortiz Corporation General Engineering Contractors. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Alvarado Trunk Sewer Phase IIIA Project, City of San Diego.* Prepared for TC Construction, Inc. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Coral Mountain Apartments Project, City of La Quinta, California*. Prepared for Coral Mountain Apartments, LP. Report on file at the California Eastern Information Center.

2013 *Cultural Resource Monitoring Report for the F Street Emergency Water Main Replacement Project, City of San Diego*. Prepared for Orion Construction. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Harbor Drive Trunk Sewer Project, City of San Diego*. Prepared for Burtech Pipeline. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Hyde Residence.* Prepared for Dr. Paul Hyde. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Juniper Street Sidewalk Project, City of San Diego*. Prepared for Palm Engineering Construction Company, Inc. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Kates Residence Project.* Prepared for Brad and Shannon Kates. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Pump Station 84 Upgrade and Pump Station 62 Abandonment Project.* Prepared for TC Construction, Inc. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Sewer and Water Group 781 Project*. Prepared for TC Construction, Inc. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Woolf Residence Project*. Prepared for A.J. Woolf Family Trust. Report on file at the California South Coastal Information Center.

2013 *Cultural Resources Study of the Fairway Drive Project.* Prepared for CV Communities, LLC. Report on file at the California Eastern Information Center.

2013 *Cultural Resource Monitoring Report for the Old Town Community Church Project, 2444 Congress Street, San Diego, California 92110.* Prepared for Soltek Pacific, Inc. Report on file at the California South Coastal Information Center.

2013 *Historic Structure Assessment, 161 West San Ysidro Boulevard, San Diego, California (APN 666-030-09)*. Prepared for Blue Key Realty. Report on file at the California South Coastal Information Center.

2013 *Historic Structure Assessment, 2603 Dove Street, San Diego, California (APN) 452-674-32).* Prepared for Barzal and Scotti Real Estate Corporation. Report on file at the California South Coastal Information Center.

2013 *Historic Structure Assessment at the Western Christian School, 3105 Padua Avenue, Claremont, California 91711 (APN 8671-005-053).* Prepared for Western Christian School. Report on file at the City of Claremont.

2013 *Mitigation Monitoring Report for the 7th and F Street Parking Project, City of San Diego*. Prepared for DZI Construction. Report on file at the California South Coastal Information Center.

2013 *Mitigation Monitoring Report for the 1919 Spindrift Drive Project*. Prepared for V.J. and Uma Joshi. Report on file at the California South Coastal Information Center.

2013 *Mitigation Monitoring Report for the Knight Residence Project, 7970 Roseland Avenue, La Jolla, California*. Prepared for Mr. Dennis Knight. Report on file at the California South Coastal Information Center.

2013 *Mitigation Monitoring Report for the Sewer Group 799-750 Project.* Prepared for Burtech Pipeline. Report on file at the California South Coastal Information Center.

2013 *Negative Cultural Resource Monitoring Report for the Citywide Pump Station Upgrades Group II Project.* Prepared for Ortiz Corporation General Engineering Contractors. Report on file at the California South Coastal Information Center.

2013 *Negative Cultural Resource Monitoring Report for the Citywide Pump Station Upgrades Group III Project, City of San Diego*. Prepared for TC Construction, Inc. Report on file at the California South Coastal Information Center.

2013 *Phase I Cultural Resource Study for the 3364 Randy Lane Project, Chula Vista, California*. Prepared for H&M Construction. Report on file at the California South Coastal Information Center.

2013 *Phase I Cultural Resources Survey for the Ecos Diamond Valley Project, Community of Winchester, County of Riverside.* Prepared for Ecos Energy, LLC. Report on file at the California Eastern Information Center.

2013 *Phase I Cultural Resources Survey for the Ecos Nuevo Project, Community of Nuevo, County of Riverside*. Prepared for Ecos Energy, LLC. Report on file at the California Eastern Information Center.

2012 *Cultural Resource Monitoring Report for the Sewer and Water Group 754 Project, City of San Diego (Project No. 177711/187301)*. Prepared for S.C. Valley Engineering, Inc. Report on file at the California South Coastal Information Center

2012 *Cultural Resource Monitoring Report for the Sewer Group 714 Project.* Prepared for Burtech Pipeline. Report on file at the California South Coastal Information Center.

2012 *Cultural Resource Monitoring Report for the Sewer and Water Group 780 Project*. Prepared for Burtech Pipeline. Report on file at the California South Coastal Information Center.

2012 *Mitigation Monitoring of the 47th Street Warehouse Project, San Diego, California.* Prepared for Aardema Development. Report on file at the California South Coastal Information Center.

2012 *Mitigation Monitoring Report for the Florida Street Apartments Project (The Kalos Project).* Prepared for Florida Street Housing Associates. Report on file at the California South Coastal Information Center.

2012 *Mitigation Monitoring Report for the Pacific Highway Trunk Sewer Project*. Prepared for HPS Mechanical. Report on file at the California South Coastal Information Center.

2011 *Phase I Cultural Resource Study for the Wesley Palms Retirement Community Project, San Diego, California.* Prepared for Front Porch Development Company. Report on file at the California South Coastal Information Center.

Kraft, Jennifer R. and Tracy A. Stropes

2013 *Phase I Cultural Resources Survey for the Orange Street Project.* Prepared for Mike Lesle. Report on file at the California Eastern Information Center.

2012 *Mitigation Monitoring Report for the 13th & Market Project*. Prepared for The Hanover Company. Report on file at the California South Coastal Information Center.

2012 *Mitigation Monitoring Report for the T-Mobile West, LLC Telecommunications Candidate SD02867C (Presidio Park).* Prepared for Michael Brandmann Associates. Report on file at the California South Coastal Information Center.

Kraft, Jennifer R., Tracy A. Stropes, and Brian F. Smith

2013 *Mitigation Monitoring Report for the Ariel Suites Project*. Prepared for Ariel Suites, LP. Report on file at the California South Coastal Information Center.

Smith, Brian F., Claire M. Allen, Mary M. Lenich, and Jennifer R. **Kraft**

2013 *Phase I and Phase II Cultural Resource Assessment for the Citrus Heights II Project, TTM 36475, Riverside County, California*. Prepared for CV Communities, LLC. Report on file at the California Eastern Information Center.

Smith, Brian F. and Jennifer R. **Kraft**

2013 *Cultural Resources Study for the Los Peñasquitos Adobe Drainage Project.* Prepared for HELIX Environmental Planning, Inc. Report on file at the California South Coastal Information Center.

2013 *Cultural Resources Study for the Rancho Peñasquitos Adobe Drainage MND Project, San Diego County, California (CSD-04.03).* Prepared for HELIX Environmental Planning, Inc. Report on file at the California South Coastal Information Center.

Contributing Author /Analyst

2011 Faunal Analysis and Report Section for *A Cultural Resource Data Recovery Program for SDI-4606 Locus B for St. Gabriel's Catholic Church, Poway, California* by Brian F. Smith and Tracy A. Stropes. Prepared for St. Gabriel's Catholic Church. Report on file at the California South Coastal Information Center.

2010 Faunal Analysis and Report Section for *An Archaeological Study for the 1912 Spindrift Drive Project, La Jolla, California* by Brian F. Smith and Tracy A. Stropes. Prepared for Island Architects. Report on file at the California South Coastal Information Center.

2010 Faunal Analysis and Report Section for *Results of a Cultural Mitigation and Monitoring Program for Robertson Ranch: Archaic and Late Prehistoric Camps near the Agua Hedionda Lagoon* by Brian F. Smith. Prepared for McMillan Land Development. Report on file at the California South Coastal Information Center.

2009 Faunal Identification for "An Earlier Extirpation of Fur Seals in the Monterey Bay Region: Recent Findings and Social Implications" by Diane Gifford-Gonzalez and Charlotte K. Sunseri. *Proceedings of the Society for California Archaeology, Vol. 21, 2009*

APPENDIX B

Archaeological Records Search Results

(Not for Public Review; Bound Separately)

APPENDIX C

NAHC Sacred Lands File Search Results

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

November 17 2014

For: Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, California 95814

From: Tracy A Stropes, M.A., RPA
Brian F. Smith and Associates
14010 Poway Rd. Suite A
Poway, CA 92064

Re: Request for a Sacred Lands File records search for the Highland 44 Project, San Bernardino County, California.

I am writing to request a record search of the Sacred Lands File and a list of appropriate Native American contacts for the Highland 44 Project, located in San Bernardino County, California. The proposed project is an approximately 8-acre project located within the County of San Bernardino just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5 minute *Redlands* topographic quadrangle (Township 1 North, Range 3 West). Please find an attached section of the USGS *Redlands* quadrangle map on which the project area is delineated.

Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
Phone: 858-484-0915
Email: tstropes@bfsa-ca.com

Attachments:
USGS 7.5 minute *Redlands,* California topographic map with project area delineated.

Sacred Lands File & Native American Contacts List Request
NATIVE AMERICAN HERITAGE COMMISSION
915 Capitol Mall, RM 364 Sacramento, CA 95814 (916) 653-4082
(916) 657-5390 – Fax
nahc@pacbell.net

Information Below is Required for a Sacred Lands File Search

Project: Highland 44 Project

County: San Bernardino

USGS Quadrangle Name: *Redlands*

Township: 1N Range: 3W Section 35

Company/Firm/Agency: Brian F. Smith & Associates

Contact Person: Tracy A. Stropes, RPA

Street Address: 14010 Poway Road, Suite A

City: Poway Zip: 92064

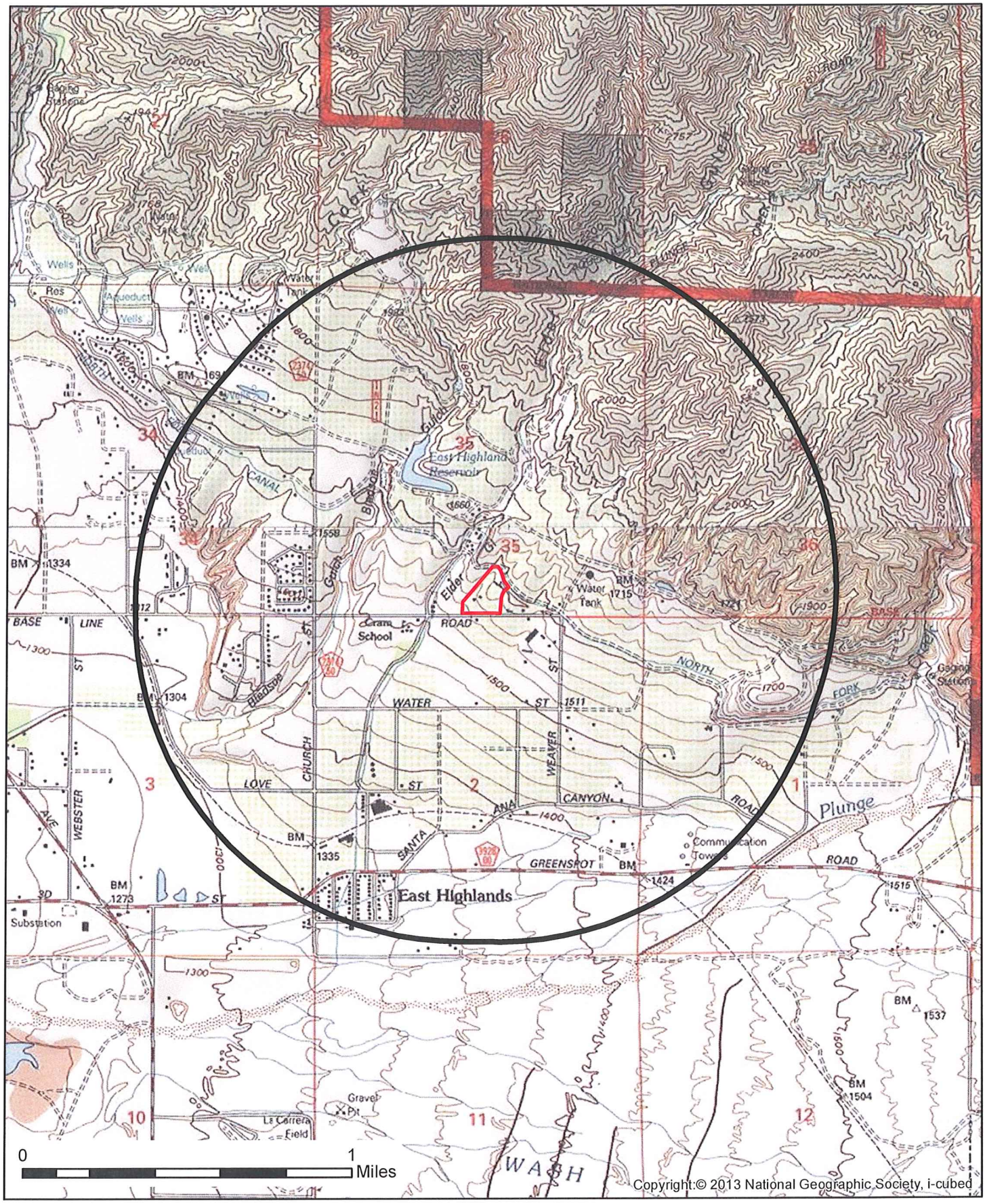
Phone: 858-484-0915

Fax: 858-679-9896

Email: tstropes@bfsa-ca.com

Project Description:

The project is a Phase I cultural resource survey project for the Highland 44 Project, located in San Bernardino County, California. The proposed project is an approximately 8-acre project located within the County of San Bernardino just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5 minute *Redlands* topographic quadrangle (Township 1 North, Range 3 West). Please find an attached section of the USGS *Redlands* quadrangle map on which the project area is delineated.



Legend

Buffer

APE

Record Search Location Map
The Highland 44 Project
USGS Harrison Mountain and Redlands 7.5-minute Quadrangles

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

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

November 24, 2014

Tracy A. Stropes
Brian F. Smith and Associates, Inc.
14010 Poway Road, Suite A
Poway, CA 92064

Sent by Fax: (858) 679-9896
Number of Pages: 2

Re: The Highland 44 Project, San Bernardino County.

Dear Ms. Stropes,

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. 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 or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 373-3712.

Sincerely,

Katy Sanchez

Katy Sanchez
Associate Government Program Analyst

Native American Contacts
San Bernardino County
November 21, 2014

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

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

Soboba Band of Mission Indians
Rosemary Morillo, Chairperson; Attn: Carrie Garcia
P.O. Box 487 Luiseno
San Jacinto , CA 92581
carrieg@soboba-nsn.gov
(951) 654-2765
(951) 654-4198 Fax

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

Morongo Band of Mission Indians
Denisa Torres, Cultural Resources Manager
12700 Pumarra Road Cahuilla
Banning , CA 92220 Serrano
dtorres@morongo-nsn.gov
(951) 572-6004 Fax

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 Luiseno
San Jacinto , CA 92581
jontiveros@soboba-nsn.gov
(951) 663-5279
(951) 654-5544, ext 4137
(951) 654-4198 Fax

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

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

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

This list is only applicable for contacting locative Americans with regard to cultural resources for the proposed Highlands 44 Project, San Bernardino County.

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

December 2, 2014

Lynn Valbuena
Chairwoman
San Manuel Band of Mission Indians
26569 Community Center Drive
Highland, California 92346

Subject: Information regarding Native American cultural resources on or near the Highland 44 Project, Highland, San Bernardino County, California

Dear Ms. Valbuena:

This inquiry is requesting information you may have regarding the existence of Native American cultural resources on or near the Highland 44 Project. The information you provide will be used to assess areas of potential adverse impact within the proposed project's Area of Potential Effect (APE). Any information you might provide will be kept confidential and will not be divulged to the public.

The project is in Highland, within San Bernardino County, California. The project is approximately eight acres located just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5-minute *Redlands, California* topographic quadrangle (Township 1 North, Range 3 West). Please find enclosed sections of the USGS *Redlands* Quadrangle map on which the project is delineated.

Although according to the Sacred Lands File no *known* resources are present within the Highland 44 Project property, the Native American Heritage Commission requested that we consult with you directly regarding the potential for the presence of Native American cultural resources that may be impacted by this project. If you do have information to provide regarding any resources on or near the project, please contact Brian Smith or myself at (858) 484-0915, or contact the City of Highland directly. We would like to extend our thanks for your response regarding this issue.

Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
tstropes@bfsa-ca.com

Attachment:
USGS 7.5-minute *Redlands, California* topographic map with project area delineated

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

December 2, 2014

Rosemary Morillo, Chairperson
c/o Carrie Garcia
Soboba Band of Mission Indians
P.O. Box 487
San Jacinto, California 92581

Subject: Information regarding Native American cultural resources on or near the Highland 44 Project, Highland, San Bernardino County, California

Dear Ms. Morillo:

This inquiry is requesting information you may have regarding the existence of Native American cultural resources on or near the Highland 44 Project. The information you provide will be used to assess areas of potential adverse impact within the proposed project's Area of Potential Effect (APE). Any information you might provide will be kept confidential and will not be divulged to the public.

The project is in Highland, within San Bernardino County, California. The project is approximately eight acres located just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5-minute *Redlands, California* topographic quadrangle (Township 1 North, Range 3 West). Please find enclosed sections of the USGS *Redlands* Quadrangle map on which the project is delineated.

Although according to the Sacred Lands File no *known* resources are present within the Highland 44 Project property, the Native American Heritage Commission requested that we consult with you directly regarding the potential for the presence of Native American cultural resources that may be impacted by this project. If you do have information to provide regarding any resources on or near the project, please contact Brian Smith or myself at (858) 484-0915, or contact the City of Highland directly. We would like to extend our thanks for your response regarding this issue.

Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
tstropes@bfsa-ca.com

Attachment:
USGS 7.5-minute *Redlands, California* topographic map with project area delineated

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

December 2, 2014

Denisa Torres
Cultural Resources Manager
Morongo Band of Mission Indians
12700 Pumarra Road
Banning, California 92220

Subject: Information regarding Native American cultural resources on or near the Highland 44 Project, Highland, San Bernardino County, California

Dear Ms. Torres:

This inquiry is requesting information you may have regarding the existence of Native American cultural resources on or near the Highland 44 Project. The information you provide will be used to assess areas of potential adverse impact within the proposed project's Area of Potential Effect (APE). Any information you might provide will be kept confidential and will not be divulged to the public.

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Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
tstropes@bfsa-ca.com

Attachment:
USGS 7.5-minute *Redlands, California* topographic map with project area delineated

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

December 2, 2014

Daniel McCarthy, M.S.
Director, CRM Department
San Manuel Band of Mission Indians
26569 Community Center Drive
Highland, California 92346

Subject: Information regarding Native American cultural resources on or near the Highland 44 Project, Highland, San Bernardino County, California

Dear Mr. McCarthy:

This inquiry is requesting information you may have regarding the existence of Native American cultural resources on or near the Highland 44 Project. The information you provide will be used to assess areas of potential adverse impact within the proposed project's Area of Potential Effect (APE). Any information you might provide will be kept confidential and will not be divulged to the public.

The project is in Highland, within San Bernardino County, California. The project is approximately eight acres located just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5-minute *Redlands, California* topographic quadrangle (Township 1 North, Range 3 West). Please find enclosed sections of the USGS *Redlands* Quadrangle map on which the project is delineated.

Although according to the Sacred Lands File no *known* resources are present within the Highland 44 Project property, the Native American Heritage Commission requested that we consult with you directly regarding the potential for the presence of Native American cultural resources that may be impacted by this project. If you do have information to provide regarding any resources on or near the project, please contact Brian Smith or myself at (858) 484-0915, or contact the City of Highland directly. We would like to extend our thanks for your response regarding this issue.

Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
tstropes@bfsa-ca.com

Attachment:
USGS 7.5-minute *Redlands, California* topographic map with project area delineated

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

December 2, 2014

Robert Martin
Chairperson
Morongo Band of Mission Indians
12700 Pumarra Road
Banning, California 92220

Subject: Information regarding Native American cultural resources on or near the Highland 44 Project, Highland, San Bernardino County, California

Dear Mr. Martin:

This inquiry is requesting information you may have regarding the existence of Native American cultural resources on or near the Highland 44 Project. The information you provide will be used to assess areas of potential adverse impact within the proposed project's Area of Potential Effect (APE). Any information you might provide will be kept confidential and will not be divulged to the public.

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Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
tstropes@bfsa-ca.com

Attachment:
USGS 7.5-minute *Redlands, California* topographic map with project area delineated

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

December 2, 2014

Ernest H. Siva
Tribal Elder
Morongo Band of Mission Indians
9570 Mias Canyon Road
Banning, California 92220

Subject: Information regarding Native American cultural resources on or near the Highland 44 Project, Highland, San Bernardino County, California

Dear Mr. Siva:

This inquiry is requesting information you may have regarding the existence of Native American cultural resources on or near the Highland 44 Project. The information you provide will be used to assess areas of potential adverse impact within the proposed project's Area of Potential Effect (APE). Any information you might provide will be kept confidential and will not be divulged to the public.

The project is in Highland, within San Bernardino County, California. The project is approximately eight acres located just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5-minute *Redlands, California* topographic quadrangle (Township 1 North, Range 3 West). Please find enclosed sections of the USGS *Redlands* Quadrangle map on which the project is delineated.

Although according to the Sacred Lands File no *known* resources are present within the Highland 44 Project property, the Native American Heritage Commission requested that we consult with you directly regarding the potential for the presence of Native American cultural resources that may be impacted by this project. If you do have information to provide regarding any resources on or near the project, please contact Brian Smith or myself at (858) 484-0915, or contact the City of Highland directly. We would like to extend our thanks for your response regarding this issue.

Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
tstropes@bfsa-ca.com

Attachment:
USGS 7.5-minute *Redlands, California* topographic map with project area delineated

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

December 2, 2014

Joseph Ontiveros
Cultural Resource Department
Soboba Band of Luiseño Indians
P.O. Box 487
San Jacinto, California 92581

Subject: Information regarding Native American cultural resources on or near the Highland 44 Project, Highland, San Bernardino County, California

Dear Mr. Ontiveros:

This inquiry is requesting information you may have regarding the existence of Native American cultural resources on or near the Highland 44 Project. The information you provide will be used to assess areas of potential adverse impact within the proposed project's Area of Potential Effect (APE). Any information you might provide will be kept confidential and will not be divulged to the public.

The project is in Highland, within San Bernardino County, California. The project is approximately eight acres located just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5-minute *Redlands, California* topographic quadrangle (Township 1 North, Range 3 West). Please find enclosed sections of the USGS *Redlands* Quadrangle map on which the project is delineated.

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Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
tstropes@bfsa-ca.com

Attachment:
USGS 7.5-minute *Redlands, California* topographic map with project area delineated

PHASE I CULTURAL RESOURCES SURVEY FOR THE HIGHLAND 44 PROJECT

TENTATIVE TRACT 19915

CITY OF HIGHLAND, COUNTY OF SAN BERNARDINO

Prepared for:

29300 Baseline Partners, LLC
20201 SW Birch Street, Suite 100
Newport Beach, California 92660

Prepared by:

Brian F. Smith and Associates, Inc.
14010 Poway Road, Suite A
Poway, California 92064

December 12, 2014

National Archaeological Database Information

Author(s):	Jennifer R. Kraft and Brian F. Smith
Prepared by:	Brian F. Smith and Associates, Inc. 14010 Poway Road, Suite A Poway, California 92064 (858) 484-0915
Report Date:	December 12, 2014
Report Title:	Phase I Cultural Resources Survey for the Highland 44 Project, Tentative Tract 19915, City of Highland, County of San Bernardino
Prepared for:	29300 Baseline Partners, LLC 20201 SW Birch Street, Suite 100 Newport Beach, California 92660
Lead Agency Identifier:	Tentative Tract 19915
USGS Quadrangle:	*Redlands, California* (7.5 minute)
Study Area:	Eight acres
Key Words:	Cultural resources survey; City of Highland; negative survey; monitoring of grading not recommended.

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**Deleted for public review and bound separately in the Confidential Appendix*

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1.0 MANAGEMENT SUMMARY/ABSTRACT

The following report describes the results of a Phase I archaeological assessment conducted by Brian F. Smith and Associates, Inc. (BFSA) for the Highland 44 Project (Tentative Tract 19915) within Assessor's Parcel Number (APN) 0288-562-03. The project consists of an approximately eight-acre property located on the eastern side of the city of Highland in San Bernardino County, California. The project, as proposed by the applicant, seeks to develop the property into a 44-lot residential subdivision with associated infrastructure.

The project lies within the city of Highland, California, just north of the intersection of Base Line Road and Greenbrier Place. Specifically, this project is located in Section 35 of the USGS 7.5-minute *Redlands, California* topographic map, Township 1 North, Range 3 West. BFSA, in compliance with the California Environmental Quality Act (CEQA) and City of Highland environmental guidelines, conducted the assessment to locate and record any cultural resources present within the project area.

The archaeological investigation of the subject property included a review of archaeological records search information provided by the Archaeological Information Center (AIC) at the San Bernardino County Museum (SBCM). The records search provided information regarding previous archaeological studies in the project area and any previously recorded sites within the project boundaries, or in the immediate vicinity. According to the data obtained from the AIC, although no previously recorded sites were identified within the project area, a total of 16 historic archaeological sites and one prehistoric isolate have been recorded within a one-mile radius of the project area.

The archaeological survey of the project area was conducted on November 18, 2014. Survey conditions were generally good and ground visibility ranged from fair to good in most areas. The property has been disturbed and graded in the past, and previous impacts to the property include a residence and related property improvements. No prehistoric or historic cultural resources were identified during the survey. The proposed project will not impact any cultural resources, and consequently, mitigation measures will not be required as a condition of approval for this project.

A copy of this report will be permanently filed with the AIC at the SBCM. All notes, photographs, and other materials related to this project will be curated at the archaeological laboratory of BFSA in Poway, California.

2.0 INTRODUCTION

In response to a request by 29300 Baseline Partners, LLC, BFSA conducted an archaeological assessment for the proposed development of the Highland 44 Project (Tentative Tract 19915). The archaeological survey and evaluation program for the project were conducted in order to comply with CEQA and the requirements of the City of Highland with regards to cultural resources. The project is located in an area of high cultural resource sensitivity, as suggested by known site density and predictive modeling. The majority of recorded sites in the vicinity of the project are historic ranches and farmsteads. Only one prehistoric isolate, a metate, is recorded within one mile of the project area. Sensitivity for cultural resources in a given area is usually indicated by known settlement patterns, which in the southwest San Bernardino County area is focused around environments with accessible food and water.

The project is an approximately eight-acre parcel located in the city of Highland, San Bernardino County, California. The project is identified as APN 0288-562-03. The project is situated just north of the intersection of Base Line Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5-minute *Redlands, California* topographic map, Township 1 North, Range 3 West (Figures 2.0–1 and 2.0–2). The project, as proposed by the applicant, seeks to develop the property into a 44-lot residential development with associated infrastructure (Figure 2.0–3).

Principal Investigator Brian F. Smith, M.A. directed the Phase I archaeological assessment for the project with the assistance of field archaeologist Clarence Hoff. Brian Smith prepared the technical report with assistance from Jennifer Kraft. Jennifer Kraft created the report graphics and Elena Buckley conducted technical editing and the copying and distribution of the report. Qualifications of key personnel are provided in Appendix A.

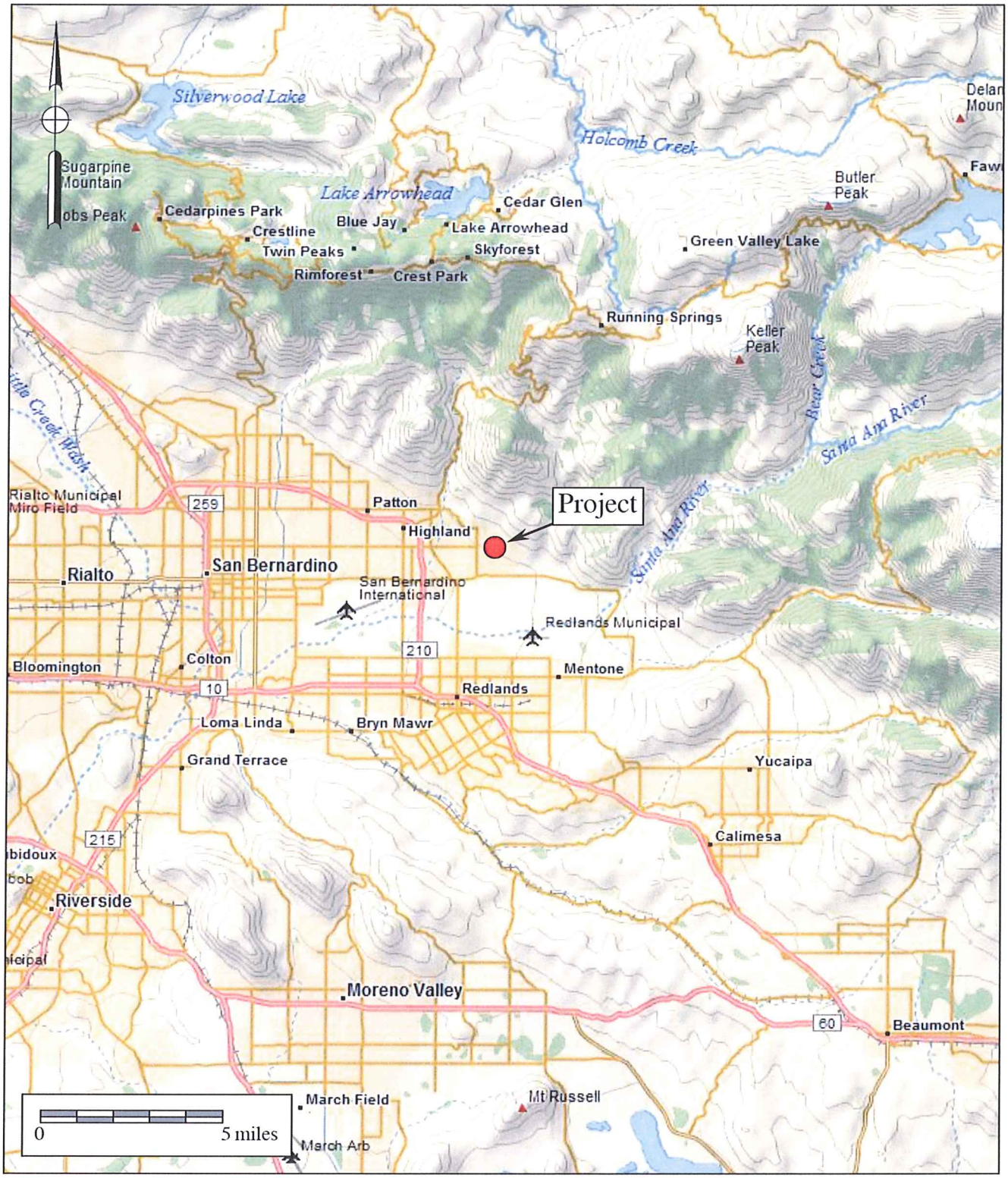


Figure 2.0–1

General Location Map

The Highland 44 Project

DeLorme (1:250,000)

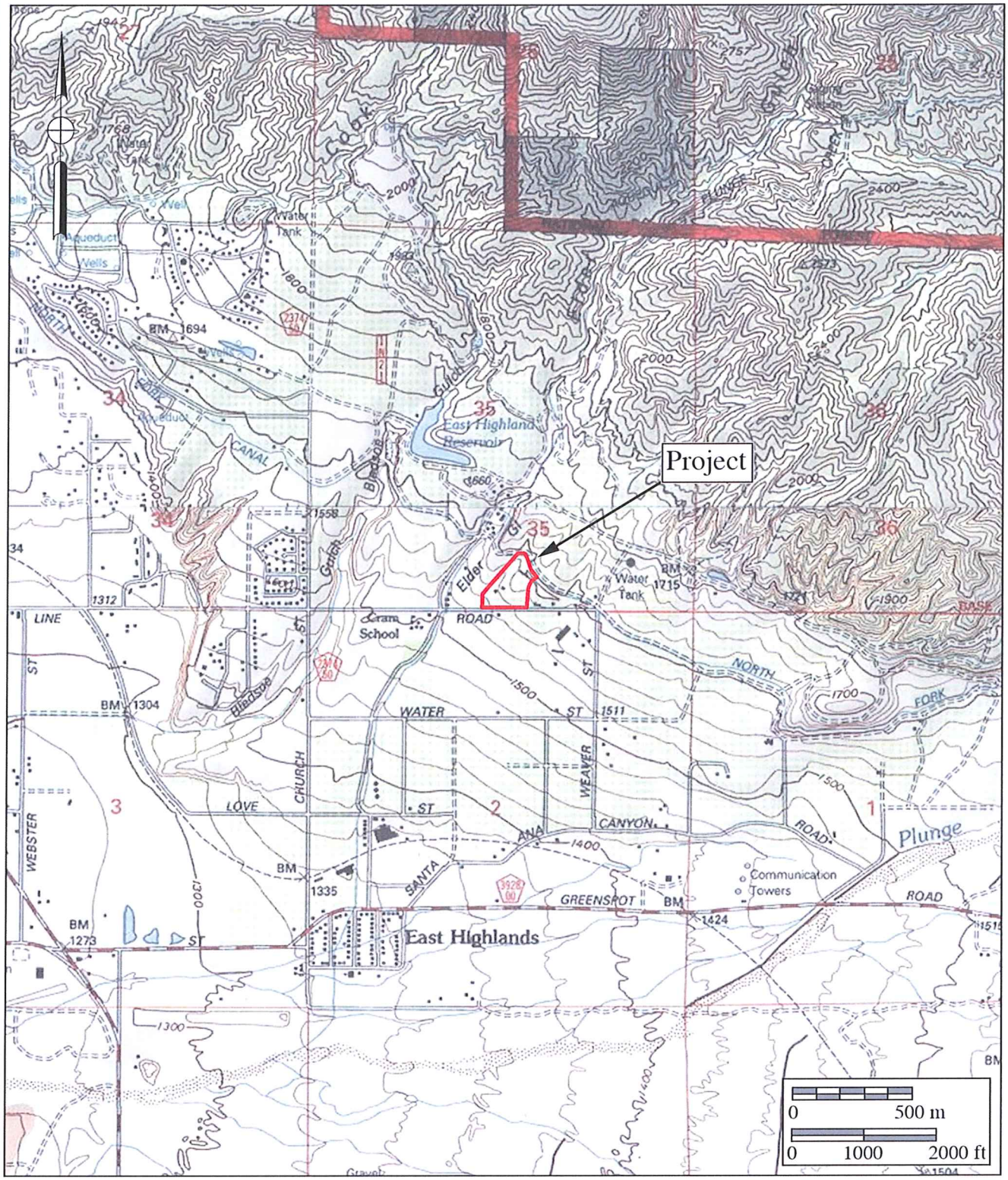


Figure 2.0–2

Project Location Map

The Highland 44 Project

USGS *Redlands* Quadrangle (7.5-minute series)

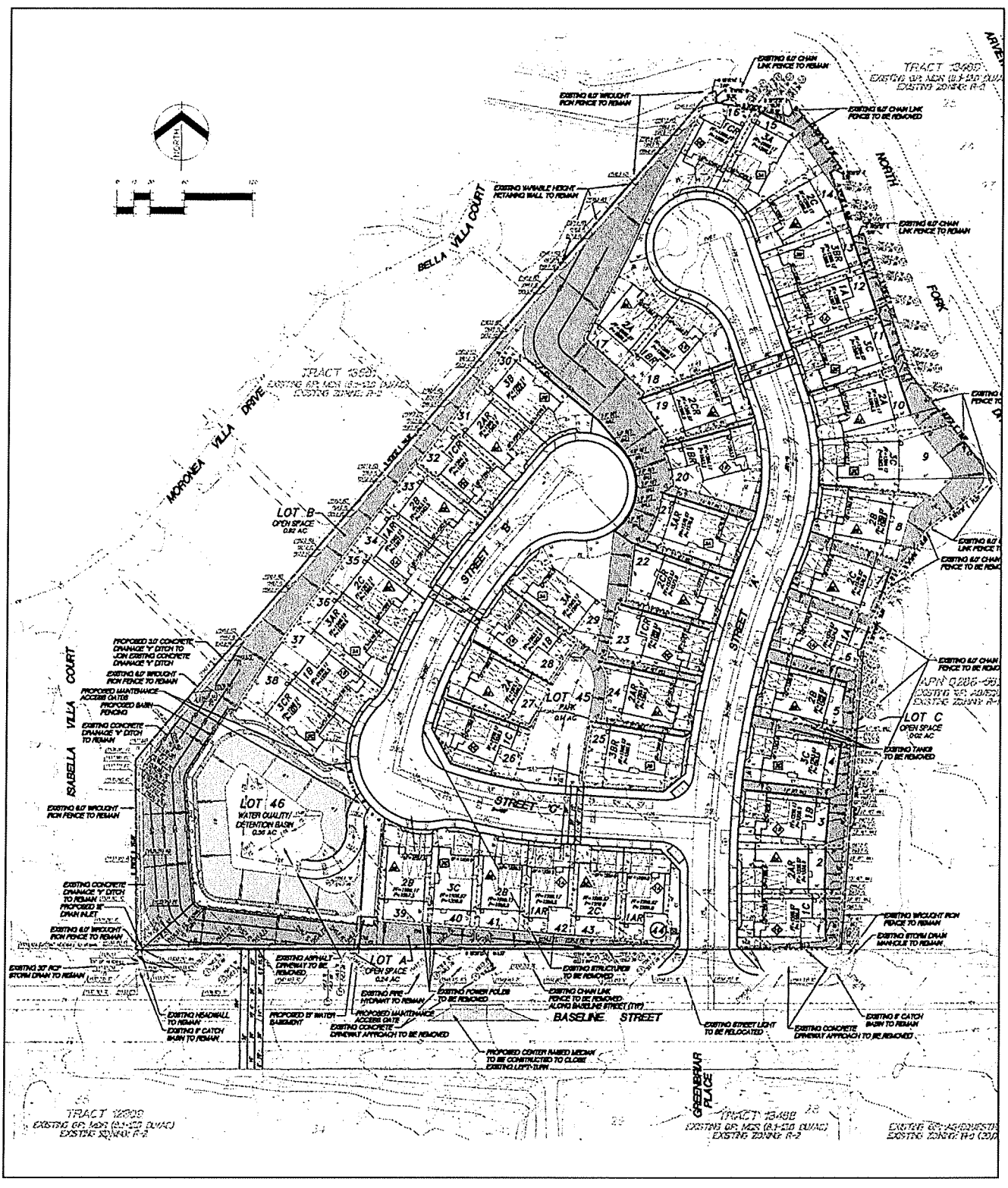


Figure 2.0–3

Project Development Map

The Highland 44 Project

3.0 PROJECT SETTING

The project setting includes the natural physical, geological, and biological contexts of the proposed project, as well as the cultural setting of prehistoric and historic human activities in the general area. The following sections discuss both the environmental and cultural settings at the subject property, the relationship between the two, and the relevance of that relationship to the project.

3.1 Environmental Setting

The proposed project site is generally located in southwest San Bernardino County, north of Base Line Road and west of Weaver Street within the city of Highland. The subject site is located within the Bunker Hill Basin. The Bunker Hill Basin is situated within the upper Santa Ana Valley of the Peninsular Ranges Geomorphic Province. The Bunker Hill Basin is an alluvial plain formed from sediments deposited by the Santa Ana River and its tributaries, such as Mill Creek and Lytle Creek. The Peninsular Ranges are a series of northwest-southeast trending mountain ranges separated by similarly trending valleys that make up the southernmost segment of a chain of North American Mesozoic batholiths that extend from Alaska to the southern tip of Baja California. The project area is on a southward-facing slope, with the property's lowest point located at its southwest corner and its highest point located at its northeastern boundary. Elevations within the project area range from approximately 1,538 to 1,591 feet above mean sea level (AMSL). The entire project area has been disturbed by previous rural development and grading. Currently, vegetation within the project area is characterized as primarily introduced grasses and trees with some areas covered in eucalyptus mulch.

3.2 Cultural Setting

3.2.1 Prehistoric Period

Paleo Indian, Archaic Period Milling Stone Horizon, and the Late Prehistoric Shoshonean groups are the three general cultural periods represented in San Bernardino County. The following discussion of the cultural history of San Bernardino County references the San Dieguito Complex, the Encinitas Tradition, the Milling Stone Horizon, the La Jolla Complex, the Pauma Complex, and the San Luis Rey Complex, since these culture sequences have been used to describe archaeological manifestations in the region. The Late Prehistoric component in the area of San Bernardino County was represented by the Cahuilla, Gabrielino, and Luiseño Indians.

Absolute chronological information, where possible, will be incorporated into this discussion to examine the effectiveness of continuing to use these terms interchangeably. Reference will be made to the geological framework that divides the culture chronology of the area into four segments: late Pleistocene (20,000 to 10,000 years before the present [YBP]), early

Holocene (10,000 to 6,650 YBP), middle Holocene (6,650 to 3,350 YBP), and late Holocene (3,350 to 200 YBP).

Paleo Indian Period (Late Pleistocene: 11,500 to circa 9,000 YBP)

The Paleo Indian Period is associated with the terminus of the late Pleistocene (12,000 to 10,000 YBP). The environment during the late Pleistocene was cool and moist, which allowed for glaciation in the mountains and the formation of deep, pluvial lakes in the deserts and basin lands (Moratto 1984). However, by the terminus of the late Pleistocene, the climate became warmer, which caused glaciers to melt, sea levels to rise, greater coastal erosion, large lakes to recede and evaporate, extinction of Pleistocene megafauna, and major vegetation changes (Moratto 1984; Martin 1967, 1973; Fagan 1991). The coastal shoreline at 10,000 YBP, depending upon the particular area of the coast, was near the 30-meter isobath, or two to six kilometers further west than its present location (Masters 1983).

Paleo Indians were likely attracted to multiple habitat types, including mountains, marshlands, estuaries, and lakeshores. These people likely subsisted using a more generalized hunting, gathering, and collecting adaptation, utilizing a variety of resources including birds, mollusks, and both large and small mammals (Erlandson and Colten 1991; Moratto 1984; Moss and Erlandson 1995).

Archaic Period (Early and Middle Holocene: circa 9,000 to 1,300 YBP)

The Archaic Period of prehistory began with the onset of the Holocene around 9,000 YBP. The transition from the Pleistocene to the Holocene was a period of major environmental change throughout North America (Antevs 1953; Van Devender and Spaulding 1979). The general warming trend caused sea levels to rise, lakes to evaporate, and drainage patterns to change. In southern California, the general climate at the beginning of the early Holocene was marked by cool/moist periods and an increase in warm/dry periods and sea levels. The coastal shoreline at 8,000 YBP, depending upon the particular area of the coast, was near the 20-meter isobath, or one to four kilometers further west than its present location (Masters 1983).

The rising sea level during the early Holocene created rocky shorelines and bays along the coast by flooding valley floors and eroding the coastline (Curray 1965; Inman 1983). Shorelines were primarily rocky with small littoral cells, as sediments were deposited at bay edges but rarely discharged into the ocean (Reddy 2000). These bays eventually evolved into lagoons and estuaries, which provided a rich habitat for mollusks and fish. The warming trend and rising sea levels generally continued until the late Holocene (4,000 to 3,500 YBP).

At the beginning of the late Holocene, sea levels stabilized, rocky shores declined, lagoons filled with sediment, and sandy beaches became established (Gallegos 1985; Inman 1983; Masters 1994; Miller 1966; Warren and Pavesic 1963). Many former lagoons became saltwater marshes surrounded by coastal sage scrub by the late Holocene (Gallegos 2002). The sedimentation of the lagoons was significant in that it had profound effects on the types of

resources available to prehistoric peoples. Habitat was lost for certain large mollusks, namely *Chione* and *Argopecten*, but habitat was gained for other small mollusks, particularly *Donax* (Gallegos 1985; Reddy 2000). The changing lagoon habitats resulted in the decline of larger shellfish, the loss of drinking water, and the loss of Torrey Pine nuts, causing a major depopulation of the coast as people shifted inland to reliable freshwater sources and intensified their exploitation of terrestrial small game and plants, including acorns (originally proposed by Rogers 1929; Gallegos 2002).

The Archaic Period in southern California is associated with a number of different cultures, complexes, traditions, and horizons, including San Dieguito, La Jolla, Encinitas, Milling Stone, and Pauma, as well as the Intermediate Period.

Late Prehistoric Period (Late Holocene: 1,300 YBP to 1790)

Approximately 1,350 YBP, a Shoshonean-speaking group from the Great Basin region moved into San Bernardino County, marking the transition to the Late Prehistoric Period. This period has been characterized by higher population densities and elaborations in social, political, and technological systems. Economic systems diversified and intensified during this period, with the continued elaboration of trade networks, the use of shell-bead currency, and the appearance of more labor-intensive, yet effective, technological innovations. Technological developments during this period included the introduction of the bow and arrow between A.D. 400 and 600 and the introduction of ceramics. Atlatl darts were replaced by smaller arrow darts, including the Cottonwood series points. Other hallmarks of the Late Prehistoric Period include extensive trade networks as far reaching as the Colorado River Basin and cremation of the dead.

Protohistoric Period (Late Holocene: 1790 to Present)

The territory of the Gabrielino at the time of Spanish contact covers much of present-day Los Angeles and Orange counties. The southern extent of this culture area is bounded by Aliso Creek, the eastern extent is located east of present-day San Bernardino along the Santa Ana River, the northern extent includes the San Fernando Valley, and the western extent includes portions of the Santa Monica Mountains. The Gabrielino also occupied several Channel Islands including Santa Barbara Island, Santa Catalina Island, San Nicholas Island, and San Clemente Island. Because of their access to certain resources, including a steatite source from Santa Catalina Island, this group was among the wealthiest and most populous aboriginal groups in all of southern California. Trade of materials and resources controlled by the Gabrielino extended as far north as the San Joaquin Valley, as far east as the Colorado River, and as far south as Baja California (Bean and Smith 1978; Kroeber 1925).

Subsistence and Settlement

The Gabrielino lived in permanent villages and smaller resource gathering camps occupied at various times of the year depending upon the seasonality of the resource. Larger

villages were comprised of several families or clans, while smaller seasonal camps typically housed smaller family units. The coastal area between San Pedro and Topanga Canyon was the location of primary subsistence villages, while secondary sites were located near inland sage stands, oak groves, and pine forests. Permanent villages were located along rivers and streams, as well as in sheltered areas along the coast. As previously mentioned, the Channel Islands were also the locations of relatively large settlements (Bean and Smith 1978; Kroeber 1925).

Resources procured along the coast and on the islands were primarily marine in nature and included tuna (*Thunnus* spp.), swordfish (*Xiphias gladius*), ray and shark (Chondrichthyes), California sea lion (*Zalophus californianus*), Stellar sea lion (*Eumetopias jubatus*), harbor seal (*Phoca vitulina*), northern elephant seal (*Mirounga angustirostris*), sea otter (*Enhydra lutris*), dolphin and porpoise (Delphinidae and Phocoenidae), various waterfowl species, numerous fish species, purple sea urchin (*Strongylocentrotus purpuratus*), and mollusk, such as rock scallop (*Crassadoma gigantea*), California mussel (*Mytilus californianus*), and limpet (Fissurellidae and Acmaeidae). Inland resources included oak acorn (*Quercus* sp.), pine nut (*Pinus* sp.), Mohave yucca (*Yucca schidigera*), cacti (*Opuntia* spp.), sage (*Salvia* sp.), grass nut (*Triteleia laxa*), deer (*Odocoileus hemionus*), rabbit (*Sylvilagus* spp.), hare (*Lepus californicus*), rodent (Rodentia), quail (*Callipepla*/*Oreortyx* spp.), duck (Anatidae), and a variety of reptiles such as western pond turtle (*Clemmys marmorata*) and numerous different snakes (Bean and Smith 1978; Kroeber 1925).

Social Organization

The social structure of the Gabrielino is little known; however, there appears to have been at least three social classes: 1) the elite, which included the rich, chiefs, and their immediate family; 2) a middle class, which included people of relatively high economic status or long-established lineages; and 3) a class of people that included most other individuals in the society. Villages were politically autonomous units comprised of several lineages. During times of the year when certain seasonal resources were available, the village would divide into lineage groups and move out to exploit them, returning to the village between forays (Bean and Smith 1978; Kroeber 1925).

Each lineage had its own leader, with the village chief coming from the dominant lineage. Several villages might be allied under a paramount chief. Chiefly positions were of an ascribed status, most often passed to the eldest son. Chiefly duties included providing village cohesion, leading warfare and peace negotiations with other groups, collecting tribute from the village(s) under his jurisdiction, and arbitrating disputes within the village(s). The status of the chief was legitimized by his safekeeping of the sacred bundle, a representation of the link between the material and spiritual realms and the embodiment of power (Bean and Smith 1978; Kroeber 1925).

Shamans were leaders in the spirit realm. The duties of the shaman included conducting healing and curing ceremonies, guarding the sacred bundle, locating lost items, identifying and

collecting poisons for arrows, and making rain (Bean and Smith 1978; Kroeber 1925).

Marriages were made between individuals of equal social status and, in the case of powerful lineages, marriages were arranged to establish political ties between the lineages (Bean and Smith 1978; Kroeber 1925).

Men conducted the majority of the heavy labor, hunting, fishing, and trading with other groups. Women's duties included gathering and preparing plant and animal resources, and making baskets, pots, and clothing (Bean and Smith 1978; Kroeber 1925).

Material Culture

Gabrielino houses were domed, circular structures made of thatched vegetation. Houses varied in size, and could house from one to several families. Sweathouses (semicircular, earth-covered buildings) were public structures used in male social ceremonies. Other structures included menstrual huts and a ceremonial structure called a *yuvar*, an open-air structure built near the chief's house (Bean and Smith 1978; Kroeber 1925).

Clothing was minimal; men and children most often went naked, while women wore deerskin or bark aprons. In cold weather, deerskin, rabbit fur, or bird skin (with feathers intact) cloaks were worn. Island and coastal groups used sea otter fur for cloaks. In areas of rough terrain, yucca fiber sandals were worn. Women often used red ochre on their faces and skin for adornment or protection from the sun. Adornment items included feathers, fur, shells, and beads (Bean and Smith 1978; Kroeber 1925).

Hunting implements included wooden clubs, sinew-backed bows, slings, and throwing clubs. Maritime implements included rafts, harpoons, spears, hook and line, and nets. A variety of other tools included deer scapulae saws, bone and shell needles, bone awls, scrapers, bone or shell flakers, wedges, stone knives and drills, metates, mullers, manos, shell spoons, bark platters, and wooden paddles and bowls. Baskets were made from rush (*Juncus* sp.), deer grass (*Muhlenbergia rigens*), and skunkbush (*Rhus trilobata*). Baskets were fashioned for hoppers, plates, trays, and winnowers for leaching, straining, and gathering. Baskets were also used for storing, preparing, and serving food, and for keeping personal and ceremonial items (Bean and Smith 1978; Kroeber 1925).

The Gabrielino had exclusive access to soapstone, or steatite, procured from Santa Catalina Island quarries. This highly prized material was used for making pipes, animal carvings, ritual objects, ornaments, and cooking utensils. The Gabrielino profited well from trading steatite since it was valued so much by groups throughout southern California (Bean and Smith 1978; Kroeber 1925).

3.2.2 Historic Period

The historic background of the project area began with the Spanish colonization 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 1998). 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 1998; Riverside County n.d.). 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 1998), 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 that were 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; Riverside County n.d.). 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 on 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 on prehistoric subsistence and social patterns. Not only does this illustrate how dependent the Native Americans had become on 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.

4.0 METHODOLOGY

The cultural resources assessment conducted for the Highland 44 Project consisted of a reconnaissance of the property by qualified archaeologists and an institutional records search. This archaeological study conformed to the statutory requirements of CEQA in evaluating potential impacts and the agency guidelines of the City of Highland.

4.1 Field Methodology

The archaeological survey of the property was an intensive pedestrian reconnaissance consisting of a series of parallel transects, spaced at approximately three to 10-meter intervals, which covered all areas of the project. Photographs were taken to document project conditions during the survey (see Section 5.2).

4.2 Archaeological Records Search

The records search conducted by the AIC at the SBCM was reviewed for an area of one mile surrounding the project in order to determine the presence of any previously recorded sites. Results of the records search are provided in Appendix B and discussed in Section 5.1.

4.3 Report Preparation and Recordation

This report contains information regarding previous studies, statutory requirements for the project, a brief description of the setting, research methods employed, and the overall results of the significance evaluation. The report includes all appropriate illustrations and tabular information needed to make a complete and comprehensive presentation of these activities, including the methodologies employed and the personnel involved. A copy of this report will be placed at the AIC at the SBCM. Any previously unrecorded sites or sites requiring updated information will be recorded on the appropriate Department of Parks and Recreation (DPR) forms, which will be filed with the AIC.

4.4 Native American Consultation

BFSA requested a review of the Sacred Lands File by the Native American Heritage Commission (NAHC) to determine if any recorded Native American sacred sites or locations of religious or ceremonial importance are present within one mile of the project. No Native American cultural resources were identified within one mile of the project. Original correspondence is provided in Appendix C.

5.0 REPORT OF FINDINGS

5.1 Results of the Institutional Records Searches

An archaeological records search was conducted by the AIC at the SBCM, the results of which were reviewed by BFSA. The AIC did not report any previously recorded sites within the project boundaries; however, 17 cultural resources have been recorded within a one-mile radius (Table 5.1–1). All but one of the recorded resources are historic and include a canal, a railroad spur, a ditch, two irrigation complexes, a water management structure, two historic trash deposits, a historic trash scatter, a ranch and associated canal, irrigation channels, remains of a school, a single-family residence and associated orchard, a historic wall and associated water conveyance system, an olive grove, and Base Line Road. The prehistoric resource consists of an isolated metate. The records search also indicated that there have been a total of 36 area-specific and nine general area overview cultural resource studies conducted within a one-mile radius of the project. According to the AIC, none of the cultural resource studies include the current project area. The AIC reviewed the following historic sources:

- The National Register of Historic Places Index
- The Office of Historic Preservation, Archaeological Determinations of Eligibility
- The Office of Historic Preservation, Directory of Properties in the Historic Property Data File
- The 15' USGS *Redlands* topographic map (1901 and 1954)
- The 30' USGS *Redlands and Vicinity* topographic map (1943)
- GLO Plat Map (1878 and 1896)

These sources did not indicate the presence of cultural resources within or adjacent to the project. The complete records search results are provided in Appendix B.

Although the search results did not indicate the presence of any historic or Native American cultural resources within the project area, the absence of positive results does not necessarily indicate the absence of cultural resources. Consequently, an archaeological survey was conducted for the project area.

Table 5.1–1
Cultural Resources Located Within a One-Mile
Radius of the Highland 44 Project

Site No.	Description
P-36-012193	Olive Grove
P-36-012194	Metate

Site No.	Description
P-36-015497	Base Line Road
SBR-6554/H	North Fork Canal
SBR-6847/H	Old Kite Route Railroad Spur
SBR-6848/H	Cram-Van Leuven Ditch
SBR-6849/H	Irrigation Complex
SBR-6850/H	Irrigation Ditch and Cinder Block Canal
SBR-6852/H	Water Management Structure
SBR-6853/H	Historic Trash Deposit
SBR-7051/H	East Highlands Ranch Orange Grove and Canal
SBR-7434/H	Historic Trash Dump
SBR-7995/H	Cram School Irrigation Channels
SBR-7996/H	Cram School Footing and Flag Pole
SBR-11,475/H	Craftsman Style Bungalow c. 1915
SBR-11,476/H	Eight Rock Walls, Gutter, and Irrigation Trench
SBR-12,205/H	Historic Trash Scatter

5.2 Results of the Field Survey

The archaeological survey of the Highland 44 property was conducted on November 18, 2014. The survey was directed by Brian F. Smith with assistance from Clarence L. Hoff. The archaeological survey of the property was an intensive pedestrian survey consisting of a series of parallel transects spaced at approximately three to 10-meter intervals. The majority of the project had good ground visibility (Plates 5.2–1 through 5.2–4). The entire property was accessible for the survey, with an asphalt entryway near Base Line Road and a circular driveway near the home still standing on the property (Plate 5.2–5). As noted previously, the property has been cleared and partially graded in the past. No native vegetation or undisturbed areas were noted on the property. Vegetation consisted of only introduced trees such as eucalyptus, pepper, and palm. Images of the property are provided in Plates 5.2–1 through 5.2–5. The intensive archaeological survey of the property did not result in the identification of any cultural resources. The previous disturbance of the property may have contributed to the survey results. However, no evidence was detected during the survey to suggest the prior existence of any cultural sites on the property.

According to historic aerial photographs of the property, all development on the parcel was conducted after 1968. Prior to this date, the property was used as an orchard. Because all of the structures located on the property were built after 1968, they do not meet the threshold to be considered historic structures under CEQA guidelines.

Plate 5.2–1: Overview of the project area, facing northwest.

Plate 5.2–2: Overview of the project area, facing west.

Plate 5.2–3: View of the northeast corner of the property, facing northwest.

Plate 5.2–4: View of the northwest corner of the property, facing northeast.

Plate 5.2–5: View of late 1960s structures and circular driveway, facing northeast.

6.0 RECOMMENDED MITIGATION

The Phase I archaeological assessment for the Highland 44 Project was negative for the presence of cultural resources. Although structures currently exist within the project area, all development on the parcel occurred after 1968. Due to all of the structures having been constructed after this date, none of the buildings meet the age threshold to be considered historic structures. Given that no resources were identified on the property, and no resources are recorded immediately adjacent to the project, the potential to encounter any cultural resources during grading is very small. Because of the absence of recorded cultural resources on the property and the lack of potential to encounter historic or prehistoric deposits, the project does not represent a source of potential impacts to cultural resources. Based upon this determination, it is recommended that the project be allowed to proceed without a Mitigation Monitoring and Reporting Program (MMRP) as a condition of approval. Archaeological monitoring will not be required for this development project.

7.0 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 that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

December 12, 2014

Brian F. Smith
Principal Investigator

Date

8.0 REFERENCES

American Local History Network: Riverside County, California
1998 American Local History Network's Page for Riverside County, California. Electronic Document, http://www.usgennet.org/usa/ca/county/riverside/, accessed 3/28/06.

Antevs, Ernst
1953 *The Postpluvial or Neothermal*. University of California Archaeological Survey Reports, No. 22, Berkley, (1953). pp. 9-23.

Bean, Lowell John and Charles R. Smith
1978 Serrano. *Handbook of North American Indians* Vol. 8. California. Smithsonian Institution, Washington, D.C.

Brigandi, Phil
1998 *Temecula: At the Crossroads of History*. Heritage Media Corporation, Encinitas, California.

Cook, Sherburne F.
1976 *The Conflict Between the California Indian and White Civilization*. University of California Press, Berkeley and Los Angeles, California.

Curray, J.R.
1965 Late Quaternary History: Continental Shelves of the United States. *Quaternary of the United States*, edited by H.E. Wright Jr. and D.G. Frey, pp. 723-735. Princeton University Press.

Erlandson, J. and R. Colten
1991 An Archaeological Context for Archaeological Sites on the California Coast. *Hunter-Gatherers of the Early Holocene Coastal California*, edited by J. Erlandson and R. Colten.

Fagan, B.
1991 *Ancient North America: The Archaeology of a Continent*. Thames and Hudson. London.

Gallegos, Dennis
1985 *A Review and Synthesis of Environmental and Cultural Material for the Batiquitos Lagoon Region*. Casual Papers, San Diego State University.

2002 Southern California in Transition: Late Holocene Occupation of Southern San Diego County. *Catalysts to Complexity: Late Holocene Societies of the California Coast*, edited by J. Erlandson and T. Jones.

Inman, Douglas L.
1983 Application of Coastal Dynamics to the Reconstruction of Paleocoastlines in the Vicinity of La Jolla, California. *Quaternary Coastlines and Marine Archaeology*. Edited by P.M. Masters and N.C. Flemming. Academic Press, Inc., Orlando, Florida.

Kroeber, A.L.
1925 *Handbook of the Indians of California*. Dover Editions, Dover Publications, Inc., New York.

Martin, P.S.
1967 Prehistoric Overkill. *Pleistocene Extinctions: The Search for a Cause*, edited by P. Martin and H.E. Wright. Yale University Press: New Haven.

1973 The Discovery of America. *Science* 179(4077):969-974.

Masters, Patricia M.
1983 Detection and Assessment of Prehistoric Artifact Sites off the Coast of Southern California. In: *Quaternary Coastlines and Marine Archaeology: Toward the Prehistory of Land Bridges and Continental Shelves*, edited by P.M. Masters and N.C. Flemming, pp. 189-213. Academic Press, London.

1994 *Archaeological Investigations at Five Sites on the Lower San Luis Rey River, San Diego County, California,* edited by Michael Moratto, pp. A1-A19. Infotec Research, Fresno, California and Gallegos and Associates, Pacific Palisades California.

Miller, J.
1966 *The Present and Past Molluscan Faunas and Environments of Four Southern California Coastal Lagoons*. Master's thesis. University of California, San Diego.

Moratto, Michael J.
1984 *California Archaeology*. Academic Press, New York.

Moss, M.L. and J. Erlandson
1995 Reflections on North American Coast Prehistory. *Journal of World Prehistory* 9(1):1-46.

Pourade, Richard F.
1964 *The Glory Years*. Union-Tribune Publishing Company, San Diego.

Reddy, S.
2000 *Settling the Highlands: Late Holocene Highland Adaptations on Camp Pendleton, San Diego County California*. Prepared for the Army Corps of Engineers by ASM Affiliates. Manuscript on file at South Coastal Information Center.

Riverside County
N.d. Welcome to Riverside County, California: Riverside County History. Electronic Document, http://www.co.riverside.ca.us/county_info/history.asp, accessed 3/28/06.

Rogers, Malcolm
1929 Archaeological Field Work in North America during 1928, California. *American Anthropologist* 31(3):341.

Van Devender, T.R. and W.G. Spaulding
1979 Development of Vegetation and Climate in the Southwestern United States. *Science* 204:701-710.

Warren, Claude N., and M.G. Pavesic
1963 *Shell Midden Analysis of Site SDI-603 and Ecological Implications for Cultural Development of Batiquitos Lagoon, San Diego County, Los Angeles*. University of California, Los Angeles, Archaeological Survey Annual Report, 1960-1961:246-338.

APPENDIX A

Qualifications of Key Personnel

Brian F. Smith, MA

Owner, Principal Investigator
Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: bsmith@bfsa-ca.com

Education

Master of Arts, History, University of San Diego, California **1982**

Bachelor of Arts, History and Anthropology, University of San Diego, California **1975**

Experience

Principal Investigator **1977–Present**
Brian F. Smith and Associates, Inc.

Brian F. Smith is the owner and principal historical and archaeological consultant for Brian F. Smith and Associates. In the past 35 years, he has conducted over 2,500 cultural resource studies in California, Arizona, Nevada, Montana, and Texas. These studies include every possible aspect of archaeology from literature searches and large-scale surveys to intensive data recovery excavations. Reports prepared by Brian Smith have been submitted to all facets of local, state, and federal review agencies, including the US Army Crops of Engineers (USACE), the Bureau of Land Management (BLM), Bureau of Reclamation (BR), the Department of Defense (DOD), and Department of Homeland Security. In addition, Mr. Smith has conducted studies for utility companies (Sempra Energy) and state highway departments (CalTrans).

Professional Accomplishments

These selected major professional accomplishments represent research efforts which have added significantly to the body of knowledge concerning the prehistoric lifeways of cultures once present in the southern California area and historic settlement since the late 18th century. Mr. Smith has been principal investigator on the following select projects, except where noted.

Downtown San Diego Mitigation and Monitoring Reporting Programs: Large number of downtown San Diego mitigation and monitoring projects submitted to the Centre City Development Corporation, some of which included Strata (2008), Hotel Indigo (2008), Lofts at 707 10th Avenue Project (2007), Breeza (2007), Bayside at the Embarcadero (2007), Aria (2007), Icon (2007), Vantage Pointe (2007), Aperture (2007), Sapphire Tower (2007), Lofts at 655 Sixth Avenue (2007), Metrowork (2007), The Legend (2006), The Mark (2006), Smart Corner (2006), Lofts at 677 7th Avenue (2005), Aloft on Cortez Hill (2005), Front and Beech Apartments (2003), Bella Via Condominiums (2003), Acqua Vista Residential Tower (2003), Northblock Lofts (2003), Westin Park Place Hotel (2001), Parkloft Apartment Complex (2001), Renaissance Park (2001), and Laurel Bay Apartments (2001).

Archaeology at the Padres Ballpark: Involved the analysis of historic resources within a seven block area of the "East Village" area of San Diego, where occupation spanned a period from the 1870s to

the 1940s. Over a period of two years, BFSA recovered over 200,000 artifacts and hundreds of pounds of metal, construction debris, unidentified broken glass, and wood. Collectively, the Ballpark project and the other downtown mitigation and monitoring projects represent the largest historical archaeological program anywhere in the country in the past decade. 2000-2007.

The Navy Broadway Complex: Architectural and historical assessment of over 25 structures that comprise the Naval Supply Depot, many of which have been in use since World War I and were used extensively during World War II. The EIR/EIS which was prepared included National Register evaluations of all structures. The archaeological component of the project involved the excavation of backhoe trenches to search for evidence of the remains of elements of the historic waterfront features that characterized the bay front in the latter half of the 19th century. This study was successful in locating portions of wharves and shanties that existed on the site prior to capping of this area after construction of the sea wall in the early 20th century.

4S Ranch Archaeological and Historical Cultural Resources Study: Data recovery program consisted of the excavation of over 2,000 square meters of archaeological deposits that produced over one million artifacts, primarily prehistoric materials. The archaeological program at 4S Ranch is the largest archaeological study ever undertaken in the San Diego County area and has produced data that has exceeded expectations regarding the resolution of long-standing research questions and regional prehistoric settlement patterns.

Charles H. Brown Site: Attracted international attention to the discovery of evidence of the antiquity of man in North America. Site located in Mission Valley, in the City of San Diego.

Del Mar Man Site: Study of the now famous Early Man Site in Del Mar, California, for the San Diego Science Foundation and the San Diego Museum of Man, under the direction of Dr. Spencer Rogers and Dr. James R. Moriarty.

Old Town State Park Projects: Consulting Historical Archaeologist. Projects completed in the Old Town State Park involved development of individual lots for commercial enterprises. The projects completed in Old Town include Archaeological and Historical Site Assessment for the Great Wall Cafe (1992), Archaeological Study for the Old Town Commercial Project (1991), and Cultural Resources Site Survey at the Old San Diego Inn (1988).

Site W-20, Del Mar, California: A two-year-long investigation of a major prehistoric site in the Del Mar area of the City of San Diego. This research effort documented the earliest practice of religious/ceremonial activities in San Diego County (circa 6,000 years ago), facilitated the projection of major non-material aspects of the La Jolla Complex, and revealed the pattern of civilization at this site over a continuous period of 5,000 years. The report for the investigation included over 600 pages, with nearly 500,000 words of text, illustrations, maps, and photographs which document this major study.

City of San Diego Reclaimed Water Distribution System: A cultural resource study of nearly 400 miles of pipeline in the City and County of San Diego.

Master Environmental Assessment Project, City of Poway: Conducted for the City of Poway to produce a complete inventory of all recorded historic and prehistoric properties within the City. The information was used in conjunction with the City's General Plan Update to produce a map matrix of the City showing areas of high, moderate, and low potential for the presence of cultural resources. The effort also included the development of the City's Cultural Resource Guidelines, which were adopted as City policy.

Draft of the City of Carlsbad Historical and Archaeological Guidelines: Contracted by the City of Carlsbad to produce the draft of the City's historical and archaeological guidelines for use by the Planning Department of the City.

The Midbayfront Project for the City of Chula Vista: Involved a large expanse of undeveloped agricultural land situated between the railroad and San Diego Bay in the northwestern portion of the City. The study included the analysis of some potentially historic features and numerous prehistoric sites.

Cultural resources survey and test of sites within the proposed development of the Audie Murphy Ranch, Riverside County, California: Project Manager/Director of the investigation of 1,113.4 acres and 43 sites, both prehistoric and historic—included project coordination; direction of field crews; evaluation of sites for significance based on County of Riverside and CEQA guidelines; assessment of cupule, pictograph, and rock shelter sites, co-authoring of cultural resources project report. February-September 2002.

Cultural resources evaluation of sites within the proposed development of the Otay Ranch Village 13 Project, San Diego County, California: Project Manager/Director of the investigation of 1,947 acres and 76 sites, both prehistoric and historic—included project coordination and budgeting; direction of field crews; assessment of sites for significance based on County of San Diego and CEQA guidelines; co-authoring of cultural resources project report. May-November 2002.

Cultural resources survey for the Remote Video Surveillance Project, El Centro Sector, Imperial County: Project Manager/Director for a survey of 29 individual sites near the U.S./Mexico Border for proposed video surveillance camera locations associated with the San Diego Border barrier Project—project coordination and budgeting; direction of field crews; site identification and recordation; assessment of potential impacts to cultural resources; meeting and coordinating with U.S. Army Corps of Engineers, U.S. Border Patrol, and other government agencies involved; co-authoring of cultural resources project report. January, February, and July 2002.

Cultural resources survey and test of sites within the proposed development of the Menifee West GPA, Riverside County, California: Project Manager/Director of the investigation of nine sites, both prehistoric and historic—included project coordination and budgeting; direction of field crews; assessment of sites for significance based on County of Riverside and CEQA guidelines; historic research; co-authoring of cultural resources project report. January-March 2002.

Mitigation of a Archaic cultural resource for the Eastlake III Woods Project for the City of Chula Vista, California: Project Archaeologist/ Director—included direction of field crews; development and completion of data recovery program including collection of material for specialized faunal and botanical analyses; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; co-authoring of cultural resources project report, in prep. September 2001-March 2002.

Cultural resources survey and test of sites within the proposed French Valley Specific Plan/EIR, Riverside County, California: Project Manager/Director of the investigation of two prehistoric and three historic sites—included project coordination and budgeting; survey of project area; Native American consultation; direction of field crews; assessment of sites for significance based on CEQA guidelines; cultural resources project report in prep. July-August 2000.

Cultural resources survey and test of sites within the proposed Lawson Valley Project, San Diego County, California: Project Manager/Director of the investigation of 28 prehistoric and two historic sites—included project coordination; direction of field crews; assessment of sites for significance based on CEQA guidelines; cultural resources project report in prep. July-August 2000.

Cultural resource survey and geotechnical monitoring for the Mohyi Residence Project, La Jolla, California: Project Manager/Director of the investigation of a single-dwelling parcel—included project coordination; field survey; assessment of parcel for potentially buried cultural deposits; monitoring of geotechnichal borings; authoring of cultural resources project report. Brian F. Smith and Associates, San Diego, California. June 2000.

Enhanced cultural resource survey and evaluation for the Prewitt/Schmucker/Cavadias Project, La Jolla, California: Project Manager/Director of the investigation of a single-dwelling parcel—included project coordination; direction of field crews; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. June 2000.

Cultural resources survey and test of sites within the proposed development of the Menifee Ranch, Riverside County, California: Project Manager/Director of the investigation of one prehistoric and five historic sites—included project coordination and budgeting; direction of field crews; feature recordation; historic structure assessments; assessment of sites for significance based on CEQA guidelines; historic research; co-authoring of cultural resources project report. February-June 2000.

Salvage mitigation of a portion of the San Diego Presidio identified during water pipe construction for the City of San Diego, California: Project Archaeologist/Director—included direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. April 2000.

Enhanced cultural resource survey and evaluation for the Tyrian 3 Project, La Jolla, California: Project Manager/Director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced cultural resource survey and evaluation for the Lamont 5 Project, Pacific Beach, California: Project Manager/Director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced cultural resource survey and evaluation for the Reiss Residence Project, La Jolla, California: Project Manager/Director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. March-April 2000.

Salvage mitigation of a portion of Site SDM-W-95 (CA-SDI-211) for the Poinsettia Shores Santalina Development Project and Caltrans, Carlsbad, California: Project Archaeologist/ Director—included direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. December 1999-January 2000.

Survey and testing of two prehistoric cultural resources for the Airway Truck Parking Project, Otay Mesa, California: Project Archaeologist/Director—included direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; authoring of cultural resources project report, in prep. December 1999-January 2000.

Cultural resources Phase I and II investigations for the Tin Can Hill Segment of the Immigration and Naturalization Services Triple Fence Project along the International Border, San Diego County,

California: Project Manager/Director for a survey and testing of a prehistoric quarry site along the border—NRHP eligibility assessment; project coordination and budgeting; direction of field crews; feature recordation; meeting and coordinating with U.S. Army Corps of Engineers; co-authoring of cultural resources project report. December 1999-January 2000.

Mitigation of a prehistoric cultural resource for the Westview High School Project for the City of San Diego, California: Project Archaeologist/ Director—included direction of field crews; development and completion of data recovery program including collection of material for specialized faunal and botanical analyses; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; co-authoring of cultural resources project report, in prep. October 1999-January 2000.

Mitigation of a prehistoric cultural resource for the Otay Ranch SPA-One West Project for the City of Chula Vista, California: Project Archaeologist/Director—included direction of field crews; development of data recovery program; management of artifact collections cataloging and curation; assessment of site for significance based on CEQA guidelines; data synthesis; authoring of cultural resources project report, in prep. September 1999-January 2000.

Monitoring of grading for the Herschel Place Project, La Jolla, California: Project Archaeologist/ Monitor—included monitoring of grading activities associated with the development of a single-dwelling parcel. September 1999.

Survey and testing of an historic resource for the Osterkamp Development Project, Valley Center, California: Project Archaeologist/ Director—included direction of field crews; development and completion of data recovery program; budget development; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and testing of a prehistoric cultural resource for the Proposed College Boulevard Alignment Project, Carlsbad, California: Project Manager/Director —included direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report, in prep. July-August 1999.

Survey and evaluation of cultural resources for the Palomar Christian Conference Center Project, Palomar Mountain, California: Project Archaeologist—included direction of field crews; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and evaluation of cultural resources at the Village 2 High School Site, Otay Ranch, City of Chula Vista, California: Project Manager/Director —management of artifact collections cataloging and curation; assessment of site for significance based on CEQA guidelines; data synthesis; authoring of cultural resources project report. July 1999.

Cultural resources Phase I, II, and III investigations for the Immigration and Naturalization Services Triple Fence Project along the International Border, San Diego County, California: Project Manager/Director for the survey, testing, and mitigation of sites along border—supervision of multiple field crews, NRHP eligibility assessments, Native American consultation, contribution to Environmental Assessment document, lithic and marine shell analysis, authoring of cultural resources project report. August 1997-January 2000.

Phase I, II, and II investigations for the Scripps Poway Parkway East Project, Poway California: Project

Archaeologist/Project Director—included recordation and assessment of multicomponent prehistoric and historic sites; direction of Phase II and III investigations; direction of laboratory analyses including prehistoric and historic collections; curation of collections; data synthesis; coauthorship of final cultural resources report. February 1994; March-September 1994; September-December 1995.

Archaeological evaluation of cultural resources within the proposed corridor for the San Elijo Water Reclamation System Project, San Elijo, California: Project Manager/Director —test excavations; direction of artifact identification and analysis; graphics production; coauthorship of final cultural resources report. December 1994-July 1995.

Evaluation of Cultural Resources for the Environmental Impact Report for the Rose Canyon Trunk Sewer Project, San Diego, California: Project Manager/Director —direction of test excavations; identification and analysis of prehistoric and historic artifact collections; data synthesis; co-authorship of final cultural resources report, San Diego, California. June 1991-March 1992.

Reports/Papers

Author, coauthor, or contributor, to over 2,500 cultural resources management publications, a selection of which are presented below.

2009 Cultural Resource Assessment of the North Ocean Beach Gateway Project City of San Diego #64A-003A; Project #154116.

2009 Archaeological constraints study of the Morgan Valley Wind Assessment Project, Lake County, California.

2008 Results of an archaeological review of the Helen Park Lane 3.1-acre Property (APN 314-561-31), Poway, California.

2008 Archaeological Letter Report for a Phase I Archaeological Assessment of the Valley Park Condominium Project, Ramona, California; APN 282-262-75-00.

2007 Archaeology at the Ballpark. Brian F. Smith and Associates, San Diego, California. Submitted to the Centre City Development Corporation.

2007 Result of an Archaeological Survey for the Villages at Promenade Project (APNs 115-180-007-3,115-180-049-1, 115-180-042-4, 115-180-047-9) in te City of Corona, Riverside County.

2007 Monitoring Results for the Capping of Site CA-SDI-6038/SDM-W-5517 within the Katzer Jamul Center Project; P00-017.

2006 Archaeological Assessment for The Johnson Project (APN 322-011-10), Poway, California.

2005 Results of archaeological monitoring at the El Camino Del Teatro Accelerated Sewer Replacement Project (Bid No. K041364; WO # 177741; CIP # 46-610.6.

2005 Results of archaeological monitoring at the Baltazar Draper Avenue Project (Project No. 15857; APN: 351-040-09).

2004 TM 5325 ER #03-14-043 Cultural Resources.

Jennifer R. Kraft, BA

Field Services Manager, Faunal Analyst
Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 484-0915 • Fax: (858) 679-9896 • E-Mail: jenni.kraft@gmail.com

Education

Master of Arts, Cultural Resource Management Archaeology — **In Progress**
Saint Cloud State University, Saint Cloud, Minnesota — **2015**

Bachelor of Arts, Anthropology — **2004**
University of California, Santa Cruz

Research Interests

California Coastal Archaeology

Medical Anthropology

Human Behavioral Ecology

Zooarchaeology

Historical Archaeology

Taphonomic Studies

Experience

Field Services Manager, Faunal Analyst — **November 2006–Present**
Brian F. Smith and Associates, Inc.

Duties include report writing, editing and production; construction monitoring management; coordination of field survey and excavation crews; laboratory and office management. Currently conducts faunal, prehistoric, and historic laboratory analysis and has conducted such analysis for over 500 projects over the past 7 years. Knowledgeable in the most recent archaeological and paleontological monitoring requirements for all Southern California lead agencies, as well as Native American monitoring requirements.

UC Santa Cruz Monterey Bay Archaeology Archives Supervisor — **December 2003–March 2004**
Santa Cruz, California

Supervising intern for archaeological collections housed at UC Santa Cruz. Supervised undergraduate interns and maintained curated archaeological materials recovered from the greater Monterey Bay region.

Faunal Analyst, Research Assistant **June 2003–December 2003**
University of California, Santa Cruz

Intern assisting in laboratory analysis and cataloging for faunal remains collected from CA-MNT-234. Analysis included detailed zoological identification and taphonomic analysis of prehistoric marine and terrestrial mammals, birds, and fish inhabiting the greater Monterey Bay region.

Archaeological Technician, Office Manager **January 2000-December 2001**
Archaeological Resource Management

Conducted construction monitoring, field survey, excavation, report editing, report production, monitoring coordination and office management.

Certifications

City of San Diego Certified Archaeological and Paleontological Monitor

40-Hour Hazardous Waste/Emergency Response OSHA 29 CFR 1910.120 (e)

Technical Reports

Kennedy, George L., Todd A. Wirths and Jennifer R. **Kraft**

2013 *Negative Paleontological, Archaeological, and Native American Monitoring and Mitigation Report, Tri-City Christian High School, 302 North Emerald Drive, Vista, San Diego County, California (APN 166-411-75).* Prepared for Tri-City Christian School. Report on file at the California South Coastal Information Center.

Kraft, Jennifer R.

2012 *Cultural Resources Monitoring Report for the Pottery Court Project (TPM 36193) City of Lake Elsinore*. Prepared for BRIDGE Housing Corporation. Report on file at the California Eastern Information Center.

Kraft, Jennifer R. and Brian F. Smith

2013 *Archaeological Monitoring Report for the Webster Residence, La Jolla, California.* Prepared for KW Building and Development. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Alvarado Trunk Sewer Phase III Project, City of San Diego.* Prepared for Ortiz Corporation General Engineering Contractors. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Alvarado Trunk Sewer Phase IIIA Project, City of San Diego.* Prepared for TC Construction, Inc. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Coral Mountain Apartments Project, City of La Quinta, California*. Prepared for Coral Mountain Apartments, LP. Report on file at the California Eastern Information Center.

2013 *Cultural Resource Monitoring Report for the F Street Emergency Water Main Replacement Project, City of San Diego*. Prepared for Orion Construction. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Harbor Drive Trunk Sewer Project, City of San Diego*. Prepared for Burtech Pipeline. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Hyde Residence.* Prepared for Dr. Paul Hyde. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Juniper Street Sidewalk Project, City of San Diego*. Prepared for Palm Engineering Construction Company, Inc. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Kates Residence Project.* Prepared for Brad and Shannon Kates. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Pump Station 84 Upgrade and Pump Station 62 Abandonment Project.* Prepared for TC Construction, Inc. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Sewer and Water Group 781 Project*. Prepared for TC Construction, Inc. Report on file at the California South Coastal Information Center.

2013 *Cultural Resource Monitoring Report for the Woolf Residence Project*. Prepared for A.J. Woolf Family Trust. Report on file at the California South Coastal Information Center.

2013 *Cultural Resources Study of the Fairway Drive Project.* Prepared for CV Communities, LLC. Report on file at the California Eastern Information Center.

2013 *Cultural Resource Monitoring Report for the Old Town Community Church Project, 2444 Congress Street, San Diego, California 92110.* Prepared for Soltek Pacific, Inc. Report on file at the California South Coastal Information Center.

2013 *Historic Structure Assessment, 161 West San Ysidro Boulevard, San Diego, California (APN 666-030-09)*. Prepared for Blue Key Realty. Report on file at the California South Coastal Information Center.

2013 *Historic Structure Assessment, 2603 Dove Street, San Diego, California (APN) 452-674-32).* Prepared for Barzal and Scotti Real Estate Corporation. Report on file at the California South Coastal Information Center.

2013 *Historic Structure Assessment at the Western Christian School, 3105 Padua Avenue, Claremont, California 91711 (APN 8671-005-053).* Prepared for Western Christian School. Report on file at the City of Claremont.

2013 *Mitigation Monitoring Report for the 7th and F Street Parking Project, City of San Diego*. Prepared for DZI Construction. Report on file at the California South Coastal Information Center.

2013 *Mitigation Monitoring Report for the 1919 Spindrift Drive Project*. Prepared for V.J. and Uma Joshi. Report on file at the California South Coastal Information Center.

2013 *Mitigation Monitoring Report for the Knight Residence Project, 7970 Roseland Avenue, La Jolla, California*. Prepared for Mr. Dennis Knight. Report on file at the California South Coastal Information Center.

2013 *Mitigation Monitoring Report for the Sewer Group 799-750 Project.* Prepared for Burtech Pipeline. Report on file at the California South Coastal Information Center.

2013 *Negative Cultural Resource Monitoring Report for the Citywide Pump Station Upgrades Group II Project.* Prepared for Ortiz Corporation General Engineering Contractors. Report on file at the California South Coastal Information Center.

2013 *Negative Cultural Resource Monitoring Report for the Citywide Pump Station Upgrades Group III Project, City of San Diego*. Prepared for TC Construction, Inc. Report on file at the California South Coastal Information Center.

2013 *Phase I Cultural Resource Study for the 3364 Randy Lane Project, Chula Vista, California*. Prepared for H&M Construction. Report on file at the California South Coastal Information Center.

2013 *Phase I Cultural Resources Survey for the Ecos Diamond Valley Project, Community of Winchester, County of Riverside.* Prepared for Ecos Energy, LLC. Report on file at the California Eastern Information Center.

2013 *Phase I Cultural Resources Survey for the Ecos Nuevo Project, Community of Nuevo, County of Riverside*. Prepared for Ecos Energy, LLC. Report on file at the California Eastern Information Center.

2012 *Cultural Resource Monitoring Report for the Sewer and Water Group 754 Project, City of San Diego (Project No. 177711/187301)*. Prepared for S.C. Valley Engineering, Inc. Report on file at the California South Coastal Information Center

2012 *Cultural Resource Monitoring Report for the Sewer Group 714 Project.* Prepared for Burtech Pipeline. Report on file at the California South Coastal Information Center.

2012 *Cultural Resource Monitoring Report for the Sewer and Water Group 780 Project*. Prepared for Burtech Pipeline. Report on file at the California South Coastal Information Center.

2012 *Mitigation Monitoring of the 47th Street Warehouse Project, San Diego, California.* Prepared for Aardema Development. Report on file at the California South Coastal Information Center.

2012 *Mitigation Monitoring Report for the Florida Street Apartments Project (The Kalos Project).* Prepared for Florida Street Housing Associates. Report on file at the California South Coastal Information Center.

2012 *Mitigation Monitoring Report for the Pacific Highway Trunk Sewer Project*. Prepared for HPS Mechanical. Report on file at the California South Coastal Information Center.

2011 *Phase I Cultural Resource Study for the Wesley Palms Retirement Community Project, San Diego, California.* Prepared for Front Porch Development Company. Report on file at the California South Coastal Information Center.

Kraft, Jennifer R. and Tracy A. Stropes

2013 *Phase I Cultural Resources Survey for the Orange Street Project.* Prepared for Mike Lesle. Report on file at the California Eastern Information Center.

2012 *Mitigation Monitoring Report for the 13th & Market Project*. Prepared for The Hanover Company. Report on file at the California South Coastal Information Center.

2012 *Mitigation Monitoring Report for the T-Mobile West, LLC Telecommunications Candidate SD02867C (Presidio Park).* Prepared for Michael Brandmann Associates. Report on file at the California South Coastal Information Center.

Kraft, Jennifer R., Tracy A. Stropes, and Brian F. Smith

2013 *Mitigation Monitoring Report for the Ariel Suites Project*. Prepared for Ariel Suites, LP. Report on file at the California South Coastal Information Center.

Smith, Brian F., Claire M. Allen, Mary M. Lenich, and Jennifer R. **Kraft**

2013 *Phase I and Phase II Cultural Resource Assessment for the Citrus Heights II Project, TTM 36475, Riverside County, California*. Prepared for CV Communities, LLC. Report on file at the California Eastern Information Center.

Smith, Brian F. and Jennifer R. **Kraft**

2013 *Cultural Resources Study for the Los Peñasquitos Adobe Drainage Project.* Prepared for HELIX Environmental Planning, Inc. Report on file at the California South Coastal Information Center.

2013 *Cultural Resources Study for the Rancho Peñasquitos Adobe Drainage MND Project, San Diego County, California (CSD-04.03).* Prepared for HELIX Environmental Planning, Inc. Report on file at the California South Coastal Information Center.

Contributing Author /Analyst

2011 Faunal Analysis and Report Section for *A Cultural Resource Data Recovery Program for SDI-4606 Locus B for St. Gabriel's Catholic Church, Poway, California* by Brian F. Smith and Tracy A. Stropes. Prepared for St. Gabriel's Catholic Church. Report on file at the California South Coastal Information Center.

2010 Faunal Analysis and Report Section for *An Archaeological Study for the 1912 Spindrift Drive Project, La Jolla, California* by Brian F. Smith and Tracy A. Stropes. Prepared for Island Architects. Report on file at the California South Coastal Information Center.

2010 Faunal Analysis and Report Section for *Results of a Cultural Mitigation and Monitoring Program for Robertson Ranch: Archaic and Late Prehistoric Camps near the Agua Hedionda Lagoon* by Brian F. Smith. Prepared for McMillan Land Development. Report on file at the California South Coastal Information Center.

2009 Faunal Identification for "An Earlier Extirpation of Fur Seals in the Monterey Bay Region: Recent Findings and Social Implications" by Diane Gifford-Gonzalez and Charlotte K. Sunseri. *Proceedings of the Society for California Archaeology, Vol. 21, 2009*

APPENDIX B

Archaeological Records Search Results

(Not for Public Review; Bound Separately)

APPENDIX C

NAHC Sacred Lands File Search Results

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

November 17 2014

For: Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, California 95814

From: Tracy A Stropes, M.A., RPA
Brian F. Smith and Associates
14010 Poway Rd. Suite A
Poway, CA 92064

Re: Request for a Sacred Lands File records search for the Highland 44 Project, San Bernardino County, California.

I am writing to request a record search of the Sacred Lands File and a list of appropriate Native American contacts for the Highland 44 Project, located in San Bernardino County, California. The proposed project is an approximately 8-acre project located within the County of San Bernardino just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5 minute *Redlands* topographic quadrangle (Township 1 North, Range 3 West). Please find an attached section of the USGS *Redlands* quadrangle map on which the project area is delineated.

Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
Phone: 858-484-0915
Email: tstropes@bfsa-ca.com

Attachments:
USGS 7.5 minute *Redlands,* California topographic map with project area delineated.

Sacred Lands File & Native American Contacts List Request
NATIVE AMERICAN HERITAGE COMMISSION
915 Capitol Mall, RM 364 Sacramento, CA 95814 (916) 653-4082
(916) 657-5390 – Fax
nahc@pacbell.net

Information Below is Required for a Sacred Lands File Search

Project: Highland 44 Project

County: San Bernardino

USGS Quadrangle Name: *Redlands*

Township: 1N Range: 3W Section 35

Company/Firm/Agency: Brian F. Smith & Associates

Contact Person: Tracy A. Stropes, RPA

Street Address: 14010 Poway Road, Suite A

City: Poway Zip: 92064

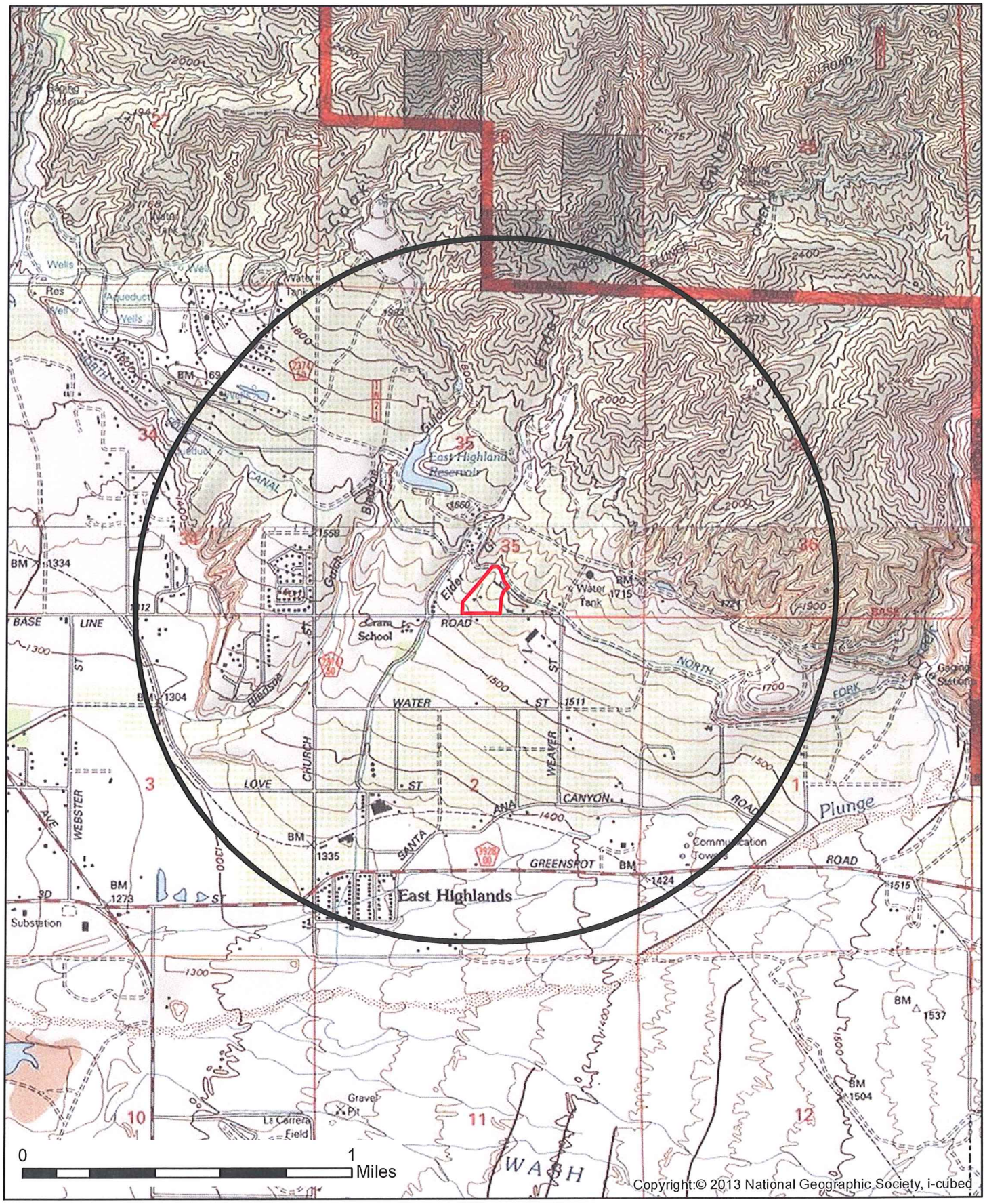
Phone: 858-484-0915

Fax: 858-679-9896

Email: tstropes@bfsa-ca.com

Project Description:

The project is a Phase I cultural resource survey project for the Highland 44 Project, located in San Bernardino County, California. The proposed project is an approximately 8-acre project located within the County of San Bernardino just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5 minute *Redlands* topographic quadrangle (Township 1 North, Range 3 West). Please find an attached section of the USGS *Redlands* quadrangle map on which the project area is delineated.



Legend

Buffer

APE

Record Search Location Map
The Highland 44 Project
USGS Harrison Mountain and Redlands 7.5-minute Quadrangles

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

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

November 24, 2014

Tracy A. Stropes
Brian F. Smith and Associates, Inc.
14010 Poway Road, Suite A
Poway, CA 92064

Sent by Fax: (858) 679-9896
Number of Pages: 2

Re: The Highland 44 Project, San Bernardino County.

Dear Ms. Stropes,

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. 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 or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 373-3712.

Sincerely,

Katy Sanchez

Katy Sanchez
Associate Government Program Analyst

Native American Contacts
San Bernardino County
November 21, 2014

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

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

Soboba Band of Mission Indians
Rosemary Morillo, Chairperson; Attn: Carrie Garcia
P.O. Box 487 Luiseno
San Jacinto , CA 92581
carrieg@soboba-nsn.gov
(951) 654-2765
(951) 654-4198 Fax

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

Morongo Band of Mission Indians
Denisa Torres, Cultural Resources Manager
12700 Pumarra Road Cahuilla
Banning , CA 92220 Serrano
dtorres@morongo-nsn.gov
(951) 572-6004 Fax

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 Luiseno
San Jacinto , CA 92581
jontiveros@soboba-nsn.gov
(951) 663-5279
(951) 654-5544, ext 4137
(951) 654-4198 Fax

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

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

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

This list is only applicable for contacting locative Americans with regard to cultural resources for the proposed Highlands 44 Project, San Bernardino County.

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

December 2, 2014

Lynn Valbuena
Chairwoman
San Manuel Band of Mission Indians
26569 Community Center Drive
Highland, California 92346

Subject: Information regarding Native American cultural resources on or near the Highland 44 Project, Highland, San Bernardino County, California

Dear Ms. Valbuena:

This inquiry is requesting information you may have regarding the existence of Native American cultural resources on or near the Highland 44 Project. The information you provide will be used to assess areas of potential adverse impact within the proposed project's Area of Potential Effect (APE). Any information you might provide will be kept confidential and will not be divulged to the public.

The project is in Highland, within San Bernardino County, California. The project is approximately eight acres located just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5-minute *Redlands, California* topographic quadrangle (Township 1 North, Range 3 West). Please find enclosed sections of the USGS *Redlands* Quadrangle map on which the project is delineated.

Although according to the Sacred Lands File no *known* resources are present within the Highland 44 Project property, the Native American Heritage Commission requested that we consult with you directly regarding the potential for the presence of Native American cultural resources that may be impacted by this project. If you do have information to provide regarding any resources on or near the project, please contact Brian Smith or myself at (858) 484-0915, or contact the City of Highland directly. We would like to extend our thanks for your response regarding this issue.

Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
tstropes@bfsa-ca.com

Attachment:
USGS 7.5-minute *Redlands, California* topographic map with project area delineated

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

December 2, 2014

Rosemary Morillo, Chairperson
c/o Carrie Garcia
Soboba Band of Mission Indians
P.O. Box 487
San Jacinto, California 92581

Subject: Information regarding Native American cultural resources on or near the Highland 44 Project, Highland, San Bernardino County, California

Dear Ms. Morillo:

This inquiry is requesting information you may have regarding the existence of Native American cultural resources on or near the Highland 44 Project. The information you provide will be used to assess areas of potential adverse impact within the proposed project's Area of Potential Effect (APE). Any information you might provide will be kept confidential and will not be divulged to the public.

The project is in Highland, within San Bernardino County, California. The project is approximately eight acres located just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5-minute *Redlands, California* topographic quadrangle (Township 1 North, Range 3 West). Please find enclosed sections of the USGS *Redlands* Quadrangle map on which the project is delineated.

Although according to the Sacred Lands File no *known* resources are present within the Highland 44 Project property, the Native American Heritage Commission requested that we consult with you directly regarding the potential for the presence of Native American cultural resources that may be impacted by this project. If you do have information to provide regarding any resources on or near the project, please contact Brian Smith or myself at (858) 484-0915, or contact the City of Highland directly. We would like to extend our thanks for your response regarding this issue.

Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
tstropes@bfsa-ca.com

Attachment:
USGS 7.5-minute *Redlands, California* topographic map with project area delineated

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

December 2, 2014

Denisa Torres
Cultural Resources Manager
Morongo Band of Mission Indians
12700 Pumarra Road
Banning, California 92220

Subject: Information regarding Native American cultural resources on or near the Highland 44 Project, Highland, San Bernardino County, California

Dear Ms. Torres:

This inquiry is requesting information you may have regarding the existence of Native American cultural resources on or near the Highland 44 Project. The information you provide will be used to assess areas of potential adverse impact within the proposed project's Area of Potential Effect (APE). Any information you might provide will be kept confidential and will not be divulged to the public.

The project is in Highland, within San Bernardino County, California. The project is approximately eight acres located just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5-minute *Redlands, California* topographic quadrangle (Township 1 North, Range 3 West). Please find enclosed sections of the USGS *Redlands* Quadrangle map on which the project is delineated.

Although according to the Sacred Lands File no *known* resources are present within the Highland 44 Project property, the Native American Heritage Commission requested that we consult with you directly regarding the potential for the presence of Native American cultural resources that may be impacted by this project. If you do have information to provide regarding any resources on or near the project, please contact Brian Smith or myself at (858) 484-0915, or contact the City of Highland directly. We would like to extend our thanks for your response regarding this issue.

Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
tstropes@bfsa-ca.com

Attachment:
USGS 7.5-minute *Redlands, California* topographic map with project area delineated

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

December 2, 2014

Daniel McCarthy, M.S.
Director, CRM Department
San Manuel Band of Mission Indians
26569 Community Center Drive
Highland, California 92346

Subject: Information regarding Native American cultural resources on or near the Highland 44 Project, Highland, San Bernardino County, California

Dear Mr. McCarthy:

This inquiry is requesting information you may have regarding the existence of Native American cultural resources on or near the Highland 44 Project. The information you provide will be used to assess areas of potential adverse impact within the proposed project's Area of Potential Effect (APE). Any information you might provide will be kept confidential and will not be divulged to the public.

The project is in Highland, within San Bernardino County, California. The project is approximately eight acres located just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5-minute *Redlands, California* topographic quadrangle (Township 1 North, Range 3 West). Please find enclosed sections of the USGS *Redlands* Quadrangle map on which the project is delineated.

Although according to the Sacred Lands File no *known* resources are present within the Highland 44 Project property, the Native American Heritage Commission requested that we consult with you directly regarding the potential for the presence of Native American cultural resources that may be impacted by this project. If you do have information to provide regarding any resources on or near the project, please contact Brian Smith or myself at (858) 484-0915, or contact the City of Highland directly. We would like to extend our thanks for your response regarding this issue.

Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
tstropes@bfsa-ca.com

Attachment:
USGS 7.5-minute *Redlands, California* topographic map with project area delineated

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

December 2, 2014

Robert Martin
Chairperson
Morongo Band of Mission Indians
12700 Pumarra Road
Banning, California 92220

Subject: Information regarding Native American cultural resources on or near the Highland 44 Project, Highland, San Bernardino County, California

Dear Mr. Martin:

This inquiry is requesting information you may have regarding the existence of Native American cultural resources on or near the Highland 44 Project. The information you provide will be used to assess areas of potential adverse impact within the proposed project's Area of Potential Effect (APE). Any information you might provide will be kept confidential and will not be divulged to the public.

The project is in Highland, within San Bernardino County, California. The project is approximately eight acres located just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5-minute *Redlands, California* topographic quadrangle (Township 1 North, Range 3 West). Please find enclosed sections of the USGS *Redlands* Quadrangle map on which the project is delineated.

Although according to the Sacred Lands File no *known* resources are present within the Highland 44 Project property, the Native American Heritage Commission requested that we consult with you directly regarding the potential for the presence of Native American cultural resources that may be impacted by this project. If you do have information to provide regarding any resources on or near the project, please contact Brian Smith or myself at (858) 484-0915, or contact the City of Highland directly. We would like to extend our thanks for your response regarding this issue.

Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
tstropes@bfsa-ca.com

Attachment:
USGS 7.5-minute *Redlands, California* topographic map with project area delineated

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

December 2, 2014

Ernest H. Siva
Tribal Elder
Morongo Band of Mission Indians
9570 Mias Canyon Road
Banning, California 92220

Subject: Information regarding Native American cultural resources on or near the Highland 44 Project, Highland, San Bernardino County, California

Dear Mr. Siva:

This inquiry is requesting information you may have regarding the existence of Native American cultural resources on or near the Highland 44 Project. The information you provide will be used to assess areas of potential adverse impact within the proposed project's Area of Potential Effect (APE). Any information you might provide will be kept confidential and will not be divulged to the public.

The project is in Highland, within San Bernardino County, California. The project is approximately eight acres located just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5-minute *Redlands, California* topographic quadrangle (Township 1 North, Range 3 West). Please find enclosed sections of the USGS *Redlands* Quadrangle map on which the project is delineated.

Although according to the Sacred Lands File no *known* resources are present within the Highland 44 Project property, the Native American Heritage Commission requested that we consult with you directly regarding the potential for the presence of Native American cultural resources that may be impacted by this project. If you do have information to provide regarding any resources on or near the project, please contact Brian Smith or myself at (858) 484-0915, or contact the City of Highland directly. We would like to extend our thanks for your response regarding this issue.

Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
tstropes@bfsa-ca.com

Attachment:
USGS 7.5-minute *Redlands, California* topographic map with project area delineated

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

December 2, 2014

Joseph Ontiveros
Cultural Resource Department
Soboba Band of Luiseño Indians
P.O. Box 487
San Jacinto, California 92581

Subject: Information regarding Native American cultural resources on or near the Highland 44 Project, Highland, San Bernardino County, California

Dear Mr. Ontiveros:

This inquiry is requesting information you may have regarding the existence of Native American cultural resources on or near the Highland 44 Project. The information you provide will be used to assess areas of potential adverse impact within the proposed project's Area of Potential Effect (APE). Any information you might provide will be kept confidential and will not be divulged to the public.

The project is in Highland, within San Bernardino County, California. The project is approximately eight acres located just north of the intersection of Baseline Road and Greenbrier Place. Specifically, this project is located within Section 35 of the USGS 7.5-minute *Redlands, California* topographic quadrangle (Township 1 North, Range 3 West). Please find enclosed sections of the USGS *Redlands* Quadrangle map on which the project is delineated.

Although according to the Sacred Lands File no *known* resources are present within the Highland 44 Project property, the Native American Heritage Commission requested that we consult with you directly regarding the potential for the presence of Native American cultural resources that may be impacted by this project. If you do have information to provide regarding any resources on or near the project, please contact Brian Smith or myself at (858) 484-0915, or contact the City of Highland directly. We would like to extend our thanks for your response regarding this issue.

Sincerely,

Tracy A. Stropes, M.A., RPA
Senior Project Archaeologist
tstropes@bfsa-ca.com

Attachment:
USGS 7.5-minute *Redlands, California* topographic map with project area delineated

PETRA

PRELIMINARY GEOTECHNICAL EVALUATION
29300 BASELINE AVENUE
ASSESSOR PARCEL NUMBER (APN) 0288-562-03
CITY OF HIGHLANDS
SAN BERNARDINO COUNTY, CALIFORNIA.

MASTERCRAFT HOMES

APRIL 15, 2014
J.N. 13-627

PETRA GEOTECHNICAL, INC.
RIVERSIDE COUNTY

40880 County Center Drive, Suite R
Temecula, CA 92591
T: 951.600.9271 F: 951.719.1499

PETRA

past + present + future
it's in our science

Engineers, Geologists
Environmental Scientists

April 15, 2014
J.N. 13-627

Mr. Ray Dorame
MASTERCRAFT HOMES
20201 SW Birch Street, Suite 100
Newport Beach, CA 92660

Subject: Preliminary Geotechnical Evaluation, 29300 Baseline Avenue, Assessor Parcel Number (APN) 0288-562-03, City of Highlands, San Bernardino County, California.

Dear Mr. Dorame:

In accordance with your request and authorization, **Petra Geotechnical, Inc. (Petra)** is pleased to submit herewith our preliminary geotechnical evaluation report for the proposed residential development, located at 29300 Baseline Avenue in the City of Highlands, San Bernardino County, California. This work was performed in general accordance with the scope of work outlined in our Supplemental Proposal No. 13-627 dated February 12, 2014. This report presents the results of our field exploration, laboratory testing, and our engineering judgment, opinions, conclusions and recommendations pertaining to preliminary geotechnical design aspects for the proposed residential development.

It has been a pleasure to be of service to you on this project. Should you have questions regarding the contents of this report or should you require additional information, please contact this office.

Respectfully submitted,

PETRA GEOTECHNICAL, INC.

Jonathan Cain
Associate Geologist

Grayson R. Walker, GE
Principal Engineer
GE 871

JC/GRW/nbc
Distribution: (4) Addressee

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PRELIMINARY GEOTECHNICAL EVALUATION
29300 BASELINE AVENUE, ASSESSOR PARCEL NUMBER (APN) 0288-562-03, CITY OF HIGHLANDS, SAN BERNARDINO COUNTY, CALIFORNIA

INTRODUCTION

This report presents the results of Petra Geotechnical, Inc.'s (Petra) preliminary geotechnical evaluation for the proposed development of the property at 29300 Baseline Avenue, in the City of Highlands, San Bernardino County, California. This evaluation included a review of published and unpublished literature, site reconnaissance and subsurface exploration, as well as a review of geotechnical maps pertaining to geologic hazards which may have an impact on the proposed residential construction.

Purpose and Scope of Services

The purposes of this study were to obtain preliminary information on the subsurface geologic and soil conditions within the project area, evaluate the field and laboratory data and provide conclusions and preliminary geotechnical recommendations for design and construction of the proposed site improvements as influenced by the subsurface conditions encountered.

The scope of our evaluation consisted of the following.

- Reviewed available published and unpublished geologic data, maps, available online aerial imagery and geotechnical documents concerning geologic and soil conditions within, and adjacent to the site which could have an impact on the proposed improvements.
- Performed a site reconnaissance and conducted geologic mapping of the property to evaluate existing onsite conditions.
- Excavated ten (10) exploratory test pits within the site to a maximum depth of 11 feet below ground surface (bgs). The test pits were excavated utilizing a rubber-tired backhoe to evaluate the stratigraphy of the subsurface earth materials and collect representative undisturbed and bulk samples for subsequent laboratory testing.
- Log and visually classify soil materials encountered in the exploratory test pits in accordance with the Unified Soil Classification System.
- Preformed appropriate laboratory testing of representative samples (bulk and undisturbed) obtained from the exploratory test pits to determine their engineering properties.
- Perform appropriate engineering and geologic analysis of the data with respect to the proposed improvements.
- Preparation of this report, including pertinent figures and appendices presenting the results of our evaluation and recommendations for the proposed improvements, in general conformance with the requirements of the 2013 California Building Code (CBC), as well as in accordance with applicable local jurisdictional requirements.

Location and Site Description

The subject site is located at 29300 Baseline Drive, approximately 2.0 miles east of the I-215 Freeway, between Weaver Street and Club View Drive in the City of Highland, San Bernardino County, California. The site, which encompasses approximately 8.0 (±) acres, is an irregular-shaped property comprised of one parcel of land identified as Assessor Parcel Number (APN) 0288-562-03. Topographically, site elevations ranged from approximately 1,560 feet above mean sea level (msl) within the southwest portion of the site to approximately 1,600 feet msl within the northern portion of the site.

Three (3) permanent structures were observed onsite during our site reconnaissance, consisting of a residence and two (2) storage structures. The residential structure is a single-family residence with a two-story attachment on the rear. An oval, asphalt-paved driveway is located along the front side of the residence. In addition, there are four (4) relatively large, plastic above-ground water tanks near the southeastern portion of the site. The structures are predominantly located on the southern portion of the property, near to Baseline Street. Nine (9) wooden and metal animal feed sheds and/or corrals were observed along the north-northeast side of the site. These small structures are now used for firewood storage areas, or were empty at the time of our site walk. A partially buried, concrete brick-lined structure was observed in the northwestern portion of the property. The structure had an exposed clay pipe on one end and concrete pipe exposed on the other. It appeared that this structure may have been a cistern. In addition, concrete and clay pipe risers were noted throughout the northern portion of the site. The use of these items is unknown, but may be associated (in part) with buried water lines and/or an onsite septic system.

Fill slopes exist onsite within the northern portion of the property that appear to channel surface runoff to onsite drainage features, including but not limited to a concrete swale along the westerly and easterly site boundaries and a pathway overlying a subsurface canal (North Fork Canal) along the northerly property line. Based upon our comparison of old topography from historical maps of the site and vicinity, it appears that portions of the former drainages in the western and northwestern portions of the site, as well as an old pond in the north central area, have been altered by grading, including leveling and backfilling. Additionally, there are signs of old fill in the northern portion of the site that was found (surficially) to include tree branches/stumps and crushed metal containers, and what appeared to be a square-shaped area directly adjacent to the residence that has collapsed (suggesting backfilled excavation). As with any historically developed agricultural property, there is a potential for buried trash/debris to be encountered during site development. The location of the site is shown on Figure 1.

Proposed Construction

Based on a site plan prepared by MDS Consulting, the site is proposed to be developed as a residential tract. The tract will consist of forty-three (43) residential lots, a park area, water quality basin and appurtenant street segments. At this time, no specific development plans have been provided for our review. However, it is assumed the structures will utilize typical wood-frame or masonry block construction with either conventional or post-tension slab-on-ground foundation systems. Building loads are assumed to be typical for this type of relatively light residential construction.

Literature Review

Petra researched and reviewed available published and unpublished geologic data, maps and aerial imagery pertaining to regional geology, faulting and geologic hazards that may affect the site. The results of this review are discussed in the Findings section of this report.

Subsurface Exploration

A subsurface exploration program was performed under the direction of an engineering geologist from Petra on February 27, 2014. The exploration involved the excavation of ten (10) exploratory test pits (TP-1 through TP-11) to a maximum depth of approximately 11 feet below existing grades, and/or practical refusal. The test pits were advanced utilizing a rubber-tired backhoe with sampling apparatus. Earth materials encountered within the exploratory test pits were classified and logged by an engineering geologist in accordance with the visual-manual procedures of the Unified Soil Classification System (USCS), ASTM Test Standard D2488. The approximate locations of the exploratory test pits are shown on Figure 2. The logs for the test pits are presented in Appendix A.

Relatively undisturbed ring and disturbed bulk samples of representative earth materials were collected from the exploratory test pits for classification, laboratory testing and engineering analyses. Undisturbed samples were obtained using a 3-inch outside diameter modified California split-spoon soil sampler lined with brass rings. The soil sampler was driven with successive 30-inch drops of a free-fall, 140-pound hammer. The central portions of the driven-core samples were placed in sealed containers and transported to our laboratory for testing. The number of blows required to drive the split-spoon sampler 12 inches into the soil were recorded and noted on the test pit logs as Blows per Foot.

Laboratory Testing

The laboratory testing program included the determination of in-situ dry density and moisture content, maximum dry density and optimum moisture content, expansion index, consolidation potential, direct shear strength, and preliminary soil corrosivity screening (soluble sulfate and chloride content, pH and minimum resistivity). A description of laboratory test methods and summaries of the laboratory test data are presented in Appendix B and the in-situ dry density and moisture content results are presented on the boring logs (Appendix A).

FINDINGS

Regional Geologic Setting

Geologically, the site lies within the northern portion of the Peninsular Ranges Geomorphic Province (CGS, 2002). The Peninsular Range Province extends from the tip of Baja California north to the Transverse Ranges Geomorphic Province and is characterized by northwest-trending mountain ranges separated by subparallel fault zones. The San Bernardino Mountains, located directly north of the site, provides the boundary between the Peninsula Range Province and the Transverse Ranges Province. In general, the province is underlain primarily of plutonic rock of the Southern California Batholith. These rocks formed from the cooling of molten magma deep within the earth's crust. Intense heat associated with the plutonic magma metamorphosed the ancient sedimentary rocks into which the plutons intruded. The Peninsular Range Geomorphic Province is generally characterized by alluviated basins and elevated erosion surfaces.

More specifically, the subject site is underlain by middle to early Pleistocene, very old alluvial fan deposits (Morton and Miller, 2003).

Local Geology and Subsurface Soil Conditions

Several geologic units were encountered during our preliminary investigation of the site. The earth materials encountered within our exploratory trenches consist of artificial fill, topsoil, old alluvial fan deposits and Cretaceous age bedrock of the Southern California Batholith. These units, from younger to older, are described below.

Artificial Fill (Af): Artificial fill was observed within test pits 1 and 2 within the northern portion of the site. This material consists of fine to coarse silty sands that were dark yellowish brown, dry and loose to medium dense, with areas containing gravel, cobbles, boulders and trash.

Topsoil: – Topsoil mantles the remainder of the site to approximately 0.5 foot. These soils were comprised of silty sands that were dark yellowish brown, dry to slightly moist and loose.

Older Alluvial Fan Deposit (Qvof) –Older alluvial fan deposits consisting of fine to coarse silty sands and clayey sands were encountered throughout the site underlying the artificial fill and topsoil. The deposits were observed to be medium brown, reddish brown and dark yellowish brown, dry to moist and loose to dense. Some gravel and cobbles were observed within test pit 1.

Groundwater

The site is located within the Bunker Hill Groundwater Sub-Basin of the upper Santa Ana Valley Basin of the South Coast Hydrologic Region (California Department of Water Resources, [CDWR], 2003). No public groundwater wells were exhibited within the vicinity of subject site on the CDWR water data library (CDWR, 2014). Based on our review, historic groundwater levels within the vicinity range between 180± and 300± feet below the ground surface. In general, groundwater depth varies within the area and although flow direction beneath the subject site is unknown, it is believed to be toward the southwest following surface topography.

Faulting

Based on our review of published geologic maps, no faults are known to project through the property, and no portion of the site lies within an Earthquake Fault Hazard Zone as designated by the State of California pursuant to the Alquist-Priolo Earthquake Zoning Act (CGS, 1977). No evidence for lineal topography was observed in aerial photographs reviewed. Our review shows the closest known active earthquake fault is the San Andreas Fault zone (San Bernardino County, 2010). It appears that the Fault Special Study Zone has been mapped near the northern boundary of the subject property (San Bernardino County, 2010). The south branch of the San Andreas Fault Zone lies approximately 750 feet north-northeast of the site; this is a strike-slip fault with an estimated maximum magnitude of 7.8.

Strong Ground Motions

The site is located in a seismically active area of southern California and will likely be subjected to very strong seismically related ground shaking over the anticipated life span of the project. Structures within the site should therefore be designed and constructed to resist the effects of strong ground motion in accordance with the 2013 California Building Code (CBC) and the seismic parameters included in the recommendations section herein.

Landslides and Secondary Seismic Effects

The site and immediate area exhibits gently sloping topography that is not prone to landsliding. Secondary effects of seismic activity normally considered as possible hazards to a site include several types of ground failure. Various general types of ground failures, which might occur as a consequence of severe ground shaking at the site, include ground subsidence, ground lurching and lateral spreading. The probability of occurrence of each type of ground failure depends on the severity of the earthquake, distance from faults, topography, subsoil and groundwater conditions, in addition to other factors. Based on the site conditions, proposed grading and gentle topography across the site, landsliding, ground subsidence and lateral spreading are considered unlikely at the site. However, due to the close proximity of the site to the south branch of the San Andreas Fault Zone, approximately 750 feet north-northeast of the site, significant ground lurching should be anticipated during a seismic event.

Seismically induced flooding that might be considered a potential hazard to a site normally includes flooding due to tsunami or seiche (i.e., a wave-like oscillation of the surface of water in an enclosed basin that may be initiated by a strong earthquake) or failure of a major reservoir or retention structure upstream of the site. No major reservoirs are located within the near vicinity of the site. Therefore, the potential for seiche or inundation is considered negligible. Because of the inland location of the site, flooding due to a tsunami is also considered negligible at the site.

Liquefaction and Seismically-Induced Settlement

Assessment of liquefaction potential for a particular site requires knowledge of a number of regional as well as site-specific parameters, including the estimated design earthquake magnitude, the distance to the assumed causative fault and the associated probable peak horizontal ground acceleration at the site, subsurface stratigraphy and soil characteristics and groundwater elevation. Parameters such as distance to causative faults and estimated probable peak horizontal ground acceleration can readily be determined

using published references, or by utilizing a commercially available computer program specifically designed to perform a probabilistic analysis. On the other hand, stratigraphy and soil characteristics can only be accurately determined by means of a site-specific subsurface investigation combined with appropriate laboratory analysis of representative samples of onsite soils.

Liquefaction occurs when dynamic loading of a saturated sand or silt causes pore-water pressures to increase to levels where grain-to-grain contact is lost and material temporarily behaves as a viscous fluid. Liquefaction can cause settlement of the ground surface, settlement and tilting of engineered structures, flotation of buoyant buried structures and fissuring of the ground surface. A common manifestation of liquefaction is the formation of sand boils – short-lived fountains of soil and water that emerge from fissures or vents and leave freshly deposited conical mounds of sand or silt on the ground surface.

In view of the recommended grading, depth to groundwater and moderately hard older alluvial fan materials that underlie the site, the potential for manifestation of liquefaction induced features or significant dynamic settlement is considered negligible.

Compressible Soils

A significant geotechnical factor affecting the project site is the presence of near-surface compressible undocumented fill and young alluvial fan deposits. Such materials in their present state are not considered suitable for support of fill or structural loads. Accordingly, these materials will require removal to competent older alluvial fan deposit soils and replacement with properly compacted fill. Removals of these soils are on the order of 5 to as much as 10 feet below existing grades as observed in our points of exploration, however deeper removals are possible.

Flooding

Based on our review, storm water in the form of localized sheet flooding and/or channelized flows from adjacent properties has the potential to affect the site. Based on current site configurations (i.e., drainage channel crossing the site), it is anticipated a drainage study will be performed by the project civil engineer. As such, the potential for localized surface flooding is considered low.

Expansive Soils

Based on our recent tests, the silty sands and clayey sand soils encountered within the site were found to have a Very Low expansion potential (Elevation Index of 0-20). Since site grading remains to be

completed, additional sampling and laboratory testing is recommended for expansion, as well as general corrosion potential, once rough grading is complete for the purposes of providing final foundation design recommendations.

CONCLUSIONS AND RECOMMENDATIONS

General

From a geotechnical engineering and engineering geologic point of view, the subject property is considered suitable for the proposed residential development provided the following conclusions and recommendations are incorporated into the design criteria and project specifications.

Earthwork

General Earthwork Recommendations

Earthwork should be performed in accordance with the applicable provisions of the 2013 CBC. Grading should also be performed in accordance with the following site-specific recommendations prepared by Petra based on the proposed residential development of the site.

Geotechnical Observations and Testing

Prior to the start of earthwork, a meeting should be held at the site with the owner, contractor and geotechnical consultant to discuss the work schedule and geotechnical aspects of the grading. Earthwork, which in this instance will generally entail removal and re-compaction of the near surface soils, should be accomplished under full-time observation and testing of the geotechnical consultant. A representative of the project geotechnical consultant should be present onsite during all earthwork operations to document proper placement and compaction of fills, as well as to document compliance with the other recommendations presented herein.

Clearing and Grubbing

Several building structures and driveway/flatwork areas are located within the southern portion of the site. The possibility exists that underground structures such as foundation footings, pipes, utility lines, seepage pits, leach lines or other structures may be found below current grades. Additionally, the majority of the property has a light to occasionally moderate amount of vegetation cover and a numerous mature trees. All surficial or buried vegetation, trees and stumps (including the root ball), miscellaneous debris and/or other deleterious materials will require clearing and hauling offsite. It is anticipated that buried roots

and/or any miscellaneous debris will need to be removed from the engineered fills by hand (root pickers) during grading operations.

The project geotechnical consultant should provide periodic observation and testing services during clearing and grubbing operations to document compliance with the above recommendations. In addition, should any unusual or adverse soil conditions be encountered during grading that are not described herein, these conditions should be brought to the immediate attention of the project geotechnical consultant for corrective recommendations, as warranted.

Ground Preparation – Unsuitable Soil Removals

Based on the earth materials encountered within the exploratory test pits, surficial soils (i.e., artificial fill, topsoil and younger fan deposits) over a majority of the site are considered unsuitable for support of structures in their existing state, and therefore should be removed and recompacted, in areas proposed for settlement sensitive improvements. In areas where structures are to be supported by conventional shallow slab-on-grade foundations, spread footings, and/or post-tension foundations the existing ground should be over-excavated to depths that expose competent materials exhibiting an in-place relative compaction of 85 percent or more, based on ASTM Test Method D 1557.

Therefore, the required depths of remedial removals (unsuitable soils) are anticipated to vary from approximately 5 to 10 feet. A minimum of 5 feet of compacted fill should underlie all foundation elements. The horizontal limits of over-excavation should extend to a minimum distance of 5 feet beyond the proposed perimeter foundation lines or to a horizontal distance equal to the depth of remedial removals, whichever is greater.

Due to the variability of the near surface earth materials that underlie the project site, the required depths of over-excavation will have to be determined during grading on a case-by-case basis. Therefore, prior to placing compacted fill, the exposed bottom surfaces in all over-excavated areas should be observed and approved by the project geotechnical consultant. Following this approval, the exposed bottom surfaces should be scarified to a depth of approximately 6 to 8 inches, watered as necessary to achieve a moisture content that is equal to or slightly above optimum moisture content, and then processed to a minimum relative compaction of 90 percent (ASTM D 1557).

Fill Placement and Testing

All fill should be placed in lifts not exceeding 6 inches in thickness, watered as necessary to achieve moisture contents that are equal to, or slightly above optimum moisture content, and then compacted to a minimum relative compaction of 90 percent or more. Each fill lift should be treated in a similar manner. Subsequent lifts should not be placed until the preceding lift has been tested and approved by the project geotechnical consultant. The laboratory maximum dry density and optimum moisture content for each change in soil type should be determined in accordance with Test Method ASTM D 1557.

Import Soils for Grading

We assume the site will be designed to grade to balance and that import soils will not be needed to achieve final design grades; however, if needed, any import soils should be free of deleterious materials, oversize rock and any hazardous materials. The soils should also be non-expansive and essentially non-corrosive and approved by the project geotechnical consultant *prior* to being brought onsite. The geotechnical consultant should inspect the potential borrow site and conduct testing of the soil at least three days before the commencement of import operations.

Shrinkage and Subsidence

Volumetric changes in earth quantities will occur when excavated onsite soils are replaced as properly compacted fill. Accordingly, it is estimated that a shrinkage factor on the order of approximately 5 to 10 percent will occur when near surface onsite earth materials are excavated and placed as compacted fill.

Subsidence from scarification and re-compaction of exposed bottom surfaces in over-excavated areas is expected to be on the order of approximately 0.05 to 0.10 feet.

The above estimates of shrinkage and subsidence are intended as aids for the civil engineer and project planners in determining earthwork quantities. However, these values should not be considered as absolute values and some contingencies should be made for balancing earthwork quantities on the basis of actual shrinkage and subsidence that occur during grading.

Temporary Excavations

Temporary excavations varying up to a height of 10 feet below existing grades may be required to accommodate the recommended overexcavation of unsuitable materials. Based on the physical properties of the onsite soils, temporary excavations which are constructed exceeding 4 feet in height should be cut

back to a ratio of 1:1 (h:v) or flatter for the duration of the overexcavation of unsuitable soil material and replacement as compacted fill, as well as placement of underground utilities. However, the temporary excavations should be observed by a representative of the project geotechnical consultant for evidence of potential instability. Depending on the results of these observations, revised slope configurations may be necessary. Other factors which should be considered with respect to the stability of the temporary slopes include construction traffic and/or storage of materials on or near the tops of the slopes, construction scheduling, presence of nearby walls or structures on adjacent properties and weather conditions at the time of construction. Applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health act of 1970 and the Construction Safety Act should also be followed.

Tentative Foundation Design Considerations

Foundation Systems

Either conventional or post-tension slab-on-ground foundation systems are deemed to be suitable for the proposed residences, providing the site is prepared as recommended in this report. Recommendations for the design and construction of both options are presented herein.

2013 CBC Seismic Design Parameters

Earthquake loads on earthen structures and buildings are a function of ground acceleration which may be determined from the site-specific acceleration response spectrum. To provide the design team with the parameters necessary to construct the site-specific acceleration response spectrum for this project, we used two computer applications that are available on the United States Geological Survey (USGS) website, http://geohazards.usgs.gov/.

Specifically, the Design Maps website http://geohazards.usgs.gov/designmaps/us/application.php was used to calculate the ground motion parameters. And, the 2008 PSHA Interactive Deaggregation website http://geohazards.usgs.gov/deaggint/2008/ was used to determine the appropriate earthquake magnitude.

To run the above computer applications, site latitude, longitude, risk category and knowledge of "Site Class" are required. The site class definition depends on the average shear wave velocity, Vs_{30}, within the upper 30 meters (approximately 100 feet) of site soils. A shear wave velocity of 270 meters per second for the upper 100 feet of the site was used for the site based on engineering experience and judgment.

The following table, Table 3, provides parameters required to construct the site-specific acceleration response spectrum based 2013 CBC guidelines. A summary of Code approach and a printout of the computer output are attached in Appendix C.

Seismic Design Parameters

Ground Motion Parameters	Reference	Parameter	Unit
Latitude (North)	-	34.122	°
Longitude (West)	-	-117.1647	°
Site Class Definition	Table 20.3-1, ASCE 7-10	D	-
Assumed Risk Category	Table 1604.5, CBC 2013	I, II, or III	-
M_w - Earthquake Magnitude	Section 1803.5.12.2, CBC 2013	7.82	-
S_s - Mapped Spectral Response Acceleration	Figure 1613.3.1(1), CBC 2013	2.653	g
S_1 - Mapped Spectral Response Acceleration	Figure 1613.3.1(2), CBC 2013	1.286	g
F_a - Site Coefficient	Table 1613.3.3(1), CBC 2013	1.0	-
F_v - Site Coefficient	Table 1613.3.3(2), CBC 2013	1.5	-
S_{MS} - Adjusted Maximum Considered Earthquake Spectral Response Acceleration	Equation 16-37, CBC 2013	2.653	g
S_{M1} - Adjusted Maximum Considered Earthquake Spectral Response Acceleration	Equation 16-38, CBC 2013	1.929	g
S_{DS} - Design Spectral Response Acceleration	Equation 16-39, CBC 2013	1.769	g
S_{D1} - Design Spectral Response Acceleration	Equation 16-40, CBC 2013	1.286	g
T_o - (0.2 S_{D1}/ S_{DS})	Section 11.3, ASCE 7-10	0.145	s
T_s - (S_{D1}/ S_{DS})	Section 11.3, ASCE 7-10	0.7271	s
T_L - Long Period Transition Period	Figure 22-12, ASCE 7-10	8	s
F_{PGA} - Site Coefficient	Figure 22-7, ASCE 7-10	1.0	-
PGA_M - Peak Ground Acceleration at MCE [1]	Equation 11.8-1, ASCE 7-10	1.024	g
PGA – Design Level – (0.4 S_{DS} [2])	Equation 11.4-5, ASCE 7-10	0.7076	g
C_{RS} - Short Period Risk Coefficient	Figure 22-17, ASCE 7-10	0.993	-
C_{R1} - Long Period Risk Coefficient	Figure 22-18, ASCE 7-10	0.944	-
Seismic Design Category [3]	Section 1613.3.5, CBC 2013	D	-

[1] PGA Calculated at the MCE return period of 2475 years (2 percent chance of exceedance in 50 years).
[2] PGA Calculated at the Design Level of 2/3 of MCE which is approximately equivalent to a return period of 475 years (10 percent chance of exceedance in 50 years).
[3] Seismic Design Category may be calculated by the structural engineer in accordance with the alternate design procedures of Section 1613.3.5.1 based on structural characteristics in addition to the ground motion parameters, this may supersede the category listed herein.

References: USGS Seismic Design Web Application – http://geohazards.usgs.gov/designmaps/us/application.php
USGS 2008 Interactive Deaggregation Tool - https://geohazards.usgs.gov/deaggint/2008/

Allowable Soil Bearing Capacities

Pad Footings

A basic allowable soil bearing capacity of 1,500 pounds per square foot, including dead and live loads, may be utilized for design of 24-inch square pad footing and 12-inch-wide continuous footings founded at a minimum depth of 12 inches below the lowest adjacent final grade. This value may be increased by 20 percent for each additional foot of depth and by 10 percent for each additional foot of width to a maximum value of 2,500 pounds per square foot. Recommended allowable bearing values include both dead and live loads, and may be increased by one-third for short duration wind and seismic forces.

Continuous Footings

A basic allowable soil bearing capacity of 1,500 pounds per square foot, including dead and live loads, may be utilized for design of 24-inch square pad footing and 12-inch-wide continuous footings founded at a minimum depth of 12 inches below the lowest adjacent final grade. This value may be increased by 20 percent for each additional foot of depth and by 10 percent for each additional foot of width to a maximum value of 2,500 pounds per square foot. Recommended allowable bearing values include both dead and live loads, and may be increased by one-third for short duration wind and seismic forces.

Footing Settlement

Based on the allowable bearing values provided above, total settlement of the footings under the anticipated loads is expected to be less than 1 inch. Differential settlement is expected to be less than 1/2 inch over a horizontal span of 40 feet. The majority of settlement is likely to take place as footing loads are applied or shortly thereafter.

Lateral Resistance

A passive earth pressure of 250 pounds per square foot per foot of depth, to a maximum value of 2,500 pounds per square foot, may be used to determine lateral bearing resistance for footings. In addition, a coefficient of friction of 0.40 times the dead load forces may be used between concrete and the supporting soils to determine lateral sliding resistance. The above values may be increased by one-third when designing for transient wind or seismic forces. It should be noted that the above values are based on the condition where footings are cast in direct contact with compacted fill or competent native soils. In cases

where the footing sides are formed, all backfill placed against the footings upon removal of forms should be compacted to at least 90 percent of the applicable maximum dry density.

Guidelines for Footings and Slabs on-Grade Design and Construction

The results of our laboratory tests performed on representative samples of near-surface soils within the site during our investigation indicate that these material exhibit expansion potentials that are within the Very Low range (Expansion Index from 0 to 20). As such, the design of slabs on-grade is considered to be exempt from the procedures outlined in Sections 1803.5.3 and 1808.6.2 of the 2013 CBC and may be performed using any method deemed rational and appropriate by the project structural engineer. However, the following minimum recommendations are presented herein for conditions where the project design team may require geotechnical engineering guidelines for design and construction of footings and slabs on-grade the project site.

The design and construction guidelines that follow are based on the above soil conditions and may be considered for reducing the effects of variability in fabric, composition and, therefore, the detrimental behavior of the site soils such as excessive short- and long-term total and differential settlements. These guidelines have been developed on the basis of the previous experience of this firm on projects with similar soil conditions. Although construction performed in accordance with these guidelines has been found to reduce post-construction movement and/or distress, they generally do not positively eliminate all potential effects of variability in soils characteristics and future settlement.

It should also be noted that the suggestions for dimension and reinforcement provided herein are performance-based and intended only as preliminary guidelines to achieve adequate performance under the anticipated soil conditions. However, they should not be construed as replacement for structural engineering analyses, experience and judgment. The project structural engineer, architect and/or civil engineer should make appropriate adjustments to slab and footing dimensions, and reinforcement type, size and spacing to account for internal concrete forces (e.g., thermal, shrinkage and expansion) as well as external forces (e.g., applied loads) as deemed necessary. Consideration should also be given to minimum design criteria as dictated by local building code requirements.

Conventional Slab-on-Grade System

Given the very low expansion potential exhibited by onsite soils, we recommend that footings and floor slabs be designed and constructed in accordance with the following minimum criteria.

Footings

1. Exterior continuous footings supporting one- and two-story structures should be founded at a minimum depth of 12 and 18 inches below the lowest adjacent final grade, respectively. Interior continuous footings may be founded at a minimum depth of 10 inches below the tops of the adjacent finish floor slabs.

2. All continuous footings should have minimum widths of 12 and 15 inches for one- and two-story construction, respectively. All continuous footings should be reinforced with a minimum of two No. 4 bars, one top and one bottom.

3. A minimum 12-inch-wide grade beam founded at the same depth as adjacent footings should be provided across garage entrances or similar openings (such as large doors or bay windows). The grade beam should be reinforced with a similar manner as provided above.

4. Interior isolated pad footings, if required, should be a minimum of 24 inches square and founded at a minimum depth of 12 inches below the bottoms of the adjacent floor slabs. Pad footings should be reinforced with No. 4 bars spaced a maximum of 18 inches on centers, both ways, placed near the bottoms of the footings.

5. Exterior isolated pad footings intended for support of roof overhangs such as second-story 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. The pad footings should be reinforced with No. 4 bars spaced a maximum of 18 inches on centers, both ways, placed near the bottoms of the footings. Exterior isolated pad footings may need to be connected to adjacent pad and/or continuous footings via tie beams at the discretion of the project structural engineer.

6. The minimum footing dimensions and reinforcement recommended herein may be modified (increased or decreased subject to the constraints of Chapter 18 of the 2013 CBC) by the structural engineer responsible for foundation design based on his/her calculations, engineering experience and judgment.

Building Floor Slabs

1. Concrete floor slabs should be a minimum 4 inches thick and reinforced with No. 3 bars spaced a maximum of 24 inches on centers, both ways. Alternatively, the structural engineer may recommend the use of prefabricated welded wire mesh for slab reinforcement. For this condition, the welded wire mesh should be of sheet type (not rolled) and should consist of 6x6/W2.9xW2.9 (per the Wire Reinforcement Institute, WRI, designation) or stronger. All slab reinforcement should be supported on concrete chairs or brick to ensure the desired placement near mid-depth. Care should be exercised to prevent warping of the welded wire mesh between the chairs in order to ensure its placement at the desired mid-slab position.

2. Living area concrete floor slabs and areas to receive moisture sensitive floor covering should be underlain with a moisture vapor retarder consisting of a minimum 10-mil-thick polyethylene or polyolefin membrane that meets the minimum requirements of ASTM E96 and ASTM E1745 for vapor retarders (such as Husky Yellow Guard®, Stego® Wrap, or equivalent). All laps within the membrane should be sealed, and at least 2 inches of clean sand should be placed over the membrane to promote uniform curing of the concrete. To reduce the potential for punctures, the membrane should be placed on a pad surface that has been graded smooth without any sharp protrusions. If a smooth surface cannot be achieved by grading, consideration should be given to lowering the pad finished grade an additional inch and then placing a 1-inch-thick leveling course of sand across the pad surface prior to the placement of the membrane.

   At the present time, some slab designers, geotechnical professionals and concrete experts view the sand layer below the slab (blotting sand) as a place for entrapment of excess moisture that could adversely impact moisture-sensitive floor coverings. As a preventive measure, the potential for moisture intrusion into the concrete slab could be reduced if the concrete is placed directly on the vapor retarder. However, if this sand layer is omitted, appropriate curing methods must be implemented to ensure that the concrete slab cures uniformly. A qualified materials engineer with experience in slab design and construction should provide recommendations for alternative methods of curing and supervise the construction process to ensure uniform slab curing. Additional steps would also need to be taken to prevent puncturing of the vapor retarder during concrete placement.

3. Garage floor slabs should be a minimum 4 inches thick and reinforced in a similar manner as living area floor slabs. Garage slabs should also be poured separately from adjacent wall footings with a positive separation maintained using ¾-inch-minimum felt expansion joint material. To control the propagation of shrinkage cracks, garage floor slabs should be quartered with weakened plane joints. Consideration should be given to placement of a moisture vapor retarder below the garage slab, similar to that provided in Item 2 above, should the garage slab be overlain with moisture sensitive floor covering.

4. Presaturation of the subgrade below floor slabs will not be required; however, prior to placing concrete, the subgrade below all dwelling and garage floor slab areas should be thoroughly moistened to achieve a moisture content that is at least equal to or slightly greater than optimum moisture content. This moisture content should penetrate to a minimum depth of 12 inches below the bottoms of the slabs.

5. The minimum dimensions and reinforcement recommended herein for building floor slabs may be modified (increased or decreased) by the structural engineer responsible for foundation design based on his/her calculations, engineering experience and judgment.

Post-Tensioned Slab-on-Grade System

In consideration of the very low expansion potential exhibited by onsite soils, any rational and appropriate procedure may be chosen by the project structural engineer for the design of post-tensioned slabs on-grade. Should the design engineer choose to follow the most current procedure published by the Post-Tensioning Institute (PTI), the following minimum design criteria are provided.

Post-Tensioned Slab on-Grade Design Parameters for PTI Procedure
Very Low Expansion Potential

Soil Information	
Approximate Depth of Constant Suction, feet	9
Approximate Soil Suction, pF	3.9
Inferred Thornthwaite Index:	-20
Average Edge Moisture Variation Distance, e_m in feet:	
Center Lift	9.0
Edge Lift	4.7
Anticipated Swell, y_m in inches:	
Center Lift	0.20
Edge Lift	0.40

Modulus of Subgrade Reaction

The modulus of subgrade reaction for design of load bearing partitions may be assumed to be 125 pounds per cubic inch.

Minimum Design Recommendations

The soil values provided above may be utilized by the project structural engineer to design post-tensioned slabs on-ground in accordance with Section 1808.6.2 of the 2013 CBC and the PTI publication. Thicker floor slabs and larger footing sizes may be required for structural reasons and should govern the design if more restrictive than the minimum recommendations provided below:

1. Perimeter footings for both one-story and two-story structures should be founded at a minimum depth of 12 inches below the lowest adjacent finished ground surface. Interior footings may be founded at a minimum depth of 10 inches below the tops of the adjacent finish floor slabs. All continuous footings should be reinforced with a minimum of two No. 4 bars, one top and one bottom. Alternatively, post-tensioned tendons may be utilized in the perimeter continuous footings in lieu of the reinforcement bars.

2. A minimum 12-inch-wide grade beam founded at the same depth as adjacent footings should be provided across the garage entrances or similar openings (such as large doors or bay windows). The grade beam should be reinforced in a similar manner as provided above.

3. Exterior isolated pad footings intended for support of roof overhangs such as second-story 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. The pad footings should be reinforced with No. 4 bars spaced a maximum of 18 inches on centers, both ways, placed near the bottoms of the footings. Exterior isolated pad footings may need to be connected to adjacent pad and/or continuous footings via tie beams at the discretion of the project structural engineer.

4. The thickness of the floor slabs should be determined by the project structural engineer with consideration given to the expansion potential of the onsite soils; however; we recommend that a minimum slab thickness of 5 inches be considered.

5. As an alternative to designing 5-inch-thick post-tensioned slabs with perimeter footings as described in Items 1 and 2 above, the structural engineer may design the foundation system using a thickened slab design. The minimum thickness of this uniformly thick slab should be 8 inches. The engineer in charge of post-tensioned slab design may also opt to use any combination of slab thickness and footing embedment depth as deemed appropriate based on their engineering experience and judgment.

6. Living area concrete floor slabs and areas to receive moisture sensitive floor covering should be underlain with a moisture vapor retarder consisting of a minimum 10-mil-thick polyethylene or polyolefin membrane that meets the minimum requirements of ASTM E96 and ASTM E1745 for vapor retarders (such as Husky Yellow Guard®, Stego® Wrap, or equivalent). All laps within the membrane should be sealed, and at least 2 inches of clean sand should be placed over the membrane to promote uniform curing of the concrete. To reduce the potential for punctures, the membrane should be placed on a pad surface that has been graded smooth without any sharp protrusions. If a smooth surface cannot be achieved by grading, consideration should be given to lowering the pad finished grade an additional inch and then placing a 1-inch-thick leveling course of sand across the pad surface prior to the placement of the membrane.

   At the present time, some slab designers, geotechnical professionals and concrete experts view the sand layer below the slab (blotting sand) as a place for entrapment of excess moisture that could adversely impact moisture-sensitive floor coverings. As a preventive measure, the potential for moisture intrusion into the concrete slab could be reduced if the concrete is placed directly on the vapor retarder. However, if this sand layer is omitted, appropriate curing methods must be implemented to ensure that the concrete slab cures uniformly. A qualified materials engineer with experience in slab design and construction should provide recommendations for alternative methods of curing and supervise the construction process to ensure uniform slab curing. Additional steps would also need to be taken to prevent puncturing of the vapor retarder during concrete placement.

7. Garage floor slabs should be designed in a similar manner as living area floor slabs. Consideration should be given to placement of a moisture vapor retarder below the garage slab, similar to that provided in Item 6 above, should the garage slab be overlain with moisture sensitive floor covering.

8. Presaturation of the subgrade below floor slabs will not be required; however, prior to placing concrete, the subgrade below all dwelling and garage floor slab areas should be thoroughly moistened to achieve a moisture content that is at least equal to or slightly greater than optimum moisture content. This moisture content should penetrate to a minimum depth of 12 inches below the bottoms of the slabs.

9. The minimum footing dimensions and reinforcement recommended herein may be modified (increased or decreased subject to the constraints of Chapter 18 of the 2013 CBC) by the structural engineer responsible for foundation design based on his/her calculations, engineering experience and judgment.

Footing Observations

Foundation footing trenches should be observed by the project geotechnical consultant to document into competent bearing-soils. The foundation excavations should be observed prior to the placement of forms, reinforcement or concrete. The excavations should be trimmed neat, level and square; prior to placing concrete, all loose, sloughed or softened soils and/or construction debris should be removed. Excavated soils derived from footing and utility trench excavations should not be placed in slab-on-grade areas unless the soils are compacted to a relative compaction of 90 percent or more.

General Corrosivity Screening

As a screening level study, limited chemical and electrical tests were performed on representative samples of onsite soils to identify potential corrosive characteristics of these soils. The following sections present the test results and an interpretation of current codes and guidelines that are commonly used in our industry as they relate to the adverse impact of chemical contents of the site soils and their associated moisture on various components of the proposed structures in contact with site soils.

A variety of test methods are available to quantify corrosive potential of soils for various elements of construction materials. Depending on the test procedures adopted, characteristics of the leachate that is used to extract the target chemicals from the soils and the test equipment; the results can vary appreciably for different test methods in addition to those caused by variability in soil composition. The testing procedures referred to herein are considered to be typical for our industry and have been adopted and/or approved by many public or private agencies. In drawing conclusions from the results of our chemical and electrical laboratory testing and providing mitigation recommendation to reduce the detrimental impact of corrosive site soils on various components of the structure in contact with site soils, heavy references were made to 2013 CBC and American Concrete Institute, 2011 Structural Concrete Building Code (ACI 318-11). Where relevant information was not available in these codes, references were made to guidelines developed by California Department of Transportation (Caltrans), mainly because their risk tolerance for highway bridges are considered comparable to those for residential or commercial structures and that Post Tensioning Institute (PTI), in part, accepts and uses Caltrans' relevant corrosivity criteria for post-tensioned slabs on-grade.

It should be noted that **Petra** does not practice corrosion engineering; therefore, these preliminary test result and our opinion and engineering judgment provided herein should be considered as general guidelines only. Additional analyses would be warranted, especially, for cases where buried metallic

building materials (such as copper and cast or ductile iron) in contact with site soils are planned for the project. In many cases, the project geotechnical engineer is not informed of these choices. Therefore, for conditions where such elements are considered, we recommend that the project design professionals (i.e., the architect and/or structural engineer) consider recommending 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.

Concrete in Contact with Site Soils

Soils containing soluble sulfates beyond certain threshold levels as well as acidic soils are considered to be detrimental to long-term integrity of concrete placed in contact with such soils. For the purpose of this study, soluble sulfates (SO_4) concentration in soils determined in accordance with California Test Method No. 417. Soil acidity, as indicated by hydrogen-ion concentration (pH), was determined in accordance with California Test Method No. 643.

The results of our limited in-house laboratory tests indicate that on-site soils contain a water-soluble sulfate content of 0.06 to 0.09 percent by weight. Based on Article 1904.1 of Section 1904 of the 2013 CBC, concrete that will be exposed to sulfates in site soil should be assigned exposure classes in accordance with the durability requirements of ACI 318.

Based on the test results and in reference to Table 4.2.1 of ACI 318-11, an exposure class of **S0** is appropriate for onsite soils. Accordingly, a severity level of **Not Applicable** for exposure to sulfate may be expected for concrete placed in contact with the onsite soil materials. As such, Table 4.3.1 of ACI 318-11 provides that no restriction for cement type or maximum water-cement ratio for the fresh concrete would be required. However, this table indicates that the concrete minimum unconfined compressive strength should not be less than 2,500 psi.

Further, the results of limited in-house testing of representative samples indicate that soils within the subject site are neutral with respect to pH (a pH of 7.0 to 7.1). Based on this finding and according to Section 8.22.2 of Caltrans' 2003 Bridge Design Specifications (2003 BDS) requirements (which consider the combined effects of soluble sulfates and soil pH), a commercially available Type II Modified cement may be used.

The guidelines provided herein should be evaluated and confirmed, or modified, in its entirety by the project structural engineer and the contractor responsible for concrete placement for concrete used in exterior and interior footings, interior slabs on-ground, garage slabs walls foundation and concrete exposed to weather such as driveways, patios, porches, walkways, ramps, steps, curbs, etc.

Metals Encased in Concrete

Soils containing a soluble chloride concentration beyond a certain threshold level are considered corrosive to metallic elements such as reinforcement bars, tendons, cables, bolts, etc. that are encased in concrete that, in turn, is in contact with such soils. For the purpose of this study, soluble chlorides (Cl) in soils were determined in accordance with California Test Method No. 422.

Based on Article 1904.1 of Section 1904 of the 2013 CBC, concrete that will be exposed to chlorides from "*deicing chemicals, salt, saltwater, brackish water, seawater or spray from these sources, where concrete has steel reinforcement*" should be assigned exposure classes in accordance with the durability requirements of ACI 318. According to Table 4.2.1 of ACI 318-11, an exposure class of **C0** with a severity designation of **Not Applicable** is appropriate for reinforced concrete that remains dry or protected from moisture. Similarly, an exposure class of **C1** with a severity designation of **Moderate** is appropriate for reinforced concrete that is exposed to moisture but not to external sources of chlorides. And, lastly, an exposure class of **C2** with a severity designation of **Severe** is appropriate for reinforced concrete that is exposed to moisture and external sources of chlorides as enumerated above.

Based on our understanding of the project, it is our professional opinion that an exposure class of **C1** with a severity designation of **Moderate** is appropriate for a majority of reinforced concrete, to be placed at the site, that are in contact with site soils. It should be noted, however, that an exposure class of **C2** with a severity designation of **Severe** is more appropriate for reinforced concrete that is planned for pool walls and decking, should such features be considered for the project.

The results of our limited laboratory tests performed indicate that onsite soils contain a water-soluble chloride concentration of 103 to 105 parts per million (ppm). Article 1904.2 of Section 1904 of the 2013 CBC requires that concrete mixtures conform to the most restrictive maximum water-cementitious material ratios, maximum cementitious admixture, minimum air-entrainment and minimum specified concrete compressive strength requirements of ACI 318 based on the exposure classes assigned in Article 1904.1. No maximum water/cement ratio for the fresh concrete is prescribed by ACI 318 for class **C1** (or

Moderate severity) exposure condition. However, Table 4.3.1 of ACI 318-11indicates that concrete minimum unconfined compressive strength, f'_c, should not be less than 2,500 psi. For class **C2** (or **Severe**) exposure condition for pool walls/decking, Table 4.3.1 of ACI 318-11requires that the maximum water/cement ratio of the fresh concrete should not exceed 0.40 and concrete minimum unconfined compressive strength, f'_c, should not be less than 5,000 psi.

The guidelines provided herein should be evaluated and confirmed, or modified, in its entirety by the project structural engineer for reinforced concrete placement for concrete used in exterior and interior footings, interior slabs on-ground, garage slabs walls foundation and concrete exposed to weather such as driveways, patios, porches, walkways, ramps, steps, curbs, etc.

It should be noted that another source of elevated chloride-ion concentration can be the chloride content of water that is used to prepare the fresh concrete at the plant. The protection against high chloride concentration in fresh concrete should therefore be provided by concrete suppliers for the project in accordance with Table 4.3.1 of ACI 318-11.

Metallic Elements in Contact with Site Soils

Elevated concentrations of soluble salts in soils tend to induce low level electrical currents in metallic objects in contact with such soils. This process promotes metal corrosion and can lead to distress to building metallic components that are in contact with site soils. The minimum electrical resistivity indicates the relative concentration of soluble salts in the soil and, therefore, can be used to estimate soil corrosivity with regard to metals. For the purpose of this investigation, the minimum resistivity in soils is measured in accordance with California Test Method No. 643. The soil corrosion severity rating is adopted from the Handbook of Corrosion Engineering by Pierre R. Roberge.

The minimum electrical resistivity for onsite soils was found to be 2,500 to 5800 ohm-cm based on limited testing. The result indicates that on-site soils are **Moderately Corrosive** to ferrous metals and copper. As such, any ferrous metal or copper components of the subject buildings (such as cast iron or ductile iron piping, copper tubing, etc.) that are expected to be placed in direct contact with site soils should be protected against detrimental effects of moderately corrosive soils based on recommendations provided by a qualified corrosion engineer.

Post-Grading Recommendations

Laboratory Testing

Additional sampling and laboratory testing upon completion of rough grading operations is recommended to evaluate expansion and general corrosion potential for the purposes of providing final foundation design recommendations.

Site Drainage

Surface drainage systems consisting of sloping concrete flatwork, graded earth swales and/or an underground area drain system are anticipated to be constructed to collect and direct all surface waters to the adjacent streets and storm drain facilities. In addition, the ground surface around the proposed buildings should be sloped at a positive gradient away from the structures. The purpose of the precise grading is to prevent ponding of surface water within the level areas of the site and against building foundations and associated site improvements. The drainage systems should be properly maintained throughout the life of the proposed development.

Utility Trenches

Utility-trench backfill within street right-of-ways, utility easements, under sidewalks, driveways and building-floor slabs should be compacted to a relative compaction of 90 percent or more. Where onsite soils are utilized as backfill, mechanical compaction should be used. Density testing, along with probing, should be performed by the project geotechnical consultant or his representative to document adequate compaction. Utility-trench sidewalls deeper than about 4 feet should be laid back at a ratio of 1:1 (h:v) or flatter or shored. A trench box may be used in lieu of shoring. If shoring is anticipated, the project geotechnical consultant should be contacted to provide design parameters.

For trenches with vertical walls, backfill should be placed in approximately 1- to 2-foot thick loose lifts and then mechanically compacted with a hydra-hammer, pneumatic tampers or similar compaction equipment. For deep trenches with sloped walls, backfill materials should be placed in approximately 8- to 12-inch-thick loose lifts and then compacted by rolling with a sheepsfoot tamper or similar equipment.

Where utility trenches are proposed in a direction that parallels any building footing (interior and/or exterior trenches), the bottom of the trench should not be located within a 1:1 (h:v) plane projected downward from the outside bottom edge of the adjacent footing.

PLAN REVIEW AND CONSTRUCTION SERVICES

This report has been prepared for the exclusive use of Mastercraft Homes to assist the project team in the design of the proposed development. It is recommended that Petra be engaged to review the final-design drawings and specifications prior to construction. This is to document that the recommendations contained in this report have been properly interpreted and are incorporated into the project grading plans and specifications. If Petra is not accorded the opportunity to review these documents, we can take no responsibility for misinterpretation of our recommendations.

We recommend that Petra be retained to provide soil-engineering services during grading and construction of the excavation and foundation preparation phases of the work. This is to observe compliance with the design, specifications, or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

If the project design concept changes significantly (e.g., structural loads or types), we should be retained to review our original design recommendations and their applicability to the revised construction concept. If conditions are encountered during construction that appears to be different than those indicated in this report, this office should be notified immediately. If this is the case, design and construction revisions may be required.

LIMITATIONS

This report is based on the project, as described, and the preliminary geologic/geotechnical field data obtained from the limited field tests performed at the locations shown. The materials encountered on the project site and utilized in our laboratory evaluation are believed representative of the total area, and the conclusions and recommendations contained in this report are presented on that basis. However, soil materials and groundwater levels can vary in characteristics between points of excavation, both laterally and vertically.

The conclusions and opinions contained in this report are based on the results of the described geotechnical evaluations and represent our professional judgment. The contents of this report are professional opinions and as such, are not to be considered a guaranty or warranty. The findings, conclusions and opinions contained in this report are to be considered tentative only and subject to confirmation by the undersigned during the construction process. Without this confirmation, this report is to be considered incomplete and Petra or the undersigned professionals assume no responsibility for its

use. In addition, this report should be reviewed and updated after a period of 1 year or if the site ownership or project concept changes from that described herein.

The professional opinions contained herein have been derived in accordance with current standards of practice and no warranty is expressed or implied. This report has not been prepared for use by parties or projects other than those named or described herein. This report may not contain sufficient information for other parties or other purposes.

We sincerely appreciate this opportunity to be of service. Please do not hesitate to call the undersigned if you have any questions regarding this report.

Respectfully submitted,
PETRA GEOTECHNICAL, INC.

Jonathan Cain
Associate Geologist

Grayson R. Walker, GE
Principal Engineer
GE 871

APPENDIX B

REFERENCES

American Concrete Institute, 2004, ACI Manual of Concrete Practice, Part 3 – 2004.

American Society of Civil Engineers (ASCE/SEI), 2010, Minimum Design Load for Buildings and Other Structures, Standards 7-10.

Bryant and Hart, E.W., W.A., 2007, Fault-rupture hazard zones in California, Alquist-Priolo earthquake fault zoning act with index to earthquake fault zones maps; California Geological Survey, Special Publication 42, interim revision.

California Building Code (CBC), 2013, California Code of Regulations, Title 24, Part 2, Volume I and II.

International Building Code, 2012, 2013 California Building Code, California Code of Regulations, Title 24, Par 2, Volume 2 of 2, California Building Standards Commission, Title 24, Par 8, 2013 California Existing Building Code, Title 24, Part 10.

California Department of Water Resources, 2013, Water Data Library, http://www.water.ca.gov/waterdatalibrary/groundwater/.

_____, 2004, California Groundwater - Bulletin 118.

California Geological Survey, 2002, *Probabilistic Seismic Hazard Assessment for the State of California*, Open-File Report 96-08, Revised 2002 California Seismic Shaking Analysis, , Appendix A.

_____, 2008, Special Publication 117A

_____, 2010, 2010 Fault Activity Map of California, Digital Version Geologic Data Map No. 6, http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html.

_____, 2011, California Geological Survey Website: http//www.consrv.gov/CGS/rghm/Pshamap/pshamain.html

Environmental Data Resources, Inc., 2013, The EDR Aerial Photo Decade Package, 29300 Baseline Avenue, Highland, CA 92346 (Inquiry No. 3794498.5), dated December 27.

Federal Emergency Management Agency (FEMA), 2009, NEHERP (National Earthquake Hazards Reduction Program) Recommended Seismic Provision for New Building and

Ishihara, K. (1985), Stability of Natural Deposits During Earthquakes, 11th International Conference on Soil Mechanics and Foundation Engineering, Procedings, San Francisco, Vol. 1., pp. 321-376.

Jennings, C.W. and Bryant, W.A., 2010, *Fault Activity Map of California*: California Geological Survey, Geologic Data Map No. 6.

Jennings, C.W, 2010, *Geologic Map of California*: California Geological Survey, Geologic Data Map No. 2.

Petersen, M.D., and Wesnouski, S.G., 1994, Fault Slip Rates and Earthquake Histories in Southern California: Bulletin of the Seismological Society of America, Vol. 84, No. 5, pp. 1608-1649, October, 1994.

Southern California Earthquake Center (SCEC, 1998), Seismic Hazards in Southern California: Probable Earthquakes, 1994 to 2024: by Working Group on California Earthquake Probabilities.

APPENDIX B

Southern California Earthquake Center (SCEC, 1999), Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California: organized through the Southern California Earthquake Center, University of Southern California.

United States Geologic Survey, 2013, 2008 Earthquake Hazards Program, 2008 Interactive Deaggregations (Beta), Earthquake Hazards Program; http://eqint.cr.usgs.gov/deaggint/2008/.

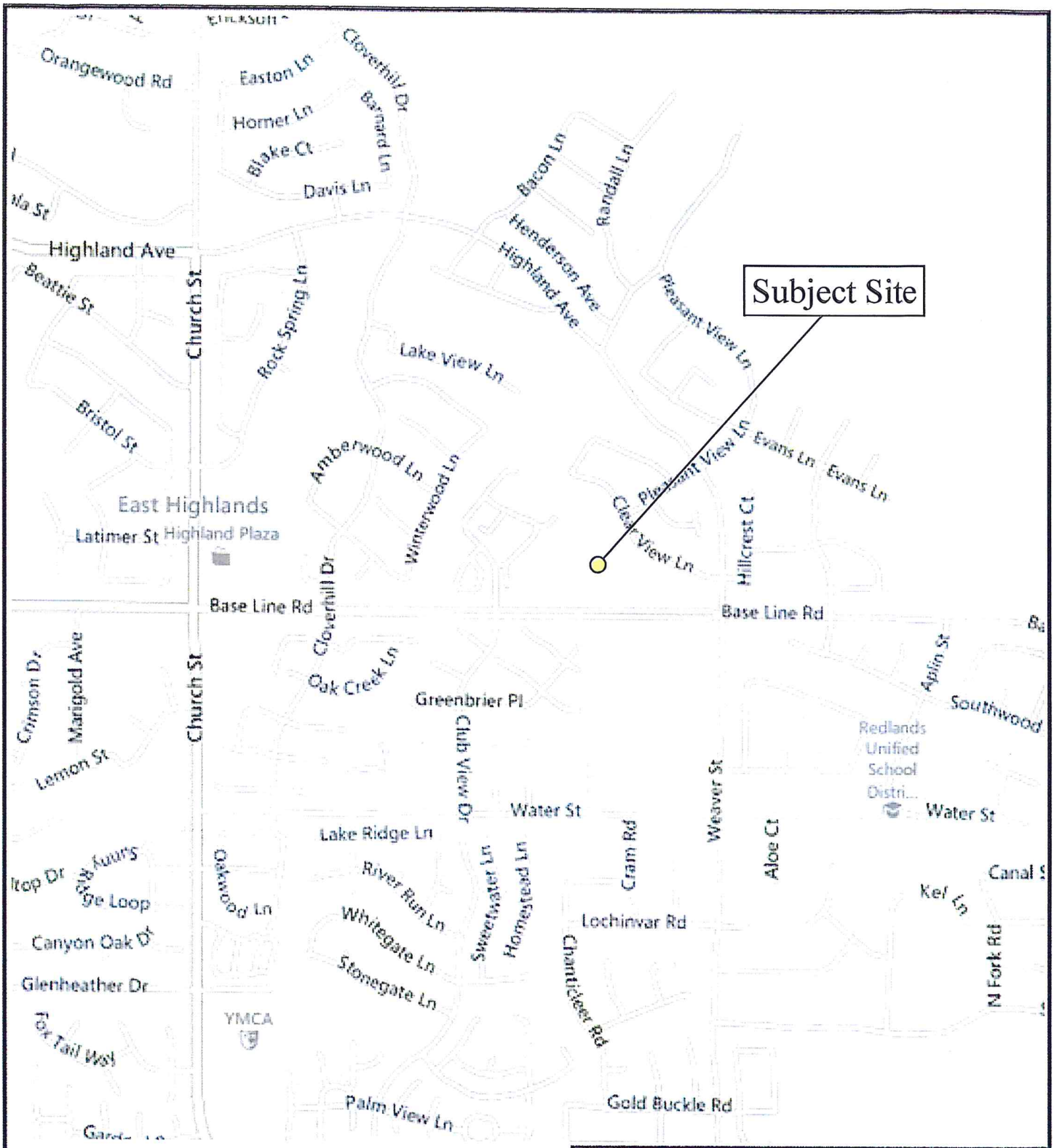
_____, 2008, Seismic Hazard Curves and Uniform Response Spectra, Version 5.0.9.

_____, 1996a, Probabilistic Seismic Hazard Assessment for the State of California, Open-File Report 96-706.

_____, 2003, Geologic Map of the Redlands 7.5' Quadrangle, San Bernardino and Riverside, California, Digital Version1.0

FIGURES

PETRA



Reference: Bing Maps

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COSTA MESA TEMECULA PALM DESERT SAN DIEGO SANTA CLARITA

SITE LOCATION MAP

29300 Baseline Avenue
Mastercraft Homes
City of Highlands, CA

DATE: April 2014	J.N. 13-627	Figure 1
DWG BY: JC	SCALE: NS	

EXPLANATION

- Approximate Location of Site Boundary
- TP-10 — Approximate Location of Exploratory Testpits
- HA-4 — Approximate Location of Hand-Auger samples

N W E S

Reference: Google Earth

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COSTA MESA TEMECULA PALM DESERT SAN DIEGO SANTA CLARITA

EXPLORATION LOCATION MAP

29300 Baseline Avenue
Mastercraft Homes
City of Highlands, CA

DATE: April 2014	J.N. 13-627	Figure 2
DWG BY: JC	SCALE: NS	

APPENDIX A

TEST PIT LOGS

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LOGS OF TEST PITS

TEST PIT NUMBER	DEPTH (ft)	DESCRIPTION
TP-1	0.0 – 1.0	**ARTIFICIAL FILL (AF):** Silty SAND (SM): dark yellow brown, dry, loose; fine to coarse sand, porous.
	1.0-4.0	Silty SAND (SM): dark yellow brown, dry; medium dense, fine to coarse sand, fine gravel, trash.
	4.0-6.0	Silty SAND (SM): dark yellow brown, dry, medium dense; fine to coarse sand, fine-coarse gravel, cobbles, boulders, barb wire.
	6.0-7.5	**FAN DEPOSITS (Qvof):** Silty SAND Very Old: dark yellow brown, dry, medium dense; fine to coarse sand, fine-coarse gavel, cobbles.
	7.5-10	Clayey Sand (SC): reddish brown, slightly moist, dense; granific clasts.
		TOTAL DEPTH = 10 Feet NO GROUNDWATER

TEST PIT NUMBER	DEPTH (ft)	DESCRIPTION
TP-2	0.0 – 0.5	**ARTIFICAL FILL (AF):** Silty SAND (SM): dark yellow brown, dry, loose; fine to coarse sand, extremely porous, abundant tree bark and leaves.
	0.5-6.5	Silty SAND (SM): dark yellow brown, dry, medium dense; fine to coarse sand, trash, wire mesh @ 4.5 feet.
	6.5-10	**VERY OLD FAN DEPOSIT (Qvof):** Silty SAND (SM): dark yellow brown, dry, medium dense; fine to coarse sand.
		TOTAL DEPTH = 10 Feet NO GROUNDWATER

TEST PIT NUMBER	DEPTH (ft)	DESCRIPTION
TP-3	0.0 – 0.5	**TOPSOIL:** Silty SAND (SM): dark yellow brown, slightly moist, loose; extremely porous.
	0.5-11	**VERY OLD FAN DEPOSIT (Qvof):** Silty SAND (SM): dark yellow brown, slightly moist, loose-medium dense; fine to medium sand.
		TOTAL DEPTH = 11 Feet NO GROUNDWATER

LOGS OF TEST PITS

TEST PIT NUMBER	DEPTH (ft)	DESCRIPTION
TP-4	0.0 – 0.5	**TOPSOIL:** Silty SAND (SM): dark yellow brown, slightly moist, loose.
	0.5-8.0	**VERY OLD FAN DEPOSIT (Qvof):** Clayey SAND (SC): medium brown, dry, medium dense; fine to coarse sand, slight porosity in upper 5 feet.
		TOTAL DEPTH = 8 Feet NO GROUNDWATER

TEST PIT NUMBER	DEPTH (ft)	DESCRIPTION
TP-5	0.0 – 1.0	**TOPSOIL:** Silty SAND (SM): dark yellow brown, dry, loose; fine sand, moderately porous.
	1.0-7.0	**VERY OLD FAN DEPOSIT (Qvof):** Clayey Sand (SC): Medium brown, slightly moist.
		TOTAL DEPTH = 7 Feet NO GROUNDWATER

TEST PIT NUMBER	DEPTH (ft)	DESCRIPTION
TP-6	0.0 – 0.5	**TOPSOIL:** Silty SAND (SM): dark yellow brown, slightly moist, loose, fine sand.
	0.5-7	**VERY OLD FAN DEPOSIT (Qvof):** Silty SAND (SM): dark yellow brown, dry, medium dense; fine to medium sand.
	7.0-9	Clayey SAND (SC): medium brown, moist, medium dense; fine to medium sand.
	9.0-11.0	Silty SAND (SM): dark yellow brown, slightly moist, medium dense; fine to coarse sand.
		TOTAL DEPTH = 11 Feet NO GROUNDWATER

TEST PIT NUMBER	DEPTH (ft)	DESCRIPTION
TP-7	0.0-0.5	**TOPSOIL:** Silty SAND (SM): dark yellow brown, slightly moist, loose.
	0.5-8	**VERY OLD FAN DEPOSITS (Qvof):** Silty SAND (SM): dark yellow brown, slightly moist, medium dense; fine sand.

LOGS OF TEST PITS

TEST PIT NUMBER	DEPTH (ft)	DESCRIPTION
		TOTAL DEPTH = 5 Feet NO GROUNDWATER

TEST PIT NUMBER	DEPTH (ft)	DESCRIPTION
TP-8	0.0 – 0.5	**TOPSOIL:** Silty SAND (SM): dark yellow brown, dry, loose.
	0.5-8	**VERY OLD FAN DEPOSIT (Qvof):** Silty SAND (SM): dark yellow brown, dry, medium dense; fine to medium sand.
		TOTAL DEPTH = 8 Feet NO GROUNDWATER

TEST PIT NUMBER	DEPTH (ft)	DESCRIPTION
TP-9	0.0 – 0.5	**TOPSOIL:** Silty SAND (SM): dark yellow brown, dry, loose.
	0.5-8	**VERY OLD FAN DEPOSIT (Qvof):** Silty SAND (SM): dark yellow brown, slightly moist, medium dense.
		TOTAL DEPTH = 8 Feet NO GROUNDWATER

TEST PIT NUMBER	DEPTH (ft)	DESCRIPTION
TP-10	0.0 – 0.5	**TOPSOIL:** Silty SAND (SM): dark yellow brown, dry, loose.
	0.5-11	**VERY OLD FAN DEPOSIT (Qvof):** Silty SAND (SM): dark yellow brown, slightly moist, medium dense; fine to pmedium sand.
		TOTAL DEPTH = 11 Feet NO GROUNDWATER

APPENDIX B

LABORATORY TEST CRITERIA/LABORATORY TEST DATA

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APPENDIX B

Laboratory Test Criteria

Soil Classification

Soils encountered within the exploratory borings were initially classified in the field in general accordance with the visual-manual procedures of the Unified Soil Classification System (ASTM D2488). The samples were re-examined in the laboratory and the classifications reviewed and then revised where appropriate. The assigned group symbols are presented in the Boring Logs (Appendix A).

In-Situ Moisture and Density

Moisture content and unit dry density of in-place soils were determined in representative strata. Test data are summarized in the Test Pit Logs (Appendix A).

Maximum Dry Density

Maximum dry density and optimum moisture content were determined for selected samples of the onsite soils in general accordance with ASTM D1557. The test results are presented in Appendix B.

Expansion Index

Expansion Index (E.I.) testing was performed on a selected bulk samples of the onsite soils in general accordance with ASTM D4829. The expansion potential classification was determined from 2010 CBC Section 1802.3.2 on the basis of the E.I. value. The test results and expansion potentials are presented in Appendix B.

Soil Corrosivity

Chemical analyses were performed on a selected sample to determine concentrations of soluble sulfate and chloride, as well as pH and resistivity. These tests were performed in accordance with California Test Method Nos. 417 (sulfate), 422 (chloride) and 643 (pH and resistivity). Test results are presented in Appendix B.

Consolidation

Consolidation tests were performed on selected samples of the in-situ soils in general accordance with ASTM D2435. Axial loads were applied in several increments to a laterally restrained 1-inch-high sample. Loads were applied in a geometric progression by doubling the previous load, and the resulting deformations were recorded at selected time intervals. The test samples were inundated at a surcharge loading approximately equal to the existing or proposed total overburden pressures in order to evaluate the effects of a sudden increase in moisture content (hydrocollapse potential). Results of these tests are graphically presented on Plates B-1 through B-3.

APPENDIX B

Direct Shear

The Coulomb shear strength parameters, angle of internal friction and cohesion, were determined for disturbed (bulk) samples remolded to approximately 90 percent of maximum dry density. These tests were performed in general accordance with ASTM D3080. Three specimens were prepared for each test. The test specimens were artificially saturated, and then sheared under varied normal loads at a maximum constant rate of strain of 0.01 inches per minute. Results are graphically presented on Plate B-4.

MAXIMUM DRY DENSITY[1]

Test Pit/Depth (feet)	Soil Type	Maxium Dry Density (pcf)	OPTIMUM MOISTURE CONTENT (%)
TP-3, 1-5 feet	Reddish Brown Silty SAND (SM)	132.5	7.5
T-4, 2-5 feet	Reddish Brown Clayey SAND (SC)	127.0	10.5

EXPANSION INDEX[2]

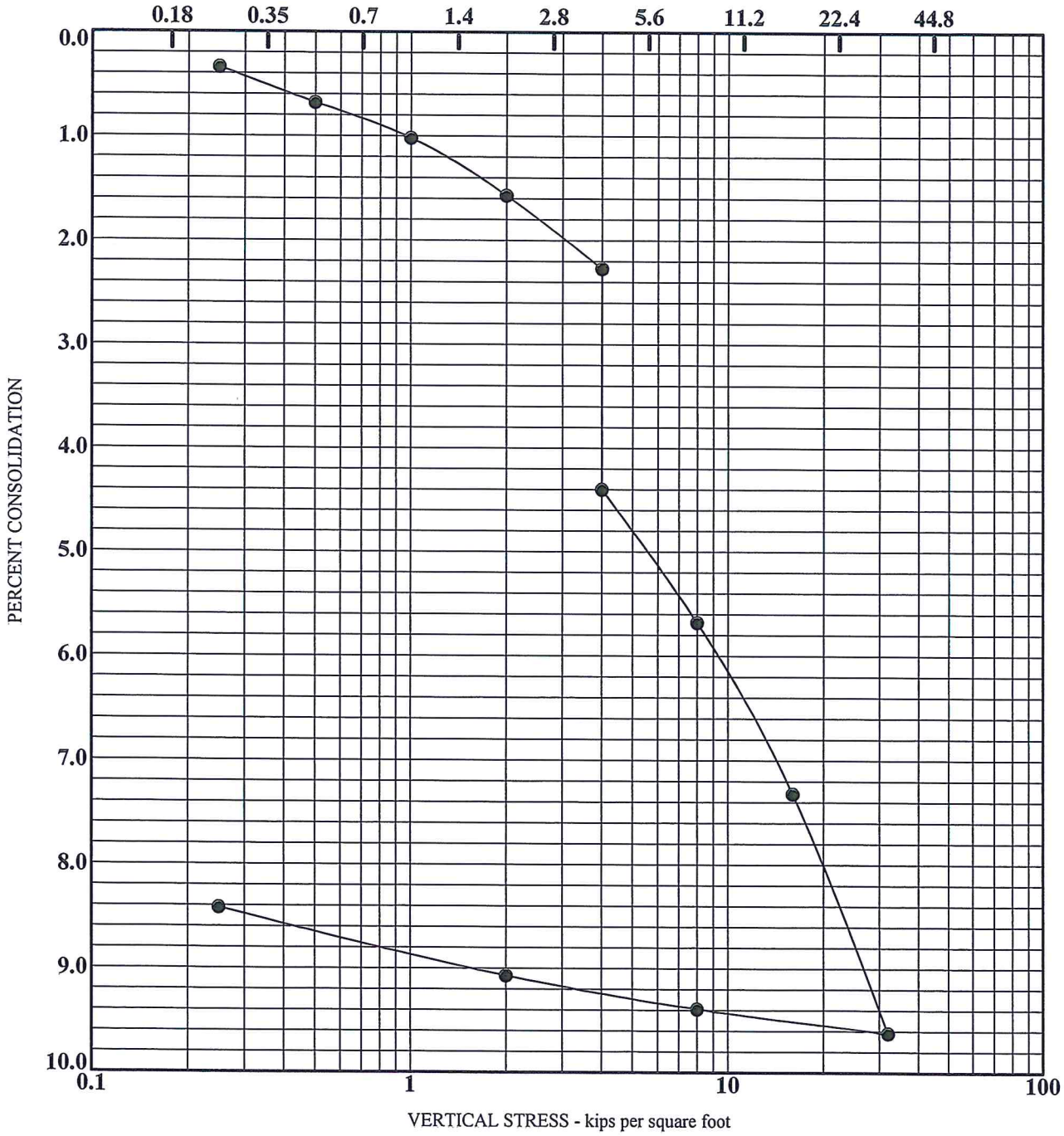
Test Pit/Depth (feet)	Soil Type	Expansion Index	Expansion Potential
TP-3, 1-5 feet	Reddish Brown Silty SAND (SM)	2	Very Low
TP-4, 2-5 feet	Reddish Brown Clayey SAND (SC)	14	Very Low

CORROSIVITY

Test Pit/Depth (feet)	Sulfate[3] (%)	Chloride[4] (ppm)	Ph[5]	Resistivity[5] (ohm-cm)	Corrosivity Potential
TP-3, 1-5 feet	.09	103	7.1	5800	concrete: Negligible steel: Moderately Corrosive
TP-4, 2-5 feet	.06	105	7.0	2500	concrete: Negligible steel: Moderately Corrosive

(1) PER ASTM D 1557
(2) PER ASTM D 4829
(3) PER CALIFORNIA TEST METHOD NO. 417
(4) PER CALIFORNIA TEST METHOD NO. 422
(5) PER CALIFORNIA TEST METHOD NO. 643

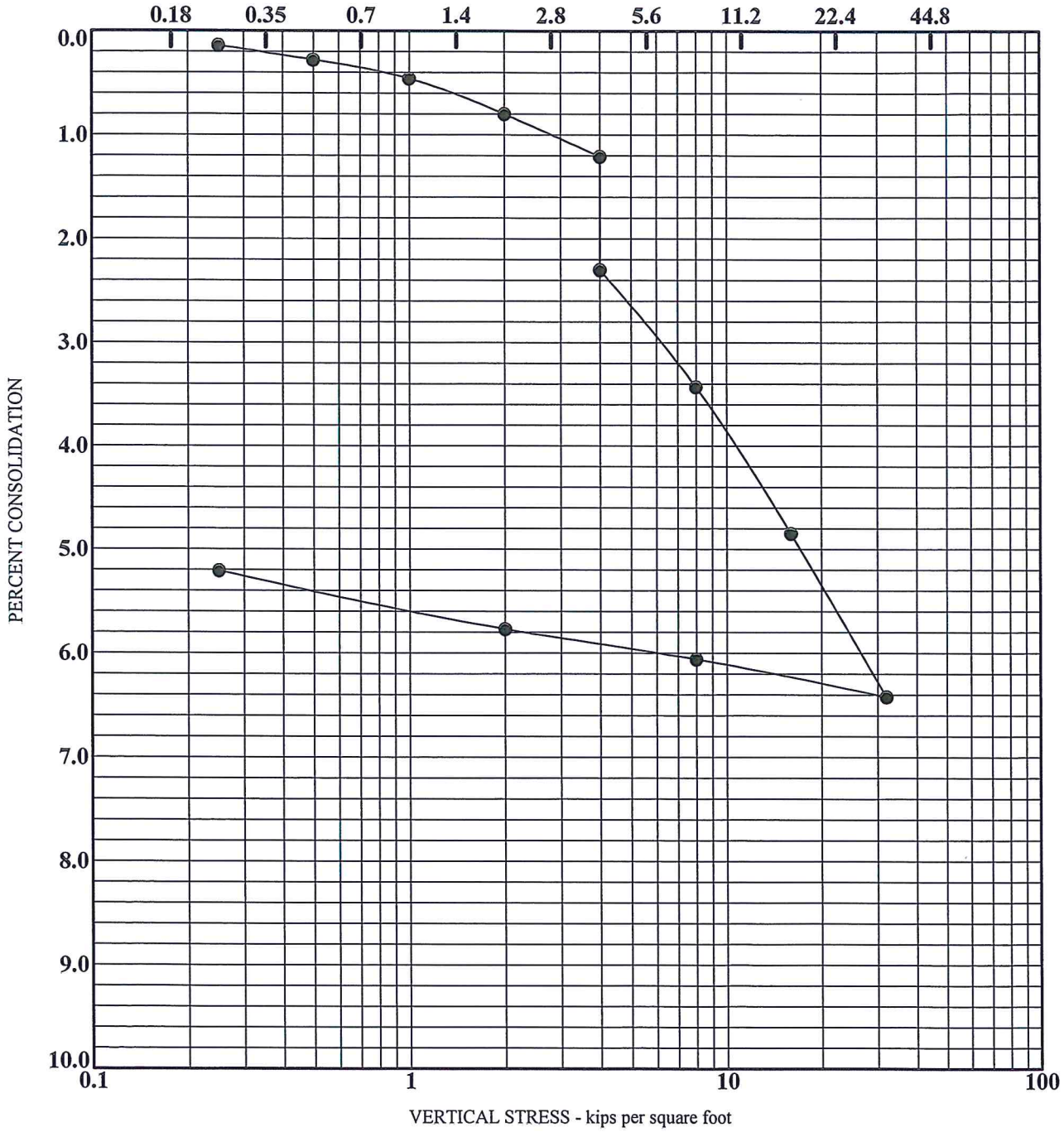
SAMPLE LOCATION	MATERIAL DESCRIPTION	INITIAL			INUNDATED
		DENSITY (pcf)	MOISTURE (%)	SATURATION (%)	LOAD (ksf)
● T-3 @ 10.0	SAND with silt				



J.N. 13-627	CONSOLIDATION TEST RESULTS	April, 2014
PETRA GEOTECHNICAL, INC.		PLATE B-1

CONSOLIDATION - STRAIN 13-627.GPJ PETRA.GDT 4/15/14

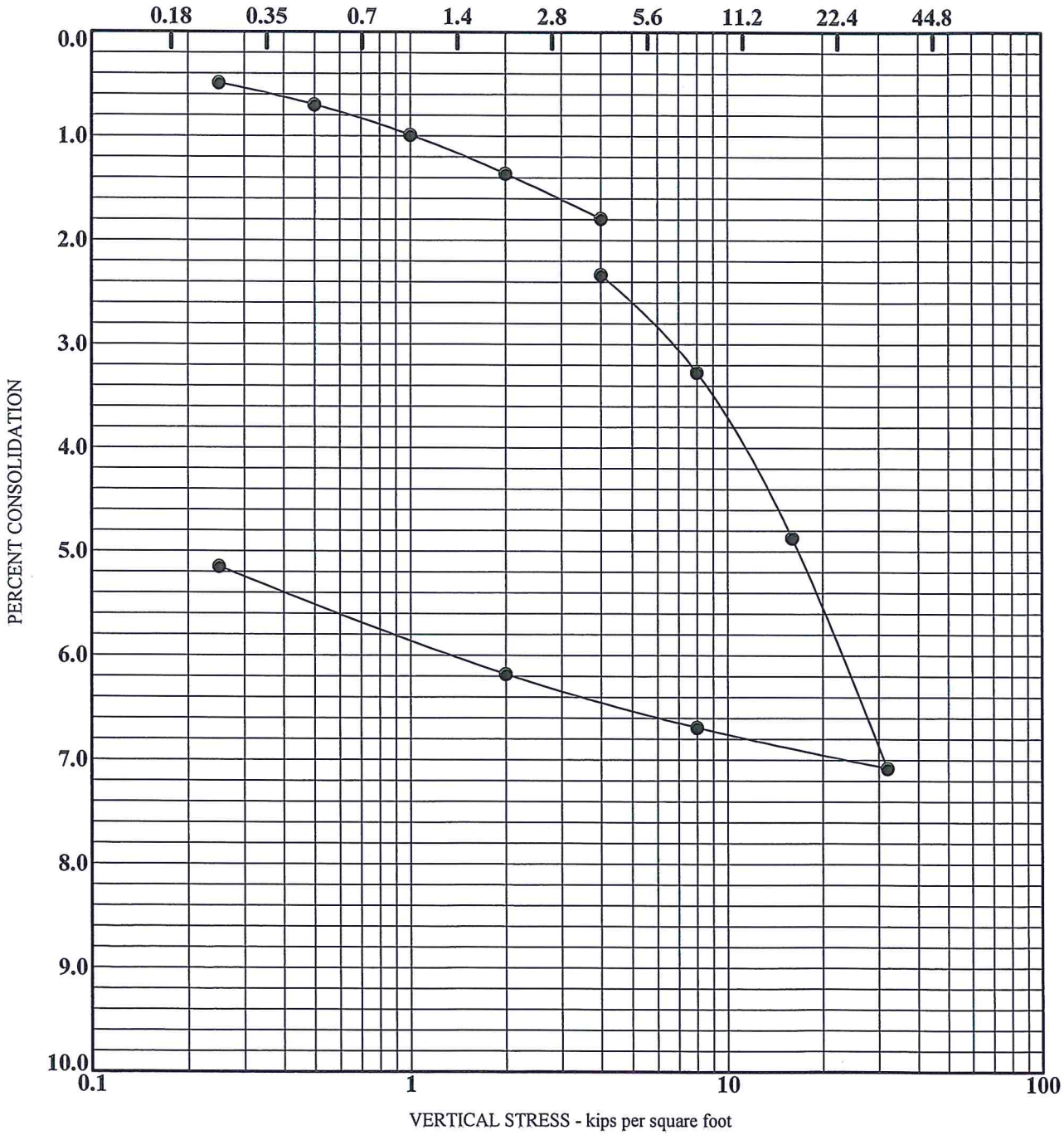
SAMPLE LOCATION	MATERIAL DESCRIPTION	INITIAL			INUNDATED
		DENSITY (pcf)	MOISTURE (%)	SATURATION (%)	LOAD (ksf)
● T-6 @ 10.0	Reddish brown Silty SAND				



J.N. 13-627	CONSOLIDATION TEST RESULTS	April, 2014
PETRA GEOTECHNICAL, INC.		PLATE B-2

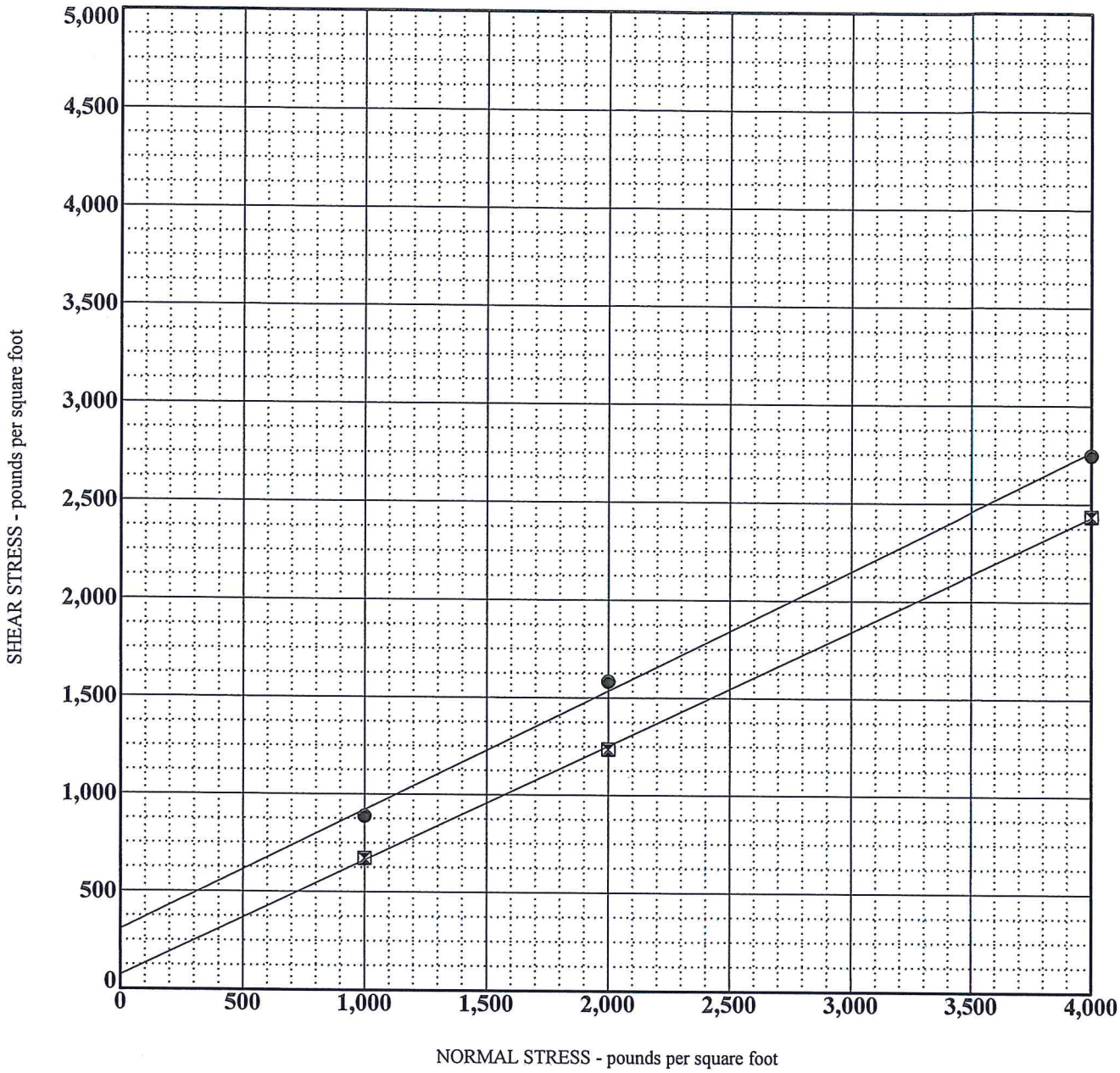
CONSOLIDATION - STRAIN 13-627.GPJ PETRA.GDT 4/15/14

SAMPLE LOCATION	MATERIAL DESCRIPTION	INITIAL			INUNDATED
		DENSITY (pcf)	MOISTURE (%)	SATURATION (%)	LOAD (ksf)
● T-10 @ 10.0	Reddish brown Silty SAND				



CONSOLIDATION - STRAIN 13-627.GPJ PETRA.GDT 4/15/14

J.N. 13-627	CONSOLIDATION TEST RESULTS	April, 2014
PETRA GEOTECHNICAL, INC.		PLATE B-3



SAMPLE LOCATION	DESCRIPTION	FRICTION ANGLE (°)	COHESION (PSF)
● T-3 @ 1.0	Silty SAND	32	306
⊠ T-3 @ 1.0	Silty SAND	31	72

NOTES:

DIRECT SHEAR 13-627.GPJ PETRA.GDT 4/15/14

J.N. 13-627	DIRECT SHEAR TEST DATA	April, 2014
PETRA GEOTECHNICAL, INC.	UNDISTURBED TEST SAMPLES	PLATE B-4

APPENDIX C

SEISMIC DESIGN DATA

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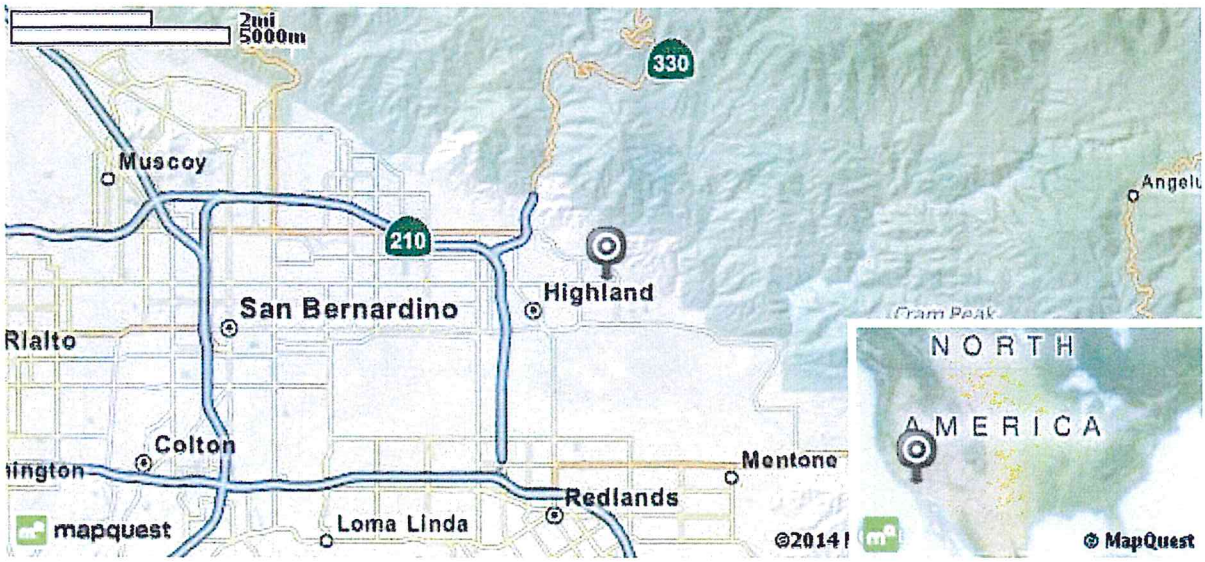
USGS Design Maps Summary Report

User-Specified Input

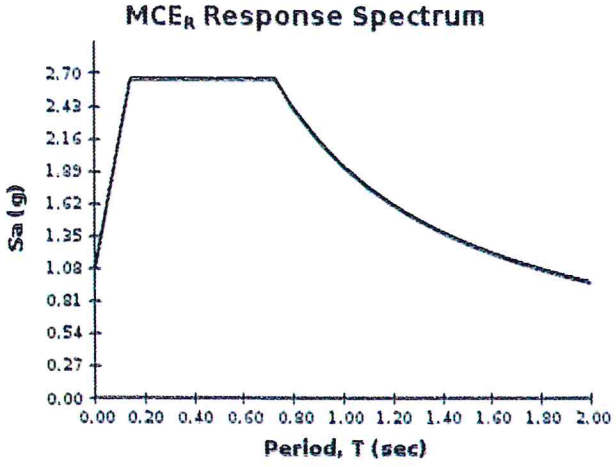
Building Code Reference Document	ASCE 7-10 Standard (which utilizes USGS hazard data available in 2008)
Site Coordinates	34.122°N, 117.1647°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

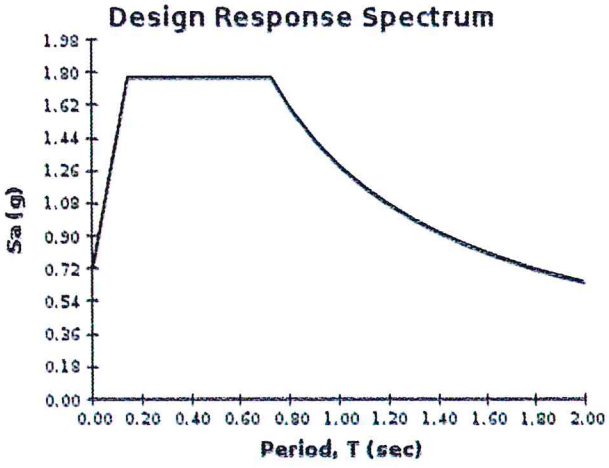


USGS-Provided Output

S_S =	2.653 g	S_{MS} =	2.653 g	S_{DS} =	1.769 g
S_1 =	1.286 g	S_{M1} =	1.929 g	S_{D1} =	1.286 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.

Although this information is a product of the U.S. Geological Survey, we provide no warranty, expressed or implied, as to the accuracy of the data contained therein. This tool is not a substitute for technical subject-matter knowledge.

USGS Design Maps Detailed Report

ASCE 7-10 Standard (34.122°N, 117.1647°W)

Site Class D – "Stiff Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_s) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1]	S_s = 2.653 g
From Figure 22-2 [2]	S_1 = 1.286 g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content $w \geq 40\%$, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk-Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4-1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \le 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \ge 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_S

For Site Class = D and S_S = 2.653 g, F_a = 1.000

Table 11.4-2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1-s Period				
	$S_1 \le 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \ge 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 1.286 g, F_v = 1.500

Equation (11.4-1): $S_{MS} = F_a S_S = 1.000 \times 2.653 = 2.653$ g

Equation (11.4-2): $S_{M1} = F_v S_1 = 1.500 \times 1.286 = 1.929$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

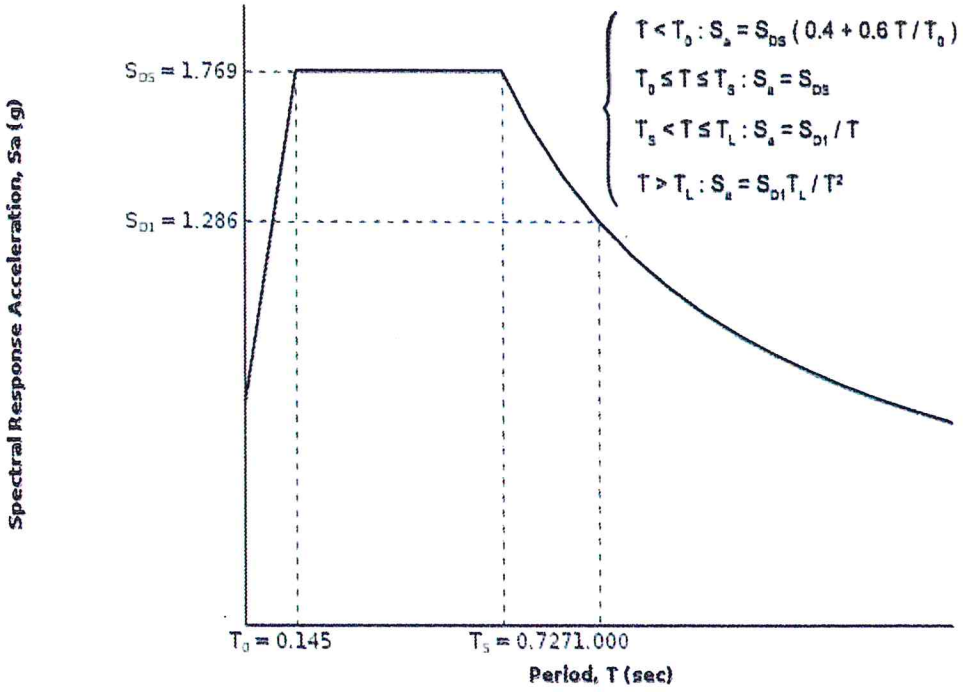
Equation (11.4-3): $S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 2.653 = 1.769$ g

Equation (11.4-4): $S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 1.929 = 1.286$ g

Section 11.4.5 — Design Response Spectrum

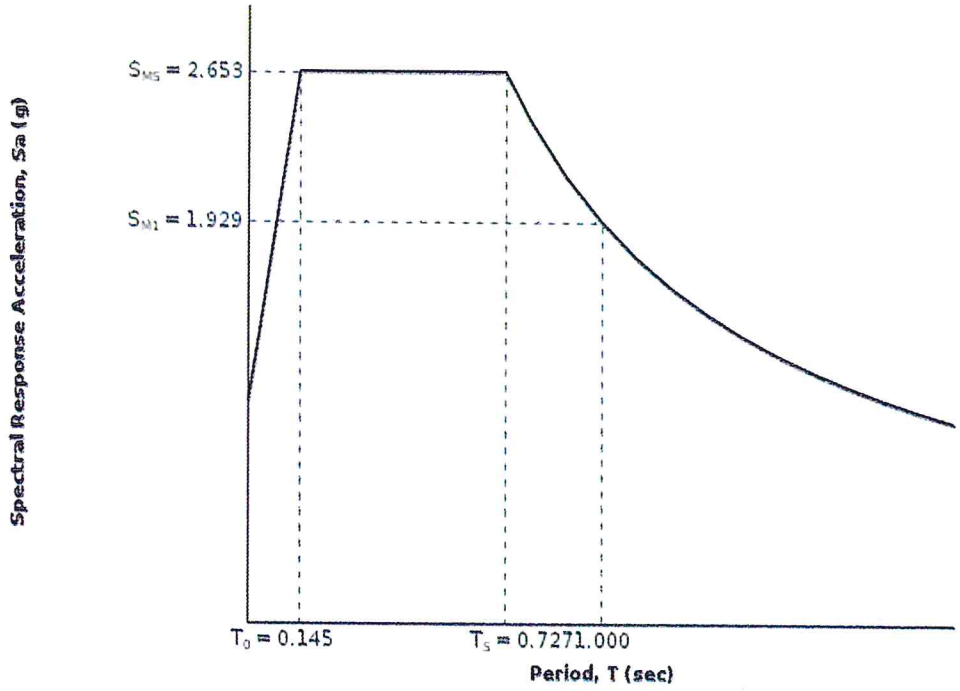
From Figure 22-12 [3] $T_L = 8$ seconds

Figure 11.4-1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 1.024

Equation (11.8-1): $PGA_M = F_{PGA}PGA = 1.000 \times 1.024 = 1.024$ g

Table 11.8-1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of PGA

For Site Class = D and PGA = 1.024 g, F_{PGA} = 1.000

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.993

From Figure 22-18 [6] C_{R1} = 0.944

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \leq S_{DS} < 0.33g$	B	B	C
$0.33g \leq S_{DS} < 0.50g$	C	C	D
$0.50g \leq S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.769 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \leq S_{D1} < 0.133g$	B	B	C
$0.133g \leq S_{D1} < 0.20g$	C	C	D
$0.20g \leq S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 1.286 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

>

*** Deaggregation of Seismic Hazard at One Period of Spectral Accel. ***
*** Data from U.S.G.S. National Seismic Hazards Mapping Project, 2008 version ***
PSHA Deaggregation. %contributions. site: 29300_Baseline_ long: 117.165 W., lat: 34.122 N.
Vs30(m/s)= 270.0 (some WUS atten. models use Site Class not Vs30).
NSHMP 2007-08 See USGS OFR 2008-1128. dM=0.2 below
Return period: 2475 yrs. Exceedance PGA =1.1450 g. Weight * Computed_Rate_Ex 0.402E-03
#Pr[at least one eq with median motion>=PGA in 50 yrs]=0.00000
#This deaggregation corresponds to Mean Hazard w/all GMPEs

DIST(KM)	MAG(MW)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.4	5.05	0.140	0.140	0.000	0.000	0.000	0.000	0.000
7.4	5.20	0.321	0.321	0.000	0.000	0.000	0.000	0.000
7.4	5.40	0.358	0.358	0.000	0.000	0.000	0.000	0.000
7.5	5.60	0.373	0.371	0.003	0.000	0.000	0.000	0.000
7.6	5.80	0.370	0.338	0.032	0.000	0.000	0.000	0.000
7.0	6.01	0.490	0.432	0.058	0.000	0.000	0.000	0.000
6.7	6.20	0.670	0.579	0.091	0.000	0.000	0.000	0.000
6.8	6.40	0.731	0.601	0.130	0.000	0.000	0.000	0.000
12.8	6.40	0.071	0.071	0.000	0.000	0.000	0.000	0.000
2.4	6.60	2.035	1.114	0.921	0.000	0.000	0.000	0.000
13.4	6.61	0.058	0.058	0.000	0.000	0.000	0.000	0.000
3.1	6.80	2.723	1.597	1.126	0.000	0.000	0.000	0.000
13.9	6.79	0.213	0.213	0.000	0.000	0.000	0.000	0.000
1.1	7.04	8.812	2.617	5.200	0.995	0.000	0.000	0.000
13.9	7.03	1.053	1.044	0.009	0.000	0.000	0.000	0.000
1.0	7.24	13.510	3.458	7.869	2.183	0.000	0.000	0.000
13.6	7.23	0.798	0.756	0.042	0.000	0.000	0.000	0.000
1.5	7.43	14.666	4.030	8.403	2.234	0.000	0.000	0.000
13.5	7.39	0.549	0.497	0.052	0.000	0.000	0.000	0.000
26.1	7.39	0.105	0.105	0.000	0.000	0.000	0.000	0.000
1.1	7.61	22.268	5.399	12.945	3.924	0.000	0.000	0.000
12.9	7.61	1.219	1.018	0.201	0.000	0.000	0.000	0.000
26.2	7.57	0.236	0.236	0.000	0.000	0.000	0.000	0.000
1.3	7.80	10.360	2.548	5.987	1.825	0.000	0.000	0.000
12.7	7.81	1.167	0.850	0.316	0.000	0.000	0.000	0.000
41.7	7.83	0.065	0.065	0.000	0.000	0.000	0.000	0.000
1.6	7.97	14.336	3.612	8.320	2.405	0.000	0.000	0.000
12.7	7.99	0.108	0.072	0.036	0.000	0.000	0.000	0.000
1.0	8.19	1.956	0.404	1.137	0.414	0.000	0.000	0.000
0.7	8.39	0.058	0.011	0.034	0.012	0.000	0.000	0.000

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Contribution from this GMPE(%): 100.0
Mean src-site R= 2.3 km; M= 7.45; eps0= 1.25. Mean calculated for all sources.
Modal src-site R= 1.1 km; M= 7.61; eps0= 1.10 from peak (R,M) bin
MODE R*= 1.1km; M*= 7.61; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 12.945

Principal sources (faults, subduction, random seismicity having > 3% contribution)

Source Category:	% contr.	R(km)	M	epsilon0 (mean values).
California A-faults	88.59	2.0	7.55	1.19
CA Compr. crustal gridded	3.88	7.3	5.96	2.03
San Gorgonio Zone gridded	7.12	2.7	7.05	1.43

Individual fault hazard details if its contribution to mean hazard > 2%:

Fault ID	% contr.	Rcd(km)	M	epsilon0	Site-to-src azimuth(d)
S. S.Andr.;NSB+SSB aPriori	5.74	0.7	7.15	1.13	24.1
S. S.Andr.;SSB+BG aPriori	6.86	0.7	7.31	1.10	24.2
S. S.Andr.;SM+NSB+SSB aPriori	3.15	0.7	7.56	1.07	24.1
S. S.Andr.;NSB+SSB+BG aPriori	3.11	0.7	7.45	1.08	24.2
S. S.Andr.;SSB+BG+CO aPriori	3.18	0.7	7.51	1.07	24.2
S. S.Andr.;SM+NSB+SSB+BG aPriori	2.43	0.7	7.72	1.06	24.2
SSAndr.;NSB+SSB+BG+CO aPriori	3.23	0.7	7.61	1.06	24.2
SSAnd;SM+NSB+SSB+BG+CO aPriori	3.31	0.7	7.82	1.04	24.2
S. San Andreas;NSB+SSB MoBal	7.27	0.7	7.14	1.13	24.1
S. San Andreas;SM+NSB+SSB MoBal	4.99	0.7	7.55	1.07	24.1

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S. San Andreas;SM+NSB+SSB+BG+CO     2.64     0.7   7.82    1.04      24.2
S. San Andreas Unsegmented A-flt   10.17     0.8   7.68    1.07      23.6
#*********End of deaggregation corresponding to Mean Hazard w/all GMPEs  *********#

PSHA Deaggregation. %contributions. site: 29300_Baseline_ long: 117.165 W., lat: 34.122 N.
 Vs30(m/s)= 270.0 (some WUS atten. models use Site Class not Vs30).
NSHMP 2007-08  See USGS OFR 2008-1128. dM=0.2 below
Return period: 2475  yrs. Exceedance PGA =1.1450   g. Weight * Computed_Rate_Ex 0.193E-03
#Pr[at least one eq with median motion>=PGA in 50 yrs]=0.00000
#This deaggregation corresponds to Boore-Atkinson 2008
DIST(KM) MAG(MW) ALL_EPS EPSILON>2  1<EPS<2 0<EPS<1 -1<EPS<0 -2<EPS<-1 EPS<-2
    7.2     5.61    0.028    0.028    0.000    0.000    0.000    0.000    0.000
    7.4     5.80    0.041    0.041    0.000    0.000    0.000    0.000    0.000
    6.5     6.02    0.088    0.088    0.000    0.000    0.000    0.000    0.000
    6.4     6.20    0.145    0.145    0.000    0.000    0.000    0.000    0.000
    6.6     6.40    0.175    0.175    0.000    0.000    0.000    0.000    0.000
    2.3     6.60    0.892    0.715    0.177    0.000    0.000    0.000    0.000
   14.1     6.61    0.043    0.043    0.000    0.000    0.000    0.000    0.000
    3.1     6.80    1.344    0.979    0.366    0.000    0.000    0.000    0.000
   14.1     6.79    0.181    0.181    0.000    0.000    0.000    0.000    0.000
    1.1     7.04    4.392    1.454    2.544    0.394    0.000    0.000    0.000
   13.8     7.01    0.754    0.745    0.009    0.000    0.000    0.000    0.000
    1.0     7.24    6.565    1.841    3.873    0.851    0.000    0.000    0.000
   13.5     7.22    0.620    0.579    0.040    0.000    0.000    0.000    0.000
    1.5     7.43    7.035    2.163    4.033    0.838    0.000    0.000    0.000
   13.5     7.39    0.358    0.313    0.045    0.000    0.000    0.000    0.000
   26.1     7.38    0.104    0.104    0.000    0.000    0.000    0.000    0.000
    1.1     7.61   10.675    2.768    6.410    1.498    0.000    0.000    0.000
   12.9     7.61    0.787    0.626    0.162    0.000    0.000    0.000    0.000
   26.2     7.57    0.220    0.220    0.000    0.000    0.000    0.000    0.000
    1.3     7.80    4.940    1.281    2.963    0.696    0.000    0.000    0.000
   12.7     7.80    0.702    0.502    0.200    0.000    0.000    0.000    0.000
   41.7     7.83    0.065    0.065    0.000    0.000    0.000    0.000    0.000
    1.6     7.97    6.835    1.815    4.086    0.933    0.000    0.000    0.000
   12.7     7.99    0.063    0.042    0.020    0.000    0.000    0.000    0.000
   41.4     8.01    0.031    0.031    0.000    0.000    0.000    0.000    0.000
    1.1     8.19    0.870    0.199    0.534    0.136    0.000    0.000    0.000
    0.7     8.39    0.027    0.006    0.017    0.005    0.000    0.000    0.000

Summary statistics for above PSHA PGA  deaggregation, R=distance, e=epsilon:
Contribution from this GMPE(%):   48.1
 Mean src-site R=    2.6 km; M= 7.49; eps0=   1.29. Mean calculated for all sources.
Modal src-site R=    1.1 km; M= 7.61; eps0=   1.15 from peak (R,M) bin
 MODE R*=   1.0km; M*= 7.62; EPS.INTERVAL: 1 to 2 sigma  % CONTRIB.=  6.410

Principal sources (faults, subduction, random seismicity having > 3% contribution)
Source Category:                % contr.  R(km)    M   epsilon0 (mean values).
California A-faults               44.01     2.4   7.54    1.26
San Gorgonio Zone gridded          3.20     2.8   7.04    1.42
Individual fault hazard details if its contribution to mean hazard > 2%:
Fault ID                        % contr.   Rcd(km)  M   epsilon0 Site-to-src azimuth(d)
S. S.Andr.;NSB+SSB aPriori         2.86     0.7   7.14    1.16      24.1
S. S.Andr.;SSB+BG aPriori          3.35     0.7   7.31    1.13      24.2
S. S.Andr.;SM+NSB+SSB aPriori      1.53     0.7   7.55    1.11      24.1
S. S.Andr.;NSB+SSB+BG aPriori      1.51     0.7   7.45    1.12      24.2
S. S.Andr.;SSB+BG+CO aPriori       1.52     0.7   7.51    1.12      24.2
S. S.Andr.;SM+NSB+SSB+BG aPriori   1.17     0.7   7.71    1.11      24.2
SSAndr.;NSB+SSB+BG+CO aPriori      1.54     0.7   7.61    1.11      24.2
SSAnd;SM+NSB+SSB+BG+CO aPriori     1.57     0.7   7.82    1.10      24.2
S. San Andreas;NSB+SSB MoBal       3.64     0.7   7.14    1.17      24.1
S. San Andreas;SM+NSB+SSB MoBal    2.42     0.7   7.55    1.11      24.1
S. San Andreas;SM+NSB+SSB+BG+CO    1.26     0.7   7.82    1.10      24.2
S. San Andreas Unsegmented A-flt   4.92     0.8   7.68    1.13      23.6
#*********End of deaggregation corresponding to Boore-Atkinson 2008      *********#
```

PSHA Deaggregation. %contributions. site: 29300_Baseline_ long: 117.165 W., lat: 34.122 N.
Vs30(m/s)= 270.0 (some WUS atten. models use Site Class not Vs30).
NSHMP 2007-08 See USGS OFR 2008-1128. dM=0.2 below
Return period: 2475 yrs. Exceedance PGA =1.1450 g. Weight * Computed_Rate_Ex 0.609E-05
#Pr[at least one eq with median motion>=PGA in 50 yrs]=0.00000
#This deaggregation corresponds to Campbell-Bozorgnia 2008

DIST(KM)	MAG(MW)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
6.7	5.05	0.001	0.001	0.000	0.000	0.000	0.000	0.000
6.9	5.22	0.011	0.011	0.000	0.000	0.000	0.000	0.000
7.2	5.41	0.026	0.026	0.000	0.000	0.000	0.000	0.000
7.4	5.60	0.036	0.036	0.000	0.000	0.000	0.000	0.000
7.5	5.80	0.035	0.035	0.000	0.000	0.000	0.000	0.000
6.9	6.00	0.037	0.037	0.000	0.000	0.000	0.000	0.000
6.5	6.21	0.054	0.054	0.000	0.000	0.000	0.000	0.000
6.6	6.40	0.074	0.074	0.000	0.000	0.000	0.000	0.000
11.8	6.40	0.002	0.002	0.000	0.000	0.000	0.000	0.000
2.5	6.60	0.146	0.146	0.000	0.000	0.000	0.000	0.000
11.2	6.61	0.002	0.002	0.000	0.000	0.000	0.000	0.000
2.6	6.79	0.125	0.125	0.000	0.000	0.000	0.000	0.000
11.4	6.81	0.001	0.001	0.000	0.000	0.000	0.000	0.000
2.5	7.02	0.159	0.155	0.004	0.000	0.000	0.000	0.000
13.7	6.99	0.001	0.001	0.000	0.000	0.000	0.000	0.000
2.1	7.22	0.246	0.240	0.006	0.000	0.000	0.000	0.000
15.1	7.16	0.004	0.004	0.000	0.000	0.000	0.000	0.000
1.7	7.42	0.242	0.234	0.008	0.000	0.000	0.000	0.000
13.7	7.37	0.003	0.003	0.000	0.000	0.000	0.000	0.000
1.5	7.60	0.197	0.194	0.003	0.000	0.000	0.000	0.000
0.8	7.80	0.045	0.045	0.000	0.000	0.000	0.000	0.000
0.9	7.97	0.061	0.061	0.000	0.000	0.000	0.000	0.000
0.8	8.22	0.006	0.006	0.000	0.000	0.000	0.000	0.000

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Contribution from this GMPE(%): 1.5
Mean src-site R= 3.0 km; M= 7.01; eps0= 2.13. Mean calculated for all sources.
Modal src-site R= 2.1 km; M= 7.22; eps0= 1.98 from peak (R,M) bin
MODE R*= 2.0km; M*= 7.22; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 0.240

Principal sources (faults, subduction, random seismicity having > 3% contribution)
Source Category: % contr. R(km) M epsilon0 (mean values).
Individual fault hazard details if its contribution to mean hazard > 2%:

Fault ID	% contr.	Rcd(km)	M	epsilon0	Site-to-src azimuth(d)
S. S.Andr.;NSB+SSB aPriori	0.03	0.7	7.17	2.48	24.1
S. S.Andr.;SSB+BG aPriori	0.10	0.7	7.30	2.15	24.2
S. S.Andr.;SM+NSB+SSB aPriori	0.02	0.7	7.55	2.47	24.1
S. S.Andr.;NSB+SSB+BG aPriori	0.03	0.7	7.45	2.23	24.2
S. S.Andr.;SSB+BG+CO aPriori	0.03	0.7	7.51	2.26	24.2
S. S.Andr.;SM+NSB+SSB+BG aPriori	0.02	0.7	7.71	2.32	24.2
SSAndr.;NSB+SSB+BG+CO aPriori	0.03	0.7	7.61	2.29	24.2
SSAnd;SM+NSB+SSB+BG+CO aPriori	0.02	0.7	7.82	2.35	24.2
S. San Andreas;NSB+SSB MoBal	0.04	0.7	7.16	2.48	24.1
S. San Andreas;SM+NSB+SSB MoBal	0.03	0.7	7.55	2.47	24.1
S. San Andreas;SM+NSB+SSB+BG+CO	0.02	0.7	7.82	2.35	24.2
S. San Andreas Unsegmented A-flt	0.00	0.0	0.00	0.00	23.6

#*********End of deaggregation corresponding to Campbell-Bozorgnia 2008 *********#

PSHA Deaggregation. %contributions. site: 29300_Baseline_ long: 117.165 W., lat: 34.122 N.
Vs30(m/s)= 270.0 (some WUS atten. models use Site Class not Vs30).
NSHMP 2007-08 See USGS OFR 2008-1128. dM=0.2 below
Return period: 2475 yrs. Exceedance PGA =1.1450 g. Weight * Computed_Rate_Ex 0.202E-03
#Pr[at least one eq with median motion>=PGA in 50 yrs]=0.00000
#This deaggregation corresponds to Chiou-Youngs 2008

DIST(KM)	MAG(MW)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.4	5.05	0.137	0.137	0.000	0.000	0.000	0.000	0.000
7.4	5.20	0.302	0.302	0.000	0.000	0.000	0.000	0.000
7.5	5.40	0.314	0.314	0.000	0.000	0.000	0.000	0.000

7.6	5.60	0.310	0.310	0.000	0.000	0.000	0.000	0.000
7.6	5.80	0.294	0.294	0.000	0.000	0.000	0.000	0.000
7.1	6.01	0.364	0.360	0.005	0.000	0.000	0.000	0.000
6.9	6.20	0.471	0.457	0.014	0.000	0.000	0.000	0.000
12.6	6.20	0.038	0.038	0.000	0.000	0.000	0.000	0.000
7.0	6.40	0.483	0.450	0.033	0.000	0.000	0.000	0.000
12.5	6.39	0.053	0.053	0.000	0.000	0.000	0.000	0.000
2.6	6.60	0.972	0.764	0.209	0.000	0.000	0.000	0.000
3.1	6.79	1.279	0.933	0.347	0.000	0.000	0.000	0.000
13.2	6.79	0.031	0.031	0.000	0.000	0.000	0.000	0.000
1.1	7.04	4.261	1.375	2.316	0.569	0.000	0.000	0.000
14.0	7.04	0.225	0.225	0.000	0.000	0.000	0.000	0.000
1.0	7.24	6.699	1.748	3.672	1.278	0.000	0.000	0.000
13.9	7.23	0.247	0.245	0.002	0.000	0.000	0.000	0.000
1.5	7.43	7.389	2.044	4.034	1.312	0.000	0.000	0.000
13.6	7.39	0.174	0.169	0.005	0.000	0.000	0.000	0.000
1.1	7.61	11.396	2.624	6.380	2.392	0.000	0.000	0.000
12.9	7.61	0.445	0.406	0.039	0.000	0.000	0.000	0.000
1.3	7.80	5.375	1.221	3.025	1.129	0.000	0.000	0.000
12.7	7.80	0.450	0.334	0.116	0.000	0.000	0.000	0.000
1.6	7.97	7.440	1.735	4.234	1.472	0.000	0.000	0.000
12.7	7.97	0.059	0.044	0.015	0.000	0.000	0.000	0.000
1.0	8.19	1.079	0.199	0.603	0.278	0.000	0.000	0.000
0.7	8.39	0.030	0.005	0.017	0.008	0.000	0.000	0.000

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Contribution from this GMPE(%): 50.4
Mean src-site R= 2.1 km; M= 7.43; eps0= 1.18. Mean calculated for all sources.
Modal src-site R= 1.1 km; M= 7.61; eps0= 1.04 from peak (R,M) bin
MODE R*= 1.1km; M*= 7.62; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 6.380

Principal sources (faults, subduction, random seismicity having > 3% contribution)

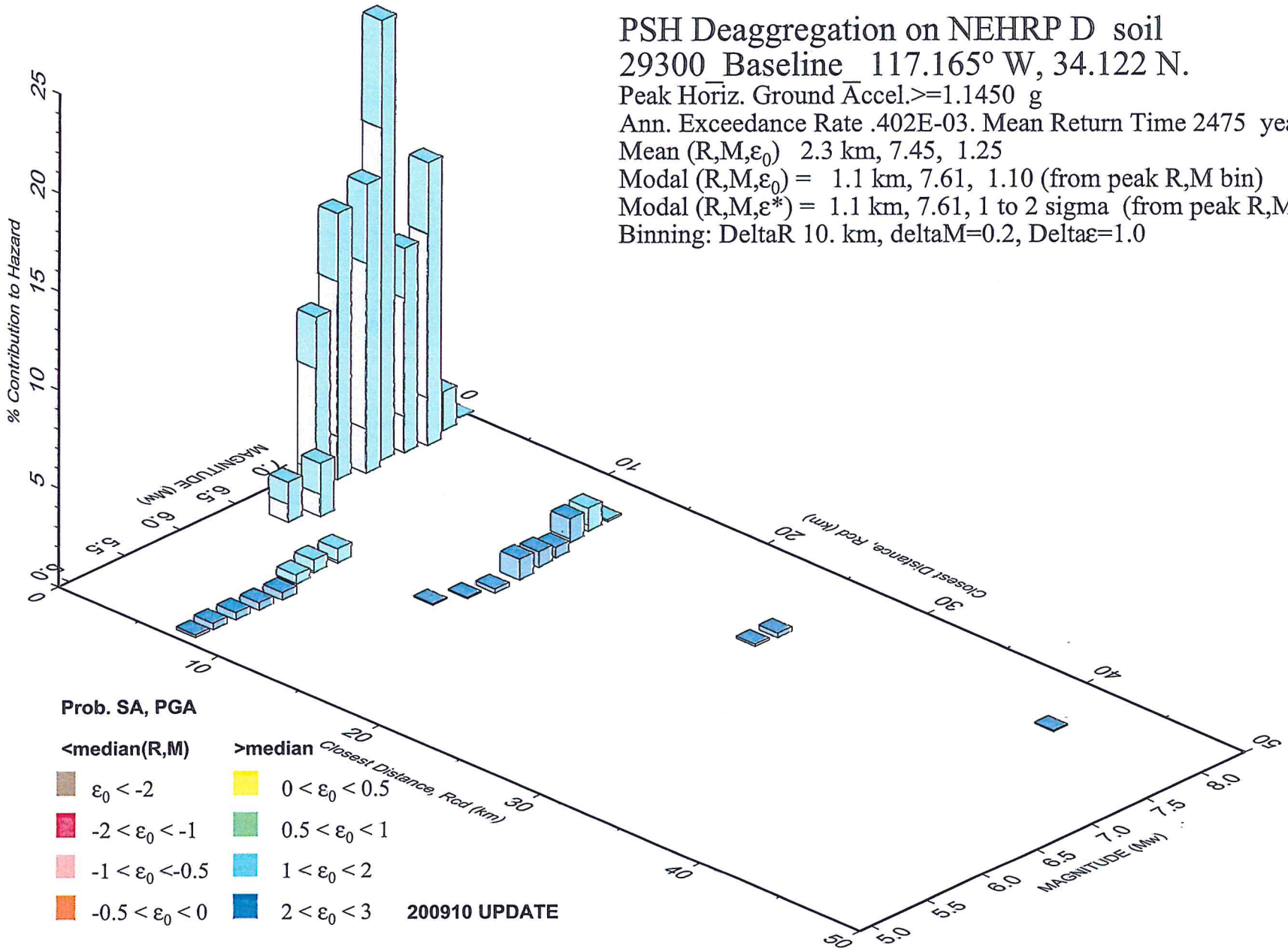
Source Category:	% contr.	R(km)	M	epsilon0 (mean values).
California A-faults	44.09	1.7	7.56	1.11
San Gorgonio Zone gridded	3.23	2.6	7.05	1.34

Individual fault hazard details if its contribution to mean hazard > 2%:

Fault ID	% contr.	Rcd(km)	M	epsilon0	Site-to-src azimuth(d)
S. S.Andr.;NSB+SSB aPriori	2.84	0.7	7.15	1.09	24.1
S. S.Andr.;SSB+BG aPriori	3.42	0.7	7.31	1.03	24.2
S. S.Andr.;SM+NSB+SSB aPriori	1.61	0.7	7.56	1.01	24.1
S. S.Andr.;NSB+SSB+BG aPriori	1.57	0.7	7.45	1.02	24.2
S. S.Andr.;SSB+BG+CO aPriori	1.62	0.7	7.51	1.00	24.2
S. S.Andr.;SM+NSB+SSB+BG aPriori	1.24	0.7	7.72	0.99	24.2
SSAndr.;NSB+SSB+BG+CO aPriori	1.66	0.7	7.61	0.99	24.2
SSAnd;SM+NSB+SSB+BG+CO aPriori	1.71	0.7	7.82	0.97	24.2
S. San Andreas;NSB+SSB MoBal	3.60	0.7	7.14	1.09	24.1
S. San Andreas;SM+NSB+SSB MoBal	2.54	0.7	7.56	1.01	24.1
S. San Andreas;SM+NSB+SSB+BG+CO	1.37	0.7	7.82	0.97	24.2
S. San Andreas Unsegmented A-flt	5.26	0.8	7.69	1.01	23.6

#*********End of deaggregation corresponding to Chiou-Youngs 2008 *********#

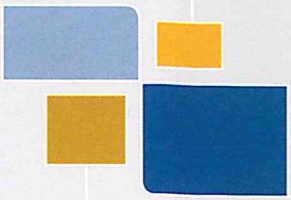
********** Southern California **********



PSH Deaggregation on NEHRP D soil
29300_Baseline_ 117.165° W, 34.122 N.

Peak Horiz. Ground Accel.>=1.1450 g
Ann. Exceedance Rate .402E-03. Mean Return Time 2475 years
Mean (R,M,ε_0) 2.3 km, 7.45, 1.25
Modal (R,M,ε_0) = 1.1 km, 7.61, 1.10 (from peak R,M bin)
Modal (R,M,ε^*) = 1.1 km, 7.61, 1 to 2 sigma (from peak R,M,ε bin)
Binning: DeltaR 10. km, deltaM=0.2, Deltaε=1.0

GMT 2014 Mar 28 23:29:52 Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on soil with average vs= 270. m/s top 30 m. USGS CGHT PSHA2008 UPDATE Bins with lt 0.05% contrib. omitted



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GREENHOUSE GAS ANALYSIS

CITY OF HIGHLAND

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LIST OF ABBREVIATED TERMS

(1)	Reference
APS	Alternative Planning Organizations
ARB	California Air Resources Board
CAA	Federal Clean Air Act
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resource Board
CAT	Climate Action Team
CBSC	California Building Standards Commission
CEC	California Energy Commission
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFC	Chlorofluorocarbons
CFR	Code of Federal Regulations
CH4	Methane
CO	Carbon Monoxide
CO2	Carbon Dioxide
CO2e	Carbon Dioxide Equivalent
CPUC	California Public Utilities Commission
EPA	Environmental Protection Agency
EPS	Emission Performance Standard
GCC	Global Climate Change
GHGA	Greenhouse Gas Analysis
GWP	Global Warming Potential
HFC	Hydrofluorocarbons
LCA	Life-Cycle Analysis
MMs	Mitigation Measures
MMTCO2e	Million Metric Ton of Carbon Dioxide Equivalent
MPOs	Metropolitan Planning Organizations
MTCO2e	Metric Ton of Carbon Dioxide Equivalent
N20	Nitrogen Dioxide
NIOSH	National Institute for Occupational Safety and Health
NOx	Oxides of Nitrogen
PFC	Perfluorocarbons
PM10	Particulate Matter 10 microns in diameter or less

PM2.5	Particulate Matter 2.5 microns in diameter or less
PPM	Parts Per Million
Project	Highland Park
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategies
UNFCCC	United Nations' Framework Convention on Climate Change
VOC	Volatile Organic Compounds

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1 INTRODUCTION

This report presents the results of the greenhouse gas analysis (GHGA) prepared by Urban Crossroads, Inc., for the proposed Highland Park project (referred to as "Project"). The Project site is located north of Base Line Street and west of Weaver Street in the City of Highland.

The purpose of this GHGA is to evaluate Project-related construction and operational emissions and determine the level of greenhouse gas (GHG) impacts as a result of constructing and operating the proposed Project.

1.1 SITE LOCATION

The proposed Highland Park site is located north of Base Line Street and west of Weaver Street in the City of Highland, as shown on Exhibit 1-A. The Project site is currently occupied by an existing single-family residential dwelling. Existing residential land uses are located to the north, west, east, and south of the Project site across Base Line Street. The Project site is located approximately 3.5 miles northeast of the San Bernardino International Airport and approximately 2.5 miles north of the Redlands Municipal Airport.

1.2 PROJECT DESCRIPTION

The Project consists of the development of up to 44 single-family detached dwelling units, as shown on Exhibit 1-B. A water quality basin is proposed at the southwest corner of the site on lot 46, and a park is proposed for lot 45 within the Project site.

1.3 SUMMARY OF FINDINGS

The City of Highland has not adopted its own thresholds of significance for GHG emissions. As such, a screening threshold of 3,000 MTCO2e per year for residential land uses is applied herein, which is a widely accepted screening threshold accepted by the County of San Bernardino and numerous jurisdictions in the South Coast Air Basin. The County of San Bernardino Greenhouse Gas Reduction Plan states that, "small projects that do not exceed 3,000 MTCO2e per year will be considered to be consistent with the Plan and determined to have a less than significant individual and cumulative impact for GHG emissions." (1)

A screening threshold of 3,000 MTCO2e per year for residential land uses is based on the South Coast Air Quality Management District (SCAQMD) staff's proposed GHG screening threshold for stationary source emissions for non-industrial projects, as described in the SCAQMD's *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* ("SCAQMD Interim GHG Threshold"). The SCAQMD Interim GHG Threshold identifies a screening threshold to determine whether additional analysis is required (SCAQMD, 2008).

The Project will result in approximately 868.12 MTCO2e per year; the proposed project would not exceed the SCAQMD threshold of 3,000 MTCO2e per year. Thus, project-related emissions would not have a significant direct or indirect impact on GHG and climate change.

1.5 REGULATORY REQUIREMENTS

The Project would be required to comply with all mandates imposed by the State of California and the South Coast Air Quality Management District aimed at the reduction of air quality emissions. Those that are applicable to the Project and that would assist in the reduction of greenhouse gas emissions are:

- Global Warming Solutions Act of 2006 (AB32)(2)
- Regional GHG Emissions Reduction Targets/Sustainable Communities Strategies (SB 375)(3)
- Pavley Fuel Efficiency Standards (AB1493). Establishes fuel efficiency ratings for new vehicles (4).
- Title 24 California Code of Regulations (California Building Code). Establishes energy efficiency requirements for new construction (5).
- Title 20 California Code of Regulations (Appliance Energy Efficiency Standards). Establishes energy efficiency requirements for appliances (6).
- Title 17 California Code of Regulations (Low Carbon Fuel Standard). Requires carbon content of fuel sold in California to be 10% less by 2020 (7).
- California Water Conservation in Landscaping Act of 2006 (AB1881). Requires local agencies to adopt the Department of Water Resources updated Water Efficient Landscape Ordinance or equivalent by January 1, 2010 to ensure efficient landscapes in new development and reduced water waste in existing landscapes (8).
- Statewide Retail Provider Emissions Performance Standards (SB 1368). Requires energy generators to achieve performance standards for GHG emissions (9).
- Renewable Portfolio Standards (SB 1078). Requires electric corporations to increase the amount of energy obtained from eligible renewable energy resources to 20 percent by 2010 and 33 percent by 2020 (10).

1.6 CONSTRUCTION-SOURCE AIR QUALITY IMPACT MITIGATION MEASURES

No significant impacts were identified and no mitigation measures are required

1.7 OPERATIONAL-SOURCE MITIGATION MEASURES

No significant impacts were identified and no mitigation measures are required

2 CLIMATE CHANGE SETTING

2.1 INTRODUCTION TO GLOBAL CLIMATE CHANGE

Global Climate Change (GCC) is defined as the change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms. GCC is currently one of the most controversial environmental issues in the United States, and much debate exists within the scientific community about whether or not GCC is occurring naturally or as a result of human activity. Some data suggests that GCC has occurred in the past over the course of thousands or millions of years. These historical changes to the Earth's climate have occurred naturally without human influence, as in the case of an ice age. However, many scientists believe that the climate shift taking place since the industrial revolution (1900) is occurring at a quicker rate and magnitude than in the past. Scientific evidence suggests that GCC is the result of increased concentrations of greenhouse gases in the earth's atmosphere, including carbon dioxide, methane, nitrous oxide, and fluorinated gases. Many scientists believe that this increased rate of climate change is the result of greenhouse gases resulting from human activity and industrialization over the past 200 years.

An individual project like the proposed Project evaluated in this GHGA cannot generate enough greenhouse gas emissions to effect a discernible change in global climate. However, the proposed Project may participate in the potential for GCC by its incremental contribution of greenhouse gasses combined with the cumulative increase of all other sources of greenhouse gases, which when taken together constitute potential influences on GCC. Because these changes may have serious environmental consequences, Section 3.0 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.

2.2 GREENHOUSE GAS EMISSIONS INVENTORIES

Global

Worldwide anthropogenic (man-made) GHG emissions are tracked by the Intergovernmental Panel on Climate Change for industrialized nations (referred to as Annex I) and developing nations (referred to as Non-Annex I). Man-made GHG emissions data for Annex I nations are available through 2011. For the Year 2011 the sum of these emissions totaled approximately 25,285,543 Gg CO2e[1](11) (12). The GHG emissions in more recent years may differ from the inventories presented in Table 2-1; however, the data is representative of currently available inventory data.

United States

[1] The global emissions are the sum of Annex I and non-Annex I countries, without counting Land-Use, Land-Use Change and Forestry (LULUCF). For countries without 2005 data, the UNFCCC data for the most recent year were used. United Nations Framework Convention on Climate Change, "Annex I Parties – GHG total without LULUCF,"

As noted in Table 2-1, the United States, as a single country, was the number two producer of GHG emissions in 2011. The primary greenhouse gas emitted by human activities in the United States was CO2, representing approximately 83 percent of total greenhouse gas emissions (13). Carbon dioxide from fossil fuel combustion, the largest source of US greenhouse gas emissions, accounted for approximately 78 percent of the GHG emissions.

TABLE 2-1: TOP GHG PRODUCER COUNTRIES AND THE EUROPEAN UNION[2]

Emitting Countries	GHG Emissions (Gg CO2e)
China	8,715,307
United States	6,665,700
European Union (27 member countries)	4,550,212
Russian Federation	2,320,834
India	1,725,762
Japan	1,307,728
Total	**25,285,543**

State of California

CARB compiles GHG inventories for the State of California. Based upon the 2008 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2008 greenhouse gas emissions inventory, California emitted 474 MMTCO2e including emissions resulting from imported electrical power in 2008 (14). Based on the CARB inventory data and GHG inventories compiled by the World Resources Institute (15), California's total statewide GHG emissions rank second in the United States (Texas is number one) with emissions of 417 MMTCO2e excluding emissions related to imported power.

2.3 GLOBAL CLIMATE CHANGE DEFINED

Global Climate Change (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, CO2 (Carbon Dioxide), N2O (Nitrous Oxide), CH4 (Methane), hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. 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 radioactive heat from escaping, thus warming the Earth's atmosphere. GCC can occur naturally as it has in the past with the previous ice ages. According to the California Air Resources Board (CARB), the climate change since the industrial revolution differs from previous climate changes in both rate and magnitude (16).

Gases that trap heat in the atmosphere are often referred to as greenhouse gases. Greenhouse gases are released into the atmosphere by both natural and anthropogenic (human) activity. Without the natural greenhouse gas effect, the Earth's average temperature would be

[2] Used http://unfccc.int data for Annex I countries. Consulted the http://www.eia.gov site to reference Non-Annex I countries such as China and India.

approximately 61° 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.

Although California's rate of growth of greenhouse gas emissions is slowing, the state is still a substantial contributor to the U.S. emissions inventory total. In 2004, California is estimated to have produced 492 million gross metric tons of carbon dioxide equivalent (CO2e) greenhouse gas emissions. Despite a population increase of 16 percent between 1990 and 2004, California has significantly slowed the rate of growth of greenhouse gas emissions due to the implementation of energy efficiency programs as well as adoption of strict emission controls (15).

2.4 GREENHOUSE GASES

For the purposes of this analysis, emissions of carbon dioxide, methane, and nitrous oxide were evaluated (see Table 3-4 later in this report) because these gasses are the primary contributors to GCC from development projects. Although other substances such as fluorinated gases also contribute to GCC, sources of fluorinated gases are not well-defined and no accepted emissions factors or methodology exist to accurately calculate these gases.

Greenhouse gases have varying global warming potential (GWP) values; GWP values represent the potential of a gas to trap heat in the atmosphere. Carbon dioxide is utilized as the reference gas for GWP, and thus has a GWP of 1.

The atmospheric lifetime and GWP of selected greenhouse gases are summarized at Table 2-2. As shown in the table below, GWP range from 1 for carbon dioxide to 23,900 for sulfur hexafluoride.

TABLE 2-2: GLOBAL WARMING POTENTIAL AND ATMOSPHERIC LIFETIME OF SELECT GHGS

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310
HFC-23	264	11,700
HFC-134a	14.6	1,300
HFC-152a	1.5	140
PFC: Tetrafluoromethane (CH4)	50,000	6,500
PFC: Hexafluoroethane (C2F6)	10,000	9,200
Sulfur Hexafluoride (SF6)	3,200	23,900
Source: EPA 2006 (URL: http://www.epa.gov/nonco2/econ-inv/table.html)		

Water Vapor: Water vapor (H20) is the most abundant, important, and variable greenhouse gas in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered to be a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. A climate feedback is an indirect, or secondary, change, either positive or negative, that occurs within the climate system in response to a forcing mechanism. The feedback loop in which water is involved is critically important to projecting future climate change.

As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to 'hold' more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive feedback loop will continue is unknown as there are also dynamics that hold the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually also condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the Earth's surface and heat it up).

There are no human health effects from water vapor itself; however, when some pollutants come in contact with water vapor, they can dissolve and the water vapor can then act as a pollutant-carrying agent. The main source of water vapor is evaporation from the oceans (approximately 85 percent). Other sources include: evaporation from other water bodies,

sublimation (change from solid to gas) from sea ice and snow, and transpiration from plant leaves.

Carbon Dioxide: Carbon dioxide (CO2) is an odorless and colorless GHG. Outdoor levels of carbon dioxide are not high enough to result in negative health effects. Carbon dioxide is emitted from natural and manmade sources. Natural sources include: the decomposition of dead organic matter; respiration of bacteria, plants, animals and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources include: the burning of coal, oil, natural gas, and wood. Carbon dioxide is naturally removed from the air by photosynthesis, dissolution into ocean water, transfer to soils and ice caps, and chemical weathering of carbonate rocks (17).

Since the industrial revolution began in the mid-1700s, the sort of human activity that increases GHG emissions has increased dramatically in scale and distribution. Data from the past 50 years suggests a corollary increase in levels and concentrations. As an example, prior to the industrial revolution, CO2 concentrations were fairly stable at 280 parts per million (ppm). Today, they are around 370 ppm, an increase of more than 30 percent. Left unchecked, the concentration of carbon dioxide in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources (18).

Methane: Methane (CH4) is an extremely effective absorber of radiation, though its atmospheric concentration is less than carbon dioxide and its lifetime in the atmosphere is brief (10-12 years), compared to other GHGs. No health effects are known to occur from exposure to methane.

Methane has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane. Other anthropocentric sources include fossil-fuel combustion and biomass burning.

Nitrous Oxide: Nitrous oxide (N2O), also known as laughing gas, is a colorless greenhouse gas. Nitrous oxide can cause dizziness, euphoria, and sometimes slight hallucinations. In small doses, it is considered harmless. However, in some cases, heavy and extended use can cause Olney's Lesions (brain damage) (19).

Concentrations of nitrous oxide also began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 314 parts per billion (ppb). Nitrous oxide is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used as an aerosol spray propellant, i.e., in whipped cream bottles. It is also used in potato chip bags to keep chips fresh. It is used in rocket engines and in race cars. Nitrous oxide can be transported into the stratosphere, be deposited on the Earth's surface, and be converted to other compounds by chemical reaction

Chlorofluorocarbons: Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in methane or ethane (C2H6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble and chemically unreactive in the troposphere (the level of air at the Earth's surface). CFCs are no longer being used; therefore, it is not likely that health effects would be experienced. Nonetheless, in confined indoor locations, working with CFC-113 or other CFCs is thought to result in death by cardiac arrhythmia (heart frequency too high or too low) or asphyxiation.

CFCs have no natural source, but were first synthesized in 1928. They were used for refrigerants, aerosol propellants and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and was extremely successful, so much so that levels of the major CFCs are now remaining steady or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

Hydrofluorocarbons: Hydrofluorocarbons (HFCs) are synthetic, man-made chemicals that are used as a substitute for CFCs. Out of all the greenhouse gases, they are one of three groups with the highest global warming potential. The HFCs with the largest measured atmospheric abundances are (in order), HFC-23 (CHF3), HFC-134a (CF3CH2F), and HFC-152a (CH3CHF2). Prior to 1990, the only significant emissions were of HFC-23. HFC-134a emissions are increasing due to its use as a refrigerant. The U.S. EPA estimates that concentrations of HFC-23 and HFC-134a are now about 10 parts per trillion (ppt) each; and that concentrations of HFC-152a are about 1 ppt (20). No health effects are known to result from exposure to HFCs, which are manmade for applications such as automobile air conditioners and refrigerants.

Perfluorocarbons: Perfluorocarbons (PFCs) have stable molecular structures and do not break down through chemical processes in the lower atmosphere. High-energy ultraviolet rays, which occur about 60 kilometers above Earth's surface, are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF4) and hexafluoroethane (C2F6). The U.S. EPA estimates that concentrations of CF4 in the atmosphere are over 70 ppt.

No health effects are known to result from exposure to PFCs. The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

Sulfur Hexafluoride: Sulfur hexafluoride (SF6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It also has the highest GWP of any gas evaluated (23,900). The U.S. EPA indicates that concentrations in the 1990s were about 4 ppt. In high concentrations in confined areas, the gas presents the hazard of suffocation because it displaces the oxygen needed for breathing.

Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

2.5 EFFECTS OF CLIMATE CHANGE IN CALIFORNIA

Public Health

Higher temperatures may increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation could increase from 25 to 35 percent under the lower warming range to 75 to 85 percent under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances, depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become up to 55 percent more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming range scenario, there could be up to 100 more days per year with temperatures above 90oF in Los Angeles and 95oF in Sacramento by 2100. This is a large increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures could increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

Water Resources

A vast network of man-made reservoirs and aqueducts captures and transports water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

If temperatures continue to increase, more precipitation could fall as rain instead of snow, and the snow that does fall could melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. Under the lower warming range scenario, snowpack losses could be only half as large as those possible if temperatures were to rise to the higher warming range. How much snowpack could be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snowpack could pose challenges to water managers and hamper hydropower generation. It could also adversely affect winter tourism. Under the lower warming range, the ski season at lower elevations could be reduced by as much as a month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing and snowboarding.

The State's water supplies are also at risk from rising sea levels. An influx of saltwater could degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta – a major fresh water supply.

Agriculture

Increased temperatures could cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. First, California farmers could possibly lose as much as 25 percent of the water supply they need. Although higher CO2 levels can stimulate plant production and increase plant water-use efficiency, California's farmers could face greater water demand for crops and a less reliable water supply as temperatures rise. Crop growth and development could change, as could the intensity and frequency of pest and disease outbreaks. Rising temperatures could aggravate O3 pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than-optimal development for many crops, so rising temperatures could worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits and nuts.

In addition, continued global climate change could shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion could occur in many species while range contractions may be less likely in rapidly evolving species with significant populations already established. Should range contractions occur, new or different weed species could fill the emerging gaps. Continued global climate change could alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

Forests and Landscapes

Global climate change has the potential to intensify the current threat to forests and landscapes by increasing the risk of wildfire and altering the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state. In contrast, wildfires in northern California could increase by up to 90 percent due to decreased precipitation.

Moreover, continued global climate change has the potential to alter natural ecosystems and biological diversity within the state. For example, alpine and subalpine ecosystems could decline by as much as 60 to 80 percent by the end of the century as a result of increasing temperatures. The productivity of the state's forests has the potential to decrease as a result of global climate change.

Rising Sea Levels

Rising sea levels, more intense coastal storms, and warmer water temperatures could increasingly threaten the state's coastal regions. Under the higher warming range scenario, sea

level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate low-lying coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. Under the lower warming range scenario, sea level could rise 12-14 inches.

2.6 HUMAN HEALTH EFFECTS

The potential health effects related directly to the emissions of carbon dioxide, methane, and nitrous oxide as they relate to development projects such as the proposed Project are still being debated in the scientific community. Their cumulative effects to global climate change have the potential to cause adverse effects to human health. Increases in Earth's ambient temperatures would result in more intense heat waves, causing more heat-related deaths. Scientists also purport that higher ambient temperatures would increase disease survival rates and result in more widespread disease. Climate change will likely cause shifts in weather patterns, potentially resulting in devastating droughts and food shortages in some areas (21). Exhibit 2-A presents the potential impacts of global warming.

Water Vapor: There are no known direct health effects related to water vapor at this time. It should be noted however that when some pollutants react with water vapor, the reaction forms a transport mechanism for some of these pollutants to enter the human body through water vapor.

Carbon Dioxide: According to the National Institute for Occupational Safety and Health (NIOSH) high concentrations of carbon dioxide can result in health effects such as: headaches, dizziness, restlessness, difficulty breathing, sweating, increased heart rate, increased cardiac output, increased blood pressure, coma, asphyxia, and/or convulsions. It should be noted that current concentrations of carbon dioxide in the earth's atmosphere are estimated to be approximately 370 parts per million (ppm), the actual reference exposure level (level at which adverse health effects typically occur) is at exposure levels of 5,000 ppm averaged over 10 hours in a 40-hour workweek and short-term reference exposure levels of 30,000 ppm averaged over a 15 minute period (22).

Specific health effects associated with directly emitted GHG emissions are as follows:

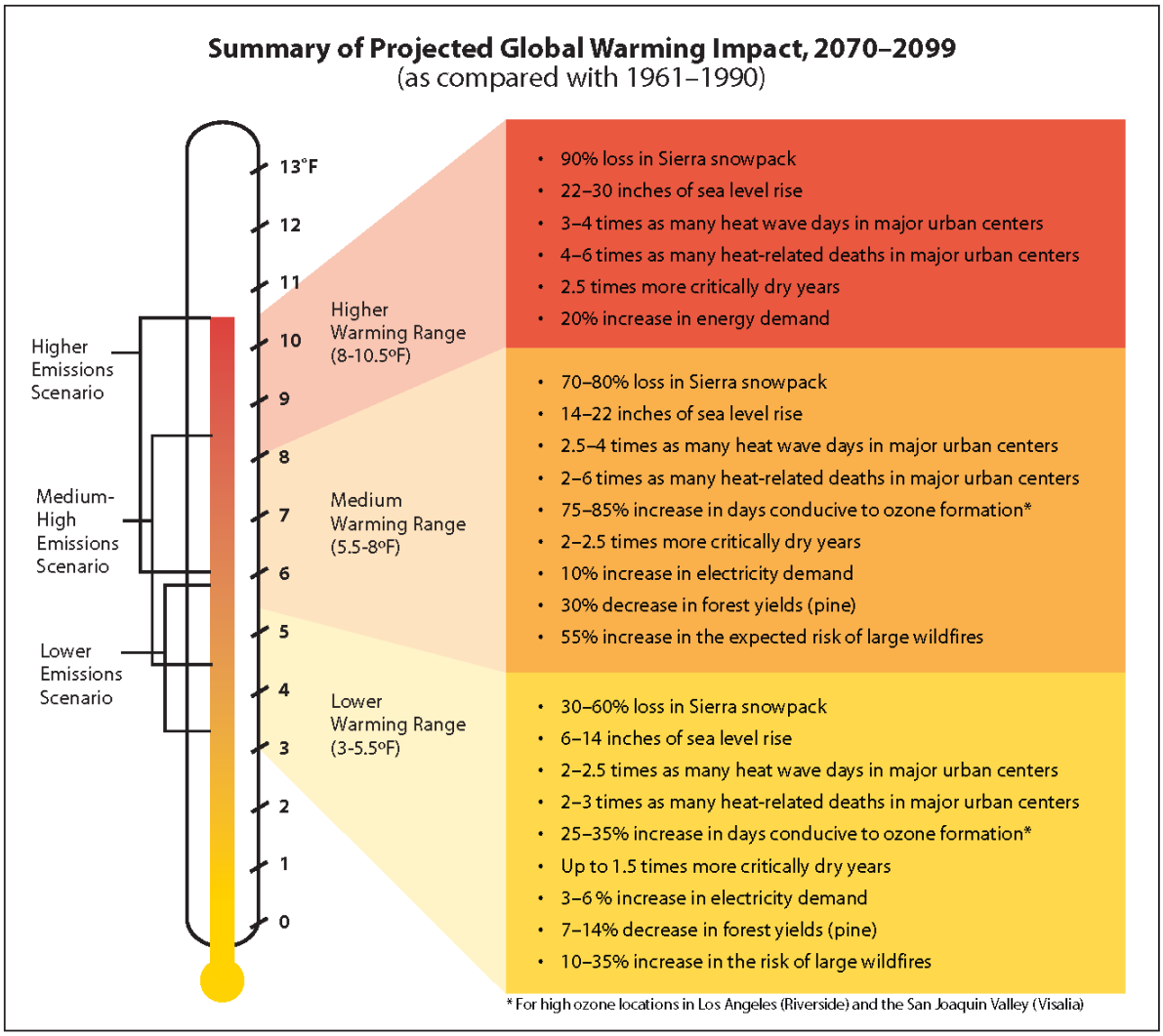
Methane: Methane is extremely reactive with oxidizers, halogens, and other halogen-containing compounds. Methane is also an asphyxiant and may displace oxygen in an enclosed space (23).

Nitrous Oxide: Nitrous Oxide is often referred to as laughing gas; it is a colorless greenhouse gas. The health effects associated with exposure to elevated concentrations of nitrous oxide include dizziness, euphoria, slight hallucinations, and in extreme cases of elevated concentrations nitrous oxide can also cause brain damage(23).

Fluorinated Gases: High concentrations of fluorinated gases can also result in adverse health effects such as asphyxiation, dizziness, headache, cardiovascular disease, cardiac disorders, and in extreme cases, increased mortality (22).

Aerosols: The health effects of aerosols are similar to that of other fine particulate matter. Thus aerosols can cause elevated respiratory and cardiovascular diseases as well as increased mortality (24).

EXHIBIT 2-A: SUMMARY OF PROJECTED GLOBAL WARMING IMPACT



2.7 REGULATORY SETTING

International Regulation and the Kyoto Protocol:

In 1988, the United Nations established the Intergovernmental Panel on Climate Change to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In 1992, the United States joined other countries around the world in signing the United Nations' Framework Convention on Climate Change (UNFCCC) agreement with the goal of controlling greenhouse gas emissions. As a result, the Climate

Change Action Plan was developed to address the reduction of GHGs in the United States. The Plan currently consists of more than 50 voluntary programs for member nations to adopt.

The Kyoto protocol is a treaty made under the UNFCCC and was the first international agreement to regulate GHG emissions. Some have estimated that if the commitments outlined in the Kyoto protocol are met, global GHG emissions could be reduced an estimated five percent from 1990 levels during the first commitment period of 2008-2012. Notably, while the United States is a signatory to the Kyoto protocol, Congress has not ratified the Protocol and the United States is not bound by the Protocol's commitments. In December 2009, international leaders from 192 nations met in Copenhagen to address the future of international climate change commitments post-Kyoto.

Federal Regulation and the Clean Air Act:

Coinciding 2009 meeting in Copenhagen, on December 7, 2009, the U.S. Environmental Protection Agency (EPA) issued an Endangerment Finding under Section 202(a) of the Clean Air Act, opening the door to federal regulation of GHGs. The Endangerment Finding notes that GHGs threaten public health and welfare and are subject to regulation under the Clean Air Act. To date, the EPA has not promulgated regulations on GHG emissions, but it has already begun to develop them.

Previously the EPA had not regulated GHGs under the Clean Air Act (25) because it asserted that the Act did not authorize it to issue mandatory regulations to address global climate change and that such regulation would be unwise without an unequivocally established causal link between GHGs and the increase in global surface air temperatures. In Massachusetts v. Environmental Protection Agency et al. (127 S. Ct. 1438 (2007), however, the U.S. Supreme Court held that GHGs are pollutants under the Clean Air Act and directed the EPA to decide whether the gases endangered public health or welfare. The EPA had also not moved aggressively to regulate GHGs because it expected Congress to make progress on GHG legislation, primarily from the standpoint of a cap-and-trade system. However, proposals circulated in both the House of Representative and Senate have been controversial and it may be some time before the U.S. Congress adopts major climate change legislation. The EPA's Endangerment Finding paves the way for federal regulation of GHGs with or without Congress.

Although global climate change did not become an international concern until the 1980s, efforts to reduce energy consumption began in California in response to the oil crisis in the 1970s, resulting in the unintended reduction of greenhouse gas emissions. In order to manage the state's energy needs and promote energy efficiency, AB 1575 created the California Energy Commission (CEC) in 1975.

Title 24 Energy Standards:

The California Energy Commission (CEC) first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (5) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency, and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The

standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods. The Energy Commission's most recent standard, 2013 Building Energy Efficiency Standard, is 25 percent more efficient than previous standards for residential construction and 30 percent better for nonresidential construction. The Standards, which took effect on January 1, 2014, offer builders better windows, insulation, lighting, ventilation systems and other features that reduce energy consumption in homes and businesses. Some improved measures in the Standards include:

Residential:

- Solar-ready roofs to allow homeowners to add solar photovoltaic panels at a future date
- More efficient windows to allow increased sunlight, while decreasing heat gain
- Insulated hot water pipes, to save water and energy and reduce the time it takes to deliver hot water
- Whole house fans to cool homes and attics with evening air reducing the need for air conditioning load
- Air conditioner installation verification to insure efficient operation

Nonresidential:

- High performance windows, sensors and controls that allow buildings to use "daylighting"
- Efficient process equipment in supermarkets, computer data centers, commercial kitchens, laboratories, and parking garages
- Advanced lighting controls to synchronize light levels with daylight and building occupancy, and provide demand response capability
- Solar-ready roofs to allow businesses to add solar photovoltaic panels at a future date
- Cool roof technologies

CALGreen

Part 11 of the Title 24 Building Standards Code is referred to as the California Green Building Standards Code (CALGreen Code) (26). The purpose of the CALGreen Code is to “improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality.” The CALGreen Code is not intended to substitute or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission (CBSC). The CBSC has released the 2010 California Green Building Standards Code on its Web site. Unless otherwise noted in the regulation, all newly constructed buildings in California are subject of the requirements of the CALGreen Code.

CALGreen contains both mandatory and voluntary measures, for Non-Residential land uses there are 39 mandatory measures including, but not limited to: exterior light pollution reduction, wastewater reduction by 20%, and commissioning of projects over 10,000 sf. There are two tiers of voluntary measures for Non-Residential land uses for a total of 36 additional elective measures.

The 2013 CALGreen include additions and amendments to the water efficiency standards for non residential buildings in order to comply with the reduced flow rate table. The 2013 CALGreen has also been rewritten to clarify and definitively identify the requirements and applicability for residential and nonresidential buildings.

California Assembly Bill No. 1493 (AB 1493):

AB 1493 requires CARB to develop and adopt the nation's first greenhouse gas emission standards for automobiles. The Legislature declared in AB 1493 that global warming was a matter of increasing concern for public health and environment in California (4). Further, the legislature stated that technological solutions to reduce greenhouse gas emissions would stimulate the California economy and provide jobs.

To meet the requirements of AB 1493, ARB approved amendments to the California Code of Regulations (CCR) adding GHG emission standards to California's existing motor vehicle emission standards in 2004. Amendments to CCR Title 13 Sections 1900 (CCR 13 1900) and 1961 (CCR 13 1961) and adoption of Section 1961.1 (CCR 13 1961.1) require automobile manufacturers to meet fleet average GHG emission limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes beginning with the 2009 model year. Emission limits are further reduced each model year through 2016.

In December 2004 a group of car dealerships, automobile manufacturers, and trade groups representing automobile manufacturers filed suit against ARB to prevent enforcement of CCR 13 1900 and CCR 13 1961 as amended by AB 1493 and CCR 13 1961.1 (Central Valley Chrysler-Jeep et al. v. Catherine E. Witherspoon, in her official capacity as Executive Director of the California Air Resources Board, et al.). The suit, heard in the U.S. District Court for the Eastern District of California, contended that California's implementation of regulations that in effect regulate vehicle fuel economy violates various federal laws, regulations, and policies. In January 2007, the judge hearing the case accepted a request from the State Attorney General's office that the trial be postponed until a decision is reached by the U.S. Supreme Court on a separate case addressing GHGs. In the Supreme Court Case, Massachusetts vs. EPA, the primary issue in question is whether the federal CAA (Clean Air Act) provides authority for USEPA to regulate CO2 emissions. In April 2007, the U.S. Supreme Court ruled in Massachusetts' favor, holding that GHGs are air pollutants under the CAA. On December 11, 2007, the judge in the Central Valley Chrysler-Jeep case rejected each plaintiff's arguments and ruled in California's favor. On December 19, 2007, the USEPA denied California's waiver request. California filed a petition with the Ninth Circuit Court of Appeals challenging USEPA's denial on January 2, 2008.

The Obama administration subsequently directed the USEPA to re-examine their decision. On May 19, 2009, challenging parties, automakers, the State of California, and the federal government reached an agreement on a series of actions that would resolve these current and potential future disputes over the standards through model year 2016. In summary, the USEPA and the U.S. Department of Transportation agreed to adopt a federal program to reduce GHGs and improve fuel economy, respectively, from passenger vehicles in order to achieve equivalent or greater greenhouse gas benefits as the AB 1493 regulations for the 2012–2016 model years. Manufacturers agreed to ultimately drop current and forego similar future legal challenges, including challenging a waiver grant, which occurred on June 30, 2009. The State of California committed to (1) revise its standards to allow manufacturers to demonstrate compliance with the fleet-average GHG emission standard by "pooling" California and specified State vehicle sales; (2) revise its standards for 2012–2016 model year vehicles so that compliance with USEPA-adopted GHG standards would also comply with California's standards; and (3) revise its standards, as necessary, to allow manufacturers to use emissions data from the federal CAFE program to demonstrate compliance with the AB 1493 regulations (CARB 2009, http://www.arb.ca.gov/regact/2009/ghgpv09/ghgpvisor.pdf) both of these programs are aimed at light-duty auto and light-duty trucks.

Executive Order S-3-05:

Executive Order S-3-05, which was signed by Governor Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change (27). It declares that increased temperatures could reduce the Sierra's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total greenhouse gas emission targets. Specifically, emissions are to be reduced to the 1990 level by 2020, and to 80% below the 1990 level by 2050. The Executive Order directed the Secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce greenhouse gas emissions to the target levels. The Secretary also is required to submit biannual reports to the Governor and state Legislature describing: (1) progress made toward reaching the emission targets; (2) impacts of global warming on California's resources; and (3) mitigation and adaptation plans to combat these impacts. To comply with the Executive Order, the Secretary of the CalEPA created a Climate Action Team (CAT) made up of members from various state agencies and commission. CAT released its first report in March 2006. The report proposed to achieve the targets by building on voluntary actions of California businesses, local government and community actions, as well as through state incentive and regulatory programs.

California Assembly Bill 32 (AB 32):

In September 2006, Governor Arnold Schwarzenegger signed AB 32, the California Climate Solutions Act of 2006. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by the year 2020 (2). This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language

stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that CARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

In November 2007, CARB completed its estimates of 1990 GHG levels. Net emission 1990 levels were estimated at 427 MMTs (emission sources by sector were: transportation – 35 percent; electricity generation – 26 percent; industrial – 24 percent; residential – 7 percent; agriculture – 5 percent; and commercial – 3 percent). Accordingly, 427 MMTs of CO2 equivalent was established as the emissions limit for 2020. For comparison, CARB's estimate for baseline GHG emissions was 473 MMT for 2000 and 532 MMT for 2010. "Business as usual" conditions (without the 28.4 percent reduction to be implemented by CARB regulations) for 2020 were projected to be 596 MMTs.

In December 2007, CARB approved a regulation for mandatory reporting and verification of GHG emissions for major sources. This regulation covered major stationary sources such as cement plants, oil refineries, electric generating facilities/providers, and co-generation facilities, which comprise 94 percent of the point source CO2 emissions in the State.

On December 11, 2008, CARB adopted a scoping plan to reduce GHG emissions to 1990 levels. The Scoping Plan's recommendations for reducing GHG emissions to 1990 levels by 2020 include emission reduction measures, including a cap-and-trade program linked to Western Climate Initiative partner jurisdictions, green building strategies, recycling and waste-related measures, as well as Voluntary Early Actions and Reductions. Implementation of individual measures must begin no later than January 1, 2012, so that the emissions reduction target can be fully achieved by 2020.

Table 2-3 shows the proposed reductions from regulations and programs outlined in the Scoping Plan. While local government operations were not accounted for in achieving the 2020 emissions reduction, local land use changes are estimated to result in a reduction of 5 MMTons of CO2e, which is approximately 3 percent of the 2020 GHG emissions reduction goal. In recognition of the critical role local governments will play in successful implementation of AB 32, CARB is recommending GHG reduction goals of 15 percent of 2006 levels by 2020 to ensure that municipal and community-wide emissions match the state's reduction target. According to the Measure Documentation Supplement to the Scoping Plan, local government actions and targets are anticipated to reduce vehicle miles by approximately 2 percent through land use planning, resulting in a potential GHG reduction of 2 MMTons tons of CO2e (or approximately 1.2 percent of the GHG reduction target).

California Senate Bill No. 1368 (SB 1368):

In 2006, the State Legislature adopted Senate Bill 1368 ("SB 1368"), which was subsequently signed into law by the Governor (9). SB 1368 directs the California Public Utilities Commission ("CPUC") to adopt a greenhouse gas emission performance standard ("EPS") for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than five years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. Due to the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas, combined cycle plants.

Accordingly, the new law will effectively prevent California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the State. Thus, SB 1368 will lead to dramatically lower greenhouse gas emissions associated with California energy demand, as SB 1368 will effectively prohibit California utilities from purchasing power from out of state producers that cannot satisfy the EPS standard required by SB 1368.

Senate Bill 97 (SB 97):

Pursuant to the direction of SB 97, OPR released preliminary draft CEQA Guideline amendments for greenhouse gas emissions on January 8, 2009, and submitted its final proposed guidelines to the Secretary for Natural Resources on April 13, 2009 (28). The Natural Resources Agency adopted the Guideline amendments and they became effective on March 18, 2010.

Of note, the new guidelines state that a lead agency shall have discretion to determine whether to use a quantitative model or methodology, or in the alternative, rely on a qualitative analysis or performance based standards. CEQA Guideline § 15064.4(a)“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 greenhouse gas emissions resulting from a project, and which model or methodology to use . . .; or (2) Rely on a qualitative analysis or performance based standards.”

Also amended were CEQA Guidelines Sections 15126.4 and 15130, which address mitigation measures and cumulative impacts respectively. Greenhouse gas mitigation measures are referenced in general terms, but no specific measures are championed. The revision to the cumulative impact discussion requirement (Section 15130) simply directs agencies to analyze greenhouse gas emissions in an EIR when a Project’s incremental contribution of emissions may be cumulatively considerable, however it does not answer the question of when emission are cumulatively considerable.

Section 15183.5 permits programmatic greenhouse gas analysis and later project-specific tiering, as well as the preparation of Greenhouse Gas Reduction Plans. Compliance with such plans can support determination that a Project’s cumulative effect is not cumulatively considerable, according to proposed Section 15183.5(b).

TABLE 2-3: SCOPING PLAN GHG REDUCTION MEASURES TOWARDS 2020 TARGET

Recommended Reduction Measures	*Reductions Counted toward 2020 Target of 169 MMT CO2e*	*Percentage of Statewide 2020 Target*
Cap and Trade Program and Associated Measures		
California Light-Duty Vehicle GHG Standards	31.7	19%
Energy Efficiency	26.3	16%
Renewable Portfolio Standard (33 percent by 2020)	21.3	13%
Low Carbon Fuel Standard	15	9%
Regional Transportation-Related GHG Targets[1]	5	3%
Vehicle Efficiency Measures	4.5	3%
Goods Movement	3.7	2%
Million Solar Roofs	2.1	1%
Medium/Heavy Duty Vehicles	1.4	1%
High Speed Rail	1.0	1%
Industrial Measures	0.3	0%
Additional Reduction Necessary to Achieve Cap	34.4	20%
Total Cap and Trade Program Reductions	146.7	87%
Uncapped Sources/Sectors Measures		
High Global Warming Potential Gas Measures	20.2	12%
Sustainable Forests	5	3%
Industrial Measures (for sources not covered under cap and trade program)	1.1	1%
Recycling and Waste (landfill methane capture)	1	1%
Total Uncapped Sources/Sectors Reductions	27.3	16%
Total Reductions Counted toward 2020 Target	174	100%
Other Recommended Measures – Not Counted toward 2020 Target		
State Government Operations	1.0 to 2.0	1%
Local Government Operations	To Be Determined[2]	NA
Green Buildings	26	15%
Recycling and Waste	9	5%
Water Sector Measures	4.8	3%
Methane Capture at Large Dairies	1	1%
Total Other Recommended Measures – Not Counted toward 2020 Target	42.8	NA

Source: CARB. 2008, MMTons CO2e: million metric tons of CO2e

[1]Reductions represent an estimate of what may be achieved from local land use changes. It is not the SB 375 regional target.

[2]According to the Measure Documentation Supplement to the Scoping Plan, local government actions and targets are anticipated to reduce vehicle miles by approximately 2 percent through land use planning, resulting in a potential GHG reduction of 2 million metric tons of CO2e (or approximately 1.2 percent of the GHG reduction target). However, these reductions were not included in the Scoping Plan reductions to achieve the 2020 Target

CEQA emphasizes that the effects of greenhouse gas emissions are cumulative, and should be analyzed in the context of CEQA's requirements for cumulative impacts analysis. (See CEQA Guidelines Section 15130(f)).

Section 15064.4(b) of the CEQA Guidelines provides direction for lead agencies for assessing the significance of impacts of greenhouse gas emissions:

1. The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; or
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 greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

The CEQA Guideline amendments do not identify a threshold of significance for greenhouse gas emissions, nor do they prescribe assessment methodologies or specific mitigation measures. Instead, they call for a "good-faith effort, based on available information, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project." The amendments encourage lead agencies to consider many factors in performing a CEQA analysis and preserve lead agencies' discretion to make their own determinations based upon substantial evidence. The amendments also encourage public agencies to make use of programmatic mitigation plans and programs from which to tier when they perform individual project analyses. Specific GHG language incorporated in the Guidelines' suggested Environmental Checklist (Guidelines Appendix G) is as follows:

VII. GREENHOUSE GAS EMISSIONS

Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Executive Order S-01-07:

On January 18, 2007 California Governor Arnold Schwarzenegger, through Executive Order S-01-07, mandated a statewide goal to reduce the carbon intensity of California's transportation fuel by at least ten percent by 2020 (29). The order also requires that a California specific Low Carbon Fuel Standard be established for transportation fuels.

Senate Bills 1078 and 107 and Executive Order S-14-08:

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20% of their supply from renewable sources by 2017 (30). SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010 (29). In November 2008 Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Energy Standard to 33% renewable power by 2020 (31).

Senate Bill 375:

SB 375, signed in September 2008 (Chapter 728, Statutes of 2008), aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation(3). SB 375 requires metropolitan planning organizations (MPOs) to adopt a sustainable communities strategy (SCS) or alternative planning strategy (APS) that will prescribe land use allocation in that MPO's regional transportation plan. ARB, in consultation with MPOs, 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 8 years but can be updated every 4 years if advancements in emissions technologies affect the reduction strategies to achieve the targets. ARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects will not be eligible for funding programmed after January 1, 2012.

This law also extends the minimum time period for the regional housing needs allocation cycle from 5 years to 8 years for local governments located within an MPO that meets certain requirements. City or county land use policies (including general plans) are not required to be consistent with the regional transportation plan (and associated SCS or APS). However, new provisions of CEQA would incentivize (through streamlining and other provisions) qualified projects that are consistent with an approved SCS or APS, categorized as "transit priority projects."

The Southern California Association of Governments (SCAG) is required by law to update the Southern California Regional Transportation Plan (RTP) every four years. The 2012 draft plan has been released, this draft plan differs from past plans because it includes development of a SCS. The RTP/SCS incorporates land use and housing policies to meet the greenhouse gas emissions targets established by the California Air Resource Board (CARB) for 2020 (8% reduction) and 2035 (13% reduction). On April 4, 2012, the Regional Council of the Southern California Association of Governments (SCAG) adopted the 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): Towards a Sustainable Future.

CARB's Preliminary Draft Staff Proposal for Interim Significance Thresholds:

Separate from its Scoping Plan approved in December of 2008 (32), CARB issued a Staff Proposal in October 2008, as its first step toward developing recommended statewide interim thresholds of significance for GHGs that may be adopted by local agencies for their own use.

CARB staff's objective in this proposal is to develop a threshold of significance that will result in the vast majority (approximately 90 percent statewide) of GHG emissions from new industrial projects being subject to CEQA's requirement to impose feasible mitigation. The proposal does not attempt to address every type of project that may be subject to CEQA, but instead focuses on common project types that, collectively, are responsible for substantial GHG emissions – specifically, industrial, residential, and commercial projects. CARB is developing these thresholds in these sectors to advance climate objectives, streamline project review, and encourage consistency and uniformity in the CEQA analysis of GHG emissions throughout the state. These draft thresholds are under revision in response to comments. There is currently no timetable for finalized thresholds at this time.

As currently proposed by CARB, a quantitative threshold of 7,000 metric tons (MT) of CO2e per year for operational emissions (excluding transportation), and performance standards yet to be defined for construction and transportation emissions are under consideration. However, CARB's proposal is not yet final, and thus cannot be applied to the Project.

South Coast Air Quality Management District Recommendations for Significance Thresholds:

In April 2008, the South Coast Air Quality Management District (SCAQMD), in order to provide guidance to local lead agencies on determining the significance of GHG emissions identified in CEQA documents, convened a "GHG CEQA Significance Threshold Working Group." The goal of the working group is to develop and reach consensus on an acceptable CEQA significance threshold for GHG emissions that would be utilized on an interim basis until CARB (or some other state agency) develops statewide guidance on assessing the significance of GHG emissions under CEQA.

Initially, SCAQMD staff presented the working group with a significance threshold that could be applied to various types of projects—residential; non-residential; industrial; etc (33). However, the threshold is still under development. In December 2008, staff presented the SCAQMD Governing Board with a significance threshold for stationary source projects where it is the lead agency. This threshold uses a tiered approach to determine a project's significance, with 10,000 metric tons of carbon dioxide equivalent (MTCO2e) as a screening numerical threshold for stationary sources. More importantly it should be noted that when setting the 10,000 MTCO2e threshold, the SCAQMD did not consider mobile sources (vehicular travel), rather the threshold is based mainly on stationary source generators such as boilers, refineries, power plants, etc. Therefore it would be misleading to apply a threshold that was developed without consideration for mobile sources to a Project where the majority of emissions are related to mobile sources. Thus there is no SCAQMD threshold that can be applied to this Project.

In September 2010(34), the Working Group released additional revisions that consist of the following recommended tiered approach:

- Tier 1 consists of evaluating whether or not the Project qualifies for applicable CEQA exemptions.
- Tier 2 consists of determining whether or not a Project is consistent with a greenhouse gas reduction plan. If a Project is consistent with a greenhouse gas reduction plan, it would not have a significant impact.

- Tier 3 consists of screening values at the discretion of the lead agency; however they should be consistent for all projects within its jurisdiction. Project-related construction emissions should be amortized over 30 years and should be added back the Project's operational emissions. The following thresholds are proposed for consideration:
    - 3,000 MTCO2e per year for all land use types

      or
    - 3,500 MTCO2e per year for residential; 1,400 MTCO2e per year for commercial; or 3,000 MTCO2e per year for mixed-use projects
- Tier 4 has the following options:
    - Option 1: Reduce emissions from business as usual by a certain percentage (currently undefined)
    - Option 2: Early implementation of applicable AB 32 Scoping Plan measures
    - Option 3: A project-level efficiency target of 4.8 MTCO2e per service population as a 2020 target and 3.0 MTCO2e per service population as a 2035 target. The recommended plan-level target for 2020 is 6.6 MTCO2e and the plan level target for 2035 is 4.1 MTCO2e
- Tier 5 involves mitigation offsets to achieve target significance thresholds

The SCAQMD has also adopted Rules 2700, 2701, and 2702 that address GHG reductions. However, these rules address boilers and process heater, forestry, and manure management projects, none of which are required by the Project

2.8 DISCUSSION ON ESTABLISHMENT OF SIGNIFICANCE THRESHOLDS

The City of Highland has not adopted a threshold of significance for GHG emissions. As such, a screening threshold of 3,000 MTCO2e per year is applied herein, which is a widely accepted screening threshold used by the County of Riverside(35) and numerous cities in the South Coast Air Basin and is based on the South Coast Air Quality Management District (SCAQMD) staff's proposed GHG screening threshold for stationary source emissions for non-industrial projects, as described in the SCAQMD's *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* ("SCAQMD Interim GHG Threshold"). The SCAQMD Interim GHG Threshold identifies a screening threshold to determine whether additional analysis is required (36). As noted by the SCAQMD:

> "…the…screening level for stationary sources is based on an emission capture rate of 90 percent for all new or modified projects...the policy objective of [SCAQMD's] recommended interim GHG significance threshold proposal is to achieve an emission capture rate of 90 percent of all new or modified stationary source projects. A GHG significance threshold based on a 90 percent emission capture rate may be more appropriate to address the long-term adverse impacts associated with global climate change because most projects will be required to implement GHG reduction measures. Further, a 90 percent emission capture rate sets the emission threshold low enough to capture a substantial fraction of future stationary source projects that will be constructed to accommodate future statewide population and economic growth, while

> setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions. This assertion is based on the fact that [SCAQMD] staff estimates that these GHG emissions would account for slightly less than one percent of future 2050 statewide GHG emissions target (85 [MMTCO2e/yr]). In addition, these small projects may be subject to future applicable GHG control regulations that would further reduce their overall future contribution to the statewide GHG inventory. Finally, these small sources are already subject to [Best Available Control Technology] (BACT) for criteria pollutants and are more likely to be single-permit facilities, so they are more likely to have few opportunities readily available to reduce GHG emissions from other parts of their facility." (36)

Thus, and based on guidance from the SCAQMD, if a non-industrial project would emit stationary source GHGs less than 3,000 $MTCO_2e$ per year, the project is not considered a substantial GHG emitter and the GHG impact is less than significant, requiring no additional analysis and no mitigation. On the other hand, if a non-industrial project would emit stationary source GHGs in excess of 3,000 MTCO2e per year, then the project could be considered a substantial GHG emitter, requiring additional analysis and potential mitigation. Additionally, the County of San Bernardino Greenhouse Gas Reduction Plan states that, "small projects that do not exceed 3,000 MTCO2e per year will be considered to be consistent with the Plan and determined to have a less than significant individual and cumulative impact for GHG emissions." (1)

3 PROJECT GREENHOUSE GAS IMPACT

3.1 INTRODUCTION

The Project has been evaluated to determine if it will result in a significant greenhouse gas impact. The significance of these potential impacts is described in the following section.

3.2 PROJECT RELATED GREENHOUSE GAS EMISSIONS

CEQA Guidelines 15064.4 (b) (1) states that a lead agency may use a model or methodology to quantify greenhouse gas emissions associated with a project (37).

On October 2, 2013, the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) released the latest version of the California Emissions Estimator Model™ (CalEEMod™) v2013.2.2. The purpose of this model is to more accurately calculate construction-source and operational-source criteria pollutant (NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO) and greenhouse gas (GHG) emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (38). Accordingly, the latest version of CalEEMod™ has been used for this Project to determine construction and operational air quality impacts. Output from the model runs for both construction and operational activity are provided in Appendix 3.1

3.3 CONSTRUCTION AND OPERATIONAL LIFE-CYCLE ANALYSIS

A full life-cycle analysis (LCA) for construction and operational activity is not included in this analysis due to the lack of consensus guidance on LCA methodology at this time. Life-cycle analysis (i.e., assessing economy-wide GHG emissions from the processes in manufacturing and transporting all raw materials used in the project development, infrastructure and on-going operations) depends on emission factors or econometric factors that are not well established for all processes. At this time a LCA would be extremely speculative and thus has not been prepared.

3.4 CONSTRUCTION EMISSIONS

Construction activities associated with the proposed Project will result in emissions of CO2 and CH4 from construction activities.

The report Highland Park Air Quality Impact Analysis Report, Urban Crossroads, Inc. (2014) contains detailed information regarding construction activity (39).

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 greenhouse gas emissions for the construction activities, dividing it by the a 30 year project life then adding that number to the annual operational phase GHG emissions (40). As such, construction emissions were amortized over a 30 year period and added to the annual operational phase GHG emissions.

3.5 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of CO2, CH4, and N2O from the following primary sources:

- Area Source Emissions
- Energy Source Emissions
- Mobile Source Emissions
- Solid Waste
- Water Supply, Treatment and Distribution

3.5.1 AREA SOURCE EMISSIONS

Hearths/Fireplaces

GHG emissions would result from the combustion of wood or biomass and are considered biogenic emissions of CO2. The emissions associated with use of hearths/fireplaces were calculated based on assumptions provided in the CalEEMod model. The Project is required to comply with SCAQMD Rule 445, which prohibits the use of wood burning stoves and fireplaces in new development. In order to account for the requirements of this Rule, the unmitigated CalEEMod model estimates were adjusted to remove wood burning stoves and fireplaces. As the project is required to comply with SCAQMD Rule 445, the removal of wood burning stoves and fireplaces is not considered "mitigation" although it must be identified as such in CalEEMod in order to treat the case appropriately.

Landscape Maintenance Equipment

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in the CalEEMod model.

3.5.2 ENERGY SOURCE EMISSIONS

Combustion Emissions Associated with Natural Gas and Electricity

GHGs are emitted from buildings as a result of activities for which electricity and natural gas are typically used as energy sources. Combustion of any type of fuel emits CO2 and other GHGs directly into the atmosphere; these emissions are considered direct emissions associated with a building. GHGs are also emitted during the generation of electricity from fossil fuels; these emissions are considered to be indirect emissions. Unless otherwise noted, CalEEMod™ default parameters were used.

3.5.3 MOBILE SOURCE EMISSIONS

Vehicles

GHG emissions will also result from mobile sources associated with the Project. These mobile source emissions will result from the typical daily operation of motor vehicles by customers and employees. Project mobile source emissions are dependent on both overall daily vehicle trip generation. Trip characteristics available from the report, Highland Park Trip Generation Assessment (Urban Crossroads, Inc.) 2014 were utilized in this analysis (41).

3.5.4 SOLID WASTE

Residential land uses will result in the generation and disposal of solid waste. A large percentage of this waste will be diverted from landfills by a variety of means, such as reducing the amount of waste generated, recycling, and/or composting. The remainder of the waste not diverted will be disposed of at a landfill. GHG emissions from landfills are associated with the anaerobic breakdown of material. GHG emissions associated with the disposal of solid waste associated with the proposed Project were calculated by the CalEEMod™ model using default parameters.

3.5.5 WATER SUPPLY, TREATMENT AND DISTRIBUTION

Indirect GHG emissions result from the production of electricity used to convey, treat and distribute water and wastewater. The amount of electricity required to convey, treat and distribute water depends on the volume of water as well as the sources of the water. Unless otherwise noted, CalEEMod™ default parameters were used.

3.6 EMISSIONS SUMMARY

The annual GHG emissions associated with the operation of the proposed Project are estimated to be 868.12 MTCO2e per year as summarized in Table 3-1. Direct and indirect operational emissions associated with the Project are compared with the SCAQMD threshold of significance for all land use projects, which is 3,000 MTCO2e per year (36). As shown, the proposed Project would result in a less than significant impact with respect to GHG emissions

TABLE 3-1: TOTAL PROJECT GREENHOUSE GAS EMISSIONS (ANNUAL)

Emission Source	Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	Total CO_2E
Annual construction-related emissions amortized over 30 years	23.11	0.005	--	23.22
Area	11.31	9.60e-4	1.90e-4	11.39
Energy	160.48	6.08e-3	2.34e-3	161.33
Mobile Sources	630.64	0.02	--	631.17
Waste	10.49	0.62	--	23.50
Water Usage	14.80	0.09	2.36e-3	17.51
Total CO_2E (All Sources)	**868.12**			
SCAQMD Threshold	**3,000**			
Significant?	**NO**			

Source: CalEEMod™ model output, See Appendix 3.1 for detailed model outputs.
Note: Totals obtained from CalEEMod™ and may not total 100% due to rounding.

Table results include scientific notation. *e* is used to represent *times ten raised to the power of* (which would be written as x 10^{b}") and is followed by the value of the exponent

4 REFERENCES

1. **County of San Bernardino.** *Greenhouse Gas Emissions Reduction Plan.* 2011.
2. **Air Resources Board.** Assembly Bill 32: Global Warming Solutions Act. [Online] 2006. [Cited: November 13, 2013.] http://www.arb.ca.gov/cc/ab32/ab32.htm.
3. —. Sustainable Communities. [Online] 2008. [Cited: November 13, 2013.] http://www.arb.ca.gov/cc/sb375/sb375.htm.
4. —. Clean Car Standards - Pavley, Assembly Bill 1493. [Online] September 24, 2009. [Cited: November 13, 2013.] http://www.arb.ca.gov/cc/ccms/ccms.htm.
5. **Building Standards Commission.** California Building Standards Code (Title 24, California Code of Regulations). [Online] [Cited: 13 2013, November.] http://www.bsc.ca.gov/codes.aspx.
6. **California Energy Commission.** California Code of Regulations, TITLE 20, Division 2. [Online] September 3, 2013. [Cited: November 13, 2013.] http://www.energy.ca.gov/reports/title20/index.html.
7. **Air Resources Board.** Title 17 - California Code of Regulation. [Online] 2010. [Cited: November 13, 2013.] http://www.arb.ca.gov/regs/regs-17.htm.
8. **Department of Water Resources.** Updated Model Water Efficient Landscape Ordinance AB 1881. [Online] 2006. [Cited: November 13, 2013.] http://www.water.ca.gov/wateruseefficiency/landscapeordinance/updatedOrd_history.cfm.
9. **California Energy Commission.** SB 1368 Emission Performance Standards. [Online] September 29, 2006. [Cited: November 13, 2013.] http://www.energy.ca.gov/emission_standards/.
10. —. Renewables Portfolio Standard (RPS) . [Online] 2002. [Cited: November 13, 2013.] http://www.energy.ca.gov/portfolio/.
11. **United Nations.** Flexible GHG Data Queries. [Online] [Cited: November 13, 2013.] http://unfccc.int/ghg_data/ghg_data_unfccc/time_series_annex_i/items/3841.php.
12. **U.S. Energy Information Administration.** [Online] http://www.eia.gov/.
13. **Environmental Protection Agency.** Inventory of U.S. Greenhouse Gas Emissions and Sinks. [Online] April 12, 2013. http://www.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2013-Main-Text.pdf.
14. **Air Resources Board.** Greenhouse Gas Inventory Data - 2000 to 2011. [Online] [Cited: November 13, 2013.] http://www.arb.ca.gov/cc/inventory/data/data.htm.
15. **World Resources Institute.** Climate Analysis Indicator Tool (CAIT). [Online] [Cited: 13 2013, November.] http://cait.wri.org.
16. **Air Resources Board.** Reducing Climate Change Emissions From Motor Vehicles. [Online] [Cited: November 13, 2013.] http://www.arb.ca.gov/cc/factsheets/ccfactsheet.pdf.
17. *The Carbon Cycle and Climate Change.* **Bennington, Bret J.** 1, s.l. : Brooks/Cole. ISBN 1 3: 978-0-495-73855-8.
18. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report.* **International Panel on Climate Change.** 4, 2007.
19. *Occupational Safety and Health Guideline for Nitrous Oxide.* **U.S. Department of Labor.**
20. **Environmental Protection Agency.** Overview of Greenhouse Gases. [Online] [Cited: November 13, 2013.] http://www.epa.gov/highgwp/scientific.html.

21. **American Lung Association.** Climate Change. [Online] 2013. [Cited: November 13, 2013.] http://www.lung.org/associations/states/california/advocacy/climate-change/.

22. **The National Institute for Occupational Safety and Health.** [Online] [Cited: November 13, 2013.] http://www.cdc.gov/niosh/.

23. **Occupational Health and Safety Administration.** [Online] [Cited: November 13, 2013.] https://www.osha.gov/.

24. **Hardin, Mary and Kahn, Ralph.** Aerosols & Climate Change. *Earth Observatory.* [Online] http://earthobservatory.nasa.gov/Features/Aerosols/.

25. **Environmental Protection Agency.** Air Pollution and the Clean Air Act. [Online] [Cited: November 13, 2013.] http://www.epa.gov/air/caa/.

26. **Building Standards Commission.** CALGreen. [Online] 2010. [Cited: November 13, 2013.] http://www.bsc.ca.gov/home/calgreen.aspx.

27. **Environmental Protection Agency.** State and Local Climate and Energy Program. [Online] [Cited: November 13, 2013.] http://www.epa.gov/statelocalclimate/state/tracking/individual/ca.html.

28. **State of California.** Senate Bill No. 97. [Online] [Cited: November 13, 2013.] http://opr.ca.gov/docs/SB_97_bill_20070824_chaptered.pdf.

29. —. California Climate Change Executive Orders. [Online] http://www.climatechange.ca.gov/state/executive_orders.html.

30. —. Senate Bill No. 1078. [Online] http://www.energy.ca.gov/portfolio/documents/documents/SB1078.PDF.

31. —. EXECUTIVE ORDER S-14-08. [Online] [Cited: November 13, 2013.] http://gov.ca.gov/news.php?id=11072.

32. **California Air Resources Board .** Preliminary Draft Staff Proposal. [Online] October 24, 2008. [Cited: November 13, 2013.] http://www.arb.ca.gov/cc/localgov/ceqa/meetings/102708/prelimdraftproposal102408.pdf.

33. **South Coast Air Quality Management District.** Greenhouse Gases (GHG) CEQA Significance Thresholds. [Online] [Cited: November 13, 2013.] http://www.aqmd.gov/ceqa/handbook/GHG/GHG.html.

34. *Greenhouse Gas CEQA Significance Threshold Stakeholder Working Group Meeting #15.* **South Coast Air Quality Management District.** Diamond Bar : s.n., 2010.

35. **County of Riverside.** *Greenhouse Gas Emissions Screening Tables.* San Bernardino : Atkins, 2012.

36. **South Coast Air Quality Management District.** Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans. [Online] http://www.aqmd.gov/hb/2008/December/081231a.htm.

37. **California Environmental Quality Act.** Addressing Analysis and Mitigation of Greenhouse Gas . [Online] [Cited: Noveber 13, 2013.] http://ceres.ca.gov/ceqa/docs/Final_Statement_of_Reasons.pdf.

38. **South Coast Air Quality Management District.** California Emissions Estimator Model. [Online] 2013. [Cited: November 13, 2013.] http://www.caleemod.com/.

39. **Urban Crossroads, Inc.** *Highland Park Air Quality Impact Analysis Report.* Irvine : s.n., 2014.

40. **South Coast Air Quality Management District.** *Greenhouse Gas CEQA Significance Threshold Stakeholder Working Group #13.* [Powerpoint] Diamond Bar : s.n., 2009.

41. **Urban Crossroads, Inc.** *Highland Park Trip Generation Assessment .* Irvine : s.n., 2014.

5 CERTIFICATION

The contents of this greenhouse gas study report represent an accurate depiction of the greenhouse gas impacts associated with the proposed Highland Park Project. The information contained in this greenhouse gas report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 660-1994 ext. 217.

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EDUCATION

Master of Science in Environmental Studies
California State University, Fullerton • May, 2010

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University of California, Irvine • June, 2006

PROFESSIONAL AFFILIATIONS

AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
ASTM – American Society for Testing and Materials

PROFESSIONAL CERTIFICATIONS

Planned Communities and Urban Infill – Urban Land Institute • June, 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April, 2008
Principles of Ambient Air Monitoring – California Air Resources Board • August, 2007
AB2588 Regulatory Standards – Trinity Consultants • November, 2006
Air Dispersion Modeling – Lakes Environmental • June, 2006

APPENDIX 3.1:

CALEEMOD EMISSIONS MODEL OUTPUTS

Highland Park Development

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	88.00	Space	0.79	35,200.00	0
Single Family Housing	44.00	Dwelling Unit	14.29	79,200.00	126

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	533.36	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Source: CPUC GHG Calculator version 3c, worksheet tab “CO2 Allocations,” cells AH/AQ 35-44.

Land Use - assumed 2 parking spaces per dwelling unit

Construction Phase - based on a mid 2015 construction start date and an end of 2016 completion

Off-road Equipment - 8 hour work day

Off-road Equipment - 8 hour work day

Off-road Equipment -

Off-road Equipment - added a water truck

Off-road Equipment -

Demolition -

Vehicle Trips - TR based on the the ITE Trip Generation Manual 9th edition and the Highland Park Trip Generation Assessment Letter

Woodstoves - no woodstoves. all natural gas fireplaces

Energy Use - Title-24 Electricity Energy Intensity and Title-24 Natural Gas Energy Intensity were adjusted by 36.4% and 6.5% respectively, to reflect 2013 Title 24 requirements. Source: Impact Analysis California's 2013 Building Energy Efficiency Standards (CEC 2013)

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	305.00
tblConstructionPhase	PhaseEndDate	12/1/2017	11/30/2016
tblConstructionPhase	PhaseEndDate	12/28/2016	9/28/2016
tblConstructionPhase	PhaseStartDate	10/1/2016	10/1/2015
tblConstructionPhase	PhaseStartDate	12/1/2016	9/1/2016
tblEnergyUse	T24E	980.99	623.91
tblEnergyUse	T24NG	27,816.78	26,008.69
tblFireplaces	NumberGas	37.40	44.00
tblFireplaces	NumberNoFireplace	4.40	0.00
tblFireplaces	NumberWood	2.20	0.00
tblOffRoadEquipment	HorsePower	400.00	189.00
tblOffRoadEquipment	LoadFactor	0.38	0.50
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	630.89	533.36
tblProjectCharacteristics	OperationalYear	2014	2016
tblVehicleTrips	ST_TR	10.08	9.91
tblVehicleTrips	SU_TR	8.77	8.62
tblVehicleTrips	WD_TR	9.57	9.52
tblWoodstoves	NumberCatalytic	2.20	0.00
tblWoodstoves	NumberNoncatalytic	2.20	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.4638	3.6725	2.5221	3.4900e-003	0.1618	0.2160	0.3778	0.0621	0.2021	0.2642	0.0000	319.3324	319.3324	0.0774	0.0000	320.9583
2016	0.7119	3.7319	2.7403	4.2300e-003	0.0489	0.2524	0.3013	0.0131	0.2385	0.2516	0.0000	373.8942	373.8942	0.0774	0.0000	375.5198
Total	**1.1757**	**7.4044**	**5.2625**	**7.7200e-003**	**0.2107**	**0.4685**	**0.6791**	**0.0752**	**0.4406**	**0.5158**	**0.0000**	**693.2266**	**693.2266**	**0.1548**	**0.0000**	**696.4781**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.4638	3.6725	2.5221	3.4900e-003	0.0806	0.2160	0.2966	0.0289	0.2021	0.2310	0.0000	319.3321	319.3321	0.0774	0.0000	320.9580
2016	0.7119	3.7319	2.7403	4.2300e-003	0.0489	0.2524	0.3013	0.0131	0.2385	0.2516	0.0000	373.8938	373.8938	0.0774	0.0000	375.5194
Total	**1.1757**	**7.4044**	**5.2625**	**7.7200e-003**	**0.1295**	**0.4685**	**0.5980**	**0.0420**	**0.4406**	**0.4826**	**0.0000**	**693.2259**	**693.2259**	**0.1548**	**0.0000**	**696.4774**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**38.53**	**0.00**	**11.95**	**44.12**	**0.00**	**6.43**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4613	5.3900e-003	0.4613	2.0000e-005		3.2200e-003	3.2200e-003		3.2200e-003	3.2200e-003	0.0000	11.3094	11.3094	9.6000e-004	1.9000e-004	11.3897
Energy	7.5800e-003	0.0648	0.0276	4.1000e-004		5.2400e-003	5.2400e-003		5.2400e-003	5.2400e-003	0.0000	160.4810	160.4810	6.0800e-003	2.3400e-003	161.3332
Mobile	0.2932	1.0415	3.5941	7.8800e-003	0.5380	0.0133	0.5513	0.1439	0.0122	0.1561	0.0000	630.6444	630.6444	0.0249	0.0000	631.1683
Waste						0.0000	0.0000		0.0000	0.0000	10.4865	0.0000	10.4865	0.6197	0.0000	23.5010
Water						0.0000	0.0000		0.0000	0.0000	0.9095	13.8885	14.7980	0.0942	2.3600e-003	17.5078
Total	**0.7620**	**1.1117**	**4.0830**	**8.3100e-003**	**0.5380**	**0.0218**	**0.5597**	**0.1439**	**0.0207**	**0.1646**	**11.3960**	**816.3233**	**827.7193**	**0.7459**	**4.8900e-003**	**844.8998**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4613	5.3900e-003	0.4613	2.0000e-005		3.2200e-003	3.2200e-003		3.2200e-003	3.2200e-003	0.0000	11.3094	11.3094	9.6000e-004	1.9000e-004	11.3897
Energy	7.5800e-003	0.0648	0.0276	4.1000e-004		5.2400e-003	5.2400e-003		5.2400e-003	5.2400e-003	0.0000	160.4810	160.4810	6.0800e-003	2.3400e-003	161.3332
Mobile	0.2932	1.0415	3.5941	7.8800e-003	0.5380	0.0133	0.5513	0.1439	0.0122	0.1561	0.0000	630.6444	630.6444	0.0249	0.0000	631.1683
Waste						0.0000	0.0000		0.0000	0.0000	10.4865	0.0000	10.4865	0.6197	0.0000	23.5010
Water						0.0000	0.0000		0.0000	0.0000	0.9095	13.8885	14.7980	0.0942	2.3600e-003	17.5063
Total	**0.7620**	**1.1117**	**4.0830**	**8.3100e-003**	**0.5380**	**0.0218**	**0.5597**	**0.1439**	**0.0207**	**0.1646**	**11.3960**	**816.3233**	**827.7193**	**0.7459**	**4.8900e-003**	**844.8984**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2015	6/26/2015	5	20	
2	Grading	Grading	6/27/2015	8/7/2015	5	30	
3	Building Construction	Building Construction	8/8/2015	9/30/2016	5	300	
4	Architectural Coating	Architectural Coating	10/1/2015	11/30/2016	5	305	
5	Paving	Paving	9/1/2016	9/28/2016	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 160,380; Residential Outdoor: 53,460; Non-Residential Indoor: 1,584; Non-Residential Outdoor: 528 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	8.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	8.00	78	0.48
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Grading	Off-Highway Trucks	1	8.00	189	0.50

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	27.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	23.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	31.00	10.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	6.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.9500e-003	0.0000	2.9500e-003	4.5000e-004	0.0000	4.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0451	0.4836	0.3607	4.0000e-004		0.0245	0.0245		0.0229	0.0229	0.0000	37.4413	37.4413	0.0102	0.0000	37.6544
Total	**0.0451**	**0.4836**	**0.3607**	**4.0000e-004**	**2.9500e-003**	**0.0245**	**0.0275**	**4.5000e-004**	**0.0229**	**0.0233**	**0.0000**	**37.4413**	**37.4413**	**0.0102**	**0.0000**	**37.6544**

3.2 Demolition - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.8000e-004	4.4500e-003	3.2000e-003	1.0000e-005	2.3000e-004	7.0000e-005	3.0000e-004	6.0000e-005	7.0000e-005	1.3000e-004	0.0000	0.9144	0.9144	1.0000e-005	0.0000	0.9145
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5000e-004	9.7000e-004	0.0102	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5248	1.5248	9.0000e-005	0.0000	1.5266
Total	**9.3000e-004**	**5.4200e-003**	**0.0134**	**3.0000e-005**	**1.8700e-003**	**8.0000e-005**	**1.9600e-003**	**5.0000e-004**	**8.0000e-005**	**5.8000e-004**	**0.0000**	**2.4391**	**2.4391**	**1.0000e-004**	**0.0000**	**2.4411**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1500e-003	0.0000	1.1500e-003	1.7000e-004	0.0000	1.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0451	0.4836	0.3607	4.0000e-004		0.0245	0.0245		0.0229	0.0229	0.0000	37.4412	37.4412	0.0102	0.0000	37.6544
Total	**0.0451**	**0.4836**	**0.3607**	**4.0000e-004**	**1.1500e-003**	**0.0245**	**0.0257**	**1.7000e-004**	**0.0229**	**0.0230**	**0.0000**	**37.4412**	**37.4412**	**0.0102**	**0.0000**	**37.6544**

3.2 Demolition - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.8000e-004	4.4500e-003	3.2000e-003	1.0000e-005	2.3000e-004	7.0000e-005	3.0000e-004	6.0000e-005	7.0000e-005	1.3000e-004	0.0000	0.9144	0.9144	1.0000e-005	0.0000	0.9145
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5000e-004	9.7000e-004	0.0102	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5248	1.5248	9.0000e-005	0.0000	1.5266
Total	**9.3000e-004**	**5.4200e-003**	**0.0134**	**3.0000e-005**	**1.8700e-003**	**8.0000e-005**	**1.9600e-003**	**5.0000e-004**	**8.0000e-005**	**5.8000e-004**	**0.0000**	**2.4391**	**2.4391**	**1.0000e-004**	**0.0000**	**2.4411**

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1135	1.3168	0.8101	1.0500e-003		0.0627	0.0627		0.0577	0.0577	0.0000	99.7804	99.7804	0.0298	0.0000	100.4060
Total	**0.1135**	**1.3168**	**0.8101**	**1.0500e-003**	**0.1301**	**0.0627**	**0.1928**	**0.0540**	**0.0577**	**0.1116**	**0.0000**	**99.7804**	**99.7804**	**0.0298**	**0.0000**	**100.4060**

3.3 Grading - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4900e-003	2.2400e-003	0.0235	4.0000e-005	3.7800e-003	3.0000e-005	3.8100e-003	1.0000e-003	3.0000e-005	1.0300e-003	0.0000	3.5070	3.5070	2.0000e-004	0.0000	3.5112
Total	**1.4900e-003**	**2.2400e-003**	**0.0235**	**4.0000e-005**	**3.7800e-003**	**3.0000e-005**	**3.8100e-003**	**1.0000e-003**	**3.0000e-005**	**1.0300e-003**	**0.0000**	**3.5070**	**3.5070**	**2.0000e-004**	**0.0000**	**3.5112**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0507	0.0000	0.0507	0.0210	0.0000	0.0210	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1135	1.3168	0.8101	1.0500e-003		0.0627	0.0627		0.0577	0.0577	0.0000	99.7803	99.7803	0.0298	0.0000	100.4059
Total	**0.1135**	**1.3168**	**0.8101**	**1.0500e-003**	**0.0507**	**0.0627**	**0.1134**	**0.0210**	**0.0577**	**0.0787**	**0.0000**	**99.7803**	**99.7803**	**0.0298**	**0.0000**	**100.4059**

3.3 Grading - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4900e-003	2.2400e-003	0.0235	4.0000e-005	3.7800e-003	3.0000e-005	3.8100e-003	1.0000e-003	3.0000e-005	1.0300e-003	0.0000	3.5070	3.5070	2.0000e-004	0.0000	3.5112
Total	**1.4900e-003**	**2.2400e-003**	**0.0235**	**4.0000e-005**	**3.7800e-003**	**3.0000e-005**	**3.8100e-003**	**1.0000e-003**	**3.0000e-005**	**1.0300e-003**	**0.0000**	**3.5070**	**3.5070**	**2.0000e-004**	**0.0000**	**3.5112**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2021	1.6858	1.0420	1.4900e-003		0.1179	0.1179		0.1107	0.1107	0.0000	136.1633	136.1633	0.0346	0.0000	136.8900
Total	**0.2021**	**1.6858**	**1.0420**	**1.4900e-003**		**0.1179**	**0.1179**		**0.1107**	**0.1107**	**0.0000**	**136.1633**	**136.1633**	**0.0346**	**0.0000**	**136.8900**

3.4 Building Construction - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.3100e-003	0.0539	0.0653	1.1000e-004	3.2100e-003	9.1000e-004	4.1200e-003	9.2000e-004	8.3000e-004	1.7500e-003	0.0000	10.3681	10.3681	8.0000e-005	0.0000	10.3698
Worker	6.9700e-003	0.0105	0.1099	2.1000e-004	0.0177	1.4000e-004	0.0178	4.6900e-003	1.3000e-004	4.8200e-003	0.0000	16.3862	16.3862	9.3000e-004	0.0000	16.4057
Total	**0.0123**	**0.0644**	**0.1752**	**3.2000e-004**	**0.0209**	**1.0500e-003**	**0.0219**	**5.6100e-003**	**9.6000e-004**	**6.5700e-003**	**0.0000**	**26.7543**	**26.7543**	**1.0100e-003**	**0.0000**	**26.7756**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2021	1.6858	1.0420	1.4900e-003		0.1179	0.1179		0.1107	0.1107	0.0000	136.1631	136.1631	0.0346	0.0000	136.8898
Total	**0.2021**	**1.6858**	**1.0420**	**1.4900e-003**		**0.1179**	**0.1179**		**0.1107**	**0.1107**	**0.0000**	**136.1631**	**136.1631**	**0.0346**	**0.0000**	**136.8898**

3.4 Building Construction - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.3100e-003	0.0539	0.0653	1.1000e-004	3.2100e-003	9.1000e-004	4.1200e-003	9.2000e-004	8.3000e-004	1.7500e-003	0.0000	10.3681	10.3681	8.0000e-005	0.0000	10.3698
Worker	6.9700e-003	0.0105	0.1099	2.1000e-004	0.0177	1.4000e-004	0.0178	4.6900e-003	1.3000e-004	4.8200e-003	0.0000	16.3862	16.3862	9.3000e-004	0.0000	16.4057
Total	**0.0123**	**0.0644**	**0.1752**	**3.2000e-004**	**0.0209**	**1.0500e-003**	**0.0219**	**5.6100e-003**	**9.6000e-004**	**6.5700e-003**	**0.0000**	**26.7543**	**26.7543**	**1.0100e-003**	**0.0000**	**26.7756**

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3552	3.0178	1.9389	2.8100e-003		0.2068	0.2068		0.1940	0.1940	0.0000	254.6164	254.6164	0.0641	0.0000	255.9621
Total	**0.3552**	**3.0178**	**1.9389**	**2.8100e-003**		**0.2068**	**0.2068**		**0.1940**	**0.1940**	**0.0000**	**254.6164**	**254.6164**	**0.0641**	**0.0000**	**255.9621**

3.4 Building Construction - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.7800e-003	0.0896	0.1144	2.1000e-004	6.0600e-003	1.4200e-003	7.4800e-003	1.7300e-003	1.3100e-003	3.0400e-003	0.0000	19.3165	19.3165	1.4000e-004	0.0000	19.3195
Worker	0.0117	0.0176	0.1857	3.9000e-004	0.0333	2.5000e-004	0.0336	8.8500e-003	2.3000e-004	9.0800e-003	0.0000	29.7698	29.7698	1.6000e-003	0.0000	29.8033
Total	**0.0205**	**0.1072**	**0.3001**	**6.0000e-004**	**0.0394**	**1.6700e-003**	**0.0410**	**0.0106**	**1.5400e-003**	**0.0121**	**0.0000**	**49.0862**	**49.0862**	**1.7400e-003**	**0.0000**	**49.1228**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3552	3.0178	1.9389	2.8100e-003		0.2068	0.2068		0.1940	0.1940	0.0000	254.6161	254.6161	0.0641	0.0000	255.9618
Total	**0.3552**	**3.0178**	**1.9389**	**2.8100e-003**		**0.2068**	**0.2068**		**0.1940**	**0.1940**	**0.0000**	**254.6161**	**254.6161**	**0.0641**	**0.0000**	**255.9618**

3.4 Building Construction - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.7800e-003	0.0896	0.1144	2.1000e-004	6.0600e-003	1.4200e-003	7.4800e-003	1.7300e-003	1.3100e-003	3.0400e-003	0.0000	19.3165	19.3165	1.4000e-004	0.0000	19.3195
Worker	0.0117	0.0176	0.1857	3.9000e-004	0.0333	2.5000e-004	0.0336	8.8500e-003	2.3000e-004	9.0800e-003	0.0000	29.7698	29.7698	1.6000e-003	0.0000	29.8033
Total	**0.0205**	**0.1072**	**0.3001**	**6.0000e-004**	**0.0394**	**1.6700e-003**	**0.0410**	**0.0106**	**1.5400e-003**	**0.0121**	**0.0000**	**49.0862**	**49.0862**	**1.7400e-003**	**0.0000**	**49.1228**

3.5 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0697					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0179	0.1131	0.0837	1.3000e-004		9.7200e-003	9.7200e-003		9.7200e-003	9.7200e-003	0.0000	11.2343	11.2343	1.4600e-003	0.0000	11.2650
Total	**0.0876**	**0.1131**	**0.0837**	**1.3000e-004**		**9.7200e-003**	**9.7200e-003**		**9.7200e-003**	**9.7200e-003**	**0.0000**	**11.2343**	**11.2343**	**1.4600e-003**	**0.0000**	**11.2650**

3.5 Architectural Coating - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.6000e-004	1.2800e-003	0.0135	3.0000e-005	2.1700e-003	2.0000e-005	2.1900e-003	5.8000e-004	2.0000e-005	5.9000e-004	0.0000	2.0127	2.0127	1.1000e-004	0.0000	2.0151
Total	**8.6000e-004**	**1.2800e-003**	**0.0135**	**3.0000e-005**	**2.1700e-003**	**2.0000e-005**	**2.1900e-003**	**5.8000e-004**	**2.0000e-005**	**5.9000e-004**	**0.0000**	**2.0127**	**2.0127**	**1.1000e-004**	**0.0000**	**2.0151**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0697					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0179	0.1131	0.0837	1.3000e-004		9.7200e-003	9.7200e-003		9.7200e-003	9.7200e-003	0.0000	11.2343	11.2343	1.4600e-003	0.0000	11.2650
Total	**0.0876**	**0.1131**	**0.0837**	**1.3000e-004**		**9.7200e-003**	**9.7200e-003**		**9.7200e-003**	**9.7200e-003**	**0.0000**	**11.2343**	**11.2343**	**1.4600e-003**	**0.0000**	**11.2650**

3.5 Architectural Coating - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.6000e-004	1.2800e-003	0.0135	3.0000e-005	2.1700e-003	2.0000e-005	2.1900e-003	5.8000e-004	2.0000e-005	5.9000e-004	0.0000	2.0127	2.0127	1.1000e-004	0.0000	2.0151
Total	**8.6000e-004**	**1.2800e-003**	**0.0135**	**3.0000e-005**	**2.1700e-003**	**2.0000e-005**	**2.1900e-003**	**5.8000e-004**	**2.0000e-005**	**5.9000e-004**	**0.0000**	**2.0127**	**2.0127**	**1.1000e-004**	**0.0000**	**2.0151**

3.5 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2523					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0587	0.3780	0.3002	4.7000e-004		0.0313	0.0313		0.0313	0.0313	0.0000	40.6818	40.6818	4.8000e-003	0.0000	40.7826
Total	**0.3110**	**0.3780**	**0.3002**	**4.7000e-004**		**0.0313**	**0.0313**		**0.0313**	**0.0313**	**0.0000**	**40.6818**	**40.6818**	**4.8000e-003**	**0.0000**	**40.7826**

3.5 Architectural Coating - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7600e-003	4.1600e-003	0.0438	9.0000e-005	7.8600e-003	6.0000e-005	7.9200e-003	2.0900e-003	5.0000e-005	2.1400e-003	0.0000	7.0260	7.0260	3.8000e-004	0.0000	7.0339
Total	**2.7600e-003**	**4.1600e-003**	**0.0438**	**9.0000e-005**	**7.8600e-003**	**6.0000e-005**	**7.9200e-003**	**2.0900e-003**	**5.0000e-005**	**2.1400e-003**	**0.0000**	**7.0260**	**7.0260**	**3.8000e-004**	**0.0000**	**7.0339**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2523					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0587	0.3780	0.3002	4.7000e-004		0.0313	0.0313		0.0313	0.0313	0.0000	40.6818	40.6818	4.8000e-003	0.0000	40.7825
Total	**0.3110**	**0.3780**	**0.3002**	**4.7000e-004**		**0.0313**	**0.0313**		**0.0313**	**0.0313**	**0.0000**	**40.6818**	**40.6818**	**4.8000e-003**	**0.0000**	**40.7825**

3.5 Architectural Coating - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7600e-003	4.1600e-003	0.0438	9.0000e-005	7.8600e-003	6.0000e-005	7.9200e-003	2.0900e-003	5.0000e-005	2.1400e-003	0.0000	7.0260	7.0260	3.8000e-004	0.0000	7.0339
Total	**2.7600e-003**	**4.1600e-003**	**0.0438**	**9.0000e-005**	**7.8600e-003**	**6.0000e-005**	**7.9200e-003**	**2.0900e-003**	**5.0000e-005**	**2.1400e-003**	**0.0000**	**7.0260**	**7.0260**	**3.8000e-004**	**0.0000**	**7.0339**

3.6 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0209	0.2239	0.1482	2.2000e-004		0.0126	0.0126		0.0116	0.0116	0.0000	21.0138	21.0138	6.3400e-003	0.0000	21.1469
Paving	1.0300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0219**	**0.2239**	**0.1482**	**2.2000e-004**		**0.0126**	**0.0126**		**0.0116**	**0.0116**	**0.0000**	**21.0138**	**21.0138**	**6.3400e-003**	**0.0000**	**21.1469**

3.6 Paving - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	8.7000e-004	9.1700e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4699	1.4699	8.0000e-005	0.0000	1.4715
Total	**5.8000e-004**	**8.7000e-004**	**9.1700e-003**	**2.0000e-005**	**1.6400e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.4699**	**1.4699**	**8.0000e-005**	**0.0000**	**1.4715**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0209	0.2239	0.1482	2.2000e-004		0.0126	0.0126		0.0116	0.0116	0.0000	21.0138	21.0138	6.3400e-003	0.0000	21.1469
Paving	1.0300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0219**	**0.2239**	**0.1482**	**2.2000e-004**		**0.0126**	**0.0126**		**0.0116**	**0.0116**	**0.0000**	**21.0138**	**21.0138**	**6.3400e-003**	**0.0000**	**21.1469**

3.6 Paving - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	8.7000e-004	9.1700e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4699	1.4699	8.0000e-005	0.0000	1.4715
Total	**5.8000e-004**	**8.7000e-004**	**9.1700e-003**	**2.0000e-005**	**1.6400e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.4699**	**1.4699**	**8.0000e-005**	**0.0000**	**1.4715**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2932	1.0415	3.5941	7.8800e-003	0.5380	0.0133	0.5513	0.1439	0.0122	0.1561	0.0000	630.6444	630.6444	0.0249	0.0000	631.1683
Unmitigated	0.2932	1.0415	3.5941	7.8800e-003	0.5380	0.0133	0.5513	0.1439	0.0122	0.1561	0.0000	630.6444	630.6444	0.0249	0.0000	631.1683

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Single Family Housing	418.88	436.04	379.28	1,420,422	1,420,422
Total	418.88	436.04	379.28	1,420,422	1,420,422

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.473353	0.065861	0.172473	0.156037	0.055870	0.009076	0.016433	0.039903	0.001120	0.001336	0.004897	0.000716	0.002924

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	85.4414	85.4414	4.6500e-003	9.6000e-004	85.8369
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	85.4414	85.4414	4.6500e-003	9.6000e-004	85.8369
NaturalGas Mitigated	7.5800e-003	0.0648	0.0276	4.1000e-004		5.2400e-003	5.2400e-003		5.2400e-003	5.2400e-003	0.0000	75.0396	75.0396	1.4400e-003	1.3800e-003	75.4963
NaturalGas Unmitigated	7.5800e-003	0.0648	0.0276	4.1000e-004		5.2400e-003	5.2400e-003		5.2400e-003	5.2400e-003	0.0000	75.0396	75.0396	1.4400e-003	1.3800e-003	75.4963

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.40619e+006	7.5800e-003	0.0648	0.0276	4.1000e-004		5.2400e-003	5.2400e-003		5.2400e-003	5.2400e-003	0.0000	75.0396	75.0396	1.4400e-003	1.3800e-003	75.4963
Total		**7.5800e-003**	**0.0648**	**0.0276**	**4.1000e-004**		**5.2400e-003**	**5.2400e-003**		**5.2400e-003**	**5.2400e-003**	**0.0000**	**75.0396**	**75.0396**	**1.4400e-003**	**1.3800e-003**	**75.4963**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.40619e+006	7.5800e-003	0.0648	0.0276	4.1000e-004		5.2400e-003	5.2400e-003		5.2400e-003	5.2400e-003	0.0000	75.0396	75.0396	1.4400e-003	1.3800e-003	75.4963
Total		**7.5800e-003**	**0.0648**	**0.0276**	**4.1000e-004**		**5.2400e-003**	**5.2400e-003**		**5.2400e-003**	**5.2400e-003**	**0.0000**	**75.0396**	**75.0396**	**1.4400e-003**	**1.3800e-003**	**75.4963**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	30976	7.4940	4.1000e-004	8.0000e-005	7.5287
Single Family Housing	322193	77.9474	4.2400e-003	8.8000e-004	78.3083
Total		**85.4414**	**4.6500e-003**	**9.6000e-004**	**85.8369**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	30976	7.4940	4.1000e-004	8.0000e-005	7.5287
Single Family Housing	322193	77.9474	4.2400e-003	8.8000e-004	78.3083
Total		**85.4414**	**4.6500e-003**	**9.6000e-004**	**85.8369**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4613	5.3900e-003	0.4613	2.0000e-005		3.2200e-003	3.2200e-003		3.2200e-003	3.2200e-003	0.0000	11.3094	11.3094	9.6000e-004	1.9000e-004	11.3897
Unmitigated	0.4613	5.3900e-003	0.4613	2.0000e-005		3.2200e-003	3.2200e-003		3.2200e-003	3.2200e-003	0.0000	11.3094	11.3094	9.6000e-004	1.9000e-004	11.3897

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0322					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4134					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.0700e-003	0.0000	6.0000e-005	0.0000		7.4000e-004	7.4000e-004		7.3000e-004	7.3000e-004	0.0000	10.5660	10.5660	2.0000e-004	1.9000e-004	10.6303
Landscaping	0.0146	5.3900e-003	0.4612	2.0000e-005		2.4900e-003	2.4900e-003		2.4900e-003	2.4900e-003	0.0000	0.7434	0.7434	7.6000e-004	0.0000	0.7594
Total	**0.4613**	**5.3900e-003**	**0.4613**	**2.0000e-005**		**3.2300e-003**	**3.2300e-003**		**3.2200e-003**	**3.2200e-003**	**0.0000**	**11.3094**	**11.3094**	**9.6000e-004**	**1.9000e-004**	**11.3897**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0322					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4134					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.0700e-003	0.0000	6.0000e-005	0.0000		7.4000e-004	7.4000e-004		7.3000e-004	7.3000e-004	0.0000	10.5660	10.5660	2.0000e-004	1.9000e-004	10.6303
Landscaping	0.0146	5.3900e-003	0.4612	2.0000e-005		2.4900e-003	2.4900e-003		2.4900e-003	2.4900e-003	0.0000	0.7434	0.7434	7.6000e-004	0.0000	0.7594
Total	**0.4613**	**5.3900e-003**	**0.4613**	**2.0000e-005**		**3.2300e-003**	**3.2300e-003**		**3.2200e-003**	**3.2200e-003**	**0.0000**	**11.3094**	**11.3094**	**9.6000e-004**	**1.9000e-004**	**11.3897**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	14.7980	0.0942	2.3600e-003	17.5063
Unmitigated	14.7980	0.0942	2.3600e-003	17.5078

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	2.86678 / 1.80732	14.7980	0.0942	2.3600e-003	17.5078
Total		**14.7980**	**0.0942**	**2.3600e-003**	**17.5078**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	2.86678 / 1.80732	14.7980	0.0942	2.3600e-003	17.5063
Total		**14.7980**	**0.0942**	**2.3600e-003**	**17.5063**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	10.4865	0.6197	0.0000	23.5010
Unmitigated	10.4865	0.6197	0.0000	23.5010

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	51.66	10.4865	0.6197	0.0000	23.5010
Total		**10.4865**	**0.6197**	**0.0000**	**23.5010**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	51.66	10.4865	0.6197	0.0000	23.5010
Total		**10.4865**	**0.6197**	**0.0000**	**23.5010**

9.0 Operational Offroad

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

10.0 Vegetation

Highland Park

NOISE IMPACT ANALYSIS

CITY OF HIGHLAND

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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
INCE	Institute of Noise Control Engineering
Leq	Equivalent continuous (average) sound level
Lmax	Maximum level measured over the time interval
Lmin	Minimum level measured over the time interval
mph	Miles per hour
NLR	Noise Level Reduction
Project	Highland Park
RCNM	Roadway Construction Noise Model
REMEL	Reference Energy Mean Emission Level
STC	Sound Transmission Class

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EXECUTIVE SUMMARY

This Noise Impact Analysis has been prepared to determine the noise exposure and the necessary noise mitigation measures for the proposed Highland Park single-family residential development ("Project"). The Project site is located north of Base Line Street and west of Weaver Street in the City of Highland. The purpose of this noise analysis is to ensure that the proposed development is compatible with the existing and future noise environment.

ON-SITE TRAFFIC NOISE ANALYSIS

The results of this analysis indicate that future vehicle noise from Base Line Street represents the principal source of community noise that will impact the Project site. The Project will also experience some background traffic noise impacts from the Project's internal roads, however due to the distance, topography and low traffic volume/speeds, traffic noise from these roads will not make a significant contribution to the noise environment. With the following recommended noise mitigation measures shown on Exhibit ES-A, the on-site noise impacts will be less than significant.

EXTERIOR NOISE MITIGATION

To satisfy the City of Highland 65 dBA CNEL exterior noise level standards for single-family residential land use, the construction of a 3-foot high noise barrier for the outdoor (backyard) areas of lot 1 facing Base Line Street is required. With the recommended noise barrier shown on Exhibit ES-A, the mitigated future exterior noise levels will range from 56.3 to 64.8 dBA CNEL. This noise analysis shows that the recommended noise barriers will satisfy the City of Highland 65 dBA CNEL exterior noise level standards. No further exterior noise mitigation is required.

The recommended noise control barriers shall provide a weight of at least 4 pounds per square foot of face area with no decorative cutouts or line-of-sight openings between shielded areas and the roadways. The noise barrier may be constructed using one of the following materials:

- Masonry block
- Stucco veneer over wood framing (or foam core), or 1 inch thick tongue and groove wood of sufficient weight per square foot
- Glass (1/4 inch thick), or other transparent material with sufficient weight per square foot
- Earthen berm
- Any combination of these construction materials

The barrier must present a solid face from top to bottom. Unnecessary openings or decorative cutouts should not be made. All gaps (except for weep holes) should be filled with grout or caulking.

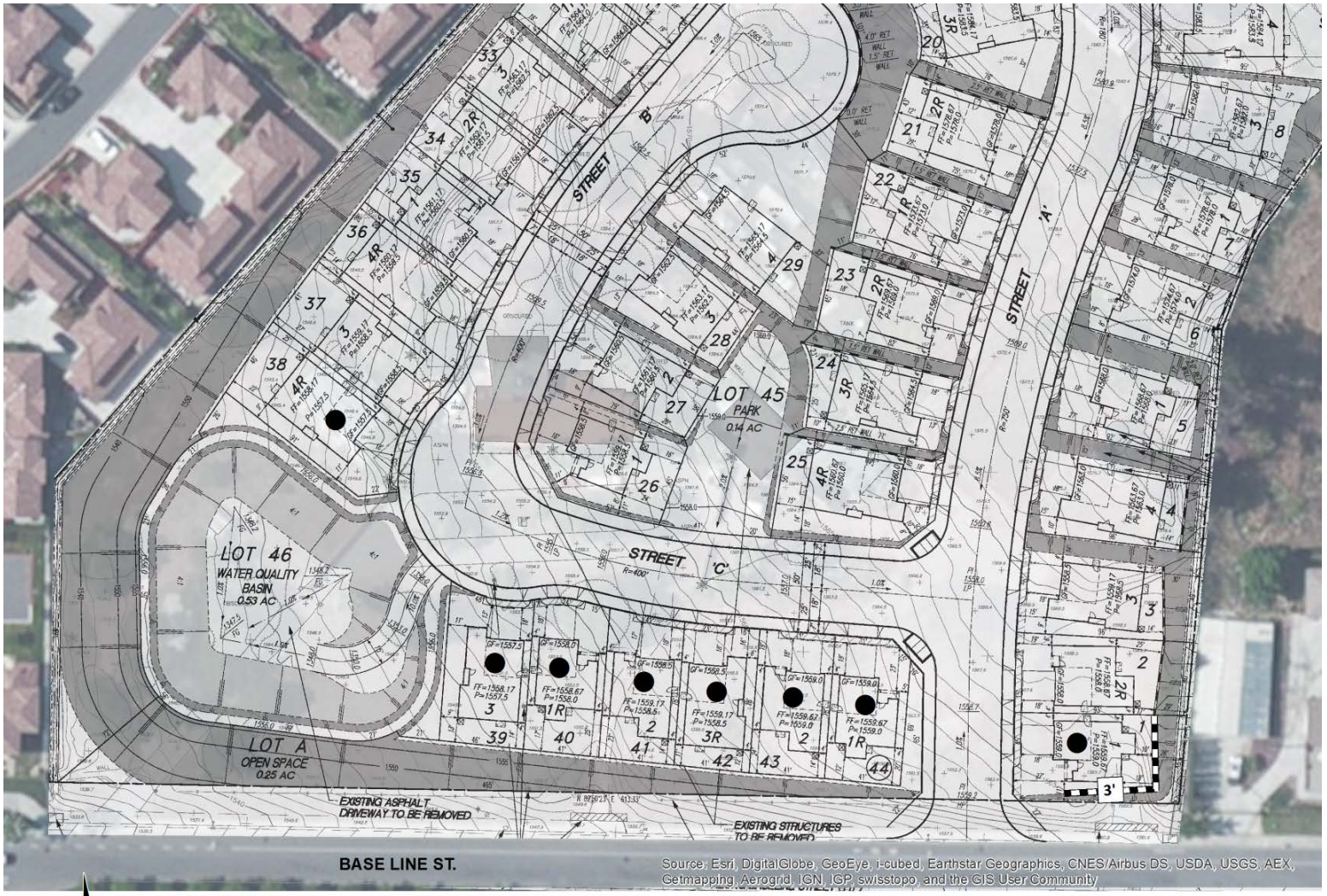
INTERIOR NOISE MITIGATION

To satisfy the City of Highland 45 dBA CNEL interior noise level criteria, lots facing Base Line Street will require a Noise Level Reduction (NLR) of up to 20.6 dBA and a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning). In order to meet the City of Highland 45 dBA CNEL interior noise standards the Project shall provide the following or equivalent noise mitigation measures:

- Windows: All windows and sliding glass doors shall be well fitted, well weather-stripped assemblies and shall have a minimum sound transmission class (STC) rating of 27.
- Doors: All exterior doors shall be well weather-stripped solid core assemblies at least one and three-fourths-inch thick.
- Roof: Roof sheathing of wood construction shall be well fitted or caulked plywood of at least one-half inch thick. Ceilings shall be well fitted, well sealed gypsum board of at least one-half inch thick. Insulation with at least a rating of R-19 shall be used in the attic space.
- Ventilation: Arrangements for any habitable room shall be such that any exterior door or window can be kept closed when the room is in use. A forced air circulation system (e.g. air conditioning) shall be provided which satisfies the requirements of the Uniform Mechanical Code.

With the recommended interior noise mitigation measures provided in this study, the proposed Highland Park residential project is expected to meet the City of Highland 45 dBA CNEL interior noise level standards for residential development.

EXHIBIT ES-A: SUMMARY OF RECOMMENDATIONS



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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Highland Park ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, provides the study methods and procedures for traffic noise analysis, and evaluates the future exterior noise environment.

1.1 SITE LOCATION

The proposed Highland Park site is located north of Base Line Street and west of Weaver Street in the City of Highland, as shown on Exhibit 1-A. The Project site is currently occupied by an existing single-family residential dwelling. Existing residential land uses are located to the north, west, east, and south of the Project site across Base Line Street. The Project site is located approximately 3.5 miles northeast of the San Bernardino International Airport and approximately 2.5 miles north of the Redlands Municipal Airport.

1.2 PROJECT DESCRIPTION

The Project consists of the development of up to 44 single-family detached dwelling units, as shown on Exhibit 1-B. A water quality basin is proposed at the southwest corner of the site on lot 46, and a park is proposed for lot 45 within the Project site.

EXHIBIT 1-A: LOCATION MAP

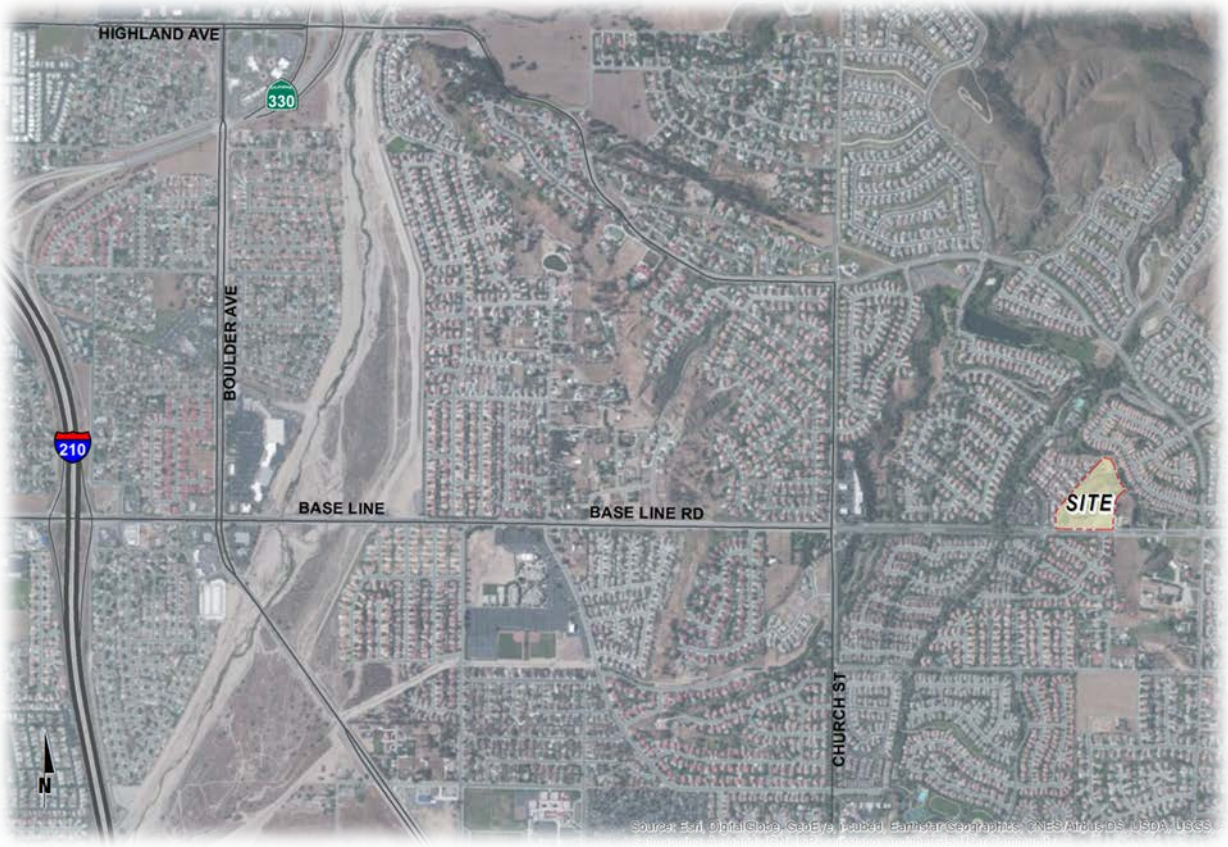

EXHIBIT 1-B: SITE PLAN

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2 FUNDAMENTALS

Noise has been 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.(1) 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.(2) 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 commonly used figure is the equivalent level (Leq). 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 (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than the 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 twenty-four 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 Leq sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA Leq 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 particular time, but rather represents the total sound exposure. The City of Highland 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. The manner in which 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.

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receptor 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 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receptor, 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 receptor 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.

2.3.3 ATMOSPHERIC EFFECTS

Receptors 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 ft) 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.

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receptor can substantially attenuate noise levels at the receptor. 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 nearby resident. 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 FHWA does not consider the planting of vegetation to be a noise abatement measure.

2.4 TRAFFIC NOISE PREDICTION

Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires on the roadway. According to the *Highway Traffic Noise Analysis and Abatement Policy and Guidance,* provided by the Federal Highway Administration (FHWA), the level of traffic noise depends on three primary factors: the volume of the traffic, the speed of the traffic, and the vehicle mix within the flow of traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and a greater number of trucks.(3) A doubling of the traffic volume, assuming that the speed and vehicle mix do not change, results in a noise level increase of 3 dBA. The vehicle mix on a given roadway may also have an effect on community noise levels. As the number of medium and heavy trucks increases and becomes a larger percentage of the vehicle mix, adjacent noise level impacts will increase.

2.5 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for a particular observation point or receptor by controlling the noise source, transmission path, receptor, or all three. This concept is known as the source-path-receptor concept. In general, noise control measures can be applied to any and all of these three elements.

2.6 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 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 receptor. 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. (3)

2.7 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. 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. (4)

2.8 COMMUNITY RESPONSE TO NOISE

Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon each individual'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. Another 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. (5) 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. (5)

Despite this variability in behavior on an individual level, the population as a whole can be expected to exhibit the following responses to changes in noise levels. An increase or decrease of 1 dBA cannot be perceived except in carefully controlled laboratory experiments, a change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (3)

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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 fairly 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 OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway 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 according to guidelines adopted by the Governor's Office of Planning and Research. (6) 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.

3.2 STATE OF CALIFORNIA BUILDING CODE

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, and the California Building Code. These noise standards are applied to new construction in California for the purpose of controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are developed near major transportation noise sources, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans for noise-sensitive land uses must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

3.3 CITY OF HIGHLAND GENERAL PLAN NOISE ELEMENT

The City of Highland has adopted a Noise Element of the General Plan to control and abate environmental noise, and to protect the citizens of the City of Highland from excessive exposure to noise. (7) The Noise Element specifies the maximum exterior and interior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports and railroads. In addition, the Noise Element 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 the City of Highland residents from excessive noise, the Noise Element contains the following three goals:

7.1 Protect sensitive land uses and the citizens of Highland from annoying and excessive noise through diligent planning and regulation.

7.2 Encourage the reduction of noise from transportation-related noise sources such as automobile and truck traffic.

7.3 Protect residents from the effects of "spill over" or nuisance noise.

The noise policies specified in the City of Highland Noise Element provide the guidelines necessary to satisfy these three goals. To protect sensitive land uses from excessive noise (7.1), the City of Highland General Plan Noise Element requires appropriate mitigation for sensitive land uses in areas in excess of 65 dBA CNEL. The Noise Element also provides several policies to reduce noise impacts from transportation-related noise sources (7.2), including requirements for traffic-generating new developments to propose mitigation measures, and encouraging the development of alternative transportation modes such as bicycle paths and pedestrian walkways. To protect residents from the effects of "spill over" noise (7.3), the Noise Element requires commercial or stationary-source noise producing uses to comply with the City Noise Ordinance, and restricts the hours of construction for new developments. (7) The City of Highland General Plan Noise Element is included in Appendix 3.1.

3.3.1 LAND USE COMPATIBILITY

The noise criteria identified in the City of Highland Noise Element are 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 *Community Noise and Land Use Compatibility* (Table 7.3) matrix in the City of Highland General Plan provides guidelines to evaluate the acceptability of the transportation related noise level impacts. Noise sensitive land uses such as single-family residences are considered *normally acceptable* with exterior noise levels below 60 dBA CNEL and *conditionally acceptable* with noise levels below 70 dBA CNEL. For *conditionally acceptable* land use, *new construction or development should be undertaken only after a detailed analysis of the 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.* The City uses 65 dBA CNEL as the critical criterion for assessing the compatibility of noise-sensitive land uses such as the Project site (Goal 7.1, Policy 5).(7)

3.3.2 NOISE STANDARDS

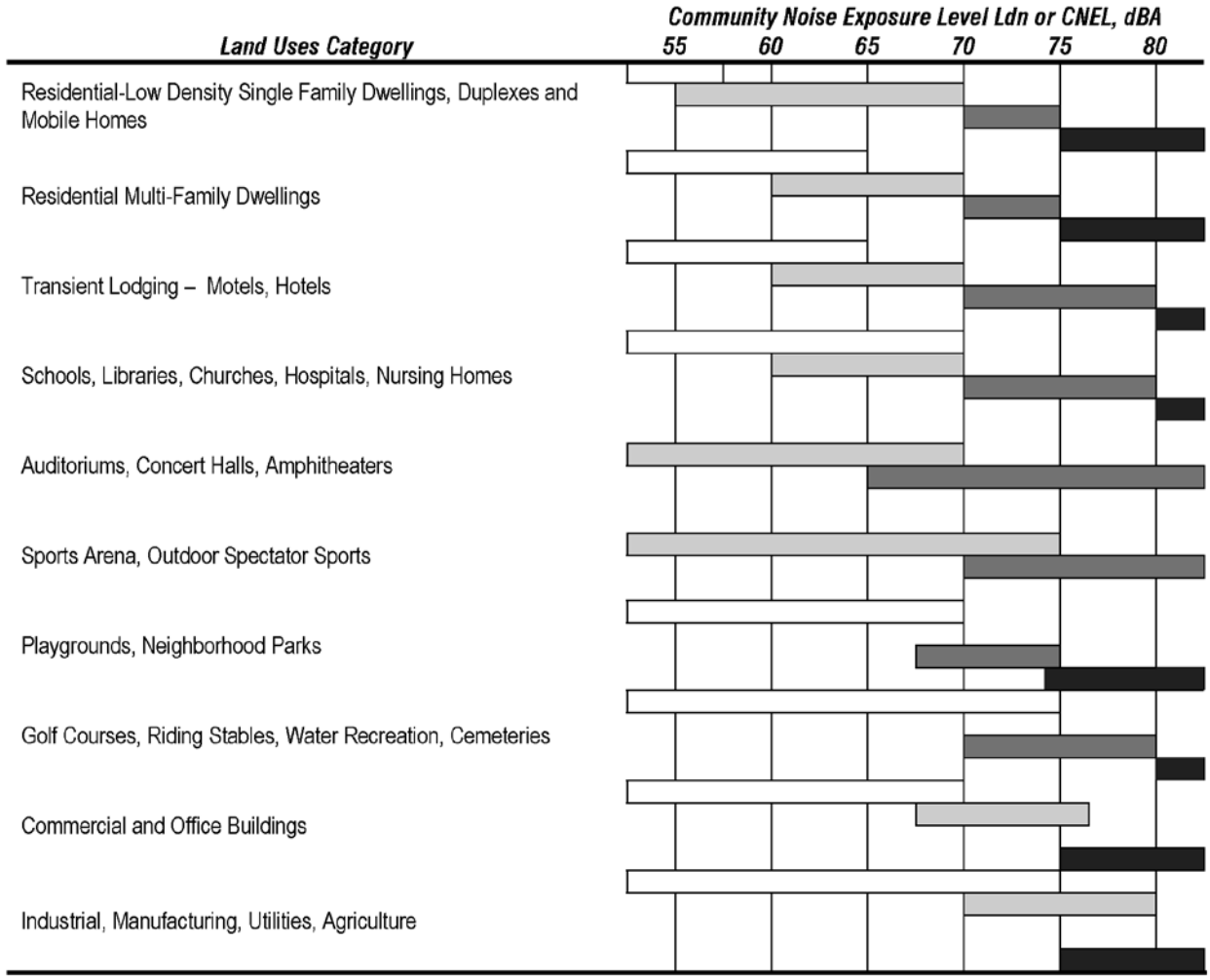
The City of Highland Noise Element, Table 7.1, provides specific interior noise level standards for all land use categories based on the Municipal Code. For noise sensitive residential uses, the Noise Element requires an interior noise level not to exceed 45 dBA CNEL.

Based on the City of Highland land use compatibility guidelines and noise standards, this noise study has been prepared to satisfy an exterior noise level of 65 dBA CNEL and an interior noise level of less than 45 dBA CNEL. This approach is consistent with Goal 7.1 Policy 5 and Table 7.1 of the General Plan Noise Element included in Appendix 3.1.

3.4 CITY OF HIGHLAND MUNICIPAL CODE NOISE ORDINANCE

The most effective method to control community noise impacts from non-transportation noise sources (such as playgrounds, trash compactors, air-conditioning units, etc.) is through the application of a community noise ordinance. For the purpose of this analysis, the noise impacts associated with this Project are controlled by the Noise Element of the General Plan.

EXHIBIT 3-A: COMMUNITY NOISE AND LAND USE COMPATIBILITY



Explanatory Notes

Normally Acceptable:
Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable:
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply system or air conditioning will normally suffice. Outdoor environment will seem noisy.

Normally Unacceptable:
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made with needed noise insulation features included in the design. Outdoor areas must be shielded.

Clearly Unacceptable:
New construction or development should generally not be undertaken. Construction cost to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be usable.

4 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment.

4.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The estimated roadway noise impacts from vehicular traffic were calculated using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108.(8) 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.(9) 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.

4.2 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 on Table 4-1. Based on the City of Highland General Plan Circulation Element, Figure 3-2, Base Line Street is classified as a 2-lane Special Secondary Highway.(10) To predict the future on-site noise environment at the Project site, parameters including the number of lanes and daily volume thresholds were obtained from the City of Highland General Plan Environmental Impact Report (EIR), Table IV-O-8, for Base Line Street. The traffic volumes shown on Table 4-1 reflect future long-range traffic conditions needed to assess the future on-site traffic noise environment and to identify the appropriate noise mitigation measures that address the worst-case future conditions. 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.

TABLE 4-1: ON-SITE ROADWAY PARAMETERS

Roadway	Lanes	Classification[1]	Traffic Volume[2]	Speed (MPH)[3]	Site Conditions
Base Line St.	2	Special Secondary Hwy	14,600	40	Soft

[1] Source: City of Highland General Plan Circulation Element, September 2004.
[2] Roadway Daily Volume Thresholds per the City of Highland General Plan EIR, Chapter IV, Table IV-O-8.
[3] Posted speed limit on Base Line Street.

Table 4-2 presents the time of day vehicle splits by vehicle type, and Table 4-3 presents the total traffic flow distributions (vehicle mixes) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA Model based on roadway types.

TABLE 4-2: TIME OF DAY VEHICLE SPLITS

Time Period	Vehicle Type		
	Autos	Medium Trucks	Heavy Trucks
Daytime (7am-7pm)	77.5%	84.8%	86.5%
Evening (7pm-10pm)	12.9%	4.9%	2.7%
Nighttime (10pm-7am)	9.6%	10.3%	10.8%
Total:	100.0%	100.0%	100.0%

TABLE 4-3: DISTRIBUTION OF TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)

Roadway	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
Base Line St.	97.42%	1.84%	0.74%	100%

To predict the future noise environment at each lot 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 Project site plan showing the plotting of each lot in relationship to Base Line Street as shown in Appendix 4.1.

The site plan was 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 exterior noise level impacts at the backyard and first floor patio receivers were placed five feet above the pad elevation and ten feet from the proposed barrier location or at the proposed building façade, whichever is greater. All second floor receivers were located fourteen feet above the proposed finished floor elevation.

5 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 proposed Highland Park. It is expected that the primary source of noise impacts to the Project site will be traffic noise from Base Line Street. The Project will also experience some background traffic noise impacts from the Project's internal streets, however, due to the distance, topography and low traffic volume/speed, traffic noise from these roads will not make a significant contribution to the noise environment.

5.1 ON-SITE EXTERIOR NOISE ANALYSIS

Using the FHWA traffic noise prediction model and the parameters outlined in Tables 4-1 to 4-3, the expected future exterior noise levels for individual lots were calculated. Table 5-1 presents a summary of future exterior noise level impacts in the outdoor living areas (backyards) for the single-family lots within the Project site. The on-site traffic noise level impacts indicate that the lots facing Base Line Street will experience unmitigated exterior noise levels ranging from 56.3 to 65.1 dBA CNEL. The on-site traffic noise analysis calculations are provided in Appendix 5.1.

To satisfy the City of Highland 65 dBA CNEL exterior noise level standards for single-family residential land use, the construction of a 3-foot high noise barrier for the outdoor (backyard) areas of lot 1 facing Base Line Street is required. With the recommended noise barrier shown on Exhibit ES-A, the mitigated future exterior noise levels will range from 56.3 to 64.8 dBA CNEL. This noise analysis shows that the recommended noise barriers will satisfy the City of Highland 65 dBA CNEL exterior noise level standards. No further exterior noise mitigation is required.

TABLE 5-1: EXTERIOR NOISE LEVELS (CNEL)

Lot	Roadway	Unmitigated Noise Level (dBA CNEL)	Mitigated Noise Level (dBA CNEL)	Barrier Height (Feet)	Top Of Barrier Elevation (Feet)
38	Base Line St.	56.3	–[1]	–[1]	–[1]
39	Base Line St.	63.4	–[1]	–[1]	–[1]
40	Base Line St.	63.7	–[1]	–[1]	–[1]
41	Base Line St.	63.9	–[1]	–[1]	–[1]
42	Base Line St.	64.3	–[1]	–[1]	–[1]
43	Base Line St.	64.6	–[1]	–[1]	–[1]
44	Base Line St.	64.8	–[1]	–[1]	–[1]
1	Base Line St.	65.1	60.3	3.0'	1562'

[1] Lots without a recommended noise barrier. No exterior noise mitigation required.

5.2 ON-SITE INTERIOR NOISE ANALYSIS

To ensure that the interior noise levels comply with the City of Highland 45 dBA CNEL interior noise standards, future noise levels were calculated at the first and second floor building façades.

5.2.1 NOISE LEVEL 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 Level Reduction (NLR) 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 assembles free of cut outs or openings.

5.2.2 INTERIOR NOISE LEVEL ASSESSMENT

To provide the necessary interior noise level reduction, Tables 5-2 and 5-3 indicate that lots facing Base Line Street will require a windows closed condition and a means of mechanical ventilation (e.g. air conditioning). Table 5-2 shows that the future unmitigated noise levels at the first floor building façade are expected to range from 56.2 to 64.6 dBA CNEL. The first floor interior noise level analysis shows that the City of Highland 45 dBA CNEL interior noise level standards can be satisfied using standard windows with a minimum STC rating of 27. Table 5-3 shows that the future noise levels at the second floor building façade are expected to range from 56.2 to 65.6 dBA CNEL, and standard windows with a minimum STC rating of 27 will satisfy the City of Highland's 45 dBA CNEL interior noise level standards. The interior noise analysis shows that with the recommended interior noise mitigation measures described in the Executive Summary, the Project will satisfy the City of Highland 45 dBA CNEL interior noise level standards for single-family residential development.

TABLE 5-2: FIRST FLOOR INTERIOR NOISE IMPACTS (CNEL)

Lot	Noise Level at Façade[1]	Required Interior Noise Reduction[2]	Estimated Interior Noise Reduction[3]	Upgraded Windows[4]	Interior Noise Level[5]
38	56.2	11.2	25	No	31.2
39	63.1	18.1	25	No	38.1
40	63.1	18.1	25	No	38.1
41	63.7	18.7	25	No	38.7
42	64.1	19.1	25	No	39.1
43	64.2	19.2	25	No	39.2
44	64.6	19.6	25	No	39.6
1	60.1	15.1	25	No	35.1

[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] A minimum of 25 dBA noise reduction is assumed with standard building construction.
[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 5-3: SECOND FLOOR INTERIOR NOISE IMPACTS (CNEL)

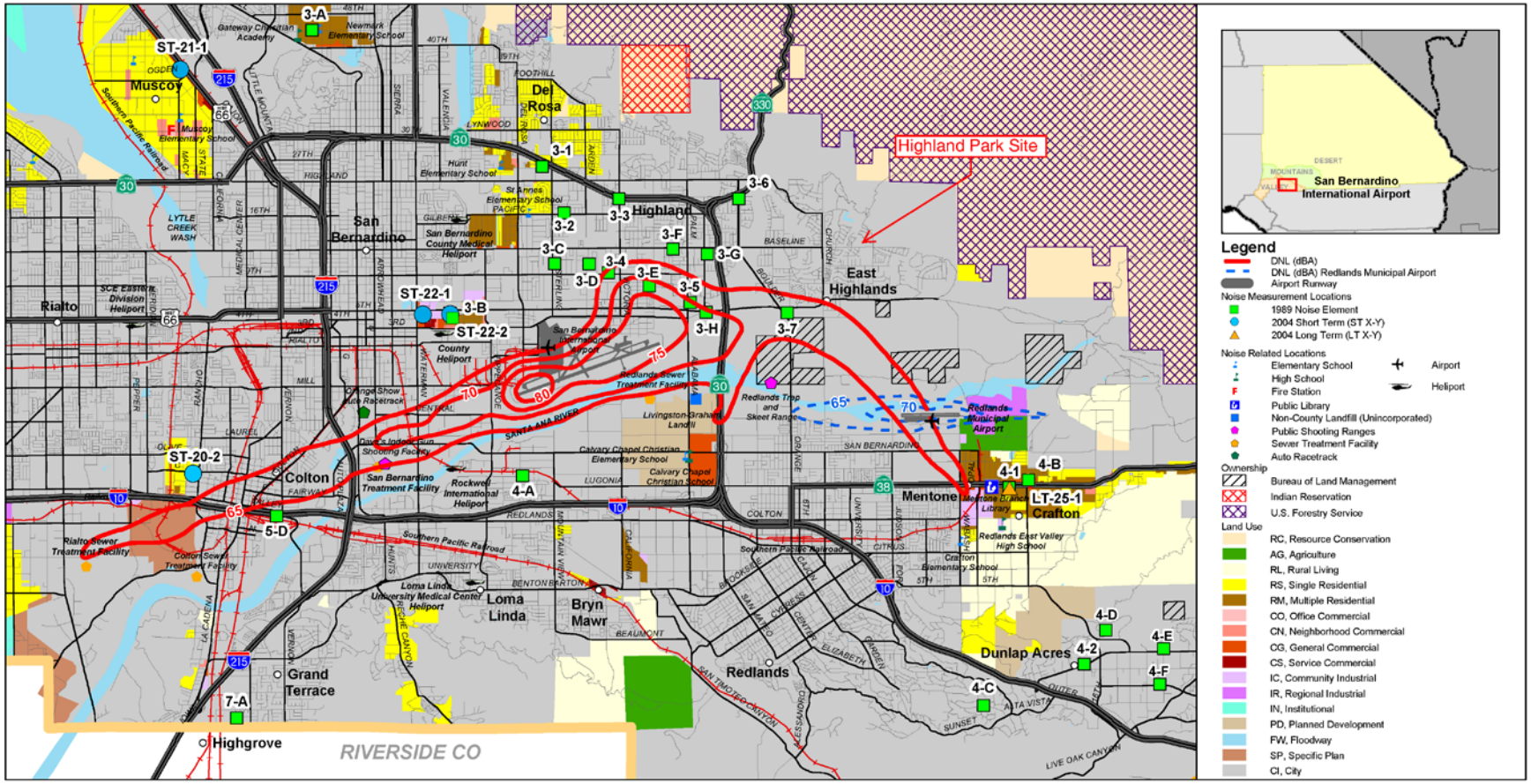
Lot	Noise Level at Façade[1]	Required Interior Noise Reduction[2]	Estimated Interior Noise Reduction[3]	Upgraded Windows[4]	Interior Noise Level[5]
38	56.2	11.2	25	No	31.2
39	62.9	17.9	25	No	37.9
40	62.9	17.9	25	No	37.9
41	63.6	18.6	25	No	38.6
42	64.0	19.0	25	No	39.0
43	64.1	19.1	25	No	39.1
44	64.5	19.5	25	No	39.5
1	65.6	20.6	25	No	40.6

[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] A minimum of 25 dBA noise reduction is assumed with standard building construction.
[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.

6 AIRPORT LAND USE COMPATIBILITY

The Project site is located approximately 3.5 miles northeast of the San Bernardino International Airport and approximately 2.5 miles north of the Redlands Municipal Airport. The *Aircraft Noise Exposure* contours of the San Bernardino International Airport and Redlands Municipal Airport are shown on Exhibit 6-A.(11) The Project site is located outside of the 65 dBA CNEL noise contours for the San Bernardino International Airport and Redlands Municipal Airport, as shown on Exhibit 6-A, and while aircraft flyovers will be heard, they will not significantly impact the proposed Project from a noise standpoint.

EXHIBIT 6-A: AIRPORT NOISE CONTOUR MAP



7 REFERENCES

1. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
2. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requiste to Protect Public Health and Welfare with an Adequate Margin of Safety.* March, 1974. EPA/ONAC 550/9/74-004.
3. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* June, 1995.
4. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
5. **U.S. Environmental Protection Agency Office of Noise Abatement and Control.** *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise.* October 1979 (revised July 1981). EPA 550/9/82/106.
6. **Office of Planning and Research.** *State of California General Plan Guidlines 2003.* October 2003.
7. **City of Highland.** *General Plan Noise Element.* September 2004.
8. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.
9. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction.* September 1995. TAN 95-03.
10. **City of Highland.** *General Plan Circulation Element.* September 2004.
11. —. *General Plan Airport Noise Exposure.* September 2004.

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8 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Highland Park 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 (949) 660-1994 ext. 203.

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EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December, 1993

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PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – TR 2537 • January, 2009
AICP – American Institute of Certified Planners – 013011 • June, 1997–January 1, 2012
PTP – Professional Transportation Planner • May, 2007 – May, 2013
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ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

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FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013

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APPENDIX 3.1:

CITY OF HIGHLAND GENERAL PLAN NOISE ELEMENT

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7. Noise Element

Chapter 7. Noise

INTRODUCTION

Purpose and Function

The everyday activities of residents, visitors and workers have the potential to generate a variety of noise sources in the City of Highland. The San Bernardino International Airport (SBIA) is a public, full-service airport designed to serve the western United States with commercial and cargo air traffic. The SBIA contains and is surrounded by multiple commercial and industrial properties, all of which have the potential to generate noise through their business activities. Highland also generates and draws a significant level of passenger and truck traffic through the City along the major roadways and highways, creating mobile sources of noise that can impact noise-sensitive land uses such as homes and schools.

The Noise Element provides the goals and strategies necessary to ensure an appropriately quiet environment for the residents, employees and visitors in Highland. Since the regulation of transportation noise sources such as roadway and aircraft primarily fall under either state or federal jurisdiction, local land use and development planning decisions are generally made in terms of limiting locations or volumes of such sources, of avoiding development in noise impact zones or in shielding impacted receiver sites.

As development continues, the City shall carefully review proposals to ensure that land uses incompatible with the noise environment are avoided. This Element identifies noise issues within the City and provides goals and policies aimed at minimizing noise conflicts and furthering the public health, safety and welfare.

Element Components

The Noise Element has been organized into three sections:

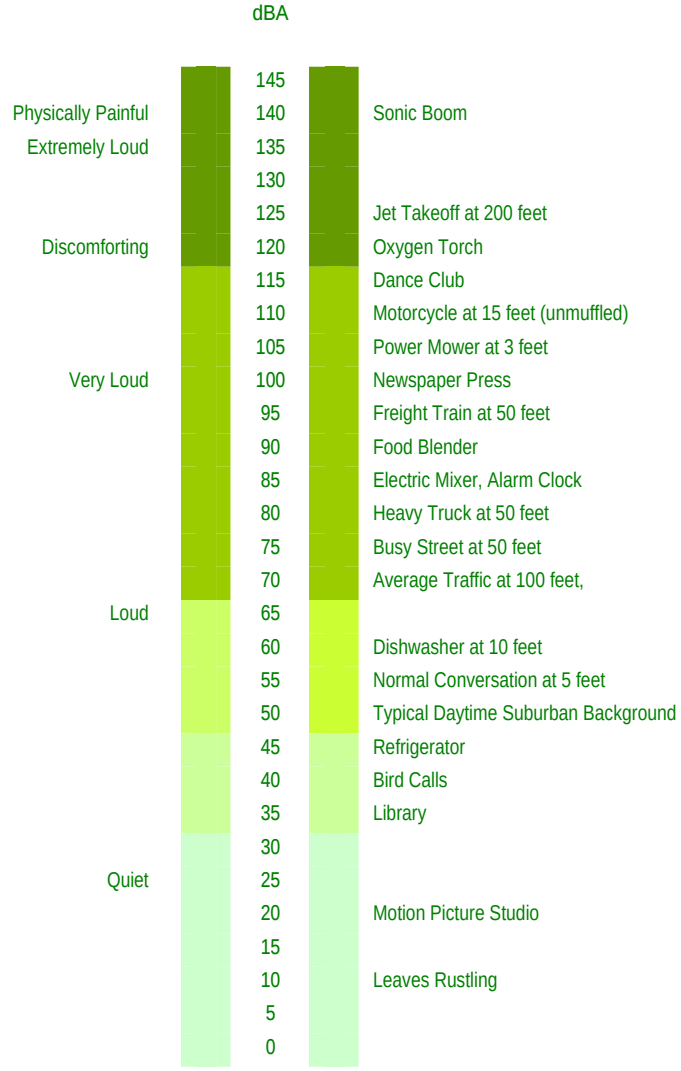
- **Introduction**. This section states the purpose of the Element, provides a brief introduction to the topic of noise and discusses other related plans and programs that affect the noise environment of Highland.
- **Noise Assessment and Modeling**. This section presents the findings and standards of the General Plan noise analysis on the buildout of the General Plan Land Use Plan.
- **Goals and Policies**. This section provides a discussion of noise issues that apply to one area of the City or apply Citywide. Each of the issue discussions is followed by a series of goals and policies.

Understanding Noise

The principal characteristics of sound are its loudness (amplitude) and frequency (pitch). The frequency of a sound is significant because the human ear is not equally sensitive to all frequencies. At low frequencies, characterized as a rumble or roar, the ear is not very sensitive while at higher frequencies, characterized as a screech or a whine, the ear is most sensitive. To reflect this varying sensitivity, an A-weighted decibel scale (dBA) is typically used to measure the perceived loudness of a sound.

Noise refers to sound pressure variations audible to the ear. The audibility of a sound depends on the amplitude and frequency of the sound and the individual's capability to hear the sound. Whether the sound is judged as noise depends largely on the listener's current activity and attitude toward the sound source, as well as the amplitude and frequency of the sound. To obtain convenient measurements and sensitivities at extremely low and high sound pressures, sound is measured in units of the decibel (dB). A listener often judges an increase in sound levels of 10 dBA as a doubling of sound. Examples of the decibel level of various noise sources are shown in Figure 7.1.

Figure 7.1: Noise Levels of Familiar Sources



Ranges and Effects of Noise

The most common sounds vary between 40 dBA (very quiet) and 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud engine noises equate to 110 dBA, which can cause serious discomfort. Physical health, psychological well-being, social cohesion, property values and economic productivity can all be affected by excessive amounts of noise.

The effects of noise on people can be grouped into three general categories: subjective effects, such as annoyance and nuisance; interference with activities such as conversation and sleep; and physiological effects, for example, a startle or hearing loss.

Noise Terminology

dB (Decibel) – The unit of measure that denotes the ratio between two quantities that are proportional to power; the number of decibels corresponding to the ratio of the two amounts of power is based on a logarithmic scale.

dBA (A-weighted decibel) – The A-weighted decibel scale discriminates against upper and lower frequencies in a manner approximating the sensitivity of the human ear. The scale ranges from zero for the least perceptible sound to about 130 for the pain level.

CNEL (Community Noise Equivalent Level) – The average equivalent A-weighted sound level during a 24-hour day, obtained after the addition of five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m. CNEL and Ldn are the metrics used in this document to describe annoyance due to noise and to establish land use planning criteria for noise.

L50 – The A-weighted sound level that is exceeded 50 percent of the sample time. Alternatively, the A-weighted sound level that is exceeded 30 minutes in a 60-minute period (similarly, L10, L25, etc.). These values are typically used to demonstrate compliance with noise restrictions included in the City noise ordinance.

Leq (Equivalent Energy Level) – The average acoustic energy content of noise during the time it lasts. The Leq of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure, no matter what time of day they occur.

Ldn (Day-Night Average Level) – The average equivalent A-weighted sound level during a 24-hour day, obtained after the addition of 10 decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m. Note: CNEL and Ldn represent daily levels of noise exposure averaged on an annual or daily basis, while Leq represents the equivalent energy noise exposure for a shorter time period, typically one hour. CNEL and Ldn are the metrics used in this document to describe annoyance due to noise and to establish land use planning criteria for noise.

Noise Contours – Lines drawn around a noise source indicating equal levels of noise exposure.

Adverse reactions to noise generally increase with an increase in the difference between background or ambient noise and the noise generated from a particularly intrusive source such as a barking dog, traffic, aircraft or industrial operations. In most situations, noise control measures must reduce noise by 5 to 10 dBA in order to effectively lower the perceived sound. Therefore, loud, short duration noises from barking dogs and low-flying aircraft generally have little impact upon the Community Noise Equivalent Level (CNEL) levels of an area, due to the CNEL being a 24-hour weighted average of noise levels.

Managing the Noise Environment

There are a variety of strategies available for managing the City's noise environment and preserving those qualities of peace and quiet that are essential and highly valued community assets. Land use planning, transportation planning, project design mitigation, simple and sophisticated technical fixes, and acoustical barriers can be applied to address community noise compatibility issues.

In areas subject to significant or potentially significant noise impacts, site planning and design standards are geared to provide noise impact mitigation. Other mitigation measures include the use of buffer zones consisting of earthen berms, walls and landscaping between sensitive land uses and roadways and other noise sources. In addition, site planning and building orientation can provide shielding of outdoor living spaces and orient operable windows away from roadways. Effective acoustical materials can also be incorporated into building windows and walls that adequately reduce outdoor noise.

Sensitive Noise Receptors

A series of land uses have been deemed "noise-sensitive" by the State of California. These land uses require a serene environment as part of the overall facility or residential experience. Many of these facilities depend on low levels of sound to promote the well being of the occupants. Land uses deemed noise-sensitive by the State of California include residences, schools, hospitals, rest homes, long-term care and mental care facilities. Highland considers residential dwellings and institutional uses such as hospitals, convalescent homes and churches to be sensitive noise receptors. Activities conducted in proximity to these facilities must consider the noise output and ensure that they don't create unacceptable noise levels that may unduly affect the noise-sensitive uses.

Relatively noise insensitive land uses include retail and office developments. Land uses that are the least impacted by noise include industrial, manufacturing, utilities, agriculture, natural open space, undeveloped land, parking lots, rifle ranges, warehousing, liquid and solid waste facilities, salvage yards and transit terminals.

Related Plans and Program

Other Elements

The Noise Element is most closely related to the Land Use and Airport Elements. The Land Use Element identifies land use patterns and policies to address land use compatibility. The Airport Element addresses comprehensive issues related to the San Bernardino International and Redlands Municipal Airports, including noise.

Municipal Code

The City of Highland Municipal Code sets forth the City's standards, guidelines and procedures concerning the regulation of noise use. Specifically, the Code includes Title 8, Health and Safety, which includes a chapter on noise control, and Title 16, Land Use and Development. Title 8 directly regulates noise while Title 16 lays out land use standards that indirectly regulate noise-generating and sensitive land uses. These regulations are intended to implement the goals, objectives and policies of the General Plan; protect property values and the health and general well being of the public; and ensure that any negative effects of noise are minimized or completely avoided.

The City categorizes land uses into designated noise zones to assign appropriate interior and exterior noise standards. The appropriate interior and exterior noise standards are identified in Tables 7.1 and 7.2, respectively.

Table 7.1: City of Highland Interior Noise Standards

Type of Land Use	*CNEL (dBA)*
Residential	45
Educational/churches, other institutional uses	45
General offices	50
Retail stores, restaurants	55
Manufacturing, warehousing	65
Agricultural	55
Sand and gravel operations	75

Source: Chapter 8.50, Noise Control, City of Highland Municipal Code.

Table 7.2: City of Highland Exterior Noise Standards		
Type of Land Use	*Time Interval*	*CNEL (dBA)*
Residential	10:00 p.m. – 7:00 a.m.	55
	7:00 a.m. – 10:00 p.m.	60
Agricultural/Equestrian	10:00 p.m. – 7:00 a.m.	60
	7:00 a.m. – 10:00 p.m.	65
Commercial	10:00 p.m. – 7:00 a.m.	65
	7:00 a.m. – 10:00 p.m.	70
Manufacturing or Industrial	Any Time	75
Open Space	Any Time	75

Source: Chapter 8.50, Noise Control, City of Highland Municipal Code.

San Bernardino International Airport Plans

For a more detailed discussion of issues and policies related to the San Bernardino International Airport and Redlands Municipal Airport, please refer to the Airport Element.

The San Bernardino International Airport (SBD), located just outside the City's southern boundary, has the capacity to provide regional air traffic for domestic and international service, both commercial and cargo, along with the necessary support facilities for major and smaller airlines. When adopted, the Airport Master Plan should contain standards and guidelines on the appropriate range and design of land uses within areas impacted by noise emanating from airport operations.

Redlands Municipal Airport Land Use Compatibility Plan

Redlands Municipal Airport (RMA) is a General Aviation facility located south of Highland near the Santa Ana Wash. The Redlands Municipal Airport Land Use Compatibility Plan (LUCP) establishes procedures and criteria by which the City of Redlands can address, evaluate and review airport compatibility issues in the vicinity of the Redlands Municipal Airport. The (LUCP) also serves to alert the City of Highland to the potential effects of air traffic from the Redlands Municipal Airport on land uses in southern Highland.

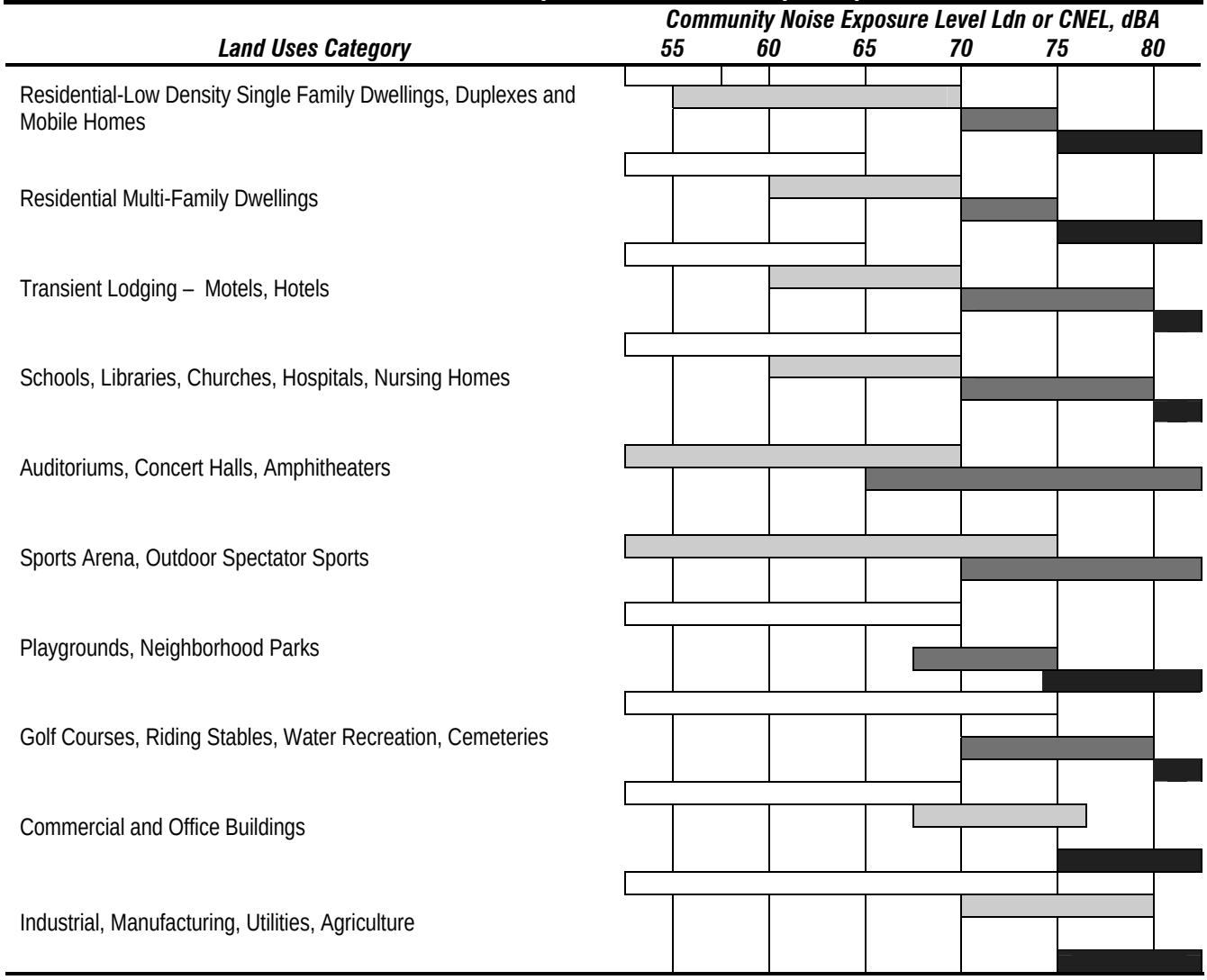
Federal Regulations

State routes and freeways that run through the City are subject to federal funding and, as such, are under the purview of the Federal Highway Administration (FHWA). The FHWA has developed noise standards that are typically used for federally funded roadway projects or projects that require either federal or Caltrans review. The Environmental Protection Agency is charged with the regulation of railroad noise under the Noise Control Act, which is enforced by the Federal Railroad Administration.

California Department of Health Services

The California Department of Health Services (DHS) Office of Noise Control studied the correlation of noise levels and their effects on various land uses. As a result, the DHS established four categories for judging the severity of noise intrusion on specified land uses. Table 7.3 presents a land use compatibility chart for community noise prepared by the California Office of Noise Control to demonstrate land use compatibility. Whereas the interior and exterior noise standards presented in Tables 7.1 and 7.2 provides limits on noise exposure for land uses from those sources of noise under the jurisdiction of the City, Table 7.3 provides planning guidelines for the review and approval of development applications in terms of the compatibility of land uses with the existing and future noise environment.

Table 7.3: Community Noise and Land Use Compatibility



Explanatory Notes

Normally Acceptable:
Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable:
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply system or air conditioning will normally suffice. Outdoor environment will seem noisy.

Normally Unacceptable:
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made with needed noise insulation features included in the design. Outdoor areas must be shielded.

Clearly Unacceptable:
New construction or development should generally not be undertaken. Construction cost to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be usable.

Source: California Office of Noise Control

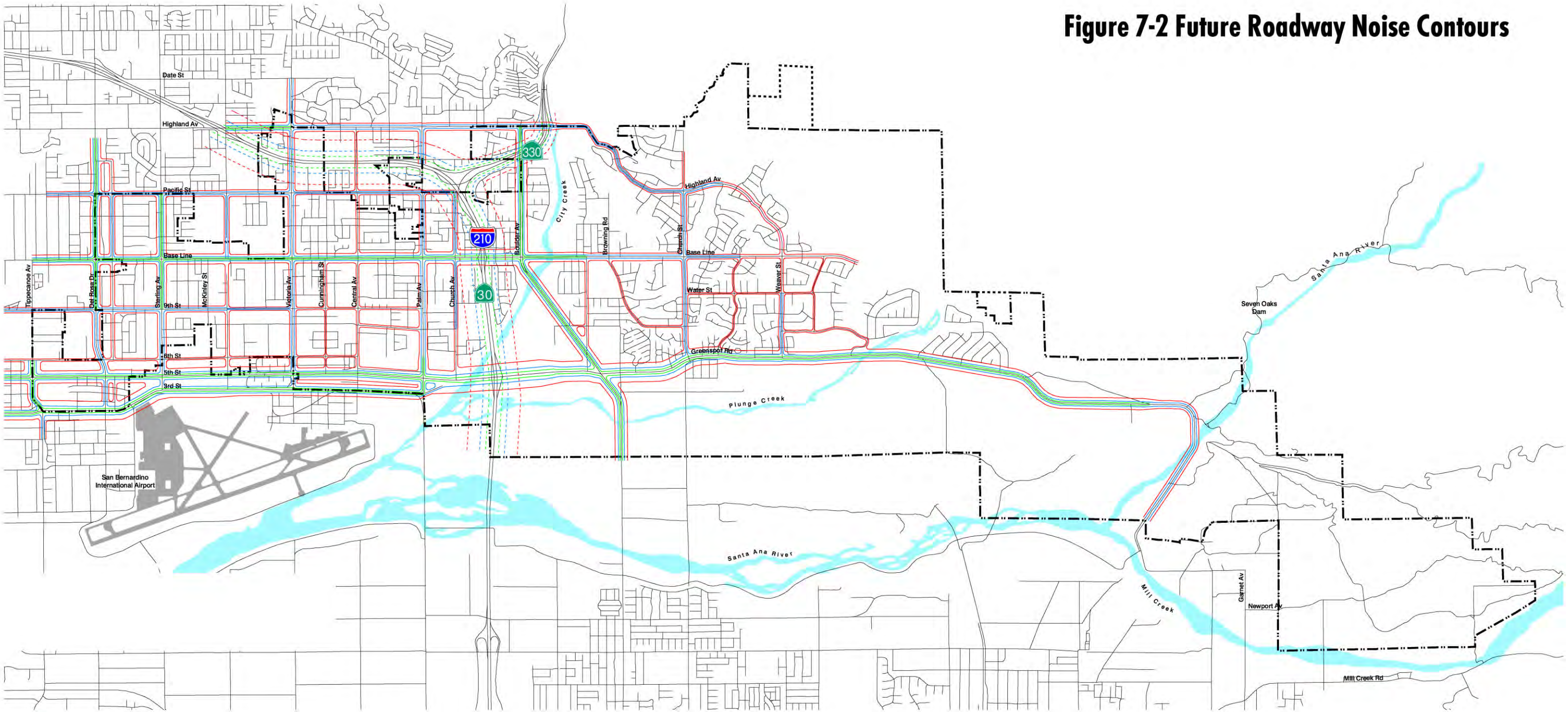
NOISE ASSESSMENT AND MODELING

To understand and evaluate the impacts of land use patterns, traffic and individual developments on the noise environment, the General Plan Environmental Impact Report incorporates a comprehensive noise analysis of existing noise sources and projections of traffic volumes associated with the buildout of the General Plan. Existing and future impacts have been modeled, with projected noise contours for the City's roadways and freeways at buildout presented in Figure 7.2.

Like all highly urbanized areas, the City of Highland is subject to noise from a myriad of sources. The major source of noise is from mobile sources and most specifically, traffic traveling through the City on its various roadways and freeways. Future noise impacts to the community are expected to be primarily generated by increasing traffic volumes.

It is important to note that special attention to project specific site design may substantially reduce noise impacts below those projected; therefore, these estimates are considered to be conservative and unmitigated. A wide range of design criteria affecting roadway engineering and traffic noise abatement include differences in final grade between the roadbed and the top of walls, spacing of intersections, setbacks and parkway widths, roadway composition and other considerations.

Figure 7-2 Future Roadway Noise Contours



- 65 CNEL
- 70 CNEL
- 75 CNEL
- Freeway 65 CNEL
- Freeway 70 CNEL
- Freeway 75 CNEL
- City Boundary
- Sphere of Influence

0' 4000'

GOALS AND POLICIES

This section contains a brief discussion and detailed policy direction for noise issues within Highland. The first issue, Land Use Planning and Design, concerns the relationship between the design and approval of land uses and existing or potential noise sources. The second issue, Transportation Related Noise Sources, considers impacts that can be created by the operation of motor vehicles, trucks, aircraft and railways in the City. Non-Transportation-Related Noise Sources, the third issue, involves noise impacts created by business or residential activities, such as air conditioning units, mining activities, barking dogs or community events. By following the policies associated with each issue, Highland will ensure compatible development, protect noise-sensitive land uses and minimize the effects of excessive and nuisance noise.

In addition to these goals, it is important to note that additional land use direction is provided through other General Plan Elements, the Development Code and redevelopment efforts.

Land Use Planning and Design

As Highland grows, the City's population, employment and commercial activity may generate more traffic and attract additional noise producing uses. In addition, some undeveloped and underdeveloped areas are designated for land uses that may be noise-sensitive and are located in proximity to roadways and transit facilities. For example, along Base Line, mixed-use and medium density residential development is encouraged to stimulate the development of vibrant commercial activity. In addition, some older neighborhoods in the southwestern portion of the City adjacent to the SBIA are currently located in areas that are transitioning to potential noise-generating business park and industrial uses.

As a result, land use compatibility with noise is an important consideration in the planning and design process. To identify potential mitigation to address noise abatement strategies, noise evaluations should be conducted when a proposed project places sensitive land uses and major noise generators within close proximity to each other. The City's Community Development Department currently uses the project review process to identify potential noise issues and works with developers or landowners to apply site planning and other design strategies to reduce noise impacts. A developer, for example, could take advantage of the natural shape and contours of a site to arrange buildings and other uses in a manner that would reduce and possibly eliminate noise impacts. Examples of other site and architectural techniques could include:

- Increasing the distance between noise source and receiver;

- Placing non-noise-sensitive land uses such as parking lots, maintenance facilities and utility areas between the noise source and receiver, while maintaining aesthetic considerations;
- Using non-noise-sensitive structures such as garages to shield noise-sensitive areas;
- Orienting buildings to shield outdoor spaces from a noise source; and
- Locating bedrooms in residential developments on the side of the house facing away from major roads.

GOAL 7.1

Protect sensitive land uses and the citizens of Highland from annoying and excessive noise through diligent planning and regulation.

Policies

1) Enforce the City's Noise Control Ordinance consistent with health and quality of life goals and employ effective techniques of noise abatement through such means as a noise ordinance, building codes and subdivision and zoning regulations.

2) Encourage the use of site planning and architectural techniques such as alternative building orientation and walls combined with landscaping to mitigate noise to levels consistent with interior and exterior noise standards.

3) Require mitigation where sensitive uses are to be placed along transportation routes to ensure compliance with interior and exterior noise standards.

4) Consider the compatibility of proposed land uses with the noise environment when preparing, revising or reviewing development proposals.

5) Prevent the siting of sensitive uses in areas in excess of established 65 dBA CNEL without appropriate mitigation. Special attention should be paid to potential development within the 65 dBA CNEL noise contour of the San Bernardino International Airport and mining operations of the Santa Ana River.

6) Work with San Bernardino International Airport Authority to ensure that future airport planning activities encourage consistency with adopted City land use plans and minimize impacts on Highland's economic development opportunities and quality of life.

7) Require that site-specific noise studies be conducted by a qualified acoustic consultant utilizing acceptable methodologies while reviewing the development of sensitive land uses or development that has the potential to impact sensitive land uses. Also require a site-specific noise study if the proposed development could potentially violate the noise provisions of the General Plan or City ordinance.

Actions

1) Coordinate with school districts to ensure that schools are located and designed so that:

   - interior noise in classrooms does not exceed 45 CNEL
   - noise exposure does not exceed 65 CNEL at classroom buildings; and
   - noise exposure does not exceed 70 CNEL on playgrounds and athletic fields.

2) Coordinate with the San Bernardino International Airport Authority to minimize flight patterns over the City.

3) When site and architectural design features cannot sufficiently reduce adverse noise levels, or cannot be economically provided, require the provision of noise barriers/berms, provided that noise barriers:

   - are sufficiently massive to prevent significant noise transmission and high enough to shield receiver from noise source;
   - noise barriers exhibit a minimum acceptable density of four pounds per square foot (equivalent to 3/4-inch plywood):
   - contain no cracks or openings; and
   - minimize the effect of flanking by bending the barrier back from the noise source at the end of the barrier.

4) Require landscaping treatment to be provided in conjunction with noise barriers to provide visual relief and to reduce aesthetic impacts.

5) Require realtors representing homebuyers in the vicinity of the gun club to inform new buyers of the existence of potential noise impacts associated with gunfire.

6) Maintain a noise complaint file to document areas of excessive noise in the City.

Transportation-Related Noise Sources

Highland's proximity to southern Californian mountains, desert resorts and other cultural and recreational attractions draws a significant level of passenger and truck traffic through the City. The City contains two major highways (State Routes 30 and 330) and a number of major arterials (such as Base Line and 5th Street), and sits next to the San Bernardino International Airport. These transportation facilities, while important components to mobility and economic vitality, are the major contributors of noise in Highland. Cost effective strategies to reduce their influence on the community noise environment are an essential part of the Noise Element.

While local government has little direct control of transportation noise at the source, as these levels are set by state and federal agencies, the City does have some control over transportation noise that exceeds state and/or federal standards through the enforcement of the Municipal Code. The most effective method the City has to mitigate transportation noise is by reducing the impact of the noise onto the community through noise barriers and site design review. The effect of a noise barrier is critically dependent on the distance between the noise source and the receiver. Noise attenuation from barriers occurs when the barrier penetrates the "line of sight" between the source and receiver; the greater the penetration or height of the barrier, the greater the noise reduction. Additional attenuation can be achieved depending upon the source of transportation-related noise.

Roadways

Roadways are one of the biggest sources of noise in the City. Everyday, thousands of vehicles travel through and around Highland. Noise levels along roadways are determined by a number of traffic characteristics. The most important is the average daily traffic levels. Additional factors include the percentage of trucks, vehicle speed, the time distribution of this traffic and gradient of the roadway.

One way the City can control vehicle noise is through speed reduction. A change of just 5 miles per hour can change the resultant noise by approximately 1 to 2 dB. The difference in noise associated with a reduction of 10 miles per hour could be roughly equivalent to reducing the traffic volume by one-half. The City also has some control over traffic-generated noise through weight limitations and the designation of truck routes. Medium trucks (i.e., those with a gross vehicle weight between 5 and 13.25 tons) produce as much acoustical energy as approximately 5 to 16 automobiles depending on the speed, with slower speeds demonstrating greater differential. Similarly, heavy trucks (i.e.,

those with a gross vehicle weight in excess of 13.25 tons) produce as much acoustical energy as 10 to 60 automobiles.

The City can further reduce traffic-generated noise by ensuring that street paving is maintained and bumps and dips are minimized. Poor paving causes vehicles to bounce and this bouncing exacerbates the noise due to the rattling of the vehicle. This is especially important along those routes that realize augmented volumes of truck traffic. Noise contours for the City's roadways and freeways are presented in Figure 7.2. Future conditions consider sound levels given the buildout of land uses and the roadway network, but do not consider sound attenuation measures such as soundwalls.

Aircraft

Highland is subject to the activities of the San Bernardino International Airport (SBIA) and the Redlands Municipal Airport (RMA). Airport operations of the SBIA and RMA are of significant importance to the City of Highland because of their impacts to Highland's safety, physical development and economic welfare. In addition, local helicopter air traffic is commonplace throughout the City. News and other helicopters (e.g., freeway traffic report helicopters) fly through the area. Helicopter use for fire and police services and at local hospitals is considered as an emergency activity and is addressed by FAA regulations.

☞ Specific policy direction on aircraft noise is provided in the Airport Element.

GOAL 7.2

Encourage the reduction of noise from transportation-related noise sources such as automobile and truck traffic.

Policies

1) Guide the location and design of transportation facilities to minimize the exposure of noise on noise-sensitive land uses.

2) Employ noise mitigation practices, as necessary, when designing future streets and highways, and when improvements occur along existing road segments. Mitigation measures should emphasize the establishment of natural buffers or setbacks between the arterial roadways and adjoining noise-sensitive areas.

3) Require that development generating increased traffic and subsequent increases in the ambient noise level adjacent to noise-sensitive land uses provide appropriate mitigation measures.

4) Minimize truck traffic through residential neighborhoods.

5) Encourage the development of alternative transportation modes such as bicycle paths and pedestrian walkways to minimize the number of automobile trips and noise.

Actions

1) Maintain roadways so that the paving is in good condition to reduce noise-generating cracks, bumps and potholes.

2) Use the daily design capacity identified in the General Plan and the posted speed limit to quantify the design noise levels adjacent to transportation routes for mitigation purposes.

3) Require evaluation of highway and arterial roadway extensions for potential noise impacts on existing and future land uses.

4) Consider the effects of truck routes, truck traffic, posted speed limits and future motor vehicle volumes on noise levels adjacent to transportation routes when planning improvements to the circulation system.

5) Work with Caltrans to landscape or install mitigation elements along freeways and highways adjacent to existing residential subdivisions or noise-sensitive uses to beautify the landscape and reduce noise, where appropriate.

6) Monitor proposals for future transit systems and require noise control to be considered in the selection of transportation systems that may affect the City.

Non-Transportation-Related Noise Sources

The City currently maintains a diversity of land uses, most of which generate their own noise. Noise from one land use can "spill over" into other uses and can potentially create undesirable noise impacts. Industrial facilities generate noise through various processes that involve the use of heavy equipment and machinery. However, even commercial facilities and residential units can generate noise from the use of heating, ventilating and air conditioning (HVAC) units.

Restaurants, bars and entertainment establishments may use sound amplification equipment that operates well into the night. Residential areas are also subject to noise from the use of landscape maintenance equipment, barking dogs, etc. Mixed-use areas that place residential uses alongside or above commercial uses can present their own challenges. Requiring that the commercial component meet a residential standard could make commercial operations difficult.

Alternatively, applying a commercial standard to a mixed-use project could result in unacceptable noise levels at the residential portion of the structure/site. Still, mixed-use projects offer several advantages from both an air quality and transportation perspective, and should be encouraged.

One major stationary noise generator associated with mining and processing of sand and gravel operations is located southeast of the City's boundary. Noise generated from the gravel pit is produced by the use of vehicles and aggregate processing equipment. Vehicles include bulldozers, loaders and other heavy machinery, as well as heavy trucks used to load finished aggregate products for delivery via public roadways. Low frequency noise source emissions can be reduced by modifying equipment.

Noise emissions from mineral extraction activities are most heavily concentrated within the processing area. A combination of individual point noise sources and a diffuse collection of mobile equipment are the primary cause for the noise observed in the nearest residential neighborhoods north of the sand and gravel operations.

GOAL 7.3

Protect residents from the effects of "spill over" or nuisance noise.

Policies

1) Enforce the City's Noise Control Ordinance so that new projects located in commercial or entertainment areas do not exceed stationary-source noise standards at the property line of proximate residential or commercial uses, as appropriate.

2) Prohibit new industrial uses from exceeding commercial or residential stationary-source noise standards at the most proximate land uses, as appropriate. (Industrial noise may spill over to proximate industrial uses so long as the combined noise does not exceed the appropriate industrial standards.)

3) Require that construction activities employ feasible and practical techniques to minimize noise impacts on adjacent uses. Particular emphasis shall be placed on the restriction of hours in which work other than emergency work may occur.

4) Require that the hours of truck deliveries to commercial properties abutting residential uses be limited unless there is no feasible alternative or there are overriding transportation benefits by scheduling deliveries at another hour.

5) Ensure that buildings are constructed to prevent adverse noise transmission between differing uses located in the same structure and individual residences in multi-family buildings.

Actions

1) As a condition of approval, limit non-emergency construction activities adjacent to existing noise-sensitive uses to daylight hours between 7:00 a.m. and 6:00 p.m. Discourage construction on weekends or holidays except in the case of construction proximate to schools where these operations could disturb the classroom environment.

2) Ensure that the design and placement of air conditioning units and pool equipment within residential areas is accomplished in a manner that does not intrude upon the peace and quiet of adjacent noise-sensitive uses.

3) Encourage the use of portable noise barriers for heavy equipment operations performed within 100 feet of existing residences or make applicant provide evidence as to why the use of such barriers is infeasible.

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APPENDIX 4.1:

SITE PLAN

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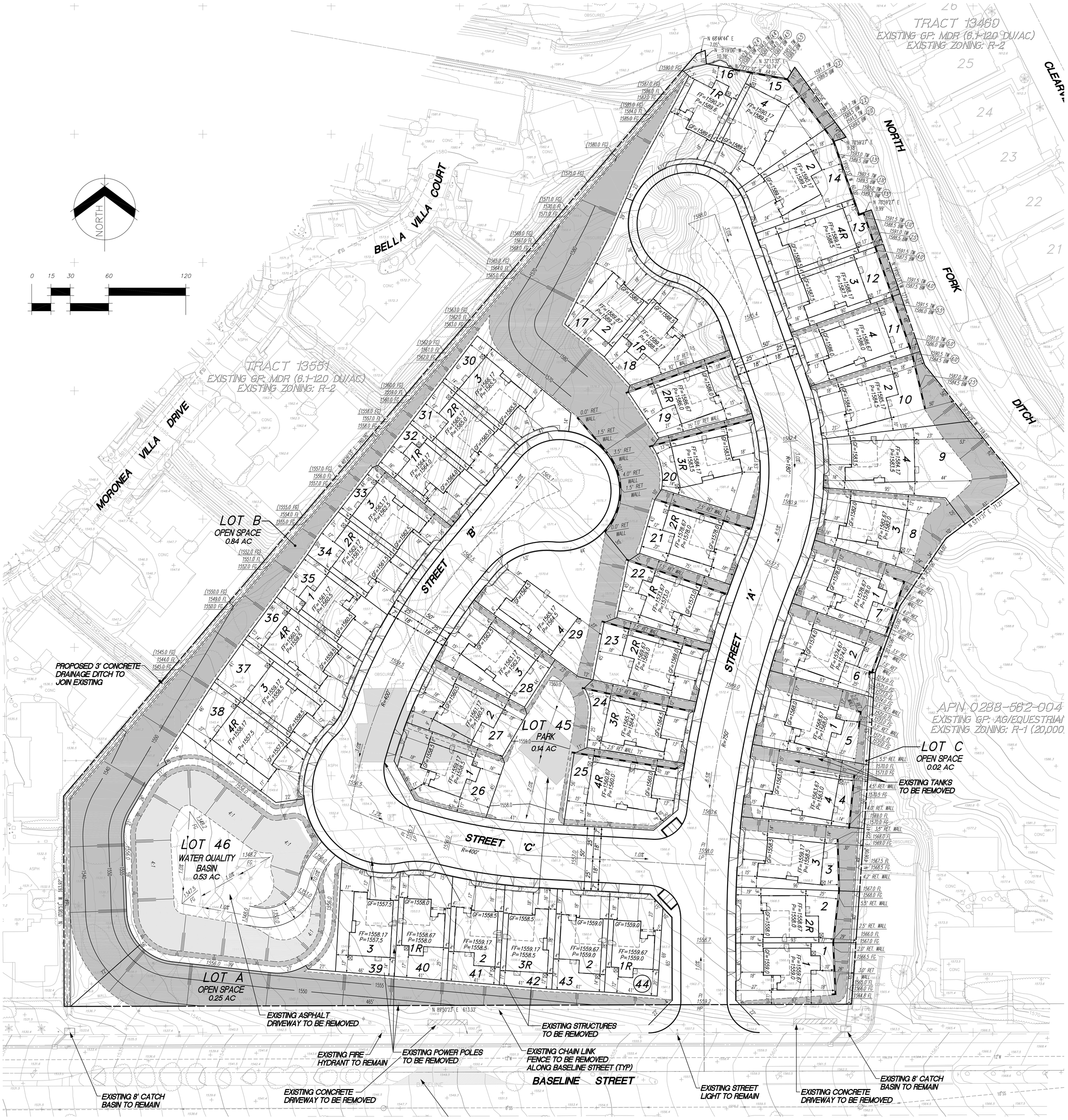

LOT SUMMARY

GROSS ACREAGE:	7.74 AC
NUMBER OF LOTS:	44
GROSS DENSITY:	5.7 DU / AC
MIN. PAD SIZE:	41' x 75'
MIN. PAD AREA:	3075 SF

UNIT SUMMARY

PLAN 1	11 DU	25%
PLAN 2	13 DU	27%
PLAN 3	11 DU	25%
PLAN 4	9 DU	23%
	44 DU	100.0%

PREPARED FOR:

MasterCraft Homes Group

PREPARED BY:

MDS CONSULTING
MORSE SCHULTZ
17320 Redhill Ave.
Suite 350
Irvine, CA 92614
Voice: 949-251-8821
FAX: 949-251-0516
PLANNERS ENGINEERS SURVEYORS

HIGHLAND 44

CITY OF HIGHLAND

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APPENDIX 5.1:

ON-SITE TRAFFIC NOISE CALCULATIONS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard No Wall
Road Name: Base Line St.
Lot No: 38

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	246.0 feet
Centerline Dist. to Observer:	256.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,557.5 feet
Road Elevation:	1,540.0 feet
Barrier Elevation:	1,557.5 feet
Road Grade:	0.0%

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:	1,540.000		
Medium Trucks:	1,542.297		
Heavy Trucks:	1,548.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	256.488
Medium Trucks:	256.297
Heavy Trucks:	255.910

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-10.75	-1.20	*-0.80*	0.000	0.000
Medium Trucks:	76.31	-17.03	-10.75	-1.20	*-0.84*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-10.74	-1.20	*-0.93*	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:	55.6	53.7	51.9	45.9	54.5	55.1
Medium Trucks:	47.3	45.8	39.5	37.9	46.4	46.6
Heavy Trucks:	48.2	46.8	37.8	39.0	47.4	47.5
Vehicle Noise:	56.9	55.1	52.3	47.2	55.8	56.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.6	53.7	51.9	45.9	54.5	55.1
Medium Trucks:	47.3	45.8	39.5	37.9	46.4	46.6
Heavy Trucks:	48.2	46.8	37.8	39.0	47.4	47.5
Vehicle Noise:	56.9	55.1	52.3	47.2	55.8	56.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard No Wall
Road Name: Base Line St.
Lot No: 39

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	77.0 feet
Centerline Dist. to Observer:	87.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,557.5 feet
Road Elevation:	1,546.0 feet
Barrier Elevation:	1,557.5 feet
Road Grade:	0.0%

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:	1,546.000		
Medium Trucks:	1,548.297		
Heavy Trucks:	1,554.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	87.093
Medium Trucks:	86.688
Heavy Trucks:	85.937

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-3.72	-1.20	*-0.47*	0.000	0.000
Medium Trucks:	76.31	-17.03	-3.69	-1.20	*-0.56*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-3.63	-1.20	*-0.83*	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:	62.6	60.7	59.0	52.9	61.5	62.2
Medium Trucks:	54.4	52.9	46.5	45.0	53.4	53.7
Heavy Trucks:	55.3	53.9	44.9	46.1	54.5	54.6
Vehicle Noise:	63.9	62.1	59.4	54.3	62.9	63.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.6	60.7	59.0	52.9	61.5	62.2
Medium Trucks:	54.4	52.9	46.5	45.0	53.4	53.7
Heavy Trucks:	55.3	53.9	44.9	46.1	54.5	54.6
Vehicle Noise:	63.9	62.1	59.4	54.3	62.9	63.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard No Wall
Road Name: Base Line St.
Lot No: 40

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	73.0 feet
Centerline Dist. to Observer:	83.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,558.0 feet
Road Elevation:	1,548.0 feet
Barrier Elevation:	1,558.0 feet
Road Grade:	0.0%

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:	1,548.000		
Medium Trucks:	1,550.297		
Heavy Trucks:	1,556.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	82.813
Medium Trucks:	82.428
Heavy Trucks:	81.743

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-3.39	-1.20	*-0.51*	0.000	0.000
Medium Trucks:	76.31	-17.03	-3.36	-1.20	*-0.61*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-3.31	-1.20	*-0.89*	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:	63.0	61.1	59.3	53.3	61.9	62.5
Medium Trucks:	54.7	53.2	46.8	45.3	53.8	54.0
Heavy Trucks:	55.7	54.2	45.2	46.5	54.8	54.9
Vehicle Noise:	64.2	62.4	59.7	54.6	63.2	63.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.0	61.1	59.3	53.3	61.9	62.5
Medium Trucks:	54.7	53.2	46.8	45.3	53.8	54.0
Heavy Trucks:	55.7	54.2	45.2	46.5	54.8	54.9
Vehicle Noise:	64.2	62.4	59.7	54.6	63.2	63.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard No Wall
Road Name: Base Line St.
Lot No: 41

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	80.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,558.5 feet
Road Elevation:	1,550.0 feet
Barrier Elevation:	1,558.5 feet
Road Grade:	0.0%

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:	1,550.000		
Medium Trucks:	1,552.297		
Heavy Trucks:	1,558.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	79.538
Medium Trucks:	79.180
Heavy Trucks:	78.576

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-3.13	-1.20	*-0.55*	0.000	0.000
Medium Trucks:	76.31	-17.03	-3.10	-1.20	*-0.66*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-3.05	-1.20	*-0.97*	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:	63.2	61.3	59.6	53.5	62.1	62.7
Medium Trucks:	55.0	53.5	47.1	45.6	54.0	54.3
Heavy Trucks:	55.9	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	64.5	62.7	60.0	54.9	63.4	63.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.2	61.3	59.6	53.5	62.1	62.7
Medium Trucks:	55.0	53.5	47.1	45.6	54.0	54.3
Heavy Trucks:	55.9	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	64.5	62.7	60.0	54.9	63.4	63.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard No Wall
Road Name: Base Line St.
Lot No: 42

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	66.0 feet
Centerline Dist. to Observer:	76.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,558.5 feet
Road Elevation:	1,552.0 feet
Barrier Elevation:	1,558.5 feet
Road Grade:	0.0%

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:	1,552.000		
Medium Trucks:	1,554.297		
Heavy Trucks:	1,560.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	75.181
Medium Trucks:	74.865
Heavy Trucks:	74.379

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-2.76	-1.20	*-0.62*	0.000	0.000
Medium Trucks:	76.31	-17.03	-2.73	-1.20	*-0.74*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-2.69	-1.20	*-1.09*	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:	63.6	61.7	59.9	53.9	62.5	63.1
Medium Trucks:	55.3	53.8	47.5	45.9	54.4	54.6
Heavy Trucks:	56.3	54.9	45.8	47.1	55.4	55.6
Vehicle Noise:	64.9	63.1	60.3	55.2	63.8	64.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.6	61.7	59.9	53.9	62.5	63.1
Medium Trucks:	55.3	53.8	47.5	45.9	54.4	54.6
Heavy Trucks:	56.3	54.9	45.8	47.1	55.4	55.6
Vehicle Noise:	64.9	63.1	60.3	55.2	63.8	64.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard No Wall
Road Name: Base Line St.
Lot No: 43

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	63.0 feet
Centerline Dist. to Observer:	73.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,559.0 feet
Road Elevation:	1,554.0 feet
Barrier Elevation:	1,559.0 feet
Road Grade:	0.0%

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:	1,554.000		
Medium Trucks:	1,556.297		
Heavy Trucks:	1,562.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	71.924
Medium Trucks:	71.640
Heavy Trucks:	71.253

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-2.47	-1.20	*-0.68*	0.000	0.000
Medium Trucks:	76.31	-17.03	-2.45	-1.20	*-0.82*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-2.41	-1.20	*-1.20*	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:	63.9	62.0	60.2	54.2	62.8	63.4
Medium Trucks:	55.6	54.1	47.8	46.2	54.7	54.9
Heavy Trucks:	56.6	55.1	46.1	47.4	55.7	55.8
Vehicle Noise:	65.1	63.4	60.6	55.5	64.1	64.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.9	62.0	60.2	54.2	62.8	63.4
Medium Trucks:	55.6	54.1	47.8	46.2	54.7	54.9
Heavy Trucks:	56.6	55.1	46.1	47.4	55.7	55.8
Vehicle Noise:	65.1	63.4	60.6	55.5	64.1	64.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard No Wall
Road Name: Base Line St.
Lot No: 44

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	61.0 feet
Centerline Dist. to Observer:	71.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,559.0 feet
Road Elevation:	1,556.0 feet
Barrier Elevation:	1,559.0 feet
Road Grade:	0.0%

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:	1,556.000		
Medium Trucks:	1,558.297		
Heavy Trucks:	1,564.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	69.635
Medium Trucks:	69.408
Heavy Trucks:	69.174

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-2.26	-1.20	*-0.79*	0.000	0.000
Medium Trucks:	76.31	-17.03	-2.24	-1.20	*-0.94*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-2.22	-1.20	*-1.36*	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:	64.1	62.2	60.4	54.4	63.0	63.6
Medium Trucks:	55.8	54.3	48.0	46.4	54.9	55.1
Heavy Trucks:	56.8	55.3	46.3	47.5	55.9	56.0
Vehicle Noise:	65.4	63.6	60.8	55.7	64.3	64.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.1	62.2	60.4	54.4	63.0	63.6
Medium Trucks:	55.8	54.3	48.0	46.4	54.9	55.1
Heavy Trucks:	56.8	55.3	46.3	47.5	55.9	56.0
Vehicle Noise:	65.4	63.6	60.8	55.7	64.3	64.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard With Wall
Road Name: Base Line St.
Lot No: 1

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**3.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	58.0 feet
Centerline Dist. to Observer:	68.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,559.0 feet
Road Elevation:	1,561.0 feet
Barrier Elevation:	1,559.0 feet
Road Grade:	0.0%

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:	1,561.000		
Medium Trucks:	1,563.297		
Heavy Trucks:	1,569.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	65.956
Medium Trucks:	65.963
Heavy Trucks:	66.280

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-1.91	-1.20	*0.14*	-6.320	-9.320
Medium Trucks:	76.31	-17.03	-1.91	-1.20	*0.20*	-6.800	-9.800
Heavy Trucks:	81.16	-20.99	-1.94	-1.20	*-0.43*	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:	64.5	62.6	60.8	54.7	63.4	64.0
Medium Trucks:	56.2	54.7	48.3	46.8	55.2	55.4
Heavy Trucks:	57.0	55.6	46.6	47.8	56.2	56.3
Vehicle Noise:	65.7	63.9	61.2	56.1	64.6	65.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	49.4	47.9	41.5	40.0	48.4	48.6
Heavy Trucks:	57.0	55.6	46.6	47.8	56.2	56.3
Vehicle Noise:	60.9	59.3	55.3	51.5	60.0	60.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Base Line St.
Lot No: 38

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	246.0 feet
Centerline Dist. to Observer:	261.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,557.5 feet
Road Elevation:	1,540.0 feet
Barrier Elevation:	1,557.5 feet
Road Grade:	0.0%

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:	1,540.000		
Medium Trucks:	1,542.297		
Heavy Trucks:	1,548.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	261.479
Medium Trucks:	261.291
Heavy Trucks:	260.912

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-10.88	-1.20	*-0.45*	0.000	0.000
Medium Trucks:	76.31	-17.03	-10.88	-1.20	*-0.49*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-10.87	-1.20	*-0.58*	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:	55.5	53.6	51.8	45.8	54.4	55.0
Medium Trucks:	47.2	45.7	39.3	37.8	46.2	46.5
Heavy Trucks:	48.1	46.7	37.6	38.9	47.3	47.4
Vehicle Noise:	56.7	54.9	52.2	47.1	55.7	56.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.5	53.6	51.8	45.8	54.4	55.0
Medium Trucks:	47.2	45.7	39.3	37.8	46.2	46.5
Heavy Trucks:	48.1	46.7	37.6	38.9	47.3	47.4
Vehicle Noise:	56.7	54.9	52.2	47.1	55.7	56.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Base Line St.
Lot No: 39

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	77.0 feet
Centerline Dist. to Observer:	91.0 feet
Barrier Distance to Observer:	14.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,557.5 feet
Road Elevation:	1,546.0 feet
Barrier Elevation:	1,557.5 feet
Road Grade:	0.0%

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:	1,546.000		
Medium Trucks:	1,548.297		
Heavy Trucks:	1,554.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	91.089
Medium Trucks:	90.701
Heavy Trucks:	89.984

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-4.01	-1.20	*-0.23*	0.000	0.000
Medium Trucks:	76.31	-17.03	-3.98	-1.20	*-0.31*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-3.93	-1.20	*-0.54*	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:	62.4	60.5	58.7	52.6	61.3	61.9
Medium Trucks:	54.1	52.6	46.2	44.7	53.1	53.4
Heavy Trucks:	55.0	53.6	44.6	45.8	54.2	54.3
Vehicle Noise:	63.6	61.8	59.1	54.0	62.6	63.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.4	60.5	58.7	52.6	61.3	61.9
Medium Trucks:	54.1	52.6	46.2	44.7	53.1	53.4
Heavy Trucks:	55.0	53.6	44.6	45.8	54.2	54.3
Vehicle Noise:	63.6	61.8	59.1	54.0	62.6	63.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Base Line St.
Lot No: 40

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	73.0 feet
Centerline Dist. to Observer:	91.0 feet
Barrier Distance to Observer:	18.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,558.0 feet
Road Elevation:	1,548.0 feet
Barrier Elevation:	1,558.0 feet
Road Grade:	0.0%

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:	1,548.000		
Medium Trucks:	1,550.297		
Heavy Trucks:	1,556.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	90.830
Medium Trucks:	90.479
Heavy Trucks:	89.855

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-3.99	-1.20	*-0.13*	0.000	0.000
Medium Trucks:	76.31	-17.03	-3.97	-1.20	*-0.20*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-3.92	-1.20	*-0.43*	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:	62.4	60.5	58.7	52.7	61.3	61.9
Medium Trucks:	54.1	52.6	46.2	44.7	53.2	53.4
Heavy Trucks:	55.0	53.6	44.6	45.8	54.2	54.3
Vehicle Noise:	63.6	61.8	59.1	54.0	62.6	63.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.4	60.5	58.7	52.7	61.3	61.9
Medium Trucks:	54.1	52.6	46.2	44.7	53.2	53.4
Heavy Trucks:	55.0	53.6	44.6	45.8	54.2	54.3
Vehicle Noise:	63.6	61.8	59.1	54.0	62.6	63.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Base Line St.
Lot No: 41

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	83.0 feet
Barrier Distance to Observer:	13.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,558.5 feet
Road Elevation:	1,550.0 feet
Barrier Elevation:	1,558.5 feet
Road Grade:	0.0%

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:	1,550.000		
Medium Trucks:	1,552.297		
Heavy Trucks:	1,558.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	82.555
Medium Trucks:	82.210
Heavy Trucks:	81.628

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-3.37	-1.20	*-0.34*	0.000	0.000
Medium Trucks:	76.31	-17.03	-3.34	-1.20	*-0.44*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-3.30	-1.20	*-0.73*	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:	63.0	61.1	59.3	53.3	61.9	62.5
Medium Trucks:	54.7	53.2	46.9	45.3	53.8	54.0
Heavy Trucks:	55.7	54.3	45.2	46.5	54.8	54.9
Vehicle Noise:	64.2	62.5	59.7	54.6	63.2	63.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.0	61.1	59.3	53.3	61.9	62.5
Medium Trucks:	54.7	53.2	46.9	45.3	53.8	54.0
Heavy Trucks:	55.7	54.3	45.2	46.5	54.8	54.9
Vehicle Noise:	64.2	62.5	59.7	54.6	63.2	63.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Base Line St.
Lot No: 42

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	66.0 feet
Centerline Dist. to Observer:	78.0 feet
Barrier Distance to Observer:	12.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,558.5 feet
Road Elevation:	1,552.0 feet
Barrier Elevation:	1,558.5 feet
Road Grade:	0.0%

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:	1,552.000		
Medium Trucks:	1,554.297		
Heavy Trucks:	1,560.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	77.203
Medium Trucks:	76.894
Heavy Trucks:	76.421

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-2.93	-1.20	*-0.47*	0.000	0.000
Medium Trucks:	76.31	-17.03	-2.91	-1.20	*-0.58*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-2.87	-1.20	*-0.92*	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:	63.4	61.5	59.8	53.7	62.3	62.9
Medium Trucks:	55.2	53.7	47.3	45.8	54.2	54.5
Heavy Trucks:	56.1	54.7	45.6	46.9	55.2	55.4
Vehicle Noise:	64.7	62.9	60.2	55.1	63.6	64.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.4	61.5	59.8	53.7	62.3	62.9
Medium Trucks:	55.2	53.7	47.3	45.8	54.2	54.5
Heavy Trucks:	56.1	54.7	45.6	46.9	55.2	55.4
Vehicle Noise:	64.7	62.9	60.2	55.1	63.6	64.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Base Line St.
Lot No: 43

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	63.0 feet
Centerline Dist. to Observer:	77.0 feet
Barrier Distance to Observer:	14.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,559.0 feet
Road Elevation:	1,554.0 feet
Barrier Elevation:	1,559.0 feet
Road Grade:	0.0%

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:	1,554.000		
Medium Trucks:	1,556.297		
Heavy Trucks:	1,562.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	75.980
Medium Trucks:	75.712
Heavy Trucks:	75.346

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-2.83	-1.20	*-0.41*	0.000	0.000
Medium Trucks:	76.31	-17.03	-2.81	-1.20	*-0.53*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-2.77	-1.20	*-0.89*	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:	63.5	61.6	59.9	53.8	62.4	63.0
Medium Trucks:	55.3	53.8	47.4	45.9	54.3	54.6
Heavy Trucks:	56.2	54.8	45.7	47.0	55.3	55.5
Vehicle Noise:	64.8	63.0	60.3	55.2	63.7	64.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.5	61.6	59.9	53.8	62.4	63.0
Medium Trucks:	55.3	53.8	47.4	45.9	54.3	54.6
Heavy Trucks:	56.2	54.8	45.7	47.0	55.3	55.5
Vehicle Noise:	64.8	63.0	60.3	55.2	63.7	64.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Base Line St.
Lot No: 44

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	61.0 feet
Centerline Dist. to Observer:	73.0 feet
Barrier Distance to Observer:	12.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,559.0 feet
Road Elevation:	1,556.0 feet
Barrier Elevation:	1,559.0 feet
Road Grade:	0.0%

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:	1,556.000		
Medium Trucks:	1,558.297		
Heavy Trucks:	1,564.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	71.673
Medium Trucks:	71.453
Heavy Trucks:	71.225

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-2.45	-1.20	*-0.62*	0.000	0.000
Medium Trucks:	76.31	-17.03	-2.43	-1.20	*-0.76*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-2.41	-1.20	*-1.18*	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:	63.9	62.0	60.2	54.2	62.8	63.4
Medium Trucks:	55.6	54.1	47.8	46.2	54.7	54.9
Heavy Trucks:	56.6	55.1	46.1	47.4	55.7	55.8
Vehicle Noise:	65.2	63.4	60.6	55.6	64.1	64.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.9	62.0	60.2	54.2	62.8	63.4
Medium Trucks:	55.6	54.1	47.8	46.2	54.7	54.9
Heavy Trucks:	56.6	55.1	46.1	47.4	55.7	55.8
Vehicle Noise:	65.2	63.4	60.6	55.6	64.1	64.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Base Line St.
Lot No: 1

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**3.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	58.0 feet
Centerline Dist. to Observer:	63.0 feet
Barrier Distance to Observer:	5.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,559.0 feet
Road Elevation:	1,561.0 feet
Barrier Elevation:	1,559.0 feet
Road Grade:	0.0%

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:	1,561.000		
Medium Trucks:	1,563.297		
Heavy Trucks:	1,569.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	61.144
Medium Trucks:	61.150
Heavy Trucks:	61.140

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-1.41	-1.20	*0.32*	-7.600	-10.600
Medium Trucks:	76.31	-17.03	-1.41	-1.20	*0.39*	-7.950	-10.950
Heavy Trucks:	81.16	-20.99	-1.41	-1.20	*-0.60*	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:	64.9	63.1	61.3	55.2	63.9	64.5
Medium Trucks:	56.7	55.2	48.8	47.2	55.7	55.9
Heavy Trucks:	57.6	56.1	47.1	48.3	56.7	56.8
Vehicle Noise:	66.2	64.4	61.7	56.6	65.1	65.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	57.3	55.5	53.7	47.6	56.3	56.9
Medium Trucks:	48.7	47.2	40.8	39.3	47.8	48.0
Heavy Trucks:	57.6	56.1	47.1	48.3	56.7	56.8
Vehicle Noise:	60.7	59.1	54.7	51.3	59.8	60.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: Base Line St.
Lot No: 38

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	246.0 feet
Centerline Dist. to Observer:	261.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,557.5 feet
Road Elevation:	1,540.0 feet
Barrier Elevation:	1,557.5 feet
Road Grade:	0.0%

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:	1,540.000		
Medium Trucks:	1,542.297		
Heavy Trucks:	1,548.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	262.407
Medium Trucks:	262.141
Heavy Trucks:	261.566

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-10.90	-1.20	*-4.15*	0.000	0.000
Medium Trucks:	76.31	-17.03	-10.90	-1.20	*-4.26*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-10.88	-1.20	*-4.55*	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:	55.5	53.6	51.8	45.7	54.4	55.0
Medium Trucks:	47.2	45.7	39.3	37.8	46.2	46.5
Heavy Trucks:	48.1	46.7	37.6	38.9	47.2	47.4
Vehicle Noise:	56.7	54.9	52.2	47.1	55.7	56.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.5	53.6	51.8	45.7	54.4	55.0
Medium Trucks:	47.2	45.7	39.3	37.8	46.2	46.5
Heavy Trucks:	48.1	46.7	37.6	38.9	47.2	47.4
Vehicle Noise:	56.7	54.9	52.2	47.1	55.7	56.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: Base Line St.
Lot No: 39

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	77.0 feet
Centerline Dist. to Observer:	91.0 feet
Barrier Distance to Observer:	14.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,557.5 feet
Road Elevation:	1,546.0 feet
Barrier Elevation:	1,557.5 feet
Road Grade:	0.0%

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:	1,546.000		
Medium Trucks:	1,548.297		
Heavy Trucks:	1,554.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	93.141
Medium Trucks:	92.539
Heavy Trucks:	91.275

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-4.16	-1.20	*-3.08*	0.000	0.000
Medium Trucks:	76.31	-17.03	-4.11	-1.20	*-3.36*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-4.02	-1.20	*-4.12*	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:	62.2	60.3	58.5	52.5	61.1	61.7
Medium Trucks:	54.0	52.5	46.1	44.6	53.0	53.2
Heavy Trucks:	54.9	53.5	44.5	45.7	54.1	54.2
Vehicle Noise:	63.5	61.7	58.9	53.9	62.4	62.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.2	60.3	58.5	52.5	61.1	61.7
Medium Trucks:	54.0	52.5	46.1	44.6	53.0	53.2
Heavy Trucks:	54.9	53.5	44.5	45.7	54.1	54.2
Vehicle Noise:	63.5	61.7	58.9	53.9	62.4	62.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: Base Line St.
Lot No: 40

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	73.0 feet
Centerline Dist. to Observer:	91.0 feet
Barrier Distance to Observer:	18.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,558.0 feet
Road Elevation:	1,548.0 feet
Barrier Elevation:	1,558.0 feet
Road Grade:	0.0%

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:	1,548.000		
Medium Trucks:	1,550.297		
Heavy Trucks:	1,556.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.742
Medium Trucks:	92.174
Heavy Trucks:	90.999

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-4.13	-1.20	*-2.32*	0.000	0.000
Medium Trucks:	76.31	-17.03	-4.09	-1.20	*-2.60*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-4.00	-1.20	*-3.36*	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:	62.2	60.3	58.6	52.5	61.1	61.7
Medium Trucks:	54.0	52.5	46.1	44.6	53.0	53.3
Heavy Trucks:	55.0	53.5	44.5	45.8	54.1	54.2
Vehicle Noise:	63.5	61.7	59.0	53.9	62.5	62.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.2	60.3	58.6	52.5	61.1	61.7
Medium Trucks:	54.0	52.5	46.1	44.6	53.0	53.3
Heavy Trucks:	55.0	53.5	44.5	45.8	54.1	54.2
Vehicle Noise:	63.5	61.7	59.0	53.9	62.5	62.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: Base Line St.
Lot No: 41

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	83.0 feet
Barrier Distance to Observer:	13.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,558.5 feet
Road Elevation:	1,550.0 feet
Barrier Elevation:	1,558.5 feet
Road Grade:	0.0%

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:	1,550.000		
Medium Trucks:	1,552.297		
Heavy Trucks:	1,558.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	84.494
Medium Trucks:	83.912
Heavy Trucks:	82.723

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-3.52	-1.20	*-3.55*	0.000	0.000
Medium Trucks:	76.31	-17.03	-3.48	-1.20	*-3.87*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-3.38	-1.20	*-4.75*	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:	62.8	60.9	59.2	53.1	61.7	62.4
Medium Trucks:	54.6	53.1	46.7	45.2	53.6	53.9
Heavy Trucks:	55.6	54.2	45.1	46.4	54.7	54.9
Vehicle Noise:	64.1	62.3	59.6	54.5	63.1	63.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.8	60.9	59.2	53.1	61.7	62.4
Medium Trucks:	54.6	53.1	46.7	45.2	53.6	53.9
Heavy Trucks:	55.6	54.2	45.1	46.4	54.7	54.9
Vehicle Noise:	64.1	62.3	59.6	54.5	63.1	63.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: Base Line St.
Lot No: 42

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	66.0 feet
Centerline Dist. to Observer:	78.0 feet
Barrier Distance to Observer:	12.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,558.5 feet
Road Elevation:	1,552.0 feet
Barrier Elevation:	1,558.5 feet
Road Grade:	0.0%

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:	1,552.000		
Medium Trucks:	1,554.297		
Heavy Trucks:	1,560.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	79.046
Medium Trucks:	78.482
Heavy Trucks:	77.357

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-3.09	-1.20	*-4.02*	0.000	0.000
Medium Trucks:	76.31	-17.03	-3.04	-1.20	*-4.38*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-2.95	-1.20	*-5.34*	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:	63.3	61.4	59.6	53.6	62.2	62.8
Medium Trucks:	55.0	53.5	47.2	45.6	54.1	54.3
Heavy Trucks:	56.0	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	64.5	62.8	60.0	54.9	63.5	64.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.3	61.4	59.6	53.6	62.2	62.8
Medium Trucks:	55.0	53.5	47.2	45.6	54.1	54.3
Heavy Trucks:	56.0	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	64.5	62.8	60.0	54.9	63.5	64.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: Base Line St.
Lot No: 43

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	63.0 feet
Centerline Dist. to Observer:	77.0 feet
Barrier Distance to Observer:	14.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,559.0 feet
Road Elevation:	1,554.0 feet
Barrier Elevation:	1,559.0 feet
Road Grade:	0.0%

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:	1,554.000		
Medium Trucks:	1,556.297		
Heavy Trucks:	1,562.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	77.679
Medium Trucks:	77.149
Heavy Trucks:	76.117

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-2.97	-1.20	*-3.61*	0.000	0.000
Medium Trucks:	76.31	-17.03	-2.93	-1.20	*-3.98*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-2.84	-1.20	*-4.98*	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:	63.4	61.5	59.7	53.7	62.3	62.9
Medium Trucks:	55.1	53.6	47.3	45.7	54.2	54.4
Heavy Trucks:	56.1	54.7	45.7	46.9	55.3	55.4
Vehicle Noise:	64.7	62.9	60.1	55.0	63.6	64.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.4	61.5	59.7	53.7	62.3	62.9
Medium Trucks:	55.1	53.6	47.3	45.7	54.2	54.4
Heavy Trucks:	56.1	54.7	45.7	46.9	55.3	55.4
Vehicle Noise:	64.7	62.9	60.1	55.0	63.6	64.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: Base Line St.
Lot No: 44

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	61.0 feet
Centerline Dist. to Observer:	73.0 feet
Barrier Distance to Observer:	12.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,559.0 feet
Road Elevation:	1,556.0 feet
Barrier Elevation:	1,559.0 feet
Road Grade:	0.0%

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:	1,556.000		
Medium Trucks:	1,558.297		
Heavy Trucks:	1,564.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	73.226
Medium Trucks:	72.727
Heavy Trucks:	71.791

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-2.59	-1.20	*-4.46*	0.000	0.000
Medium Trucks:	76.31	-17.03	-2.54	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-2.46	-1.20	*-5.96*	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:	63.8	61.9	60.1	54.1	62.7	63.3
Medium Trucks:	55.5	54.0	47.7	46.1	54.6	54.8
Heavy Trucks:	56.5	55.1	46.1	47.3	55.7	55.8
Vehicle Noise:	65.0	63.3	60.5	55.4	64.0	64.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.8	61.9	60.1	54.1	62.7	63.3
Medium Trucks:	55.5	54.0	47.7	46.1	54.6	54.8
Heavy Trucks:	56.5	55.1	46.1	47.3	55.7	55.8
Vehicle Noise:	65.0	63.3	60.5	55.4	64.0	64.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: Base Line St.
Lot No: 1

Project Name: Highland Park
Job Number: 9368
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	32 feet

Site Data

Barrier Height:	**3.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	58.0 feet
Centerline Dist. to Observer:	63.0 feet
Barrier Distance to Observer:	5.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,559.0 feet
Road Elevation:	1,561.0 feet
Barrier Elevation:	1,559.0 feet
Road Grade:	0.0%

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:	1,561.000		
Medium Trucks:	1,563.297		
Heavy Trucks:	1,569.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	62.105
Medium Trucks:	61.702
Heavy Trucks:	61.065

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	0.20	-1.52	-1.20	*-5.83*	0.000	0.000
Medium Trucks:	76.31	-17.03	-1.47	-1.20	*-6.22*	0.000	0.000
Heavy Trucks:	81.16	-20.99	-1.41	-1.20	*-7.22*	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:	64.8	62.9	61.2	55.1	63.8	64.4
Medium Trucks:	56.6	55.1	48.7	47.2	55.7	55.9
Heavy Trucks:	57.6	56.1	47.1	48.4	56.7	56.8
Vehicle Noise:	66.1	64.3	61.6	56.5	65.1	65.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.8	62.9	61.2	55.1	63.8	64.4
Medium Trucks:	56.6	55.1	48.7	47.2	55.7	55.9
Heavy Trucks:	57.6	56.1	47.1	48.4	56.7	56.8
Vehicle Noise:	66.1	64.3	61.6	56.5	65.1	65.6

17 December 2014;
Revised 22 January 2015

Mr. Raymond Dorame
29300 Baseline Partners, LLC
20201 SW Birch Street, Suite 100
Newport Beach, California 92660

Subject: Paleontological resource assessment, Highland 44 housing development, city of Highland, San Bernardino County, California (APN 0288-562-03; Tentative Tract 19915)

Dear Mr. Dorame:

Site Location: A paleontological resource assessment has been completed for the proposed Highland 44 housing subdivision project site (Assessor's Parcel Number [APN] 0288-562-03; Tentative Tract 19915) in the city of Highland, San Bernardino County, California (Attachments 1 and 2). The approximately eight-acre site is bounded on the south by Base Line Road, on the west and north by existing residential neighborhoods, and on the east by an undeveloped rural property. On the U. S. Geological Survey 7.5-minute, 1:24,000-scale Redlands, California topographic quadrangle map, the project site is centrally located along the southern boundary of Section 35, Township 1 North, Range 3 West, San Bernardino Base and Meridian (Attachment 2). The parcel itself consists of a disturbed (graded) rural property with a single residence and associated infrastructure.

Geology: Based on the published geologic map of the San Bernardino two-degree sheet (Attachment 3, after E. J. Bortugno and T. E. Spittler, 1986, Geologic map of the San Bernardino quadrangle, California, 1:250,000: California Division of Mines and Geology, Regional Geologic Map Series, San Bernardino quadrangle, Map 3A [Geology], sheet 1), the project site is located near the base of the San Bernardino Mountains along the frontal fault zone of the San Andreas Fault system. Numerous alluvial fans are present along the frontal zone of the mountains (J. C. Matti, D. M. Morton, B. F. Cox, and K. J. Kendrick, 2003, Geologic Map of the Redlands 7.5' Quadrangle, San Bernardino and Riverside Counties, California, Version 1.0: U. S. Geological Survey Open-File Report 03-302), and represent rapidly accumulated debris shed off the topographically higher mountainous areas that are immediately adjacent to the north of the property. At the project site, the sediments are represented by very old (early to middle Pleistocene) alluvial-fan deposits ($Qvof_3$)

consisting of a several-meter-thick, well consolidated, crudely stratified, poorly sorted, gravelly fine to very coarse sand unit overlying even older (early to middle Pleistocene) alluvial-fan deposits ($Qvof_2$) that are as much as 30 meters thick (Matti *et al.,* 2003, "Description of map units"). Both units are capped by soil profiles having Bt horizons as much as two to three meters thick (Matti *et al.,* 2003). The main source of the alluvial-fan sediments is from the Elder Gulch drainage, which, subsequent to deposition of the sediments (*i.e.,* $Qvof_3$) on the site, incised itself down through the older fan materials to its current flow line. Geomorphically, the project site is relatively flat lying, with a gentle slope to the south-southwest.

Paleontological Sensitivity: The degree of paleontological sensitivity of any particular area is based on a number of factors, including the documented presence of fossiliferous resources on a site or in nearby areas, the presence of documented fossils within a particular geologic formation or lithostratigraphic unit, and whether or not the original depositional environment of the sediments is one that might have been conducive to the accumulation of organic remains that might have become fossilized over time. Late Quaternary (Holocene, or "modern") alluvium and alluvial-fan deposits are generally considered to be geologically too young to contain significant nonrenewable paleontological resources (*i.e.*, fossils), whereas older, Pleistocene (> 10,000 year old) alluvial-fan deposits in many areas of the Inland Empire of San Bernardino County and adjacent Riverside County have often yielded important Ice Age terrestrial vertebrate fossils, such as extinct mammoths, mastodons, giant ground sloths, extinct species of horse, bison, and camel, saber-toothed cats, and others. These fossiliferous Pleistocene sediments, which represent more distal areas at the toe of the fans or in the alluvial axial-valley sediments below, are accorded a high paleontological resource sensitivity. However, the coarser-grained, high-energy deposits at the heads of alluvial fans in steep terrains have little likelihood of containing fossils and are accorded a low paleontological resource potential, and thus a low paleontological sensitivity.

Paleontological Potential: The potential for discovering fossils in any lithologic or formational unit is first and foremost based on the original depositional environment that must have been conducive to the accumulation, and preservation, of organic remains through time. For example, plutonic rocks (*e.g.,* granitic rocks) do not have any potential to contain fossils, whereas metamorphic rocks only rarely yield fossils, and sedimentary rocks often contain the remains of past life forms. High-energy deposits, such as landslide deposits or gravelly, coarse-grained alluvial-fan deposits in steep terrains, such as those across the project site, typically lack fossils because they represent (geologically) almost instantaneous depositional events and have had little time for the accumulation and burial of organic remains. Thus, these types of sediments are accorded a low paleontological potential to yield nonrenewable paleontological resources, and are typically excluded from implementation of mitigation measures. Furthermore, we are unaware of any fossils that may have been recovered during the construction phases of the adjacent residential neighborhoods.

Field Survey: An intensive pedestrian survey of the entire property was conducted for exposed archaeological and paleontological resources by a staff member of our firm (Mr.

Clarence L. Hoff) on November 18, 2014. The survey consisted of observations made along parallel transects spaced at three- to 10-meter intervals. No fossiliferous sediments, or fossils of any sort, were observed during this field reconnaissance program.

Recommendations: The existence of surficially disturbed and gravelly coarse-grained, very old Quaternary (*i.e.*, early to middle Pleistocene) alluvial-fan deposits ($Qvof_3$ on Attachment 3) across the project site and the low paleontological resource sensitivity and resource potential typically assigned to these geologically high-energy fan deposits, as well as the lack of any known fossil specimens from these sediments within the surrounding neighborhoods, all support the recommendation that ***paleontological monitoring need not be required during surficial grading activities concomitant with the site preparation phase of the Highland 44 construction project.*** However, *if* fossiliferous Pleistocene sediments are encountered at depth, or if fossils of any sort are discovered during grading and/or earth-moving activities, a paleontologist must be retained to develop a Mitigation Monitoring and Reporting Program (MMRP) consistent with the provisions of the California Environmental Quality Act (CEQA), the provisions of the City of Highland and the County of San Bernardino, and the draft guidelines of the Society of Vertebrate Paleontology. In such a case, implementation of the MMRP would mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources, if present, to a level below significant.

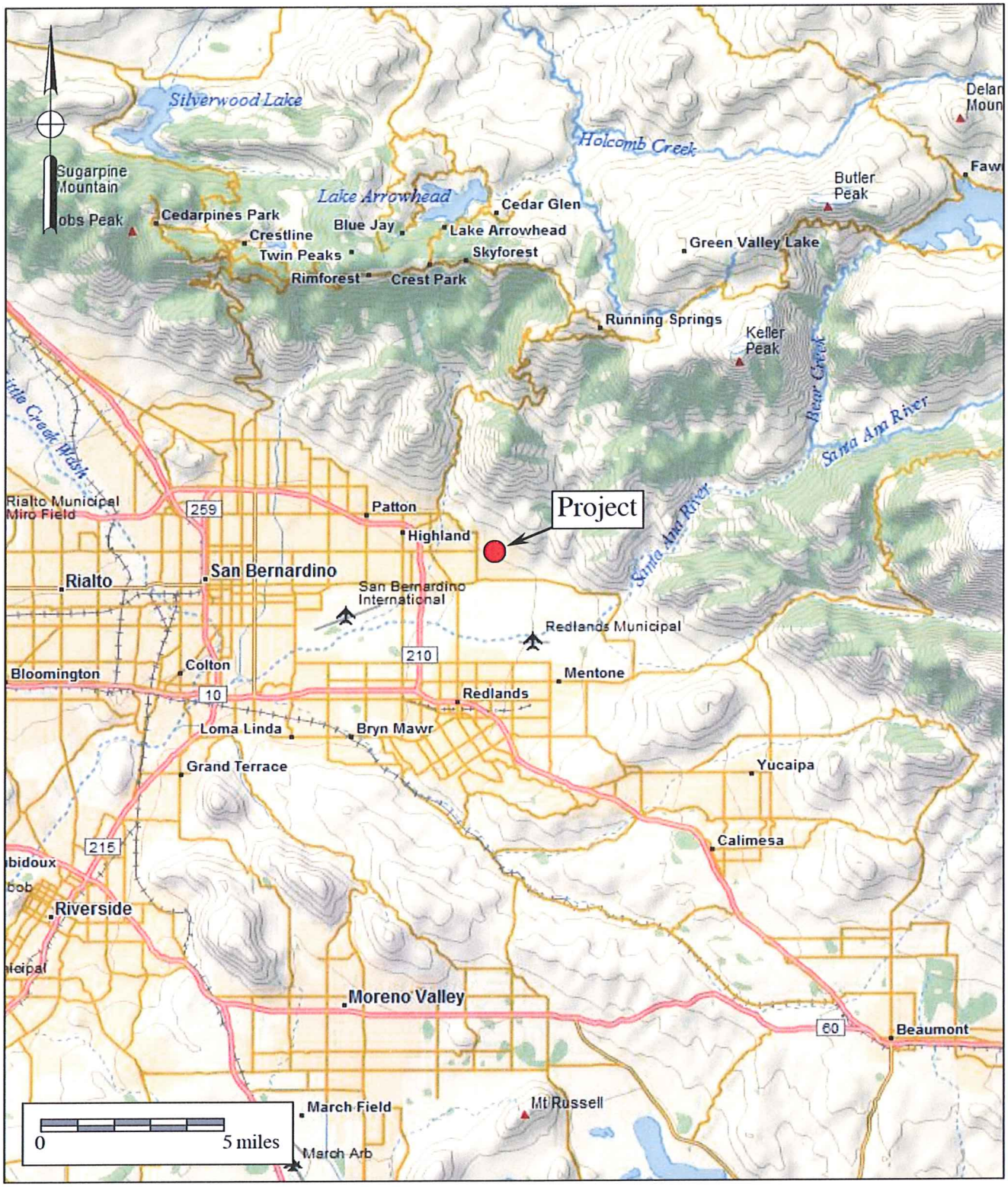
This report only addresses the paleontological (*i.e.*, fossil) resource potential of the Highland 44 project site, and is not intended for any other purpose, geologic or otherwise. Thank you for the opportunity to have provided paleontological services for this project.

Sincerely,

George L. Kennedy, Ph.D.
Senior Paleontologist

Todd A. Wirths, M.S., P.G.
California Professional Geologist No. 7588

Attachments: Index maps, geologic map

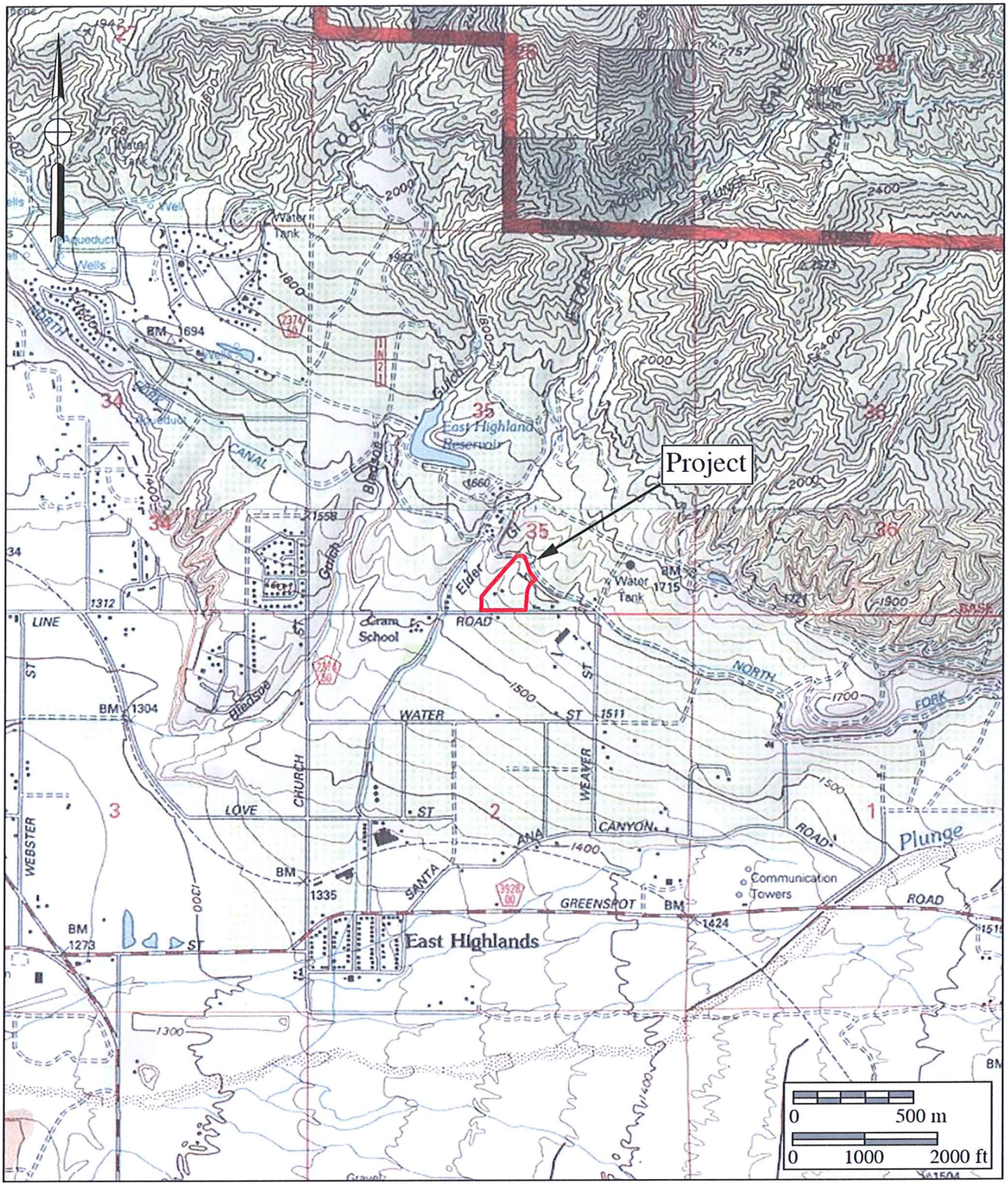


Attachment 1

General Location Map

The Highland 44 Project

DeLorme (1:250,000)

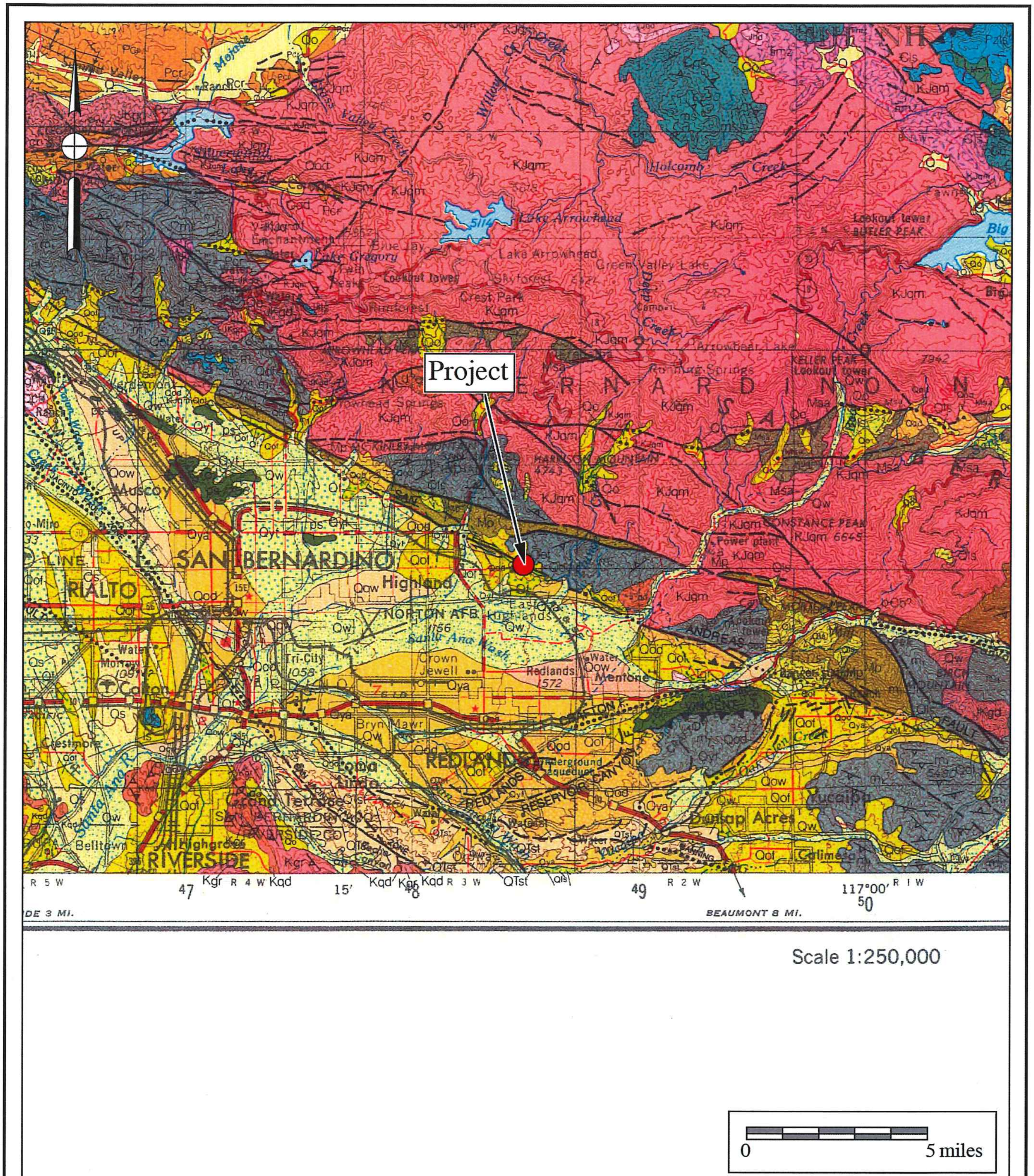


Attachment 2

Project Location Map

The Highland 44 Project

USGS *Redlands* Quadrangle (7.5-minute series)



Attachment 3

Geologic Map

The Highland 44 Project

Geology after Bortugno and Spittler (1986)

PETRA

PHASE I ENVIRONMENTAL SITE ASSESSMENT
29300 BASELINE STREET
ASSESSOR PARCEL NUMBER (APN) 0288-562-03-0-000
CITY OF HIGHLAND
SAN BERNARDINO COUNTY, CALIFORNIA 92346

MASTERCRAFT HOMES GROUP, LLC

JANUARY 31, 2014
J.N. 13-627

PETRA GEOTECHNICAL, INC.
RIVERSIDE COUNTY

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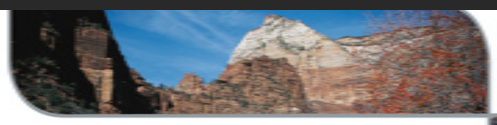

past + present + future
it's in our science

Engineers, Geologists
Environmental Scientists

January 31, 2014
J.N. 13-627

Mr. Ray Dorame
MASTERCRAFT HOMES GROUP, LLC
20201 SW Birch Street, Suite 100
Newport Beach, California 92660

Subject: **Phase I Environmental Site Assessment; 29300 Baseline Street, Assessor Parcel Number (APN) 0288-562-03-0-000, City of Highland, San Bernardino County, California 92346**

Dear Mr. Dorame:

The Environmental Division of Petra Geotechnical, Inc. (Petra) is pleased to present this Phase I Environmental Site Assessment for the above-referenced site. This investigation has been conducted in accordance with our Proposal No. 13-627P dated November 20, 2013, and in general conformance with the scope and limitations of the standards set forth in the American Society for Testing and Materials (ASTM) Practice E 1527-13 and the EPA's All Appropriate Inquiry (AAI) regulations 40 CFR Part 312. This assessment has revealed potential recognized environmental conditions associated with the subject site due to long term, historical land use as an orchard.

This opportunity to be of service to you is sincerely appreciated. Please do not hesitate to call this office if you have questions pertaining to this report.

Respectfully submitted,

Petra Geotechnical, Inc.
ENVIRONMENTAL DIVISION

Edward P. Lump, PG 5975
Associate Geologist

Siamak Jafroudi, Ph.D, GE 2024
President, Senior Principal Engineer

EXECUTIVE SUMMARY

PHASE I ENVIRONMENTAL SITE ASSESSMENT
29300 Baseline Street, APN# 0288-562-03,
City of Highland, San Bernardino County, California 92346

INTRODUCTION

The information presented in this report includes the results of our recent site reconnaissance, as well as a review of pertinent literature, and recent federal, state and local government agency records. Our field reconnaissance was performed by Mr. Oscar Holmes (Environmental Assistant), with data gathering and compilation performed by Mr. Edward Lump (Associate Geologist), and with oversight by Dr. Siamak Jafroudi President and Principal Engineer.

SITE DESCRIPTION AND GENERAL INFORMATION

- The subject site is located approximately 2.0 (±) miles east of the I-215 Freeway, between Weaver Street and Club View Drive in the City of Highland, San Bernardino County, California. A map showing the general site location is included as Figure 1.

- The site is comprised of one parcel of land identified as Assessor Parcel Number (APN) 0288-562-03, which encompasses approximately 8.0(±)-acres of land at 29300 Baseline Drive, Highland, California. The property appears to be an inactive equestrian property.

- The site is an irregular-shaped property that moderately slopes to the southwest. Based upon the terraced nature of northern portion of the property, fill slopes exist onsite that appears to channel surface runoff to onsite drainage features, including but not limited to a concrete swale along the westerly and easterly site boundaries and a pathway overlying a subsurface canal (North Fork Canal) along the northerly property line.

- Prior to development of the site vicinity by residential tracts, the area consists of moderately-sloping terrain, with natural drainage swales located within the westerly and easterly portions of the site (USGS, 2012). Prior to development, site elevations ranged from approximately 1,560± feet above mean sea level (amsl) within the southwest portion of the site to approximately 1,600± feet amsl within the northern portion of the site.

- Based upon our comparison of old topography from historical maps of the site and vicinity, it appears that portions of the former drainages in the western and northwestern portions of the site, as well as an old pond in the north central area, have been altered by grading, including leveling and backfilling. Additionally, there are signs of old fill in the northern portion of the site that was found (surficially) to include tree branches/stumps and crushed metal containers, and what appeared to be a square-shaped area directly adjacent to the residence that has collapsed (suggesting backfilled excavation). As with any historically developed agricultural property, there is a potential for buried trash/debris to be encountered during site development.

- There were three (3) permanent structures observed onsite during our site reconnaissance, consisting of the residence and two (2) storage structures. The residential structure consists of a single-family

residence with a two-story attachment on the rear. An oval asphalt-paved driveway is located along the front side of the residence. In addition, there are four (4) relatively large, plastic aboveground water tanks near the southeastern portion of the site. The structures are predominantly located on the southern portion of the property, near to Baseline Street. Nine (9) wooden and metal animal feed sheds and/or corrals were observed on north to northeast side of the site. These small structures are now used for firewood storage areas, or were empty at the time of our site walk. A plan showing the current location of the site is included as Figure 1.

- Old farm equipment, a vehicle transport trailer, a camper shell, two (2) 3-axle trailers, a pickup truck with what appeared to contain three (3) petroleum product containers/tanks and heavily stained hoses, and two (2) areas of surface staining were observed within the subject property.

- A partially buried, concrete brick-lined structure was observed in the northwestern portion of the property. The structure had an exposed clay pipe on one end and concrete pipe exposed on the other. It appeared that this structure may have been a cistern. In addition, concrete and clay pipe risers were noted throughout the northern portion of the site. The use of these items is unknown, but may be associated (in part) with buried water lines and/or an onsite septic system.

- Stored chemicals and debris observed onsite and around structures consisted of a lawnmower, old swamp cooler, small volume petroleum-based fluid containers, small volume household pesticides, a portable kerosene heater, empty vehicle gas tanks, lithographic ink containers, paint cans, glaze remover, plate etching chemical bottles, and fluorescent light bulbs. We also observed household trash, PVC pipes, concrete pipes, tires, batteries, and numerous 55-gallon metal drums, the majority of which appeared to be partially filled with concrete and/or gravel. Two (2) of the drums, however, appeared to contain oil with product staining on the lid. In the metal storage unit along the southwest side of the residence, we observed a battery, gas containers, small volume petroleum product containers, and assorted landscape equipment/tools.

- One well and associated holding tank and aboveground (electric?) pump was observed on site during our reconnaissance. The well was located on the southeast portion of the site. It is our understanding that this inactive well previous fed water to the existing aboveground water tanks.

- Four (4) above ground water tanks were observed on the southeast side of the site, of approximately 3,800 gallon capacity. It is our understanding that the plastic tanks are used for landscaping and site water supply.

- As noted above, we observed two (2) vehicle gas tanks, and two (2) 55-gallon metal drums on the north side of the site. All drums observed onsite, except these two (2), appeared to be either empty or contained gravel and/or concrete during our site walk. No readily detectable petroleum staining was observed onsite during our site reconnaissance, with the exception of slab staining on the storage shed floor southeast of the residence, in the carport next to the storage shed, under a tractor trailer parked east of the residence, and in the metal storage shed northwest of the residence. Overall, housekeeping was found to be poor.

- Based on information obtained during this assessment, the site appears to have been developed for agricultural purposes (orchards) from at least 1930 to sometime before 1989, when the majority of the site was re-developed as equestrian property. Sometime prior to 1994, orchard trees were completely removed from the southern portion of the site. Historical information reviewed during this

investigation includes aerial photographs (dating back to 1930), USGS topographical maps (dating back to 1901), and interviews.

- Site vegetation consists of several mature pine trees and oak trees scattered throughout the property. A low cover of native grasses, weeds and leaves cover the property. At the time of our site walk several trees and tree stumps were observed lying on the west to northwest side of the property, near the drainage. These trees extended from the south to the northwest side of the property, where we observed the dumped concrete, asphalt, empty cans of roofing tar, and remnants from a demolished fence.

- No sites were identified in our search of various government agency database records, which appear to have impacted the soils or groundwater beneath the subject site.

- There was no evidence of sumps, pits, pools, or lagoons identified during our site reconnaissance, except for the aforementioned concrete brick-lined cistern.

RECOGNIZED ENVIRONMENTAL CONDITIONS

Recognized environmental conditions are defined by the American Society of Testing and Materials (ASTM) as any hazardous substance or petroleum product under conditions that indicate an existing, past, or material threat of release into the structures, ground, groundwater, or surface water at the subject site. If the presences of recognized environmental conditions are identified on a subject site, it may warrant additional research, site investigation, and/or action.

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527 of the 8.0(±)-acre property at 29300 Baseline Avenue, in the City of Highland, California. Any exceptions to, or deletions from, this practice are described in section titled data gaps of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the property, except the following:

- Based upon the historical use of the subject property as an orchard from at least 1930 to 1989, there is a potential for restricted agricultural chemicals (pesticides and herbicides, lead, arsenic, diesel) to have been utilized onsite. This former usage may have resulted in agricultural chemical soil residues onsite that will require addressing prior to residential development of the property.

- Numerous petroleum product and paint containers of various sizes were observed onsite during our field reconnaissance, the majority of which appeared to be in relatively good condition and/or empty. There were, however, at least three (3) unlabeled 55-gallon drums (full to partially full), numerous car batteries and tires, and what appeared to a few 5-gallon buckets that contained

liquids with characteristics of petroleum products mixed with water. In addition, floor staining was observed in the car port, storage shed northwest of the residence, and storage shed southwest of the residence. The removal of these containers offsite to a suitable disposal facility should be conducted by an experienced and licensed hazardous waste contractor.

- Although floor staining was observed within the storage sheds and car port onsite, visual observations of the color density and horizontal extent does not suggest a large volume of spilled petroleum products. The proposed land use change from agricultural to residential, however, dictates that these areas are sampled and chemically characterized prior to removal and offsite disposal.

As a result of the aforementioned recognized environmental concerns, Petra recommends, therefore, a limited Phase II Soil Residue Survey be completed onsite. A scope of work and cost proposal can be provided upon request.

SITE CONSIDERATIONS

The following items are not considered recognized environmental conditions in accordance with ASTM 1527-13. However, these items may warrant considerations in conjunction with any planned development activities. The information regarding possible actions relative to these items has been provided as guidance.

1. If the inactive water well is to be abandoned, it is recommended that the abandonment be completed by a licensed water well contractor accordance with the California Well Standards as published by the California Department of Water Resources (Bulletin 74-81 and 74-90), with oversight provided by the appropriate agencies.

2. It is unknown if there are any septic tanks or leach fields on the site. If any are encountered during site development, it is recommended that they be removed in accordance with current regulations.

3. Due to the age of the residences (pre-1980), there is an elevated likelihood that asbestos containing materials and lead paint exist. Petra recommends a pre-demolition survey of the onsite buildings be completed by a licensed asbestos consultant. Removal of any asbestos and/or lead paint should be conducted by a licensed abatement contractor.

4. As with any historic agricultural property, there is a potential for buried debris to be encountered during development of the site. While Petra was not notified of any such buried debris, our field observations detected such a condition(s) in the northern and northwestern portions of the subject property. As such, we recommend that any unanticipated buried containers/structures/debris

encountered during clearing and grubbing or grading be evaluated in-place by Petra prior to removal from the subsurface.

5. It is recommended that all trash and dumped debris observed on the site be removed and disposed in accordance with current regulations.

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PHASE I ENVIRONMENTAL SITE ASSESSMENT

29300 Baseline Avenue, APN# 0288-562-03
City of Highland, San Bernardino County, California

INTRODUCTION

The information presented in this report includes the results of our recent field reconnaissance, a review of various federal, state, and local government agency records, a review of previous reports for the site, and a review of historic aerial photographs and topographic maps for the site vicinity. This report includes a summary of our findings, our opinion as to the current environmental condition of the site, and recommendations for additional work, if needed.

Purpose

This evaluation was conducted to determine if any recognized environmental conditions exist on the subject site. Recognized environmental conditions are defined by the American Society for Testing and Materials (ASTM) as any hazardous substance or petroleum product under conditions that indicate an existing, past, or material threat of release into the structures, ground, groundwater, or surface water at the subject site.

This evaluation is also intended to satisfy the requirement for conducting all appropriate inquiries into the previous ownership and uses of a property for the purposes of meeting the all appropriate inquiries provisions necessary to qualify for certain landowner liability protections under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

We have performed this Phase I Environmental Site Assessment in conformance with the scope and limitations of the standards set forth in the ASTM Practice E 1527-13 and the EPA's All Appropriate Inquiry (AAI) regulations 40 CFR Part 312. The findings in this assessment are based upon published geologic and hydrogeologic reports and maps, and information (both documentary and oral) provided by the California Geological Survey, the United Stated Geological Survey, the County of San Bernardino and the City of Highland, Environmental Data Resources, Inc. (EDR)® (i.e., agency database search), and Petra's field observations. Some of this information, based on conditions not currently observable or measurable, but recorded by documents or orally reported by individuals, is subject to change over time.

Involved Parties

This report was prepared by the Environmental Division of Petra Geotechnical, Inc. (Petra), at the request of Mastercraft Homes Group, LLC, for their exclusive use. Use of this report or reliance thereon by other parties or projects is not authorized. The report may not be suitable for other parties or other purposes.

SCOPE OF PHASE I SITE ASSESSMENT

The scope of this assessment included the following:

1. Performing a site reconnaissance to identify the current conditions and land use of the subject site and adjoining properties, during which visual evidence of prior uses of the subject site and adjoining properties were noted. The site reconnaissance included an observation of the site surface and the site perimeter.

2. Researching historical land use of the subject site and vicinity by reviewing available historical aerial photographs, United States Geologic Survey (USGS) topographic maps, fire insurance maps, city directories, and other reasonably ascertainable maps and data.

3. Conducting a search for environmental liens and Activities and Use Limitations (AULs) for the property.

4. Performing a literature study to identify local and regional geological conditions.

5. Obtaining and reviewing a search of pertinent federal, state, and local regulatory agency databases concerning environmental conditions on and in the vicinity of the site. As specified in the ASTM and AAI standards, the following databases were searched using, at a minimum, the recommended search radius:

    - Federal National Priority List (NPL) site list,
    - Federal Delisted NPL site list,
    - Federal Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) site list,
    - Federal CERCLIS- No Further Remedial Action Planned (CERC-NFRAP) site list,
    - Federal Resource Conservation and Recovery Act Information (RCRA) Corrective Action Report (CORRACTS) facilities list,
    - Federal RCRA non-CORRACTS Treat, Store and Dispose (RCRA-TSD) facilities list,
    - Federal RCRA generators list,
    - Federal institutional control/engineering control registries,
    - Federal Emergency Response Notification System (ERNS) list,
    - State and tribal lists of hazardous waste sites identified for investigation or remediation including: State- and tribal-equivalent NPL, State, and tribal-equivalent CERCLIS lists,
    - State and tribal landfill and/or solid waste disposal site lists,
    - State and tribal leaking storage tank lists,
    - State and tribal registered storage tank lists,
    - State and tribal institutional control/engineering control registries,
    - State and tribal voluntary cleanup sites, and

- State and tribal Brownfield sites.

In the interest of thoroughness, numerous non-ASTM and non-AAI required databases were also searched. These databases are listed and discussed in the database search included within this report.

6. Contacting and interviewing knowledgeable persons, such as property owners, managers, and representatives of local government agencies regarding historical site use and current site conditions, if possible.

7. Evaluating the presence of recognized environmental conditions at the subject site through visual observation and research of reasonably ascertainable records. Recognized environmental conditions may include the presence of hazardous materials, petroleum products, underground storage tanks, above ground storage tanks, drums, chemical containers, polychlorinated biphenyls, liquid or solid wastes, oil wells, and areas indicative of potential contamination including stained soils and/or pavement, stressed vegetation, drains, sumps, pits, ponds, lagoons, and odors.

8. Preparing a report presenting the results of our investigation.

Unless listed above, this assessment does not include any testing or sampling of materials (such as an assessment for the potential presence of methane or radon, asbestos or lead-based paints, or the sampling and testing of soil, air, surface water, or groundwater). This investigation does not include evaluating the site for the presence of wetlands, regulatory compliance, or other items beyond the scope of ASTM E 1527-13 or 40 CFR Part 312, nor is it an assessment for vapor intrusion as defined by ASTM E 2600-08.

SITE OVERVIEW

According to the Division of Oil, Gas, and Geothermal Resources (DOGGR) Online Mapping System (2013), the site is located in western portion of Section 35, Township 01 North, Range 03 West of the San Bernardino Base and Meridian. Prior to development of the site vicinity by residential tracts, the area consists of moderately gently-sloping terrain, with natural drainage swales located within the westerly portion of the site, and offsite to the east (USGS, 2012). Generally, site elevations range from approximately 1,560± feet above mean sea level (amsl) within the southwest portion of the site to approximately 1,600± feet amsl within the northern portion of the site.

The subject site located at 29300 Baseline Street in the City of Highland, San Bernardino County, California. The 8-acre property, currently an inactive equestrian site, consists of one (1) parcel of land designated as APN 0288-562-03. Four (4) main structures currently exist on the subject property, including one (1), 1-story single-family residence with a rear 2-story addition; a carport; and two (2)

metal storage sheds. In addition, four (4) 3,800 gallon plastic aboveground water tanks are located near the southeastern property boundary. Farm equipment, tractor trailers, trailers, camper shells, and relict horse corrals/pens were also observed onsite during our site reconnaissance. Topographically, the site consists of moderately sloping terrain to the southwest. A plan showing the current configuration of the site is included as Figure 2.

PREVIOUS LAND USE

Based on information obtained during this assessment, the site appears to have been developed for agricultural purposes (orchards) from at least 1930 to sometime before 1989, when the majority of the site was re-developed as equestrian property. Sometime prior to 1994, orchard trees were completely removed from the southern portion of the site. Historical information reviewed during this investigation includes aerial photographs (dating back to 1930), USGS topographical maps (dating back to 1901), and interviews.

It should be noted that EDR reports that there is no Sanborn™ Map coverage for the site vicinity.

PREVIOUS REPORTS

No previous reports were provided to Petra for review during this assessment.

ENVIRONMENTAL SETTING

The following section provides an overview of the regional and local geologic setting and includes information pertaining to groundwater conditions in the vicinity of the subject site. Geotechnical hazard information (faults, landslides, etc.) is not part of this investigation. This section does not constitute a geotechnical investigation of the subject site and should not be taken as such.

Geology

Geologically, the site lies within the northern portion of the Peninsular Ranges Geomorphic Province (CGS, 2002). The Peninsular Range Province extends from the tip of Baja California north to the Transverse Ranges Geomorphic Province and is characterized by northwest trending mountain ranges separated by subparallel fault zones. The San Bernardino Mountains, located directly north of the site, provides the boundary between the Peninsula Range Province and the Transverse Ranges Province. In general, the province is underlain primarily of plutonic rock of the Southern California Batholith. These rocks formed from the cooling of molten magma deep within the earth's crust. Intense heat associated

with the plutonic magma metamorphosed the ancient sedimentary rocks into which the plutons intruded. The Peninsular Range Geomorphic Province is generally characterized by alluviated basins and elevated erosion surfaces.

More specifically, the subject site is underlain by middle to early Pleistocene, Very old alluvial fan deposits (Morton and Miller, 2003).

San Andreas Fault Zone

The closest known active earthquake fault is the San Andreas Fault zone (San Bernardino County, 2010). It appears that the Fault Special Study Zone has been mapped near the northern boundary of the subject property (San Bernardino County, 2010); however, the majority of the project site does not appear to lie within an Alquist-Priolo Earthquake Fault Zone (CGS, 1977).

Surface Water

No indication of surface water was observed on the site at the time of this investigation.

Groundwater

The site is located within the Bunker Hill Groundwater Sub-Basin of the upper Santa Ana Valley Basin of the South Coast Hydrologic Region (California Department of Water Resources, [CDWR], 2003). No public groundwater wells were exhibited within the vicinity of subject site on the CDWR water data library (CDWR, 2014). Based on our review, historic groundwater levels within the vicinity range between 180± and 300± feet below the ground surface. In general, groundwater depth varies within the area and though flow direction beneath the subject site is unknown, it is believed to be toward the southwest following surface topography.

RESULTS OF EVALUATION

The results of our site reconnaissance and inspection of adjacent sites, agency database review, and historical land use study are presented in the following sections.

Site Reconnaissance

Petra conducted a reconnaissance of the subject site on December 04, 2013. The caretaker, Ralph, aided our site walk and answered questions when knowledgeable. Site photographs are included as Appendix A. Our site observations are summarized below.

- The subject site is located approximately 2.0 (±) miles east of the I-215 Freeway between Club View Drive and Weaver Street in the City of Highland, San Bernardino County, California. A map showing the general site location is included as Figure 1.

- The site is comprised of one parcel of land identified as Assessor Parcel Number (APN) 0288-562-03, which encompasses approximately 8.0 (±) acres of land at 29300 Baseline Drive, Highland, California. The property appears to be an inactive equestrian property.

- The site is an irregular-shaped property that moderately slopes to the southwest. Based upon the terraced nature of northern portion of the property, fill slopes exist onsite that appears to channel surface runoff to onsite drainage features, including but not limited to a concrete swale along the westerly and easterly site boundaries and a pathway overlying a subsurface canal (North Fork Canal) along the northerly property line.

- Prior to development of the site vicinity by residential tracts, the area consists of moderately-sloping terrain, with natural drainage swales located within the westerly and easterly portions of the site (USGS, 2012). Prior to development, site elevations ranged from approximately 1,560± feet above mean sea level (amsl) within the southwest portion of the site to approximately 1,600± feet amsl within the northern portion of the site.

- Based upon our comparison of old topography from historical maps of the site and vicinity, it appears that portions of the former drainages in the western and northwestern portions of the site, as well as an old pond in the north central area, have been altered by grading, including leveling and backfilling. Additionally, there are signs of old fill in the northern portion of the site that was found (surficially) to include tree branches/stumps and crushed metal containers, and what appeared to be a square-shaped area directly adjacent to the residence that has collapsed (suggesting backfilled excavation). As with any historically developed agricultural property, there is a potential for buried trash/debris to be encountered during site development.

- There were three (3) permanent structures observed onsite during our site reconnaissance, consisting of the residence and two (2) storage structures. The residential structure consists of a single-family residence with a two-story attachment on the rear. An oval asphalt-paved driveway is located along the front side of the residence. In addition, there are four (4) relatively large, plastic aboveground water tanks near the southeastern portion of the site. The structures are predominantly located on the southern portion of the property, near to Baseline Street. Nine (9) wooden and metal animal feed sheds and/or remnants of fenced corrals were observed on north to northeast side of the site. These small structures are now used for firewood storage areas, or were empty at the time of our site walk. A plan showing the current location of the site is included as Figure 1.

- Old farm equipment, a vehicle transport trailer, a camper shell, two (2) 3-axle trailers, a pickup truck with what appeared to contain three (3) petroleum product containers/tanks and heavily stained hoses, and two (2) areas of surface staining were observed within the subject property.

- A partially buried, concrete brick-lined structure was observed in the northwestern portion of the property. The structure had an exposed clay pipe on one end and concrete pipe exposed on the other. It appeared that this structure may have been a cistern. In addition, concrete and clay pipe risers were noted throughout the northern portion of the site. The use of these items is unknown, but may be associated (in part) with buried water lines and/or an onsite septic system.

- Stored chemicals and debris observed onsite and around structures consisted of a lawnmower, old swamp cooler, small volume petroleum-based fluid containers, small volume household pesticides, a portable kerosene heater, empty vehicle gas tanks, lithographic ink containers, paint cans, glaze remover, plate etching chemical bottles, and fluorescent light bulbs. We also observed household trash, PVC pipes, concrete pipes, tires, batteries, and numerous 55-gallon metal drums, the majority of which appeared to be partially filled with concrete and/or gravel. Two (2) of the drums, however, appeared to contain oil with product staining on the lid. In the metal storage unit along the southwest side of the residence, we observed a battery, gas containers, small volume petroleum product containers, and assorted landscape equipment/tools.

- One well and associated holding tank and aboveground (electric?) pump was observed on site during our reconnaissance. The well was located on the southeast portion of the site. It is our understanding that this inactive well previous fed water to the existing aboveground water tanks.

- Four (4) above ground water tanks were observed on the southeast side of the site, of approximately 3,800 gallon capacity. It is our understanding that the plastic tanks are used for landscaping and site water supply.

- As noted above, we observed two (2) vehicle gas tanks, and two (2) 55-gallon metal drums on the north side of the site. All drums observed onsite, except these two (2), appeared to be either empty or contained gravel and/or concrete during our site walk. No readily detectable petroleum staining was observed onsite during our site reconnaissance, with the exception of slab staining on the storage shed floor southeast of the residence, in the carport next to the storage shed, under a tractor trailer parked east of the residence, and in the metal storage shed northwest of the residence. Overall, housekeeping was found to be poor.

- Based on information obtained during this assessment, the site appears to have been developed for agricultural purposes (orchards) from at least 1930 to sometime before 1989, when the majority of the site was re-developed as equestrian property. Sometime prior to 1994, orchard trees were completely removed from the southern portion of the site. Historical information reviewed during this investigation includes aerial photographs (dating back to 1930), USGS topographical maps (dating back to 1901), and interviews.

- Site vegetation consists of several mature pine trees and oak trees scattered throughout the property. A low cover of native grasses, weeds and leaves cover the property. At the time of our site walk several trees and tree stumps were observed lying on the west to northwest side of the property, near the drainage. These trees extended from the south to the northwest side of the property, where we observed the dumped concrete, asphalt, empty cans of roofing tar, and remnants from a demolished fence.

- No sites were identified in our search of various government agency database records, which appear to have impacted the soils or groundwater beneath the subject site.

- There was no evidence of sumps, pits, pools, or lagoons identified during our site reconnaissance, except for the aforementioned concrete brick-lined cistern.

Adjacent Site and Vicinity Observations

The site is situated in a residential land use area. Our specific observations are noted below:

North — To the north of the subject site is a paved walkway overlying North Fork Canal (buried), with residential development beyond.

East — To the east of the subject site is residential development.

South — To the south of the subject site is Baseline Road with residential development beyond.

West — To the west of the subject site is residential development.

Government Agency Database Research

A search of federal, state, and local government listings was performed by Environmental Data Resources, Inc. (EDR) for the purposes of this report. The search radius used for all government databases meets or exceeds the standard search distance adopted by ASTM and AAI.

Results of Agency Records Search

A data search of the various government agency records listed in Appendix B revealed no listing for the subject site. The EDR report mapped four (4) surrounding sites within the requested search radii. Twenty (20) orphan sites (sites with inadequate address information to be mapped by EDR) were identified during the agency database search. Refer to the EDR Report in Appendix C for the search radii completed for this investigation. A brief description of the sites listed in the EDR report, which are of potential concern due to the nature of the listing or their proximity to the site, is provided below:

Site 1, East Highland Ranch Tract 15252, 7000 Club View Dr., Highland, CA 92345

This site is located <1/8 of a mile north-northwest of, and at a lower elevation than the subject site. This listing is reported on the HIST CORTESE database associated with a leaking diesel underground storage tank (LUST) impacting soil only. The status of this site LUST clean-up site is reported as, "Completed-case closed" in 1994. Therefore, this listing does not currently appear to represent a recognized environmental condition with regards to the subject site.

Site 2, East Highland Ranch HOA, 7136 Club View Dr., Highland, CA 92346

This site is located <1/8 of a mile north-northwest of, and at a lower elevation than the subject site. This site is listed on the San Bernardino County Permit database for active HAZMAT Handler Employees. No releases or violations are reported. Therefore, this listing does not currently appear to represent a recognized environmental condition with regards to the subject site.

Site A3, Pacific Bell, 26840 E. Baseline, Highland, CA

This site is located approximately ¼ of a mile west-southwest of, and at a lower elevation than the subject site. This cell tower facility is listed on the RCRA-Small Quantity Generator (SQG), Facility Index system/Facility Registry System (FINDS), and Facility and Manifest Data (HAZNET) databases. No releases or violations are reported. Therefore, this listing does not currently appear to represent a recognized environmental condition with regards to the subject site.

Site A4, All Make Auto, 26892 E. Baseline, Highland, CA 92346

This site is located approximately ¼ of a mile west-southwest of, and at a lower elevation than the subject site. This site is listed on the San Bernardino County Permit database as a "conditionally exempt small quantity generator." The status of this facility is listed as, "inactive." No releases or violations are reported. Therefore, this listing does not currently appear to represent a recognized environmental condition with regards to the subject site.

All site listings in the EDR report do not currently appear to represent a recognized environmental condition with regards to the subject site, due to the nature of the listings, the oversight agency having granted closure, the site being down gradient from the subject site and/or their distance from the subject site.

Orphan Sites

Orphan sites are unable to be located due to lack of complete address information. Twenty (20) orphan sites are listed in the EDR report. Orphan sites may appear on more than one database. None of the orphan sites listed, twelve (12) of which are listed from 25481 to 27308 East Baseline, Highland, CA 92346, in the EDR reports are considered recognized environmental conditions, with regards to the subject site, due to the nature of the listings and/or their distance from the subject site.

Local Agencies

Petra reviewed information held by the agencies listed below during the course of this assessment.

A. San Bernardino County

The San Bernardino County Department of Environmental Health maintains Environmental Case Listings related to hazardous waste permits, underground storage tanks and tank cleanup sites. Records held by this agency were accessed by EDR during the government database search. No listings for the subject site were reported by EDR.

B. California Regional Water Quality Control Board

The California Regional Water Quality Control Board-Santa Ana Region (RWQCB) maintains records of leaking underground storage tank sites and groundwater cleanups for sites in the County of

San Bernardino of which the subject property is a part. Records held by the RWQCB were accessed by EDR during the government database search. No listings for the subject site were reported by EDR.

C. GeoTracker

The GeoTracker website maintains a record of environmental data for regulated facilities in California. No database listings for the subject site were reported on GeoTracker. Two (2) facilities were shown on the website's map: East Highland Ranch Tract 15252 (7000 Club View Drive, Highland, CA), and East Highland Ranch Tract 15253 (7500 Church Street, Highland, CA). The Tract 15252 listing is also discussed above under Agency Records Search. The status of both of these sites as, "case closed" related to LUSTs. The printout documenting this inquiry is included in Appendix B.

D. Department of Toxic Substances Control

The online database EnviroStor (2014), which provides records on LUSTs, SLICs, Priority cleanup sites and states sites, which is maintained by the Department of Toxic Substances Control (DTSC). Neither the subject property nor any immediately adjacent properties were listed on the databases researched. The printout documenting this inquiry is included in Appendix B.

E. California Division of Oil, Gas, and Geothermal Resources

According to the California Division of Oil, Gas, and Geothermal Resources (DOGGR), Map W 1-7 there are no active oil, or gas wells located on the subject site. Further, there were no indications of any such wells found during our reconnaissance of the subject site. A copy of this map is included in Appendix B.

F. National Pipeline Mapping System

Petra reviewed the National Pipeline Mapping System (NPMS, 2014) public viewer website for gas transmission pipelines and hazardous liquid trunk-lines on or close to the subject property. According to the information reviewed, a SCE natural gas transmission line is located in South Archibald Avenue, along the west edge of the subject property. The printout documenting this inquiry is included in Appendix B.

Evaluation of Records Search Results

In summary, no sites were identified in our search of various government agency database records, which may have impacted the soils or groundwater beneath the subject site.

Results of Aerial Photo Analysis

Although aerial photographs can often be a valuable source of information in the assessment of historical land usage, it should be understood that information extrapolated from photographic images is strictly

interpretation and not necessarily fact. For this reason, it may not be appropriate to draw conclusions regarding previous site activities based solely upon aerial photograph analysis.

In order to provide a complete updated assessment of historical land usage on and in the vicinity of the subject site, aerial photographs with coverage of the subject site and vicinity were obtained from EDR and viewed by a representative of this firm. Photographs from the years 1930, 1938, 1953, 1966, 1976, 1989, 1994, 2005, 2006, 2009, 2010 and 2012 were provided by EDR. A summary of the information obtained during the aerial photograph review follows. Copies of the aerial photographs obtained from EDR are included in Appendix C.

1930 and 1938 Photographs

In the 1930 and 1938 photographs, the subject property (and vicinity) was developed with orchards. The canal along the northern site boundary was visible, as well as a moderately well developed drainage along the western site boundary and a smaller drainage along the eastern property line. Two (2) small structures (one possibly an above ground water tank) are noted in the southeast corner of the site. These structures are less obvious in the 1938 photograph. Baseline Road is depicted along the southern property boundary.

1953 Photograph

In the 1953 photograph, property development remained unchanged; however, the two (2) structures in the southeastern corner of the property are no longer visible, replaced by a rectangular clearing. Orchards remained the dominant development in the site area, with a few isolated farm structures.

1966 Photograph

In the 1966 photograph, the subject site and surrounding areas appear basically the same as in the previous photograph. The small drainage along the eastern property boundary appeared improved. Small structures were visible offsite, directly east of the southeast corner of the site.

1976 Photograph

In the 1976 photograph, the majority of the subject property appeared to be re-developed with an equestrian center with what appeared to be a pond in the northern portion; rectangular corrals in the

center; and either barns or corrals along the western side. Orchard trees remained within the southern portion of the site.

1989 Photograph

In the 1989 photograph, the subject site appears basically the same as in the previous photograph. The pond is not readily visible and may be infilled. The existing residence is readily visible onsite for the first time; however, the pad was cleared in the previous photo (1976). Residential tract development is noted immediately to the north and south. Single family residential lots were depicted to the east.

1994 Photograph

Except for the removal of orchards, the subject property conditions appeared to remain unchanged from 1989. Residential tract development was noted west of the property. The majority of the land surrounding the site is developed as residential tracts.

2005 and 2006 Photographs

In the 2005 and 2006 photographs, the subject site appears basically the same as in the previous photograph. Grass development in the larger corrals suggested a decrease in equestrian activity.

2009, 2010 and 2012 Photographs

In the 2009, 2010 and 2012 photographs, the site appeared basically the same as in the previous photographs, except the corrals are not discernable. Except for the absence of the above ground water tanks near the southeastern corner of the property, the subject property appeared similar to conditions noted during our site walk in 2010.

Historical USGS Topographic Maps

Petra reviewed the historical USGS topographic maps of the site and vicinity provided by EDR (Target Quad's: 1901, 1943, 1954, 1967, 1973, 1980, 1988 and 1996. The adjoining Harrison Mountain Quad maps (north) were also provided from 1953, 1967, 1973, 1980, 1988, and 1996. Due to the large scale of the maps from 1901, land use was not readily discernable; however, Baseline Road was visible and it appeared that a small structure existed in the northern corner of the site, adjacent to the canal. The 1943 map depicted unimproved roads and drainage along the western property boundary, including a small structure at the west central site edge. In addition to 3 small structures along the western property

boundary, orchards were noted onsite in the 1954, 1967, and 1973 maps. Orchard development decreased from the 1980 map. These maps generally support observations made from the aerial photographs reviewed. Copies of the maps reviewed are provided in Appendix C.

Environmental Liens & Activity and Use Limitations

Environmental Liens and Activity and Use Limitations (AUL) indicate restrictions on a property, which may represent a recognized environmental condition for the subject site. A search for Environmental Liens and AULs was conducted by EDR as part of this investigation using a single Assessor Parcel Number (APN). The APN number used for this report was APN 0288-562-03. The results from this search indicated that there were no recorded Environmental Liens or AULs listed for the parcel. The quitclaim deed provided with this lien search shows the title is vested in Robert C. and Doris J. Christianson, Trustees of the Family Trust, recorded on December 23, 2008. A copy of the lien and AUL search report is provided in Appendix C.

Fire Insurance Maps and City Directories

Fire Insurance Maps provide information on structure locations and operations, which were present at the time of the survey. These maps were completed for most major cities and metropolitan areas, dating from 1867, and provide information into past usage of buildings and how commercial and industrial zoning has changed over time. Sanborn™ Fire Insurance maps were requested for this study. EDR reports that no Sanborn™ Fire Insurance map coverage is available for the site. The memorandum documenting this inquiry is included in Appendix C.

City Directories provide information for a specific address at a specific time. A search of city directories, from 1975 to 2013 was conducted by EDR for this assessment. The search was conducted for the target property and adjoining properties. No listings, which would indicate a potential concern for the subject site based on the name of the listing, was included in the EDR city directory abstract. A copy of this search is presented in Appendix C.

Building Permits

Building Permit data provides information to identify current and/or former operations and structures/features which may represent a recognized environmental condition for the subject site. A search of building permits, dating back to 1988 was conducted by EDR for this assessment. Buildings permits were not found for the target property; however, permits were provided for adjoining residential

property listings. Based upon our review, none of the permits provided indicated a potential concern for the subject site based on the type of the listings (i.e., residential property improvements). A copy of this search is presented in Appendix C.

Interviews

An Owner Questionnaire was e-mailed to Mr. Patrick Oberg (broker/real estate agent) and included a follow-up call on January 27, 2014. Mr. Oberg was identified by the client as someone who is knowledgeable of the site. A response by Mr. Oberg was received, which consisted of questionnaire responses by the property owner, Mr. Robert Christianson. A copy of this document is included in Appendix D. A summary of the questions is provided below.

1. According to Mr. Christianson, he has a good knowledge of the uses, physical characteristics, and activities associated with the property over the last 15 years.

2. According to Mr. Christianson, prior uses of the subject property consisted of an orange grove prior to 1972. From 1972 to sometime before 1997, the property was developed as a horse ranch. In 1998 to the present date, the property use is as residential with the majority of the land fallow and unused.

3. According to Mr. Christianson, based on his knowledge and experience related to the property, there are no hazardous substances or petroleum products present on the property, and he in not aware of any former hazardous substances or petroleum products on the property.

4. According to Mr. Christianson, there are no utility corridors onsite; however, there is a three (3) inch diameter irrigation pipe (18-inches deep) that extends from the irrigation weir to the water tanks.

5. Based upon his knowledge, Mr. Christianson indicated that there are no agency violations, environmental liens, and/or pending or past litigation or administrative proceedings related to hazardous substance(s) or petroleum product(s) on the subject property.

Client Knowledge

In compliance with AAI, Petra provided a Phase I Client Questionnaire to the client, Mr. Ray Dorame with Mastercraft Homes, Group, LLC, regarding his knowledge of the subject site. A summary of the questions is provided below.

1. According to the client, he does not have any specialized knowledge or experience related to the property or nearby properties.

2. According to the client, he is not aware of commonly known or reasonably ascertainable information about the property that would help identify conditions indicative of hazardous materials/chemical releases or threatened releases.

3. According to the client, based on his knowledge and experience related to the property, there are no obvious indicators that point to the presence of likely presence of contamination at the property.

A copy of the complete client questionnaire is provided in Appendix D.

Data Failures and Data Gaps

In the event that data gaps are identified, the Environmental Professional (EP) will endeavor to comment on the significance of those data gaps. However, the EP cannot, and does not warrant or guarantee that no significant events, releases, or conditions arose, during periods such as data gaps.

Petra reviewed several sources for historical information regarding the subject site. These sources included a government agency database search, a city directory search, a review of historical aerial photographs and historical USGS topographic maps, and interviews. No fire insurance maps are reported to be available for the site.

Data gaps exist in the historic information reviewed. These gaps are due to the limited resources available, which are reasonably ascertainable and practically reviewable in the local area. However, it is our opinion that if additional historic information were to become available, it is not likely to change the conclusions or recommendations of this assessment.

DISCUSSION OF POTENTIAL ENVIRONMENTAL CONCERNS

The following discussions of potential environmental concerns are presented to inform the client as to the existence, or lack thereof, of recognized environmental conditions present on the subject site.

Regulatory Actions

Based upon a thorough search of available federal, state, and local records, no known current regulatory action is pending with respect to the subject site.

Adjacent and Nearby Properties

No information has been obtained during this assessment which would indicate the presence of recognized environmental conditions adjacent to the subject site that are considered likely to pose a significant impact to soils or groundwater beneath the subject site.

Polychlorinated Biphenyls

No electrical transformers were observed onsite during our site reconnaissance. Based upon the estimated age of the onsite residences (i.e., pre-1980), there is a potential that light fixtures, ballasts, and switches contain PCBs. It is recommended that the structure be assessed for PCB-containing materials prior to any demolition. If present, PCB-containing materials should be abated prior to demolition in accordance with current regulations.

Underground Storage Tanks

No information has been obtained during this assessment, which would indicate fuel underground storage tanks (USTs) to be located on the subject site currently nor are USTs reported to have been located on the site in the past. Further, no surface indications of USTs were observed on the subject site during the site reconnaissance.

Above Ground Storage Tanks

No information has been obtained during this assessment, which would indicate above ground fuel storage tanks (ASTs) to be located on the subject site currently, nor are ASTs reported to have been located on the site in the past.

Storm Water/Waste Water Discharge

At this time, storm water/waste water discharge from the site appears to be limited to surface water runoff.

Pesticide and Herbicide Residues

Based on information obtained during this assessment, citrus groves have been planted within the subject site as far back as 1930 until sometime before 1989. As a result, pesticide and herbicide soil residues appear to represent a recognized environmental condition with regards to the subject site. A Limited Phase II Soil Assessment is recommended onsite to evaluate soil residues onsite.

Asbestos-Containing Materials

It is unknown if asbestos-containing materials are present in the structures located on the site. Based on the age of the residential building, it is recommended that the structure be assessed for asbestos-

containing materials prior to any demolition. If present, asbestos-containing materials should be abated prior to demolition in accordance with current regulations.

Lead-Based Paints

It is unknown if lead-based paints are present in the structures located on the site. Based on the age of the site buildings, it is recommended that the buildings be assessed for lead-based paints prior to any demolition. If present, lead-based paints should be abated prior to demolition in accordance with current regulations.

Landfills

The EDR report does not list any known landfills within the subject site, or nearby the site; therefore, landfills do not represent a recognized environmental condition with regards to the subject site.

Water Supplies

One (1) inactive water well was observed on the site. It is our understanding that the well previously feed the aboveground water storage tanks in the southeast portion of the site.

Waste Generation and Storage

Scattered debris was observed throughout the site. The debris was commonly vegetation debris which consists of branches and cut tree trunks/stumps, but also included PVC and concrete piping; empty 55-gallon drums (both empty and containing gravel and/or concrete; batteries; rubber tires; roofing tiles; fiberglass siding; empty metal and plastic containers; vehicle fuel tanks; and abandoned equipment. It is recommended that the debris be removed and disposed, in accordance with current regulations.

CONCLUSIONS

General Site Information

1. The site is comprised of one parcel of land identified as Assessor Parcel Number (APN) 0288-562-03, which encompasses approximately 8.0 (±) acres of land at 29300 Baseline Drive, Highland, California. The property appears to be an inactive equestrian property.

2. The site is an irregular-shaped property that moderately slopes to the southwest. Based upon the terraced nature of northern portion of the property, fill slopes exist onsite that appears to channel surface runoff to onsite drainage features, including but not limited to a concrete swale along the westerly and easterly site boundaries and a pathway overlying a subsurface canal (North Fork Canal) along the northerly property line.

3. Prior to development of the site vicinity by residential tracts, the area consists of moderately-sloping terrain, with natural drainage swales located within the westerly and easterly portions of the site (USGS, 2012). Prior to development, site elevations ranged from approximately 1,560± feet above mean sea level (amsl) within the southwest portion of the site to approximately 1,600± feet amsl within the northern portion of the site.

4. Based upon our comparison of old topography from historical maps of the site and vicinity, it appears that portions of the former drainages in the western and northwestern portions of the site, as well as an old pond in the north central area, have been altered by grading, including leveling and backfilling. Additionally, there are signs of old fill in the northern portion of the site that was found (surficially) to include tree branches/stumps and crushed metal containers, and what appeared to be a square-shaped area directly adjacent to the residence that has collapsed (suggesting backfilled excavation). As with any historically developed agricultural property, there is a potential for buried trash/debris to be encountered during site development.

5. There were three (3) permanent structures observed onsite during our site reconnaissance, consisting of the residence and two (2) storage structures. The residential structure consists of a single-family residence with a two-story attachment on the rear. An oval asphalt-paved driveway is located along the front side of the residence. In addition, there are four (4) relatively large, plastic aboveground water tanks near the southeastern portion of the site. The structures are predominantly located on the southern portion of the property, near to Baseline Street. Nine (9) wooden and metal animal feed sheds and/or corrals were observed on north to northeast side of the site. These small structures are now used for firewood storage areas, or were empty at the time of our site walk. A plan showing the current location of the site is included as Figure 1.

6. Old farm equipment, a vehicle transport trailer, a camper shell, two (2) 3-axle trailers, a pickup truck with what appeared to contain three (3) petroleum product containers/tanks and heavily stained hoses, and two (2) areas of surface staining were observed within the subject property.

7. A partially buried, concrete brick-lined structure was observed in the northwestern portion of the property. The structure had an exposed clay pipe on one end and concrete pipe exposed on the other. It appeared that this structure may have been a cistern. In addition, concrete and clay pipe risers were noted throughout the northern portion of the site. The use of these items is unknown, but may be associated (in part) with buried water lines and/or an onsite septic system.

8. Stored chemicals and debris observed onsite and around structures consisted of a lawnmower, old swamp cooler, small volume petroleum-based fluid containers, small volume household pesticides, a portable kerosene heater, empty vehicle gas tanks, lithographic ink containers, paint cans, glaze remover, plate etching chemical bottles, and fluorescent light bulbs. We also observed household trash, PVC pipes, concrete pipes, tires, batteries, and numerous 55-gallon metal drums, the majority of which appeared to be partially filled with concrete and/or gravel. Two (2) of the drums, however, appeared to contain oil with product staining on the lid. In the metal storage unit along the southwest side of the residence, we observed a battery, gas containers, small volume petroleum product containers, and assorted landscape equipment/tools.

9. One well and associated holding tank and aboveground (electric?) pump was observed on site during our reconnaissance. The well was located on the southeast portion of the site. It is our

understanding that this inactive well previously fed water to the existing aboveground water tanks.

10. Four (4) above ground water tanks were observed on the southeast side of the site, of approximately 3,800 gallon capacity. It is our understanding that the plastic tanks are used for landscaping and site water supply.

11. As noted above, we observed two (2) vehicle gas tanks, and two (2) 55-gallon metal drums on the north side of the site. All drums observed onsite, except these two (2), appeared to be either empty or contained gravel and/or concrete during our site walk. No readily detectable petroleum staining was observed onsite during our site reconnaissance, with the exception of slab staining on the storage shed floor southeast of the residence, in the carport next to the storage shed, under a tractor trailer parked east of the residence, and in the metal storage shed northwest of the residence. Overall, housekeeping was found to be poor.

12. Based on information obtained during this assessment, the site appears to have been developed for agricultural purposes (orchards) from at least 1930 to sometime before 1989, when the majority of the site was re-developed as equestrian property. Sometime prior to 1994, orchard trees were completely removed from the southern portion of the site. Historical information reviewed during this investigation includes aerial photographs (dating back to 1930), USGS topographical maps (dating back to 1901), and interviews.

13. Site vegetation consists of several mature pine trees and oak trees scattered throughout the property. A low cover of native grasses, weeds and leaves cover the property. At the time of our site walk several trees and tree stumps were observed lying on the west to northwest side of the property, near the drainage. These trees extended from the south to the northwest side of the property, where we observed the dumped concrete, asphalt, empty cans of roofing tar, and remnants from a demolished fence.

14. No sites were identified in our search of various government agency database records, which appear to have impacted the soils or groundwater beneath the subject site.

15. There was no evidence of sumps, pits, pools, or lagoons identified during our site reconnaissance, except for the aforementioned concrete brick-lined cistern.

RECOGNIZED ENVIRONMENTAL CONDITIONS

Recognized environmental conditions are defined by the American Society of Testing and Materials (ASTM) as any hazardous substance or petroleum product under conditions that indicate an existing, past, or material threat of release into the structures, ground, groundwater, or surface water at the subject site. If the presences of recognized environmental conditions are identified on a subject site, it may warrant additional research, site investigation, and/or action.

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527 of the 8-acre parcel (APN 0288-562-03) at 29300 Baseline Road,

Highland, San Bernardino County, California. Any exceptions to, or deletions from, this practice are described in section titled data gaps of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the property, except the following:

- Based upon the historical use of the subject property as an orchard from at least 1930 to 1989, there is a potential for restricted agricultural chemicals (pesticides and herbicides, lead, arsenic, diesel) to have been utilized onsite. This former usage may have resulted in agricultural chemical soil residues onsite that will require addressing prior to residential development of the property.

- Numerous petroleum product and paint containers of various sizes were observed onsite during our field reconnaissance, the majority of which appeared to be in relatively good condition and/or empty. There were, however, at least three (3) unlabeled 55-gallon drums (full to partially full), numerous car batteries and tires, and what appeared to be a few 5-gallon buckets that contained liquids with characteristics of petroleum products mixed with water. In addition, floor staining was observed in the car port, storage shed northwest of the residence, and storage shed southwest of the residence. The removal of these containers offsite to a suitable disposal facility should be conducted by an experienced and licensed hazardous waste contractor.

- Although floor staining was observed within the storage sheds and car port onsite, visual observations of the color density and horizontal extent does not suggest a large volume of spilled petroleum products. The proposed land use change from agricultural to residential, however, dictates that these areas are sampled and chemically characterized prior to removal and offsite disposal.

As a result of the aforementioned recognized environmental concerns, Petra recommends, therefore, a limited Phase II Soil Residue Survey be completed onsite. A scope of work and cost proposal can be provided upon request.

SITE CONSIDERATIONS

The following items are not considered recognized environmental conditions in accordance with ASTM 1527-05. However, these items may warrant considerations in conjunction with any planned development activities. The information regarding possible actions relative to these items has been provided as guidance.

1. If the inactive water well to be abandoned, it is recommended that the abandonment be completed by a licensed water well contractor accordance with the California Well Standards as published by the California Department of Water Resources (Bulletin 74-81 and 74-90), with oversight provided by the appropriate agencies.

2. It is unknown if there are any septic tanks or leach fields on the site. If any are encountered during site development, it is recommended that they be removed in accordance with current regulations.

3. Due to the age of the residences (pre-1980), there is an elevated likelihood that asbestos containing materials and lead paint exist. Petra recommends a pre-demolition survey of the onsite buildings be completed by a licensed asbestos consultant. Removal of any asbestos and/or lead paint should be conducted by a licensed abatement contractor.

4. As with any historic agricultural property, there is a potential for buried debris to be encountered during development of the site. While Petra was not notified of any such buried debris, our field observations detected such a condition(s) in the northern and northwestern portions of the subject property. As such, we recommend that any unanticipated buried containers/structures/debris encountered during clearing and grubbing or grading be evaluated in-place by Petra prior to removal from the subsurface.

5. It is recommended that all trash and dumped debris observed on the site be removed and disposed in accordance with current regulations.

LIMITATIONS

This Phase I Environmental Site assessment is based upon the project as described and the environmental data obtained from the field reconnaissance and research performed (some by others) as outlined in this report. This report has not been prepared for use by parties or projects other than those named or described in this report, additional studies may be required.

Since our assessment is based upon a review of available data and visual inspection of the site, without any invasive investigation, the conclusions presented herein are professional opinions. These opinions have been derived in accordance with current standards of practice, and no warranty is expressed or implied.

This firm's evaluation of previous reports and/or subconsultant reports (if any) focuses on the completeness of the information presented in the document, in accordance with applicable rules and regulations, and does not include the establishment of data sufficiency or accuracy.

QUALIFICATIONS

Resumes for the staff who contributed to this report are presented in Appendix E.

"We the undersigned declare 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. We have the specific qualification based on education, training, and experience to assess a property of the nature, history, and setting of the subject site. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312."

Edward P. Lump
Associate Geologist

Siamak Jafroudi, PhD
Senior Principal Engineer
GE 2024

REFERENCES

Bryant and Hart, E.W., W.A., 2007, Fault-rupture hazard zones in California, Alquist-Priolo earthquake fault zoning act with index to earthquake fault zones maps; California Geological Survey, Special Publication 42, interim revision.

CALIFORNIA DEPARTMENT OF CONSERVATION, DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES, 2014, DOGGR Online Mapping System (DOMS) http://maps.conservation.ca.gov/doms/index.html.

CALIFORNIA DEPARTMENT OF WATER RESOURCES, 2013, Historic Water Level Database, http://www.water.ca.gov/.

_____, 2003, California Groundwater - Bulletin 118.

_____, 1990, Monitoring Well Standards - Bulletins 74-90.

_____, 1981, Water Well Standards - Bulletins 74-81, dated December.

Department of Toxic Substances Control (DTSC), Website (http://www.envirostor.dtsc.ca.gov/public/), EnviroStor database, accessed January 2014.

ENVIRONMENTAL DATA RESOURCES, INC., 2013, The EDR Radius Map Report with GeoCheck, 29300 Baseline Avenue, Highland, CA 92346 (Inquiry No. 03794498.2r), dated December 22.

ENVIRONMENTAL DATA RESOURCES, INC., 2013, Certified Sanborn Map Report, 29300 Baseline Avenue, Highland, CA 92346 (Inquiry No. 3794498.3), dated December 22.

ENVIRONMENTAL DATA RESOURCES, INC., 2013, EDR Historical Topographic Map Report, 29300 Baseline Avenue, Highland, CA 92346 (Inquiry No. 3794498.4), dated December 22.

ENVIRONMENTAL DATA RESOURCES, INC., 2013, The EDR Aerial Photo Decade Package, 29300 Baseline Avenue, Highland, CA 92346 (Inquiry No. 3794498.5), dated December 27.

ENVIRONMENTAL DATA RESOURCES, INC., 2013, The EDR-City Directory Abstract, 29300 Baseline Avenue, Highland, CA 92346 (Inquiry No. 03794498.6), dated December 26.

ENVIRONMENTAL DATA RESOURCES, INC., 2013, EDR Environmental Lien and AUL Search, 29300 Baseline Avenue, Highland, CA 92346 (Inquiry No. 3794498.7), dated December 25.

ENVIRONMENTAL DATA RESOURCES, INC., 2013, EDR Building Permit Report, 29300 Baseline Avenue, Highland, CA 92346 (Inquiry No. 3794498.11), dated December 23.

Fidelity National Title Company, 2013, Preliminary Report, 29300 Baseline Avenue, Highland, CA, Order No. 002-23038668-PP1, dated October 28.

GEOTRACKER, 2014, http://geotracker.swrcb.ca.gov/.

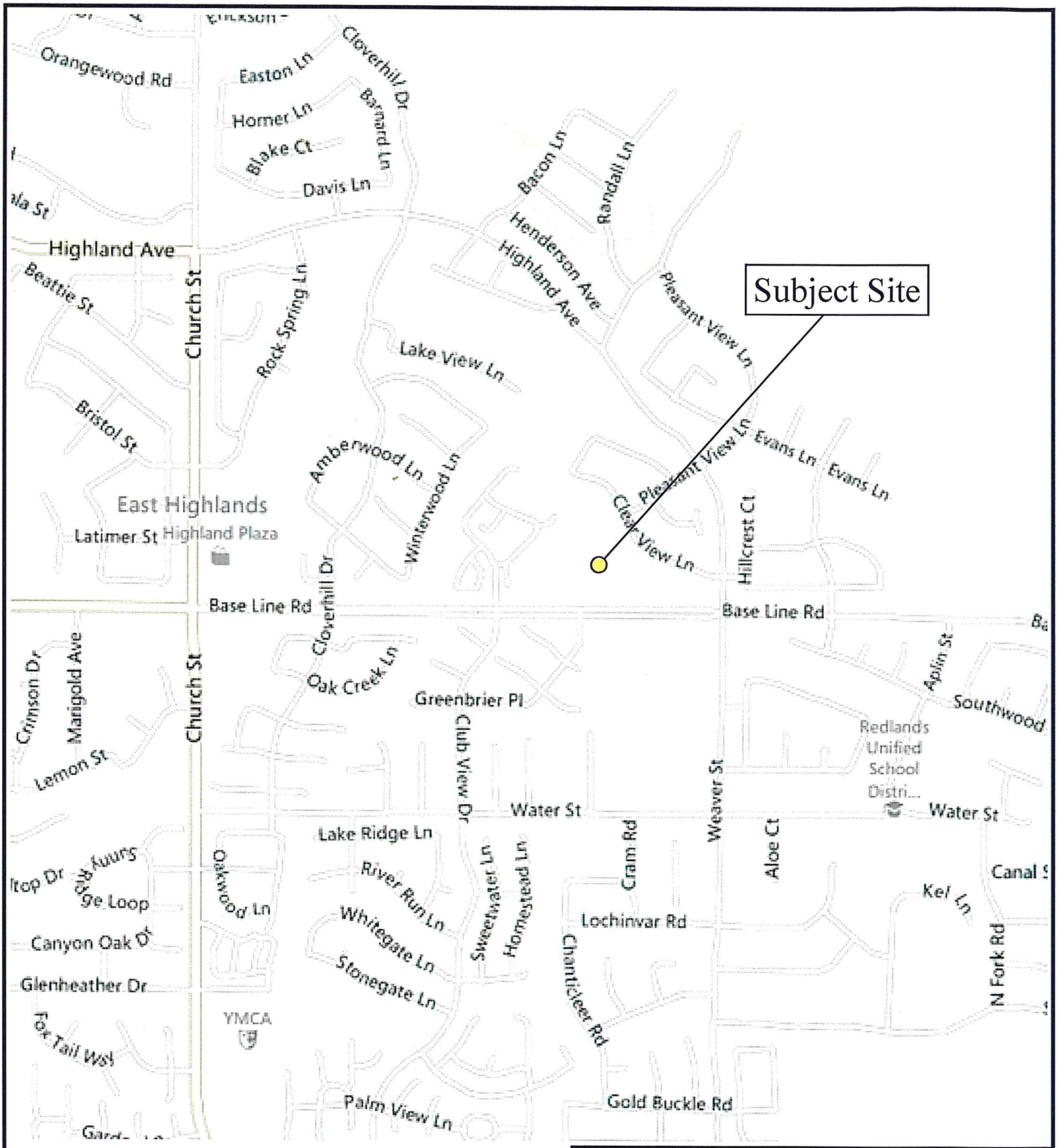
Google Earth™ 2013, by Google Earth, Inc., http://www.google.com/earth/index.html, accessed November, 20.

Morton, M.D., and Miller, F.K., 2003, Preliminary Geologic Map of the San Bernardino 30'x60' Quadrangle, California, USGS Open-File Report 03-293, version 1.0.

NATIONAL PIPELINE MAPPING SYSTEM (NPMS), Public Map Viewer, Website (http://www.npms.phmsa.dot.gov/PublicViewer/), accessed January 2014.

FIGURES

PETRA



N
W E
S

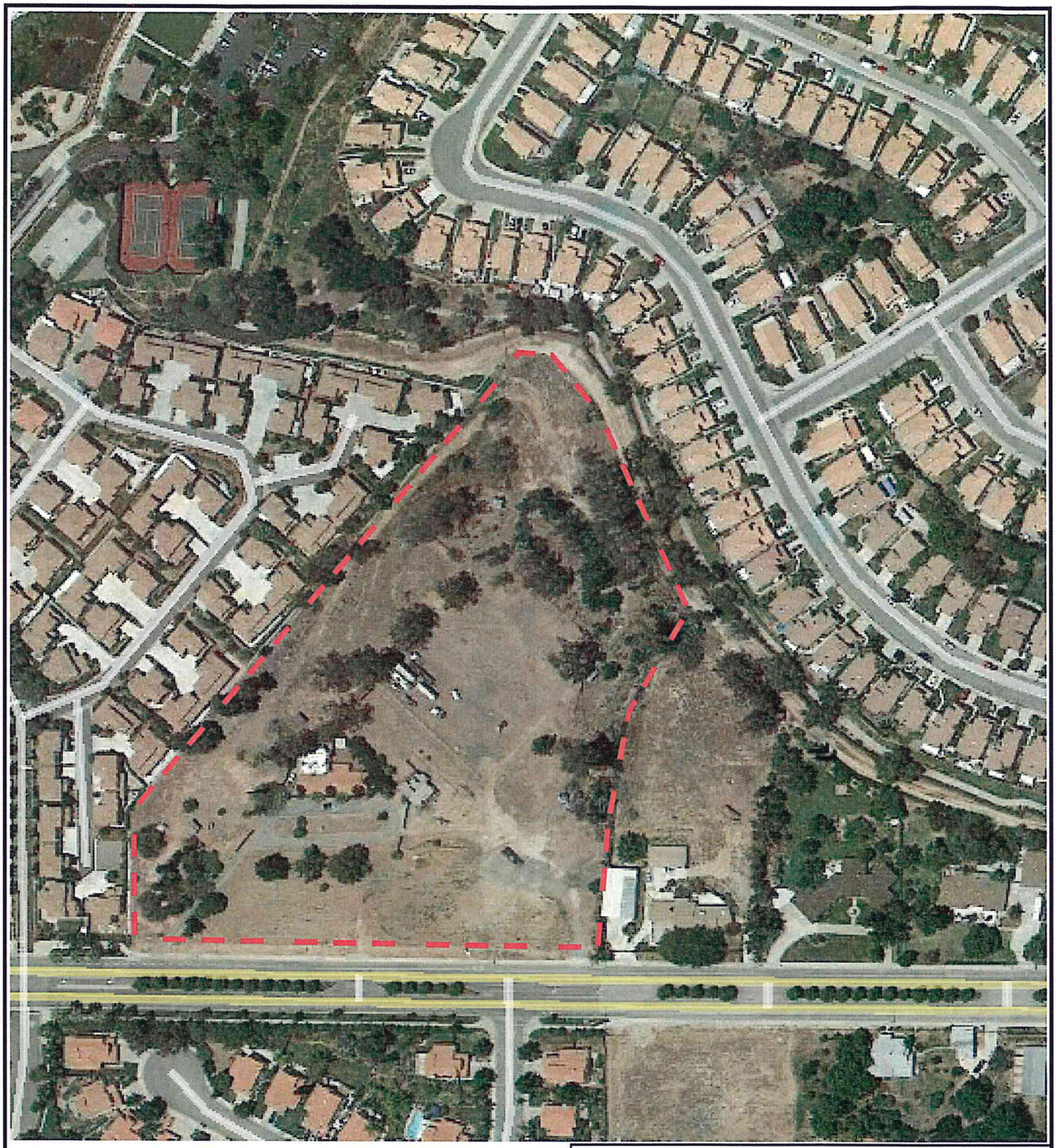
Reference: Bing Maps

PETRA GEOTECHNICAL, INC.
40880 County Center Drive, Suite R
Temecula, California 92591
PHONE: (951) 600-9271
COSTA MESA TEMECULA PALM DESERT SAN DIEGO SANTA CLARITA

SITE LOCATION MAP

29300 Baseline Avenue
Mastercraft Homes
City of Highlands, CA

DATE: January 2014	J.N. 13-627	Figure 1
DWG BY: LH	SCALE: NTS	



EXPLANATION

Approximate Location of Site Boundary

N
W E
S

Reference: Google Earth

PETRA GEOTECHNICAL, INC.
40880 County Center Drive, Suite R
Temecula, California 92591
PHONE: (951) 600-9271
COSTA MESA TEMECULA PALM DESERT SAN DIEGO SANTA CLARITA

TEST PIT LOCATION MAP

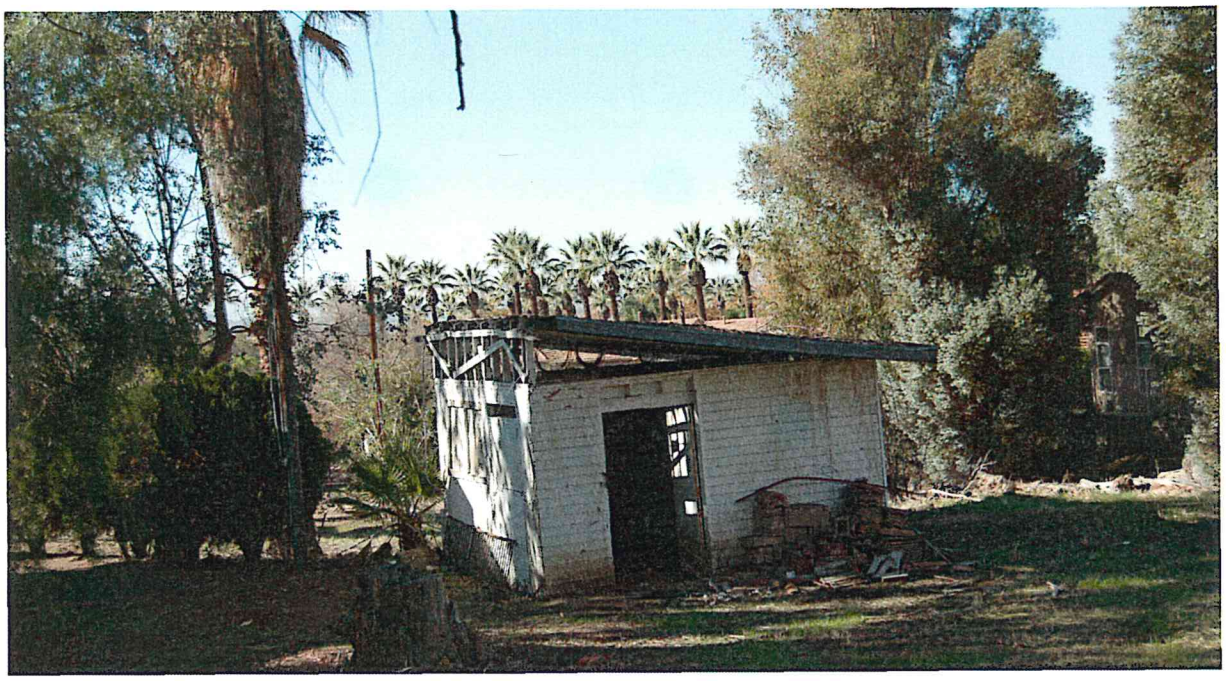
29300 Baseline Avenue
Mastercraft Homes
City of Highlands, CA

DATE: January 2014	J.N. 13-627	Figure 2
DWG BY: LH	SCALE: NTS	

APPENDIX A

SITE PHOTOGRAPHS

PETRA



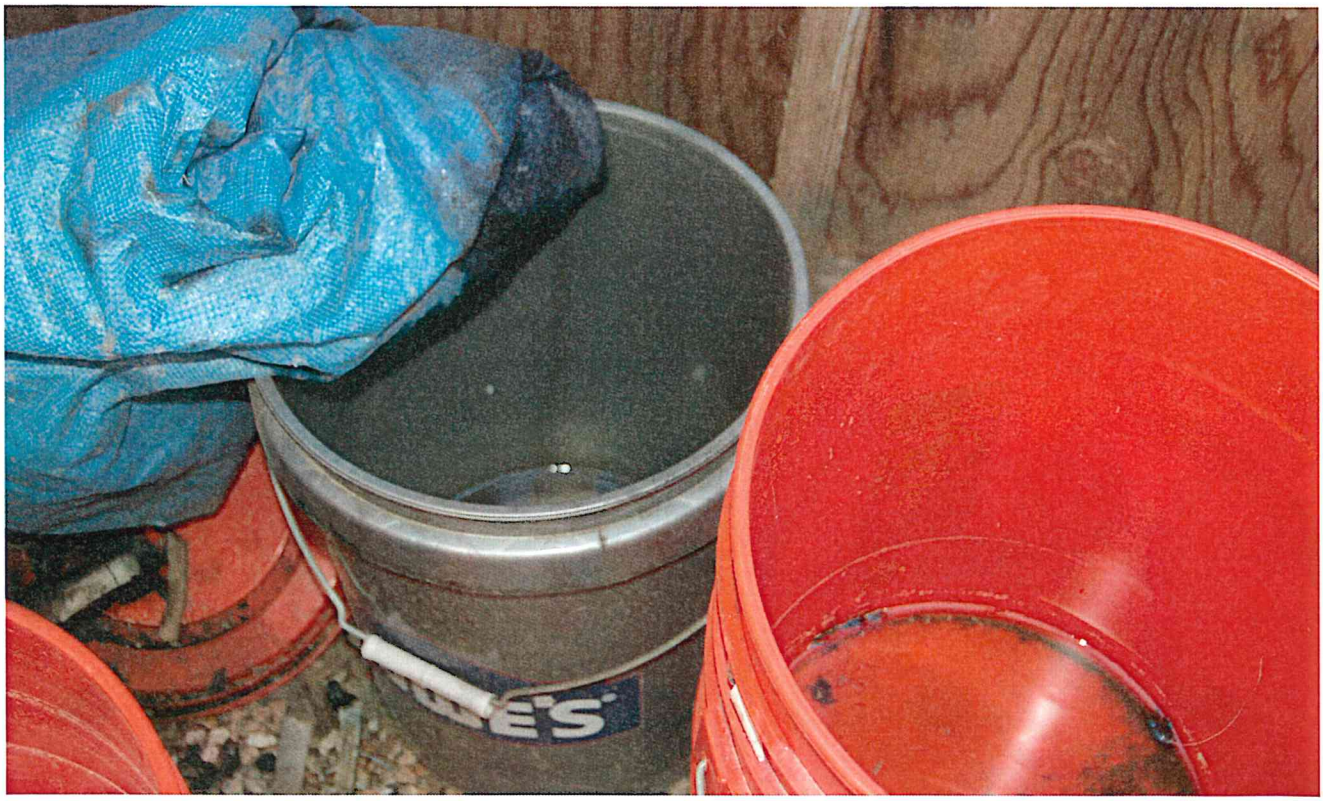
Storage shed observed northwest of the house

Material observed in the storage shed, paint cans, oil containers, empty gas containers and roofing clay tiles

Miscellaneous paint,swamp cooler, lawn mower and swamp cooler parts

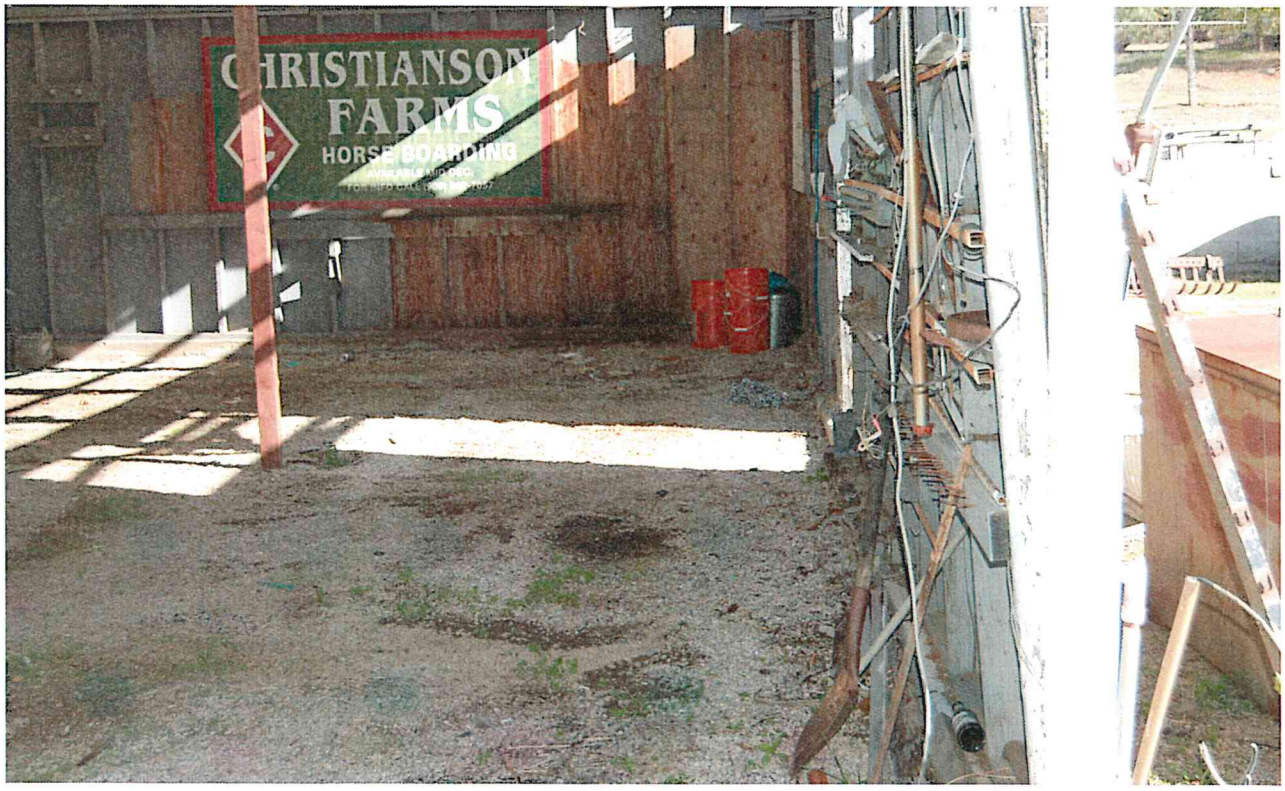
Sinkhole observed on the northeast side of house

Two of three batteries observed in the garage area east of the house



Seven (5) gallon buckets observed in garage area

Garage area on the east side of the property



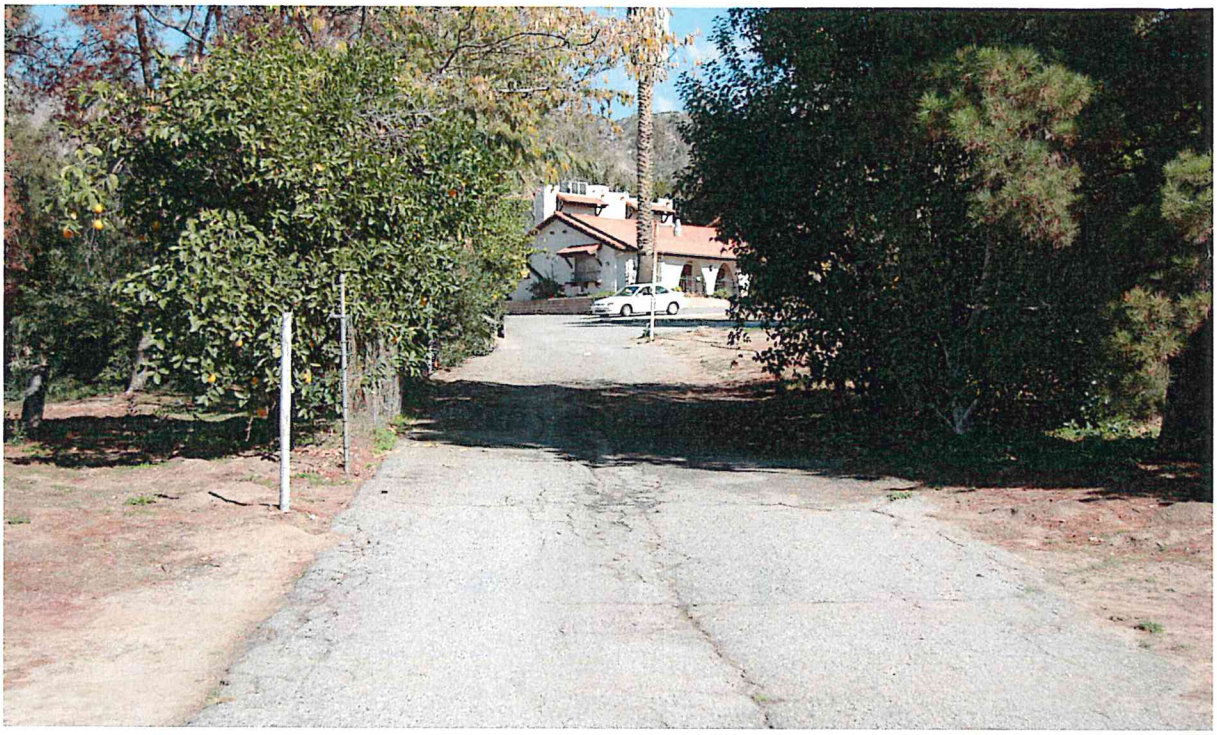
Staining observed in the gravel in the garage area located east of the house

Miscellanoeus brake fluid, ant and roach killer, lithographic ink and glaze remover observed in storage area

Staining observed on concrete floor in storage shed east of the house

Miscellaneous paint, polyblend grout, charcoal lighter fluid, fasting setting patch and paint thinner

Roundup and liquid wrench observed onsite during visit



View of asphalt driveway looking north onto the site

View of asphalt round about driveway area located infront of the property

Storage shed located on the southwest side of property

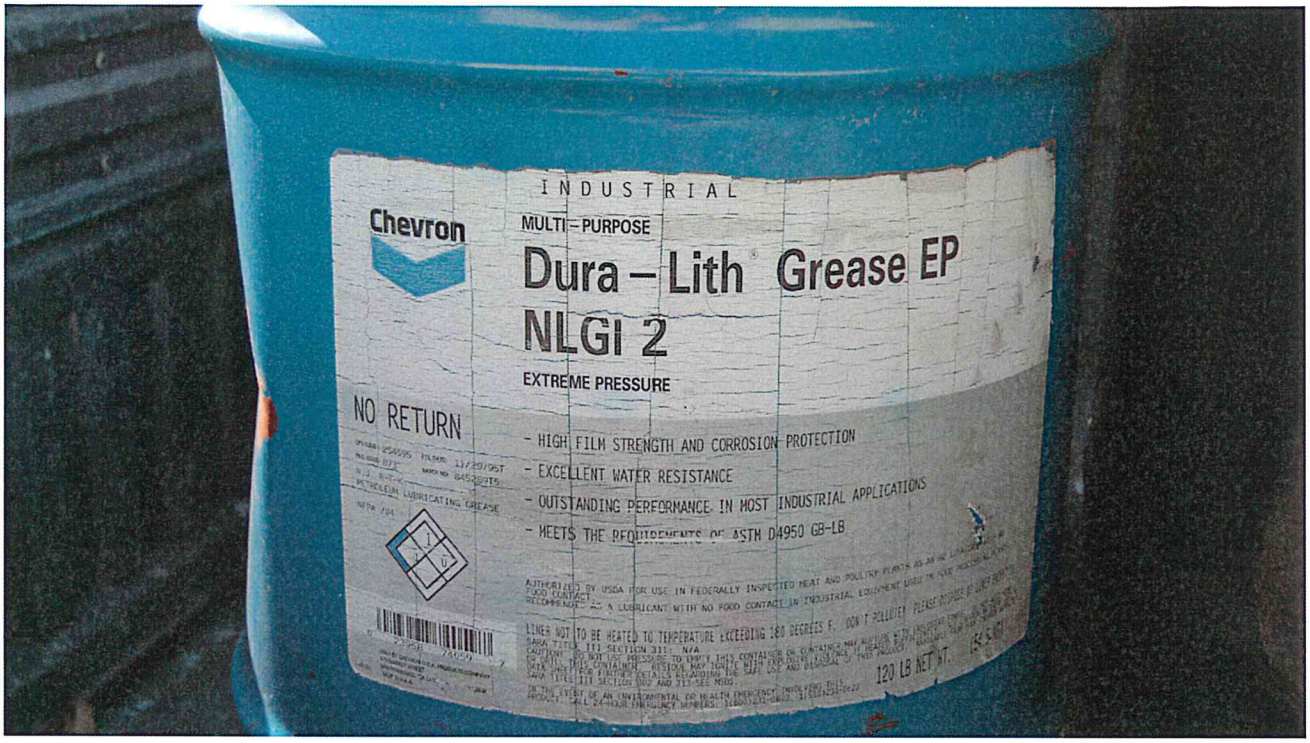
Miscellaneous starter fluid, WD-40, oil, gas, transmission fluid and used oil observed in the shed

Pump located on the southeast side of the site along the east side property line

View of the southeast side of the property looking west along Baseline Avenue

Two of the four AST's located on the southeast side of the site used for water storage

Water tank sitting on top of a 55 gallon barrel on the southeast side of the property



One of three containers located in the bed of a old Ford-250 pick-up truck behind the house(full)

Plastic storage tank observed on the southeast side of the site (empty)

Irrigation pipe running east along the east side edge og the property

55 gallon barrel(1/4 full of concrete) and one (3) gallon can of pol;chrome liotho wash(empty)

Empty 55 gallon barrel observed on the north side center of the site

4" diameter clay pipe observed onsite on the north center side of property

View of the inside of the concrete tank observed on the north side center of the property

East side view of the above tank with miscellaneous trash and debris

Three (3) gallon metal cans observed in a stockpile in the drainage on the northwest side of the site

Two gas tanks and one 55 gallon barrel observed on the north side center of the property

View of the site looking southwest along the northwest side of the site

View of the site looking east along the northwest side of the site

One of the many 55 gallon barrels observed onsite with 1/4 barrel of concrete

View of west side of the site looking southwest

A view from the southwest side of the property looking north along old fence line

View of four 55 gallon barrels(1/4 full of concrete) along the northwest side drainage flow

APPENDIX B

AGENCY SEARCH RESULTS

PETRA

http://geotracker.waterboards.ca.gov/map/?C GeoTracker

LINK TO THIS MAP

GEOTRACKER

LAYERS

- ☒ SIGNIFIES A CLOSED SITE
- ☑ Leaking Underground Tank (LUST) Cleanup Sites
- ☑ Other Cleanup Sites
- ☑ Land Disposal Sites
- ☑ Military Sites
- ☑ WDR Sites
- ☑ Irrigated Lands Regulatory Program
- ☐ Permitted Underground Storage Tank (UST) Facilities
- ☑ Monitoring Wells*
- * ZOOM IN TO SEE MWS
- ☐ DTSC Cleanup Sites
- ☐ DTSC Haz Waste Permit

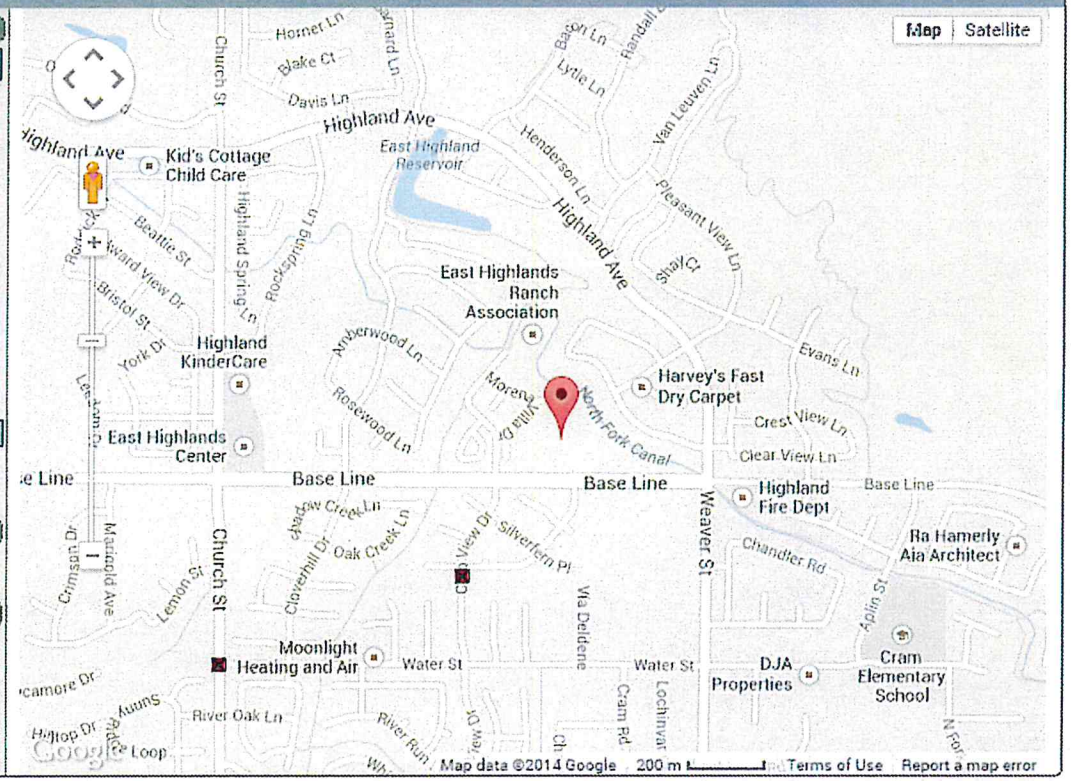
MAP SIZE

640x480

OPTIONS

☑ Site List - EXPORT TO EXCEL

2 Sites



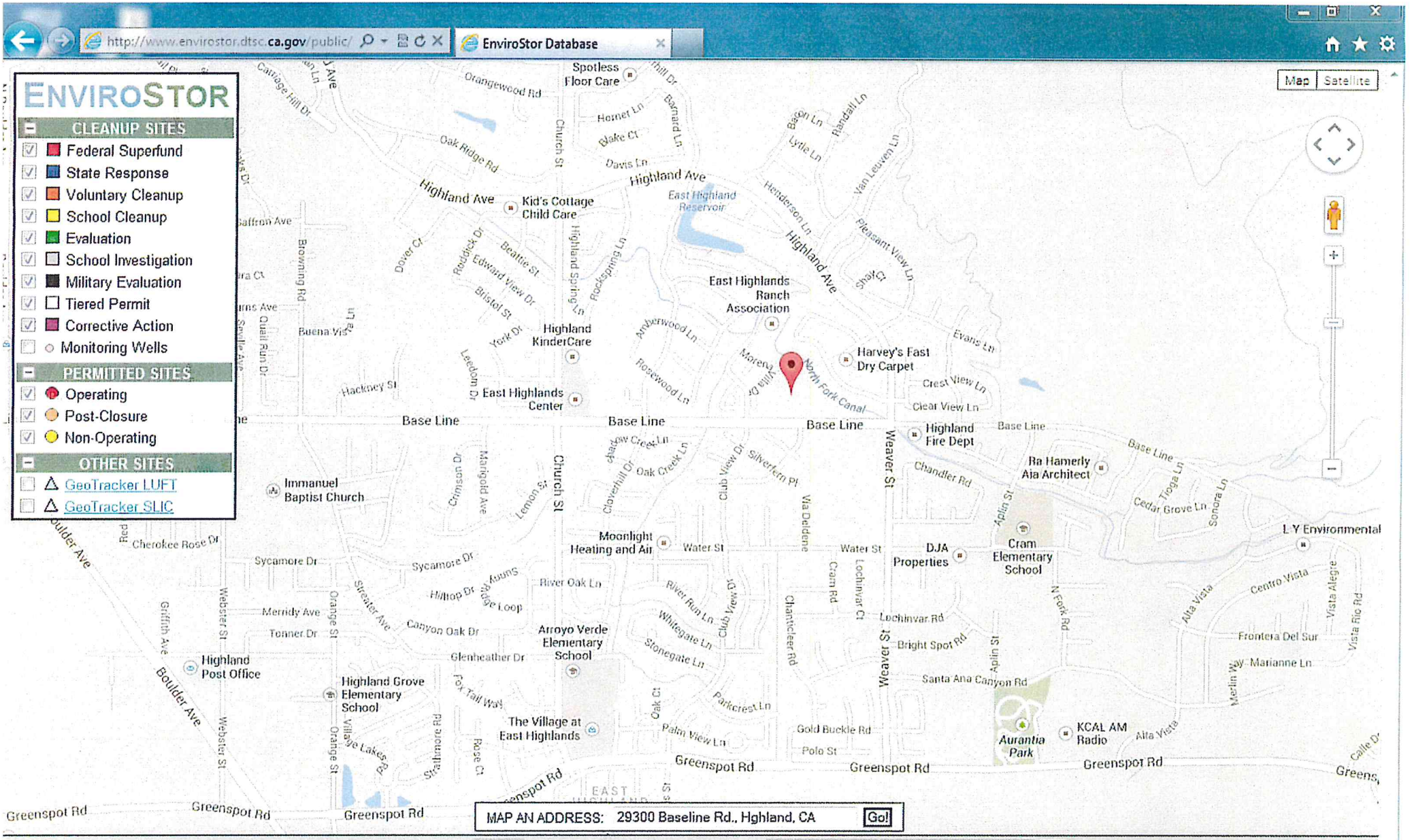
☐ SHOW SITES WITHIN 1000 FEET OF THE FOLLOWING ADDRESS: 29300 Baseline Rd., Highland, CA Go

SITE LIST

	SITE NAME	GLOBAL ID	STATUS	ADDRESS	CITY
☒	EAST HIGHLAND RANCH TRCT 15252	T0607100257	COMPLETED - CASE CLOSED	7000 CLUB VIEW DR	HIGHLAND
☒	EAST HIGHLAND RANCH TRCT 15253	T0607100258	COMPLETED - CASE CLOSED	7500 CHURCH ST	HIGHLAND

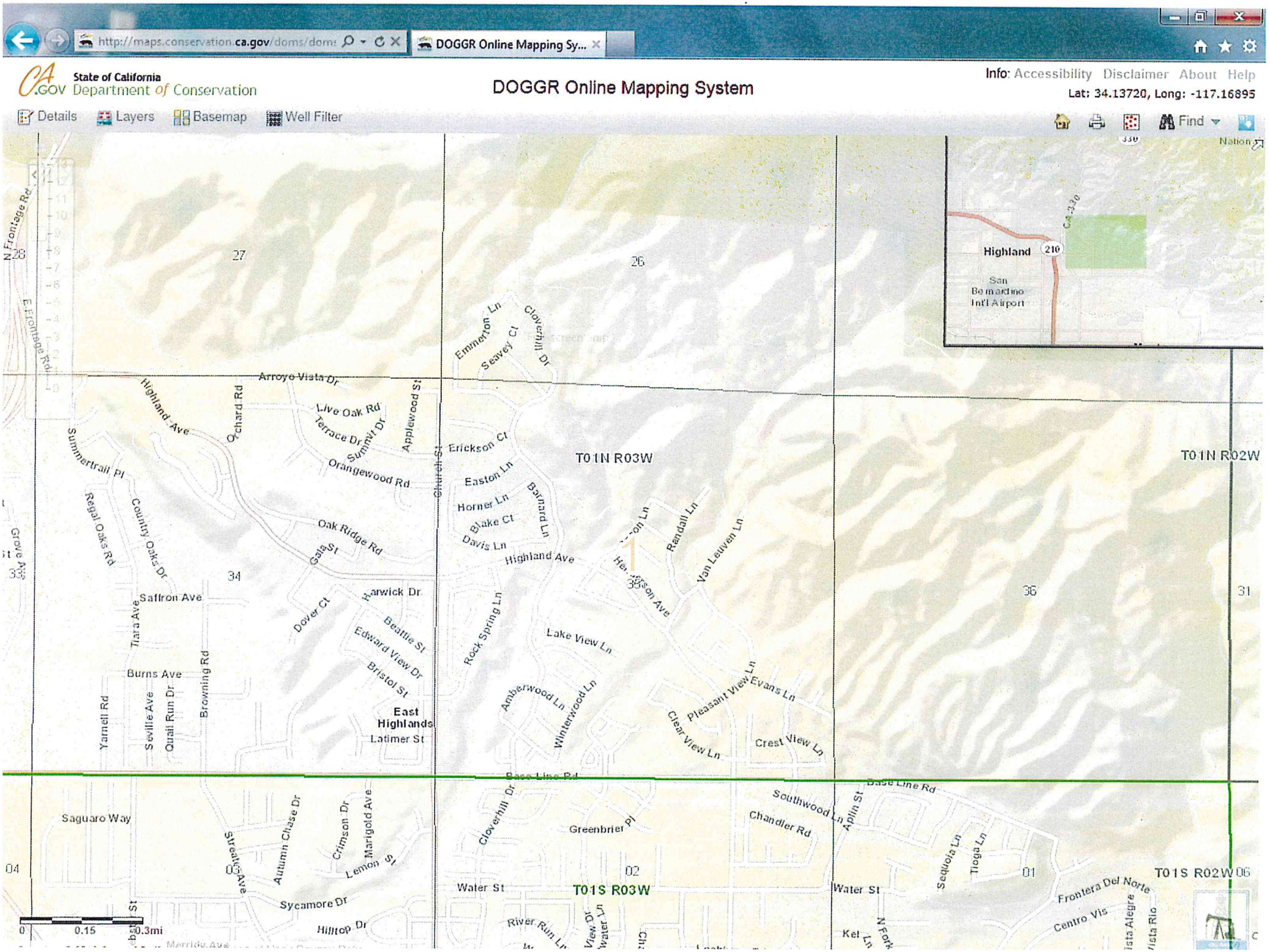
MAP AN ADDRESS: Go!

10:02 AM



SITES CURRENTLY VISIBLE ON MAP — 1 SITES LISTED — EXPORT THIS LIST TO EXCEL

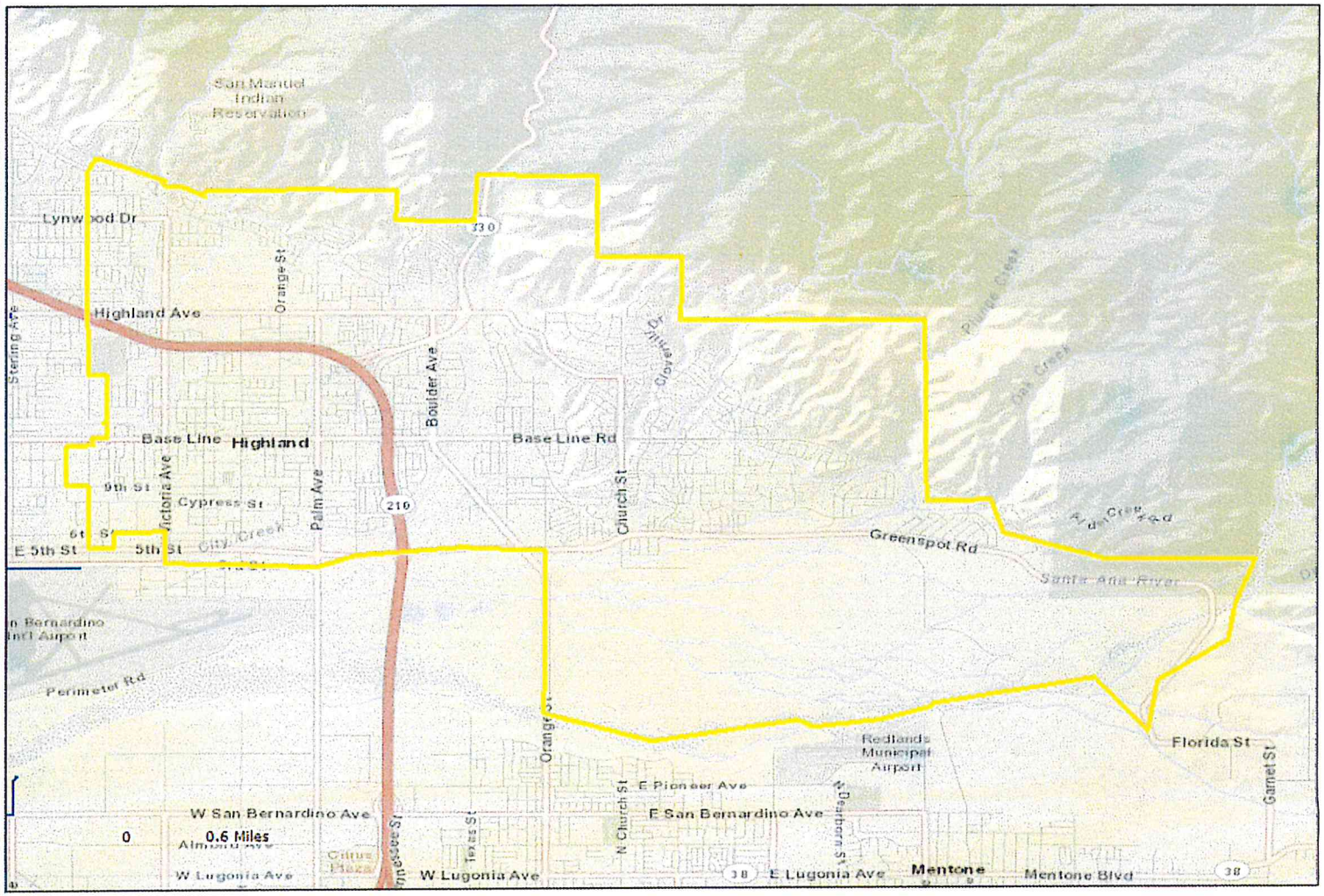
PROJECT NAME	STATUS	PROJECT TYPE	ADDRESS	CITY
HIGHLAND FIFTH-ORANGE PARTNERS, LLC (HFO)	ACTIVE	VOLUNTARY CLEANUP	SOUTHEAST CORNER OF GREENSPOT ROAD AND ORANGE STREET	HIGHLAND


http://maps.conservation.ca.gov/doms/dom
DOGGR Online Mapping Sy...
State of California
Department of Conservation
DOGGR Online Mapping System
Info: Accessibility Disclaimer About Help
Lat: 34.13720, Long: -117.16895
Details
Layers
Basemap
Well Filter
Find
Highland
210
San Bernardino Int'l Airport
CA-330
T01N R03W
T01N R02W
T01S R03W
T01S R02W
East Highlands
Arroyo Vista Dr
Highland Ave
Orchard Rd
Live Oak Rd
Terrace Dr
Summit Dr
Applewood St
Church St
Erickson Ct
Easton Ln
Horner Ln
Blake Ct
Davis Ln
Barnard Ln
Randall Ln
Van Leuven Ln
Orangewood Rd
Summertrail Pl
Regal Oaks Rd
Country Oaks Dr
Oak Ridge Rd
Gale St
Saffron Ave
Tiara Ave
Yarnell Rd
Seville Ave
Quail Run Dr
Browning Rd
Burns Ave
Dover Ct
Warwick Dr
Beattie St
Edward View Dr
Bristol St
Latimer St
Rock Spring Ln
Lake View Ln
Amberwood Ln
Winterwood Ln
Clear View Ln
Pleasant View Ln
Evans Ln
Crest View Ln
Base Line Rd
Cloverhill Dr
Greenbrier Pl
Chandler Rd
Southwood Ln
Aplin St
Sequoia Ln
Tioga Ln
Saguaro Way
Autumn Chase Dr
Crimson Dr
Marigold Ave
Lemon St
Sycamore Dr
Hilltop Dr
Water St
River Run Ln
Frontera Del Norte
Centro Vis
Emmerton Ln
Seavey Ct
Cloverhill Dr
Merrill Ave
0
0.15
0.3mi

NPMS Public Map Viewer

Public Viewer Layer List

View pipelines by
...



Please refer to the User Manual which is accessible via the Help link for guidance on this map application. If you need additional assistance, please contact the NPMS National Repository staff at NPMS-NR@mbakercorp.com or 703-317-6294.

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APPENDIX C

EDR HISTORICAL REPORTS

PETRA

29300 Baseline Avenue
29300 Baseline Avenue
Highland, CA 92346

Inquiry Number: 03794498.2r
November 22, 2013

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

FORM-YAS-KKT

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

29300 BASELINE AVENUE
HIGHLAND, CA 92346

COORDINATES

Latitude (North):	34.1220000 - 34° 7' 19.20"
Longitude (West):	117.1647000 - 117° 9' 52.92"
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	484811.8
UTM Y (Meters):	3775500.8
Elevation:	1581 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34117-A2 REDLANDS, CA
Most Recent Revision:	1988
North Map:	34117-B2 HARRISON MOUNTAIN, CA
Most Recent Revision:	1988

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2012
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL---------- Proposed National Priority List Sites
NPL LIENS---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG---------- RCRA - Large Quantity Generators
RCRA-CESQG---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS---------- Engineering Controls Sites List
US INST CONTROL---------- Sites with Institutional Controls
LUCIS---------- Land Use Control Information System

Federal ERNS list

ERNS---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF---------- Solid Waste Information System

State and tribal leaking storage tank lists

SLIC---------- Statewide SLIC Cases
INDIAN LUST---------- Leaking Underground Storage Tanks on Indian Land

EXECUTIVE SUMMARY

State and tribal registered storage tank lists

UST---------- Active UST Facilities
AST---------- Aboveground Petroleum Storage Tank Facilities
INDIAN UST---------- Underground Storage Tanks on Indian Land
FEMA UST---------- Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP---------- Voluntary Cleanup Program Properties
INDIAN VCP---------- Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI---------- Open Dump Inventory
DEBRIS REGION 9---------- Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT---------- Waste Management Unit Database
SWRCY---------- Recycler Database
HAULERS---------- Registered Waste Tire Haulers Listing
INDIAN ODI---------- Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL---------- Clandestine Drug Labs
HIST Cal-Sites---------- Historical Calsites Database
SCH---------- School Property Evaluation Program
Toxic Pits---------- Toxic Pits Cleanup Act Sites
CDL---------- Clandestine Drug Labs
US HIST CDL---------- National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST---------- Facility Inventory Database
HIST UST---------- Hazardous Substance Storage Container Database
SWEEPS UST---------- SWEEPS UST Listing

Local Land Records

LIENS 2---------- CERCLA Lien Information
LIENS---------- Environmental Liens Listing
DEED---------- Deed Restriction Listing

Records of Emergency Release Reports

HMIRS---------- Hazardous Materials Information Reporting System
CHMIRS---------- California Hazardous Material Incident Report System
LDS---------- Land Disposal Sites Listing

MCS---------- Military Cleanup Sites Listing
SPILLS 90---------- SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR---------- RCRA - Non Generators
DOT OPS---------- Incident and Accident Data
DOD---------- Department of Defense Sites
FUDS---------- Formerly Used Defense Sites
CONSENT---------- Superfund (CERCLA) Consent Decrees
ROD---------- Records Of Decision
UMTRA---------- Uranium Mill Tailings Sites
US MINES---------- Mines Master Index File
TRIS---------- Toxic Chemical Release Inventory System
TSCA---------- Toxic Substances Control Act
FTTS---------- FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS---------- FIFRA/TSCA Tracking System Administrative Case Listing
SSTS---------- Section 7 Tracking Systems
ICIS---------- Integrated Compliance Information System
PADS---------- PCB Activity Database System
MLTS---------- Material Licensing Tracking System
RADINFO---------- Radiation Information Database
FINDS---------- Facility Index System/Facility Registry System
RAATS---------- RCRA Administrative Action Tracking System
RMP---------- Risk Management Plans
CA BOND EXP. PLAN---------- Bond Expenditure Plan
UIC---------- UIC Listing
NPDES---------- NPDES Permits Listing
Cortese---------- "Cortese" Hazardous Waste & Substances Sites List
CUPA Listings---------- CUPA Resources List
Notify 65---------- Proposition 65 Records
DRYCLEANERS---------- Cleaner Facilities
WIP---------- Well Investigation Program Case List
ENF---------- Enforcement Action Listing
HAZNET---------- Facility and Manifest Data
EMI---------- Emissions Inventory Data
INDIAN RESERV---------- Indian Reservations
SCRD DRYCLEANERS---------- State Coalition for Remediation of Drycleaners Listing
MWMP---------- Medical Waste Management Program Listing
COAL ASH DOE---------- Steam-Electric Plant Operation Data
COAL ASH EPA---------- Coal Combustion Residues Surface Impoundments List
HWT---------- Registered Hazardous Waste Transporter Database
HWP---------- EnviroStor Permitted Facilities Listing
Financial Assurance---------- Financial Assurance Information Listing
LEAD SMELTERS---------- Lead Smelter Sites
2020 COR ACTION---------- 2020 Corrective Action Program List
US AIRS---------- Aerometric Information Retrieval System Facility Subsystem
PRP---------- Potentially Responsible Parties
WDS---------- Waste Discharge System
EPA WATCH LIST---------- EPA WATCH LIST
US FIN ASSUR---------- Financial Assurance Information
PCB TRANSFORMER---------- PCB Transformer Registration Database
PROC---------- Certified Processors Database

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP---------- EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR US Hist Auto Stat..... EDR Exclusive Historic Gas Stations
EDR US Hist Cleaners..... EDR Exclusive Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal RCRA generators list

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 07/11/2013 has revealed that there is 1 RCRA-SQG site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
PACIFIC BELL	***26840 E BASELINE***	***WSW 1/8 - 1/4 (0.220 mi.)***	***A3***	***10***

State and tribal leaking storage tank lists

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the State Water Resources Control Board Leaking Underground Storage Tank Information System.

A review of the LUST list, as provided by EDR, and dated 09/16/2013 has revealed that there is 1 LUST site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
EAST HIGHLAND RANCH TRCT 15252 Status: Completed - Case Closed	***7000 CLUB VIEW DR***	***NNW 1/8 - 1/4 (0.151 mi.)***	***1***	***8***

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
EAST HIGHLAND RANCH TRCT 15252	*7000 CLUB VIEW DR*	*NNW 1/8 - 1/4 (0.151 mi.)*	*1*	*8*

San Bern. Co. Permit: San Bernardino County Fire Department Hazardous Materials Division.

A review of the San Bern. Co. Permit list, as provided by EDR, and dated 09/03/2013 has revealed that there are 2 San Bern. Co. Permit sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
EAST HIGHLANDS RANCH HOA	7136 CLUB VIEW DR	NW 1/8 - 1/4 (0.151 mi.)	2	10
ALL MAKE AUTO	26892 E BASELINE	WSW 1/8 - 1/4 (0.220 mi.)	A4	13

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 20 records.

Site Name	Database(s)
26075 BASELINE RD	US HIST CDL
CALTRANS	HIST CORTESE
	WMUDS/SWAT, HIST CORTESE, CHMIRS
SAN BERNARDINO CNTY FIRE DEPT	SWEEPS UST
E-Z SERVE	SWEEPS UST
MOBIL R/S #17038	SWEEPS UST, San Bern. Co. Permit
THRIFTY OIL CO #329	SWEEPS UST, San Bern. Co. Permit
SHANK/BALFOUR BEATTY	CHMIRS, San Bern. Co. Permit
CIMA ROAD MINE WASTE SITE	CERCLIS
ARCO FAC #9699	UST
SCE-MILL CREEK #2/3 POWERHOUSE	AST, San Bern. Co. Permit
SCE-MILL CREEK #1 POWERHOUSE	AST, San Bern. Co. Permit
EXXONMOBIL OIL CORP.	RCRA-LQG
SOUTHERN CALIFORNIA EDISON SANTA A	RCRA-LQG
ARS AUTO REPAIR	San Bern. Co. Permit
AT&T MOBILITY-ATC #85404	San Bern. Co. Permit
BASELIINE MACHINE	San Bern. Co. Permit
THREE AMIGO'S AUTO REPAIR	San Bern. Co. Permit
BASELINE GARDENS MWC	ICIS
ROBERTO #39;S RECYCLING	SWRCY

OVERVIEW MAP - 03794498.2r

- ★ Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland CA 92346 LAT/LONG: 34.122 / 117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY #: 03794498.2r DATE: November 22, 2013 7:56 pm

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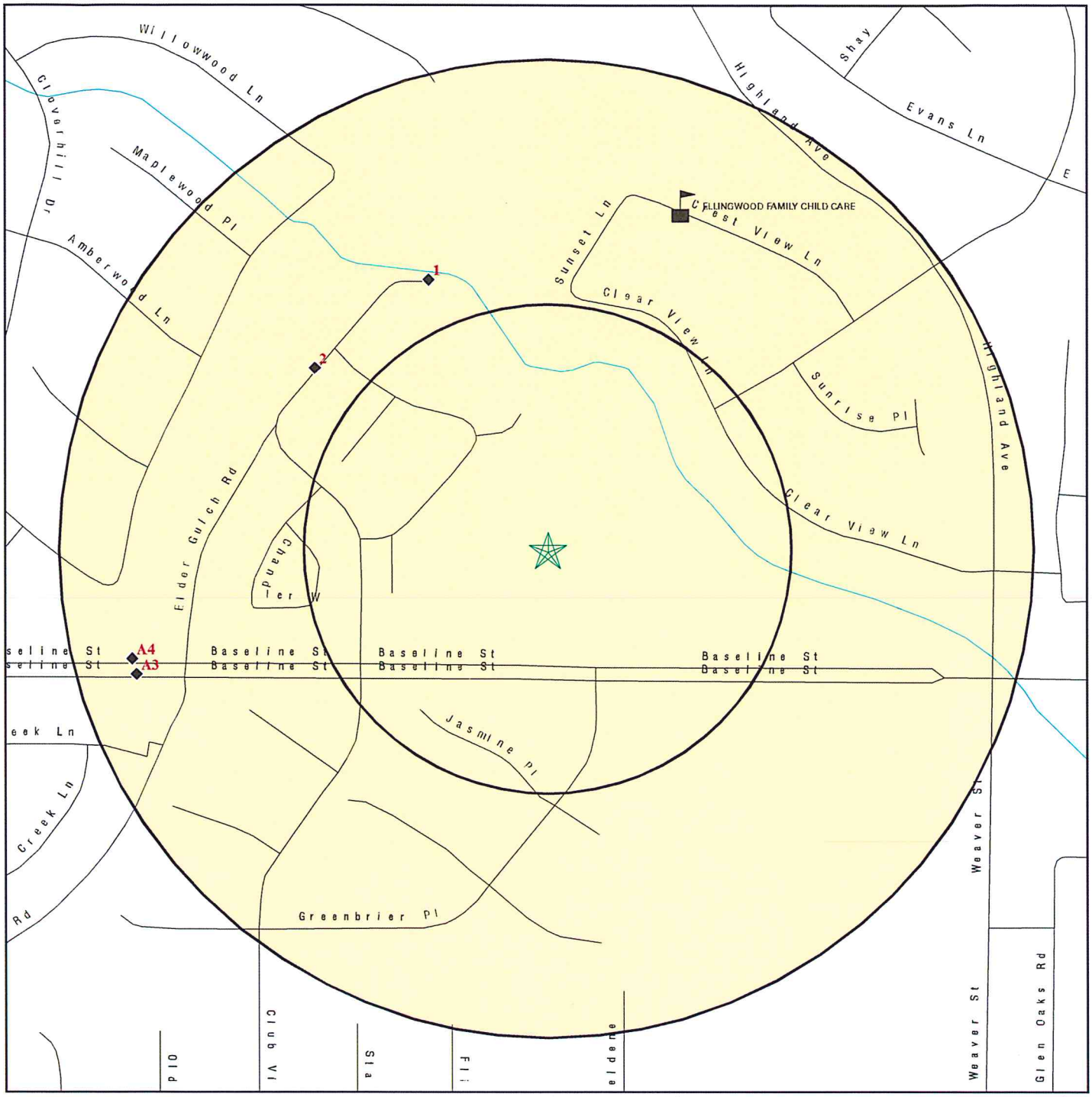
DETAIL MAP - 03794498.2r



0 1/16 1/8 1/4 Miles

- ★ Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland CA 92346 LAT/LONG: 34.122 / 117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY #: 03794498.2r DATE: November 22, 2013 7:57 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS	0.500		0	0	0	NR	NR	0
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	1	NR	NR	NR	1
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
LUCIS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	1	0	NR	NR	1

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SLIC	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
SWEEPS UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
LIENS	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	0	0	NR	0
FUDS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
Cortese	0.500		0	0	0	NR	NR	0
HIST CORTESE	0.500		0	1	0	NR	NR	1
CUPA Listings	0.250		0	0	NR	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
San Bern. Co. Permit	0.250		0	2	NR	NR	NR	2
HAZNET	TP		NR	NR	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
HWT	0.250		0	0	NR	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR US Hist Auto Stat	0.250		0	0	NR	NR	NR	0
EDR US Hist Cleaners	0.250		0	0	NR	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1 **EAST HIGHLAND RANCH TRCT 15252** **HIST CORTESE S101301169**
NNW **7000 CLUB VIEW DR** **LUST N/A**
1/8-1/4 **HIGHLAND, CA 92346**
0.151 mi.
795 ft.

Relative:
Lower

Actual:
1570 ft.

CORTESE:

Region:	CORTESE
Facility County Code:	36
Reg By:	LTNKA
Reg Id:	083602099T

LUST:

Region:	STATE
Global Id:	T0607100257
Latitude:	34.1189612
Longitude:	-117.1673055
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	10/17/1994
Lead Agency:	SAN BERNARDINO COUNTY
Case Worker:	CR2
Local Agency:	SAN BERNARDINO COUNTY
RB Case Number:	083602099T
LOC Case Number:	92032
File Location:	Local Agency
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Diesel
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0607100257
Contact Type:	Local Agency Caseworker
Contact Name:	CATHERINE RICHARDS
Organization Name:	SAN BERNARDINO COUNTY
Address:	620 SOUTH E STREET
City:	SAN BERNARDINO
Email:	crichards@sbcfire.org
Phone Number:	9093868419

Global Id:	T0607100257
Contact Type:	Regional Board Caseworker
Contact Name:	VALERIE JAHN-BULL
Organization Name:	SANTA ANA RWQCB (REGION 8)
Address:	3737 MAIN STREET, SUITE 500
City:	RIVERSIDE
Email:	vjahn-bull@waterboards.ca.gov
Phone Number:	9517824903

Status History:

Global Id:	T0607100257
Status:	Completed - Case Closed
Status Date:	10/17/1994

Global Id:	T0607100257
Status:	Open - Case Begin Date
Status Date:	07/21/1992

EAST HIGHLAND RANCH TRCT 15252 (Continued) **S101301169**

Global Id: T0607100257
Status: Open - Remediation
Status Date: 06/01/1993

Regulatory Activities:
Global Id: T0607100257
Action Type: Other
Date: 01/01/1950
Action: Leak Stopped

Global Id: T0607100257
Action Type: Other
Date: 01/01/1950
Action: Leak Discovery

Global Id: T0607100257
Action Type: Other
Date: 01/01/1950
Action: Leak Reported

LUST REG 8:
Region: 8
County: San Bernardino
Regional Board: Santa Ana Region
Facility Status: Case Closed
Case Number: 083602099T
Local Case Num: 92032
Case Type: Soil only
Substance: Diesel
Qty Leaked: Not reported
Abate Method: Excavate and Dispose - remove contaminated soil and dispose in approved site
Cross Street: GREENSPOT
Enf Type: Not reported
Funding: Not reported
How Discovered: Tank Closure
How Stopped: Not reported
Leak Cause: UNK
Leak Source: UNK
Global ID: T0607100257
How Stopped Date: 7/21/1992
Enter Date: 9/1/1992
Review Date: Not reported
Prelim Assess: Not reported
Discover Date: 7/24/1992
Enforcement Date: Not reported
Close Date: 10/17/1994
Workplan: Not reported
Pollution Char: Not reported
Remed Plan: Not reported
Remed Action: 6/1/1993
Monitoring: Not reported
Enter Date: 9/1/1992
GW Qualifies: Not reported
Soil Qualifies: Not reported

EAST HIGHLAND RANCH TRCT 15252 (Continued) **S101301169**

Operator:	Not reported
Facility Contact:	Not reported
Interim:	Not reported
Oversite Program:	LUST
Latitude:	34.125597
Longitude:	-117.2042053
MTBE Date:	Not reported
Max MTBE GW:	Not reported
MTBE Concentration:	0
Max MTBE Soil:	Not reported
MTBE Fuel:	0
MTBE Tested:	Not Required to be Tested.
MTBE Class:	*
Staff:	VJJ
Staff Initials:	CR2
Lead Agency:	Local Agency
Local Agency:	36000L
Hydr Basin #:	UPPER SANTA ANA VALL
Beneficial:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Work Suspended:	Not reported
Summary:	SMUG POT OIL ALSO

2
NW
1/8-1/4
0.151 mi.
798 ft.

EAST HIGHLANDS RANCH HOA **San Bern. Co. Permit** **S109254357**
7136 CLUB VIEW DR **N/A**
HIGHLAND, CA 92346

Relative:
Lower

Actual:
1555 ft.

San Bern. Co. Permit:

Region:	SAN BERNARDINO
Facility ID:	FA0011675
Owner:	EAST HIGHLANDS RANCH MSTR HOA
Permit Number:	PT0020215
Permit Category:	HAZMAT HANDLER 0-10 EMPLOYEES
Facility Status:	ACTIVE
Expiration Date:	08/31/2013

A3
WSW
1/8-1/4
0.220 mi.
1161 ft.

PACIFIC BELL **RCRA-SQG** **1000250420**
26840 E BASELINE **FINDS** **CAT080025612**
HIGHLAND, CA **HAZNET**

Site 1 of 2 in cluster A

Relative:
Lower

Actual:
1509 ft.

RCRA-SQG:

Date form received by agency:	09/01/1996
Facility name:	PACIFIC BELL
Facility address:	26840 E BASELINE HIGHLAND, CA 92346
EPA ID:	CAT080025612
Mailing address:	500 S.MAIN S TOWER BOCC RM 260 ORANGE, CA 92668
Contact:	Not reported
Contact address:	Not reported Not reported

PACIFIC BELL (Continued) **1000250420**

Contact country: Not reported
Contact telephone: Not reported
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: THE PACIFIC TELEPHONE AND TELEGRAPH CO
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/20/1981
Facility name: PACIFIC BELL
Classification: Large Quantity Generator

Violation Status: No violations found

PACIFIC BELL (Continued) **1000250420**

FINDS:

Registry ID: 110002952537

Environmental Interest/Information System
California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

HAZNET:

Year:	2010
Gepaid:	CAT080025612
Contact:	JAMES CRANMER
Telephone:	3033917206
Mailing Name:	Not reported
Mailing Address:	1 AT&T WAY RM 2C140
Mailing City,St,Zip:	BEDMINSTER, NJ 079210000
Gen County:	Not reported
TSD EPA ID:	CAD982444481
TSD County:	Not reported
Waste Category:	Other organic solids
Disposal Method:	Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Tons:	0.005
Facility County:	San Bernardino

Year:	2010
Gepaid:	CAT080025612
Contact:	JAMES CRANMER
Telephone:	3033917206
Mailing Name:	Not reported
Mailing Address:	1 AT&T WAY RM 2C140
Mailing City,St,Zip:	BEDMINSTER, NJ 079210000
Gen County:	Not reported
TSD EPA ID:	CAD982444481
TSD County:	Not reported
Waste Category:	Waste oil and mixed oil
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.038
Facility County:	San Bernardino

Year:	2010
Gepaid:	CAT080025612
Contact:	JAMES CRANMER
Telephone:	3033917206
Mailing Name:	Not reported
Mailing Address:	1 AT&T WAY RM 2C140

PACIFIC BELL (Continued) **1000250420**

Mailing City,St,Zip: BEDMINSTER, NJ 079210000
Gen County: Not reported
TSD EPA ID: CAD982444481
TSD County: Not reported
Waste Category: Unspecified organic liquid mixture
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.204
Facility County: San Bernardino

Year: 2010
Gepaid: CAT080025612
Contact: JAMES CRANMER
Telephone: 3033917206
Mailing Name: Not reported
Mailing Address: 1 AT&T WAY RM 2C140
Mailing City,St,Zip: BEDMINSTER, NJ 079210000
Gen County: Not reported
TSD EPA ID: CAD982444481
TSD County: Not reported
Waste Category: Unspecified organic liquid mixture
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.204
Facility County: San Bernardino

Year: 2010
Gepaid: CAT080025612
Contact: JAMES CRANMER
Telephone: 3033917206
Mailing Name: Not reported
Mailing Address: 1 AT&T WAY RM 2C140
Mailing City,St,Zip: BEDMINSTER, NJ 079210000
Gen County: Not reported
TSD EPA ID: CAD982444481
TSD County: Not reported
Waste Category: Other organic solids
Disposal Method: Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Tons: 0.005
Facility County: San Bernardino

Click this hyperlink while viewing on your computer to access
23 additional CA_HAZNET: record(s) in the EDR Site Report.

A4 **ALL MAKE AUTO** **San Bern. Co. Permit** **S104763451**
WSW **26892 E BASELINE** **N/A**
1/8-1/4 **HIGHLAND, CA 92346**
0.220 mi.
1161 ft. **Site 2 of 2 in cluster A**

Relative:
Lower

Actual:
1512 ft.

San Bern. Co. Permit:
Region: SAN BERNARDINO
Facility ID: FA0000832
Owner: SOG WAP CORP
Permit Number: PT0014968
Permit Category: CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR
Facility Status: INACTIVE
Expiration Date: 11/30/2010

ALL MAKE AUTO (Continued) **S104763451**

Region: SAN BERNARDINO
Facility ID: FA0000832
Owner: SOG WAP CORP
Permit Number: PT0009876
Permit Category: SPECIAL HANDLER
Facility Status: ACTIVE
Expiration Date: 11/30/2013

Region: SAN BERNARDINO
Facility ID: FA0000832
Owner: SOG WAP CORP
Permit Number: PT0009877
Permit Category: SPECIAL GENERATOR
Facility Status: ACTIVE
Expiration Date: 11/30/2013

Count: 20 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
HIGHLAND	U003937936	ARCO FAC #9699	25717 E BASELINE ST	92346	UST
HIGHLAND	S112142764	ARS AUTO REPAIR	25481 E BASELINE ST	92346	San Bern. Co. Permit
HIGHLAND	S111023772	ROBERTO #39;S RECYCLING	25496 E BASELINE ST	92346	SWRCY
HIGHLAND	S110071592	AT&T MOBILITY-ATC #85404	2756 E BASELINE ST	92346	San Bern. Co. Permit
HIGHLAND	S106931778	SAN BERNARDINO CNTY FIRE DEPT	26974 E BASELINE	92346	SWEEPS UST
HIGHLAND	S106925600	E-Z SERVE	26503 E BASELINE	92346	SWEEPS UST
HIGHLAND	S105697615	MOBIL R/S #17038	27308 E BASELINE	92346	SWEEPS UST, San Bern. Co. Permit
HIGHLAND	S105697611	BASELIINE MACHINE	26608 E BASELINE	92346	San Bern. Co. Permit
HIGHLAND	S105697603	THRIFTY OIL CO #329	25717 E BASELINE	92346	SWEEPS UST, San Bern. Co. Permit
HIGHLAND	S105298546	THREE AMIGO'S AUTO REPAIR	25788 E BASELINE	92346	San Bern. Co. Permit
HIGHLAND	1009619663	26075 BASELINE RD	26075 BASELINE RD		US HIST CDL
HIGHLAND	1007200134	EXXONMOBIL OIL CORP.	27308 EAST BASELINE	92346	RCRA-LQG
HIGHLAND	1012210432	SOUTHERN CALIFORNIA EDISON SANTA A	3 MI E OF HWY 330	92346	RCRA-LQG
HIGHLAND	S105676581	SHANK/BALFOUR BEATTY	2904 FRONTAGE RD	92346	CHMIRS, San Bern. Co. Permit
HIGHLAND	S105024082	CALTRANS	HIGHLAND AVE E	92346	HIST CORTESE
MENTONE	S109254329	SCE-MILL CREEK #2/3 POWERHOUSE	HIGHWAY 387 MILES EAST OF MENT	92359	AST, San Bern. Co. Permit
MENTONE	S108724291	SCE-MILL CREEK #1 POWERHOUSE	1/4 MILE OFF HWY 383 1/2 MILES	92359	AST, San Bern. Co. Permit
SAN BERNARDINO COUN	1012121453	BASELINE GARDENS MWC	CA		ICIS
SAN BERNARDINO COUN	S103442535		FORT IRWIN		WMUDS/SWAT, HIST CORTESE, CHI
SAN BERNARDINO COUN	1016139697	CIMA ROAD MINE WASTE SITE	1 MIL W OF INTE. 15 OFF CIMA R		CERCLIS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/09/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 62

Source: EPA
Telephone: N/A
Last EDR Contact: 11/11/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/09/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 62

Source: EPA
Telephone: N/A
Last EDR Contact: 11/11/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/09/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 62

Source: EPA
Telephone: N/A
Last EDR Contact: 11/11/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/29/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 72

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 11/11/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 10/09/2012
Date Made Active in Reports: 12/20/2012
Number of Days to Update: 72

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 10/11/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. 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.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/29/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 72

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 11/11/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 06/17/2013
Date Data Arrived at EDR: 06/21/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 104

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 06/17/2013
Date Data Arrived at EDR: 06/21/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 104

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 08/20/2013
Date Data Arrived at EDR: 08/23/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 70

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/18/2013
Next Scheduled EDR Contact: 03/03/2014
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/17/2013
Date Made Active in Reports: 02/15/2013
Number of Days to Update: 29

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 10/01/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 09/05/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/06/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 09/05/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/06/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/19/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 50

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 11/21/2013
Next Scheduled EDR Contact: 03/03/2014
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 29

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC: Statewide SLIC Cases
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 08/27/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 66

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 08/20/2013
Date Data Arrived at EDR: 08/23/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 70

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 07/29/2013
Date Data Arrived at EDR: 07/30/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 94

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 03/01/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 08/27/2012
Date Data Arrived at EDR: 08/28/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 49

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 09/12/2011
Date Data Arrived at EDR: 09/13/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 59

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/02/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 91

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 02/01/2013
Date Data Arrived at EDR: 05/01/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 184

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 11/01/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

State and tribal registered storage tank lists

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 29

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 10/07/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 02/06/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 65

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 02/21/2013
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 45

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 07/29/2013
Date Data Arrived at EDR: 08/01/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 92

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/28/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 43

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/10/2011
Date Data Arrived at EDR: 05/11/2011
Date Made Active in Reports: 06/14/2011
Number of Days to Update: 34

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 08/20/2013
Date Data Arrived at EDR: 08/23/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 70

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/02/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 91

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 11/07/2012
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 156

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 11/01/2014
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 09/05/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/06/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 10/02/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 14

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 10/01/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/24/2013
Date Data Arrived at EDR: 06/25/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 45

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/24/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 11/08/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/19/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 28

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 04/26/2013
Date Made Active in Reports: 05/16/2013
Number of Days to Update: 20

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 11/18/2013
Next Scheduled EDR Contact: 03/03/2014
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 11/04/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 08/06/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 22

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 09/04/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 09/05/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/06/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 09/03/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 37

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 04/25/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 11/13/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 06/14/2013
Date Data Arrived at EDR: 06/17/2013
Date Made Active in Reports: 08/21/2013
Number of Days to Update: 65

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 09/11/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 33

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/13/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 55

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 10/01/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 03/12/2013
Date Data Arrived at EDR: 05/01/2013
Date Made Active in Reports: 06/25/2013
Number of Days to Update: 55

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 10/30/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 29

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 29

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 11/06/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 15

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 08/07/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 57

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 06/11/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 143

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/13/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Varies

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 28

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 09/05/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/31/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 44

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/30/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/24/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 11/21/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 11/21/2014
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/20/2011
Date Data Arrived at EDR: 11/10/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 61

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 10/09/2014
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 06/01/2013
Date Data Arrived at EDR: 07/17/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 107

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 07/22/2013
Date Data Arrived at EDR: 08/02/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 91

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 09/30/2013
Date Data Arrived at EDR: 10/09/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 23

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 10/09/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 03/08/2013
Date Data Arrived at EDR: 03/21/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 111

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/11/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 05/08/2012
Date Data Arrived at EDR: 05/25/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 46

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/19/2013
Number of Days to Update: 52

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/26/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Biennially

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 08/19/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 50

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/21/2013
Next Scheduled EDR Contact: 03/03/2014
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UIC: UIC Listing
A listing of underground control injection wells.

Date of Government Version: 08/21/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 30

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 09/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Varies

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 07/05/2013
Date Data Arrived at EDR: 07/05/2013
Date Made Active in Reports: 08/26/2013
Number of Days to Update: 52

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 10/01/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List
The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 35

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Annually

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 08/09/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 56

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/08/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 07/16/2013
Date Made Active in Reports: 08/26/2013
Number of Days to Update: 41

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 10/15/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 06/25/2013
Date Made Active in Reports: 08/22/2013
Number of Days to Update: 58

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 09/27/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 11/18/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/04/2013
Date Data Arrived at EDR: 03/15/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 11/18/2013
Next Scheduled EDR Contact: 03/03/2014
Data Release Frequency: Quarterly

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 11/01/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/19/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 28

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 08/29/2013
Date Data Arrived at EDR: 09/13/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 31

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 09/11/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 10/15/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 09/13/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 07/15/2013
Date Data Arrived at EDR: 07/16/2013
Date Made Active in Reports: 08/12/2013
Number of Days to Update: 27

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/15/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/28/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 44

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/27/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Quarterly

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 08/12/2013
Date Data Arrived at EDR: 08/20/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 49

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 11/18/2013
Next Scheduled EDR Contact: 03/03/2014
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 08/27/2013
Number of Days to Update: 19

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 10/25/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 01/29/2013
Date Data Arrived at EDR: 02/14/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 09/24/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 11/11/2011
Date Data Arrived at EDR: 05/18/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 11/15/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: N/A

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 04/15/2013
Date Data Arrived at EDR: 07/03/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 72

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 10/04/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 11/21/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Quarterly

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/30/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-5962
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/30/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-5962
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Annually

EPA WATCH LIST: EPA WATCH LIST
EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 11/15/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR US Hist Auto Stat: EDR Exclusive Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Exclusive Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Proprietary Historic Dry Cleaners - Cole

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: N/A
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR US Hist Auto Stat: EDR Proprietary Historic Gas Stations - Cole

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: N/A
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 07/25/2013
Date Data Arrived at EDR: 07/26/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 14

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 07/25/2013
Date Data Arrived at EDR: 07/26/2013
Date Made Active in Reports: 08/20/2013
Number of Days to Update: 25

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List

Cupa Facility List

Date of Government Version: 06/20/2013
Date Data Arrived at EDR: 06/21/2013
Date Made Active in Reports: 08/21/2013
Number of Days to Update: 61

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/02/2013
Date Made Active in Reports: 08/22/2013
Number of Days to Update: 20

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 10/09/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 07/24/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 16

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 06/20/2013
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 39

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 11/15/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 08/20/2013
Date Data Arrived at EDR: 08/23/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 46

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 11/04/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 01/09/2013
Date Data Arrived at EDR: 01/10/2013
Date Made Active in Reports: 02/25/2013
Number of Days to Update: 46

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 11/04/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 08/20/2013
Date Data Arrived at EDR: 08/23/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 46

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 11/04/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 07/16/2013
Date Made Active in Reports: 07/24/2013
Number of Days to Update: 8

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 10/09/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 08/09/2013
Date Data Arrived at EDR: 08/09/2013
Date Made Active in Reports: 08/22/2013
Number of Days to Update: 13

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 11/20/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Varies

IMPERIAL COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 07/26/2013
Date Data Arrived at EDR: 08/09/2013
Date Made Active in Reports: 08/22/2013
Number of Days to Update: 13

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 33

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 11/20/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing

Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 11/08/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List

A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/22/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 42

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 11/20/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/25/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 33

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/21/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern

San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: No Update Planned

HMS: Street Number List

Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 03/28/2013
Date Data Arrived at EDR: 06/17/2013
Date Made Active in Reports: 08/21/2013
Number of Days to Update: 65

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 10/09/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities

Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/22/2013
Date Data Arrived at EDR: 07/22/2013
Date Made Active in Reports: 08/26/2013
Number of Days to Update: 35

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/22/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Varies

City of Los Angeles Landfills

Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/17/2013
Next Scheduled EDR Contact: 11/04/2013
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 01/30/2013
Date Data Arrived at EDR: 02/21/2013
Date Made Active in Reports: 03/25/2013
Number of Days to Update: 32

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 10/21/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 07/31/2013
Date Data Arrived at EDR: 08/01/2013
Date Made Active in Reports: 08/27/2013
Number of Days to Update: 26

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 10/21/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 07/15/2013
Date Data Arrived at EDR: 07/18/2013
Date Made Active in Reports: 08/20/2013
Number of Days to Update: 33

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/09/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 09/20/2013
Date Data Arrived at EDR: 09/24/2013
Date Made Active in Reports: 10/18/2013
Number of Days to Update: 24

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 11/20/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 11/26/2012
Date Data Arrived at EDR: 11/28/2012
Date Made Active in Reports: 01/21/2013
Number of Days to Update: 54

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 10/07/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 08/23/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 42

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 11/20/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List
CUPA Facility List

Date of Government Version: 09/04/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 39

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 09/11/2013
Date Data Arrived at EDR: 09/12/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 32

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 11/20/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 12/05/2011
Date Data Arrived at EDR: 12/06/2011
Date Made Active in Reports: 02/07/2012
Number of Days to Update: 63

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 05/29/2013
Date Data Arrived at EDR: 05/30/2013
Date Made Active in Reports: 07/15/2013
Number of Days to Update: 46

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 11/04/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 56

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/08/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 56

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/08/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 56

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/08/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 08/22/2013
Date Data Arrived at EDR: 08/22/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 49

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 08/20/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 07/18/2013
Date Data Arrived at EDR: 07/18/2013
Date Made Active in Reports: 07/24/2013
Number of Days to Update: 6

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Quarterly

Underground Storage Tank Tank List

Underground storage tank sites located in Riverside county.

Date of Government Version: 07/18/2013
Date Data Arrived at EDR: 07/18/2013
Date Made Active in Reports: 08/20/2013
Number of Days to Update: 33

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List

List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 05/03/2013
Date Data Arrived at EDR: 07/08/2013
Date Made Active in Reports: 07/24/2013
Number of Days to Update: 16

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/07/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 05/03/2013
Date Data Arrived at EDR: 07/08/2013
Date Made Active in Reports: 08/23/2013
Number of Days to Update: 46

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/07/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 09/03/2013
Date Data Arrived at EDR: 09/03/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 37

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 11/08/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/23/2013
Date Data Arrived at EDR: 09/24/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 23

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Quarterly

Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2012
Date Data Arrived at EDR: 11/06/2012
Date Made Active in Reports: 11/30/2012
Number of Days to Update: 24

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 11/18/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 11/08/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 11/08/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 09/25/2013
Date Data Arrived at EDR: 09/27/2013
Date Made Active in Reports: 10/18/2013
Number of Days to Update: 21

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 08/26/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 44

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 11/20/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 07/02/2013
Date Data Arrived at EDR: 07/05/2013
Date Made Active in Reports: 08/23/2013
Number of Days to Update: 49

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/13/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 29

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 11/21/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 09/03/2013
Date Data Arrived at EDR: 09/04/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 36

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 09/03/2013
Date Data Arrived at EDR: 09/06/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 38

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/14/2013
Date Data Arrived at EDR: 08/16/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 53

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 11/08/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 08/22/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 44

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 11/21/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 09/09/2013
Date Data Arrived at EDR: 09/10/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 34

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 11/21/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 09/18/2013
Date Data Arrived at EDR: 09/20/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 27

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/18/2013
Date Data Arrived at EDR: 09/24/2013
Date Made Active in Reports: 10/18/2013
Number of Days to Update: 24

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 07/05/2013
Date Data Arrived at EDR: 07/05/2013
Date Made Active in Reports: 08/21/2013
Number of Days to Update: 47

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 07/02/2013
Date Data Arrived at EDR: 07/05/2013
Date Made Active in Reports: 08/12/2013
Number of Days to Update: 38

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 33

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Semi-Annually

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/14/2013
Date Data Arrived at EDR: 01/16/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 42

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 08/19/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 44

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 11/19/2013
Next Scheduled EDR Contact: 03/03/2014
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/07/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 11/19/2013
Next Scheduled EDR Contact: 03/03/2014
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 05/28/2013
Date Data Arrived at EDR: 06/24/2013
Date Made Active in Reports: 08/12/2013
Number of Days to Update: 49

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 08/29/2013
Date Data Arrived at EDR: 09/18/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 28

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 06/24/2013
Date Data Arrived at EDR: 06/26/2013
Date Made Active in Reports: 08/20/2013
Number of Days to Update: 55

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/05/2013
Date Made Active in Reports: 08/22/2013
Number of Days to Update: 17

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 11/18/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 45

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 11/22/2013
Next Scheduled EDR Contact: 03/03/2014
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 08/28/2012
Number of Days to Update: 40

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 11/01/2013
Date Data Arrived at EDR: 11/07/2013
Date Made Active in Reports: 11/18/2013
Number of Days to Update: 11

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 11/07/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 07/24/2013
Date Made Active in Reports: 08/19/2013
Number of Days to Update: 26

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/21/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 06/21/2013
Date Made Active in Reports: 08/05/2013
Number of Days to Update: 45

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/23/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 08/09/2013
Date Made Active in Reports: 09/27/2013
Number of Days to Update: 49

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

29300 BASELINE AVENUE
29300 BASELINE AVENUE
HIGHLAND, CA 92346

TARGET PROPERTY COORDINATES

Latitude (North):	34.122 - 34° 7' 19.20"
Longitude (West):	117.1647 - 117° 9' 52.92"
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	484811.8
UTM Y (Meters):	3775500.8
Elevation:	1581 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34117-A2 REDLANDS, CA
Most Recent Revision:	1988
North Map:	34117-B2 HARRISON MOUNTAIN, CA
Most Recent Revision:	1988

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

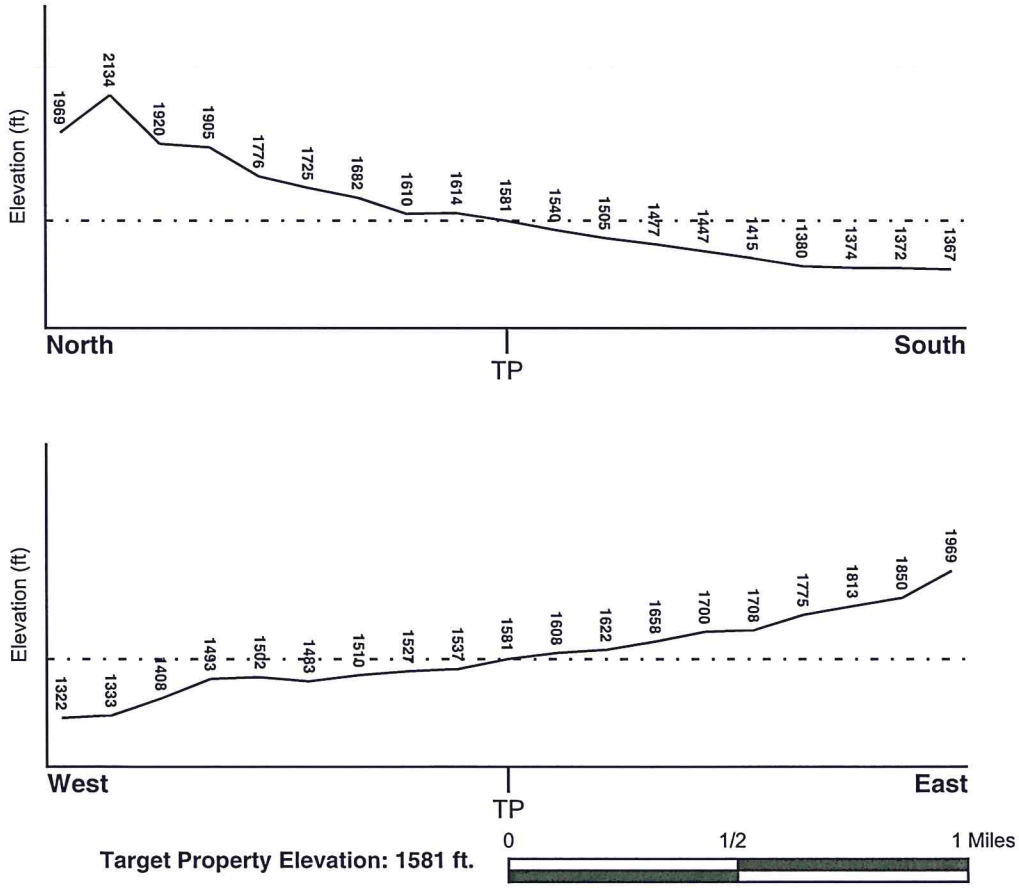
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 1581 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
SAN BERNARDINO, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06071C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius: 1.25 miles
Status: Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
A2	1/4 - 1/2 Mile West	Not Reported
4	1/4 - 1/2 Mile West	SW

For additional site information, refer to Physical Setting Source Map Findings.

* ©1996 Site-specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

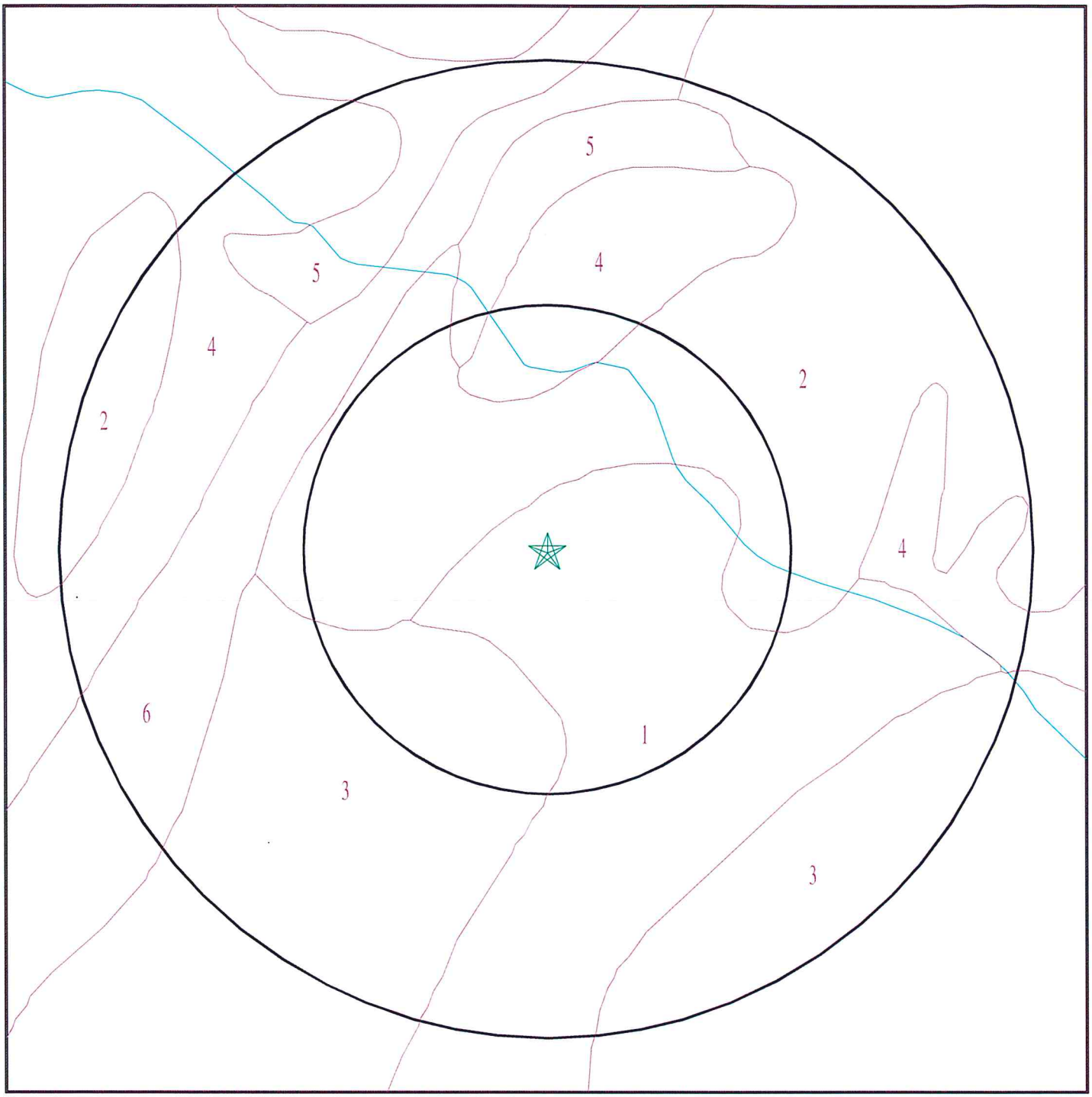
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 03794498.2r



★ Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland CA 92346 LAT/LONG: 34.122 / 117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY #: 03794498.2r DATE: November 22, 2013 7:58 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: GREENFIELD

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
2	16 inches	50 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
3	50 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 2

Soil Component Name: RAMONA

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	22 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 6.5 Min: 5.6
2	22 inches	31 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay. FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 7.8 Min: 6.6
3	31 inches	53 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
4	53 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.6

Soil Map ID: 3

Soil Component Name: Hanford

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
2	11 inches	59 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 5.6

Soil Map ID: 4

Soil Component Name: GREENFIELD

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
2	16 inches	50 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
3	50 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.6

Soil Map ID: 5

Soil Component Name: Saugus

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 7.3 Min: 6.1
2	7 inches	40 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay. FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 7.3 Min: 6.1
3	40 inches	44 inches	weathered bedrock	Not reported	Not reported	Max: 4 Min: 1.4	Max: Min:

Soil Map ID: 6

Soil Component Name: TUJUNGA

Soil Surface Texture: gravelly loamy sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	gravelly loamy sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.1
2	18 inches	59 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 6.1

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS40000141505	1/8 - 1/4 Mile ESE
A3	USGS40000141535	1/4 - 1/2 Mile West
5	USGS40000141306	1/2 - 1 Mile SSE
B6	USGS40000141268	1/2 - 1 Mile South
B8	USGS40000141269	1/2 - 1 Mile South
C9	USGS40000141758	1/2 - 1 Mile NNW
C10	USGS40000141759	1/2 - 1 Mile NNW

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
D11	USGS40000141721	1/2 - 1 Mile NW
E12	USGS40000141257	1/2 - 1 Mile SSW
F15	USGS40000141227	1/2 - 1 Mile SSE
D16	USGS40000141723	1/2 - 1 Mile NW
D17	USGS40000141724	1/2 - 1 Mile NW
D18	USGS40000141729	1/2 - 1 Mile NW
19	USGS40000141275	1/2 - 1 Mile SW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

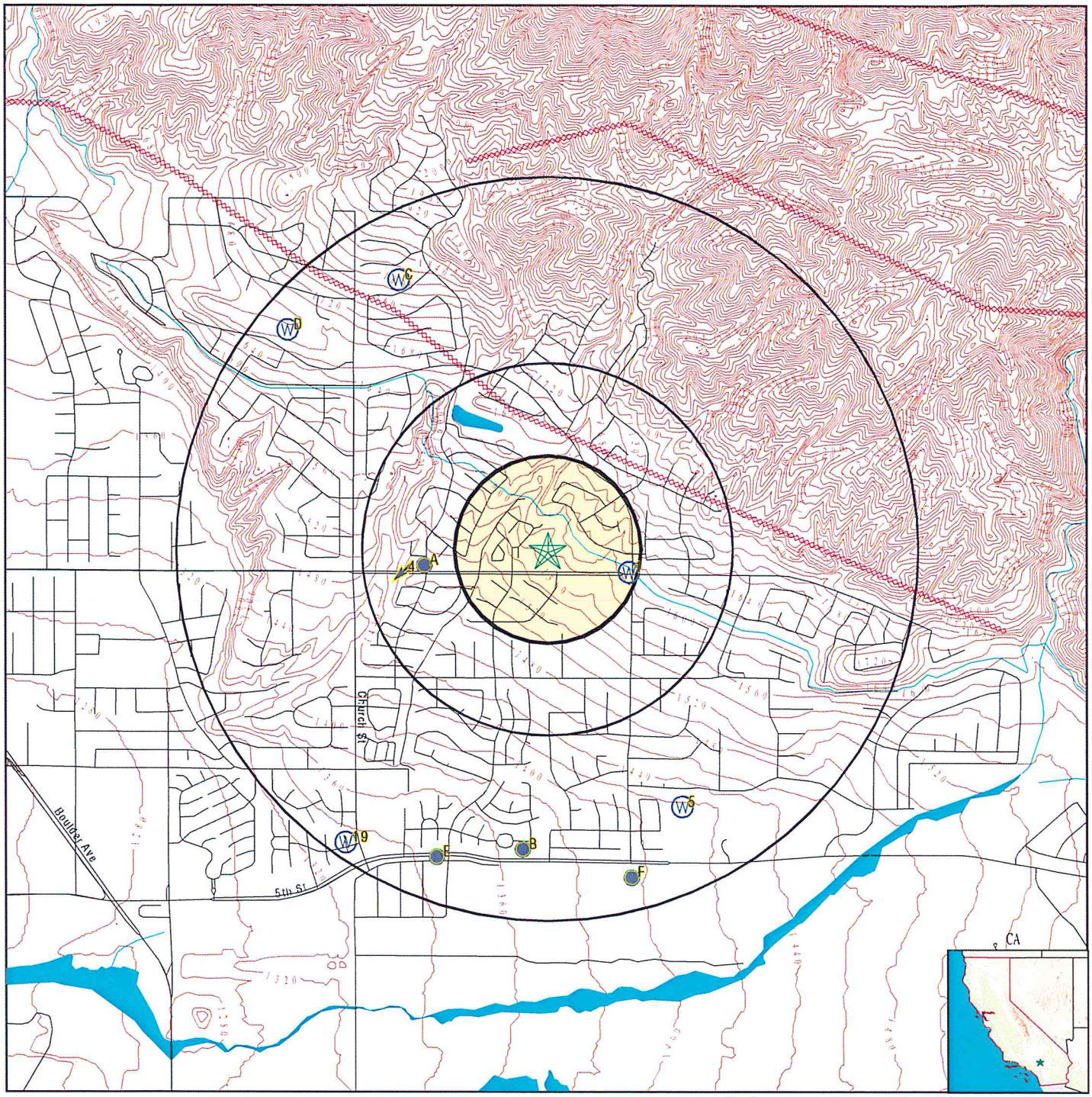
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
B7	CADW50000004404	1/2 - 1 Mile South
E13	CADW50000004403	1/2 - 1 Mile SSW
F14	CADW50000004401	1/2 - 1 Mile SSE

PHYSICAL SETTING SOURCE MAP - 03794498.2r



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland CA 92346 LAT/LONG: 34.122 / 117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY #: 03794498.2r DATE: November 22, 2013 7:58 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
1 **ESE** **1/8 - 1/4 Mile** **Higher**	**FED USGS**	**USGS40000141505**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-340716117093601		
Monloc name:	001S003W02B001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.1211223
Longitude:	-117.1608716	Sourcemap scale:	Not Reported
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1593.00
Vert measure units:	feet	Vertacc measure val:	20
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Other aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19030101	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	600
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

A2 **West** **1/4 - 1/2 Mile** **Lower**	Site ID:	083600059T	**AQUIFLOW**	**50145**
	Groundwater Flow:	Not Reported		
	Shallow Water Depth:	Not Reported		
	Deep Water Depth:	Not Reported		
	Average Water Depth:	100		
	Date:	12/10/1990		

	Database	EDR ID Number
A3 **West** **1/4 - 1/2 Mile** **Lower**	**FED USGS**	**USGS40000141535**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-340718117101201		
Monloc name:	HOLE-22 LYSIMETER AT 39		
Monloc type:	Well: Test hole not completed as a well		
Monloc desc:	Not Reported		
Huc code:	18070203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.1216778
Longitude:	-117.170872	Sourcemap scale:	Not Reported

Horiz Acc measure:	Unknown	Horiz Acc measure units:	Unknown
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	Other aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

4
West
1/4 - 1/2 Mile
Lower

		AQUIFLOW	**54985**
Site ID:	083602018T		
Groundwater Flow:	SW		
Shallow Water Depth:	Not Reported		
Deep Water Depth:	Not Reported		
Average Water Depth:	90		
Date:	02/25/1993		

5
SSE
1/2 - 1 Mile
Lower

FED USGS **USGS40000141306**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-340643117092701		
Monloc name:	001S003W02J002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.111956
Longitude:	-117.1583713	Sourcemap scale:	Not Reported
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1415.00
Vert measure units:	feet	Vertacc measure val:	10
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	230
Welldepth units:	ft	Wellholedepth:	390
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

B6
South
1/2 - 1 Mile
Lower

FED USGS **USGS40000141268**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-340637117095201		
Monloc name:	001S003W02P001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.1102894
Longitude:	-117.165316	Sourcemap scale:	Not Reported
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1369.00
Vert measure units:	feet	Vertacc measure val:	.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19300101	Welldepth:	418
Welldepth units:	ft	Wellholedepth:	438
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1993-04-12					
Note: The well was destroyed (no water level is recorded).					
1992-10-29	180.83		1992-08-12	184.17	

B7
South
1/2 - 1 Mile
Lower

CA WELLS **CADW50000004404**

Latitude :	34.1103		
Longitude :	117.1662		
Site code:	341103N1171662W001	Casgem sta:	01S03W02P001S
Local well:	Not Reported	Casgem s 1:	Unknown
County id:	36		
Basin cd:	8-2.06	Basin desc:	Bunker Hill
Org unit n:	Southern Region Office	Site id:	CADW50000004404

B8
South
1/2 - 1 Mile
Lower

FED USGS **USGS40000141269**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-340637117095501		
Monloc name:	001S003W02L001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.1102894
Longitude:	-117.1661494	Sourcemap scale:	Not Reported

Horiz Acc measure:	Unknown	Horiz Acc measure units:	Unknown
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1375.00
Vert measure units:	feet	Vertacc measure val:	10
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

C9
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000141758**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-340757117101501		
Monloc name:	HOLE-24 LYSIMETER AT 10		
Monloc type:	Well: Test hole not completed as a well		
Monloc desc:	Not Reported		
Huc code:	18070203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.1325108
Longitude:	-117.1717055	Sourcemap scale:	Not Reported
Horiz Acc measure:	Unknown	Horiz Acc measure units:	Unknown
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	Other aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

C10
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000141759**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-340757117101502		
Monloc name:	HOLE-24 LYSIMETER AT 50		
Monloc type:	Well: Test hole not completed as a well		
Monloc desc:	Not Reported		
Huc code:	18070203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.1325108
Longitude:	-117.1717055	Sourcemap scale:	Not Reported

Horiz Acc measure:	Unknown	Horiz Acc measure units:	Unknown
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	Other aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

D11
NW
1/2 - 1 Mile
Higher

FED USGS **USGS40000141721**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-340749117103101		
Monloc name:	001N003W34H006S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.1302886
Longitude:	-117.17615	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1648.00
Vert measure units:	feet	Vertacc measure val:	.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Other aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19450101	Welldepth:	300
Welldepth units:	ft	Wellholedepth:	300
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

E12
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000141257**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-340636117100701		
Monloc name:	001S003W02P002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.1100116
Longitude:	-117.1694828	Sourcemap scale:	24000

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1345.3
Vert measure units:	feet	Vertacc measure val:	.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	194805	Welldepth:	464
Welldepth units:	ft	Wellholedepth:	480
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 105

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1991-06-17					
Note: The well was destroyed (no water level is recorded).					
1990-12-03	180.88		1990-06-25	172.82	
1989-11-28	162.38		1989-09-22	159.20	
1988-11-23	146.03		1988-06-30	139.20	
1987-12-09	130.98		1987-06-17	124.61	
1986-11-10	118.53		1986-06-19	115.62	
1985-09-30	108.01				
1964-03-27	263.9				
Note: Other conditions existed that would affect the measured water level.					
1963-12-27	300.5				
Note: The site was being pumped.					
1963-11-24	258.2		1963-09-25	302.6	
1963-08-26	308.5		1963-07-30	271.3	
1963-06-26	310.0				
Note: The site was being pumped.					
1963-05-28	294.2				
Note: The site was being pumped.					
1963-04-25	240.6		1963-03-19	248.8	
1963-02-28	245.8				
1963-01-28	304.9				
Note: The site was being pumped.					
1962-11-22	301.7				
Note: The site was being pumped.					
1962-10-29	289.3				
Note: The site was being pumped.					
1962-09-14	288.1				
Note: The site was being pumped.					
1962-07-20	283.5				
Note: The site was being pumped.					
1962-06-20	281.8				
Note: The site was being pumped.					
1962-05-23	238.3		1962-04-12	239.9	
1962-03-22	240.2		1962-02-28	245.4	
1962-01-17	289.8				
Note: The site was being pumped.					
1961-12-20	246.2		1961-11-28	248.6	
1961-10-03	288.1				
Note: The site was being pumped.					
1961-08-08	287.8				
Note: The site was being pumped.					

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1961-07-13	283.7				
Note: The site was being pumped.					
1961-06-16	277.1				
Note: The site was being pumped.					
1961-05-23	277.5				
Note: The site was being pumped.					
1961-04-12	264.2				
Note: The site was being pumped.					
1961-03-09	221.0		1961-02-20	210.8	
1961-01-28	214.8				
1960-12-28	253.3				
Note: The site was being pumped.					
1960-11-30	212.7		1960-10-04	230.0	
1960-08-02	234.6				
Note: The site was being pumped.					
1960-05-26	233.9				
Note: The site was being pumped.					
1960-03-23	196.3		1960-03-02	191.3	
1960-01-15	195.0				
1959-12-04	230.0				
Note: The site was being pumped.					
1959-11-04	201.0				
1959-09-16	235.1				
Note: The site was being pumped.					
1959-07-11	219.7				
Note: The site was being pumped.					
1959-06-09	217.4				
Note: The site was being pumped.					
1959-05-13	216.5				
Note: The site was being pumped.					
1959-04-16	208.9				
Note: The site was being pumped.					
1959-03-13	181.8		1959-01-30	189.3	
1958-12-23	194.4		1958-11-17	201.5	
1958-10-08	225.8				
Note: The site was being pumped.					
1958-08-08	223.3				
Note: The site was being pumped.					
1958-07-12	202.5		1958-06-12	195.6	
1958-05-08	194.8		1958-04-09	202.4	
1958-03-07	202.6		1958-02-07	205.3	
1958-01-11	210.3				
1957-12-04	251.7				
Note: The site was being pumped.					
1957-10-01	261.4				
Note: The site was being pumped.					
1957-08-27	267.4				
Note: The site was being pumped.					
1957-02-16	205.9		1957-01-15	213.8	
1956-10-30	256.7				
Note: The site was being pumped.					
1956-09-27	249.0				
1956-08-28	247.6				
Note: The site was being pumped.					
1955-06-06	182.5				
Note: Other conditions existed that would affect the measured water level.					

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1955-05-02	179.8		1955-02-24	176.3	
1954-10-21	207.2				
1954-07-22	179.5				
Note: The site was being pumped.					
1954-05-26	173.4		1954-04-16	176.8	
1954-02-08	189.2		1952-08-07	170.3	
1952-05-05	173.1		1952-03-07	176.3	
1951-05-08	169.7		1951-03-06	166.1	
1951-01-12	181.1		1950-11-15	176.3	
1950-05-04	146.0		1950-02-28	144.4	
1949-12-29	150.7		1949-05-26	137.2	
1949-03-28	135.6		1949-01-18	137.5	
1948-11-27	147.7				
Note: A nearby site that taps the same aquifer was being pumped.					
1948-07-08	126.1		1948-05-17	121.5	

E13
SSW
1/2 - 1 Mile
Lower

CA WELLS **CADW50000004403**

Latitude :	34.11		
Longitude :	117.1704		
Site code:	341100N1171704W001	Casgem sta:	01S03W02P002S
Local well:	Not Reported	Casgem s 1:	Unknown
County id:	36		
Basin cd:	8-2.06	Basin desc:	Bunker Hill
Org unit n:	Southern Region Office	Site id:	CADW50000004403

F14
SSE
1/2 - 1 Mile
Lower

CA WELLS **CADW50000004401**

Latitude :	34.1092		
Longitude :	117.1612		
Site code:	341092N1171612W001	Casgem sta:	01S03W02J001S
Local well:	Not Reported	Casgem s 1:	Unknown
County id:	36		
Basin cd:	8-2.06	Basin desc:	Bunker Hill
Org unit n:	Southern Region Office	Site id:	CADW50000004401

F15
SSE
1/2 - 1 Mile
Lower

FED USGS **USGS40000141227**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-340633117093401		
Monloc name:	001S003W02J001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.1091783
Longitude:	-117.1603158	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1397.00
Vert measure units:	feet	Vertacc measure val:	10
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	1928	Welldepth:	303
Welldepth units:	ft	Wellholedepth:	303
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 10

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1988-11-30	153.62		1987-12-09	137.53	
1987-06-17	128.93		1986-11-19	119.36	
1986-06-19	115.70		1985-09-30	104.06	
1980-05-14	13.9		1974-04-16	121.92	
1973-11-13	122.15		1965-01-27	289.7	

D16
NW
1/2 - 1 Mile
Higher

FED USGS **USGS40000141723**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-340750117103501		
Monloc name:	001N003W34H002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.1305664
Longitude:	-117.1772612	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1680.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Other aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	306
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

D17
NW
1/2 - 1 Mile
Higher

FED USGS **USGS40000141724**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-340750117103502		
Monloc name:	001N003W34H004S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.1305664
Longitude:	-117.1772612	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	168.00
Vert measure units:	feet	Vertacc measure val:	5.
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Other aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	194012	Welldepth:	192.5
Welldepth units:	ft	Wellholedepth:	192.5
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

D18
NW
1/2 - 1 Mile
Higher

FED USGS **USGS40000141729**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-340751117103401		
Monloc name:	001N003W34H001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.1308442
Longitude:	-117.1769835	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1649.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Other aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	136.6
Welldepth units:	ft	Wellholedepth:	137
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
19 **SW** **1/2 - 1 Mile** **Lower**		**FED USGS**	**USGS40000141275**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-340638117102401		
Monloc name:	001S003W03J001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.1105671
Longitude:	-117.1742052	Sourcemap scale:	Not Reported
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1332.00
Vert measure units:	feet	Vertacc measure val:	20
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	224
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
92346	17	0

Federal EPA Radon Zone for SAN BERNARDINO County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 92346

Number of sites tested: 2

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.900 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

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29300 Baseline Avenue
29300 Baseline Avenue
Highland, CA 92346

Inquiry Number: 3794498.3
November 22, 2013

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

11/22/13

Site Name:
29300 Baseline Avenue
29300 Baseline Avenue
Highland, CA 92346

Client Name:
Petra Geotechnical Inc
3190 Airport Loop Drive
Costa Mesa, CA 92626-0000

EDR Inquiry # 3794498.3

Contact: Jon Cain

EDR® Environmental Data Resources Inc

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Site Name:	29300 Baseline Avenue
Address:	29300 Baseline Avenue
City, State, Zip:	Highland, CA 92346
Cross Street:	
P.O. #	13-627
Project:	29300 Baseline Avenue
Certification #	5819-4170-A377

Sanborn® Library search results
Certification # 5819-4170-A377

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- ✓ Library of Congress
- ✓ University Publications of America
- ✓ EDR Private Collection

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29300 Baseline Avenue
29300 Baseline Avenue
Highland, CA 92346

Inquiry Number: 3794498.3
November 22, 2013

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11/22/13

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29300 Baseline Avenue
Highland, CA 92346

EDR Inquiry # 3794498.3

Client Name:
Petra Geotechnical Inc
3190 Airport Loop Drive
Costa Mesa, CA 92626-0000

Contact: Jon Cain

EDR® Environmental Data Resources Inc

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P.O. #	13-627
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Certification #	5819-4170-A377

Sanborn® Library search results
Certification # 5819-4170-A377

UNMAPPED PROPERTY

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29300 Baseline Avenue
29300 Baseline Avenue
Highland, CA 92346

Inquiry Number: 3794498.4
November 22, 2013

EDR Historical Topographic Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

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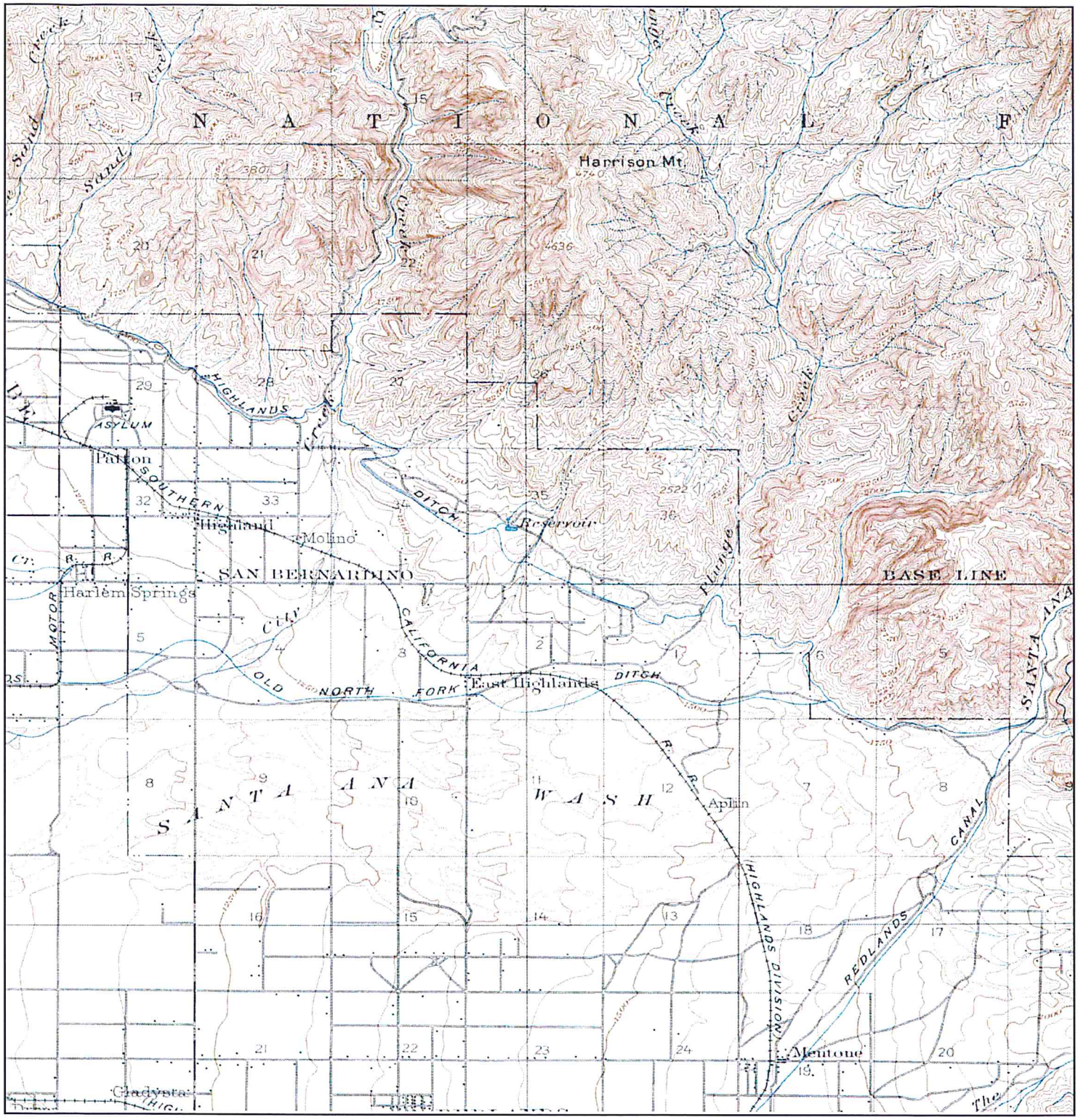
Historical Topographic Map

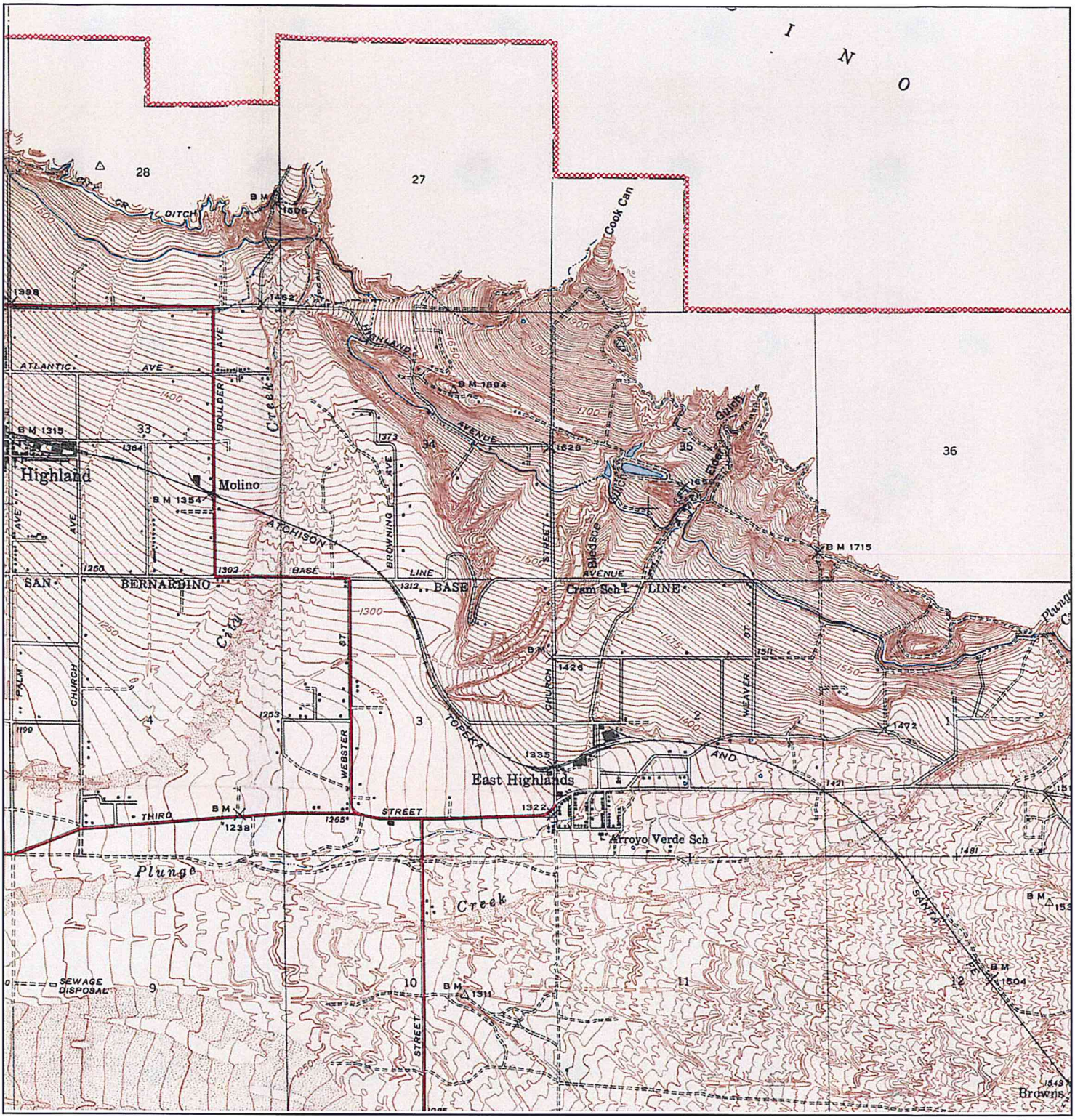


N	TARGET QUAD NAME: REDLANDS MAP YEAR: 1901 SERIES: 15 SCALE: 1:62500	SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland, CA 92346 LAT/LONG: 34.122 / -117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY#: 3794498.4 RESEARCH DATE: 11/22/2013

Historical Topographic Map

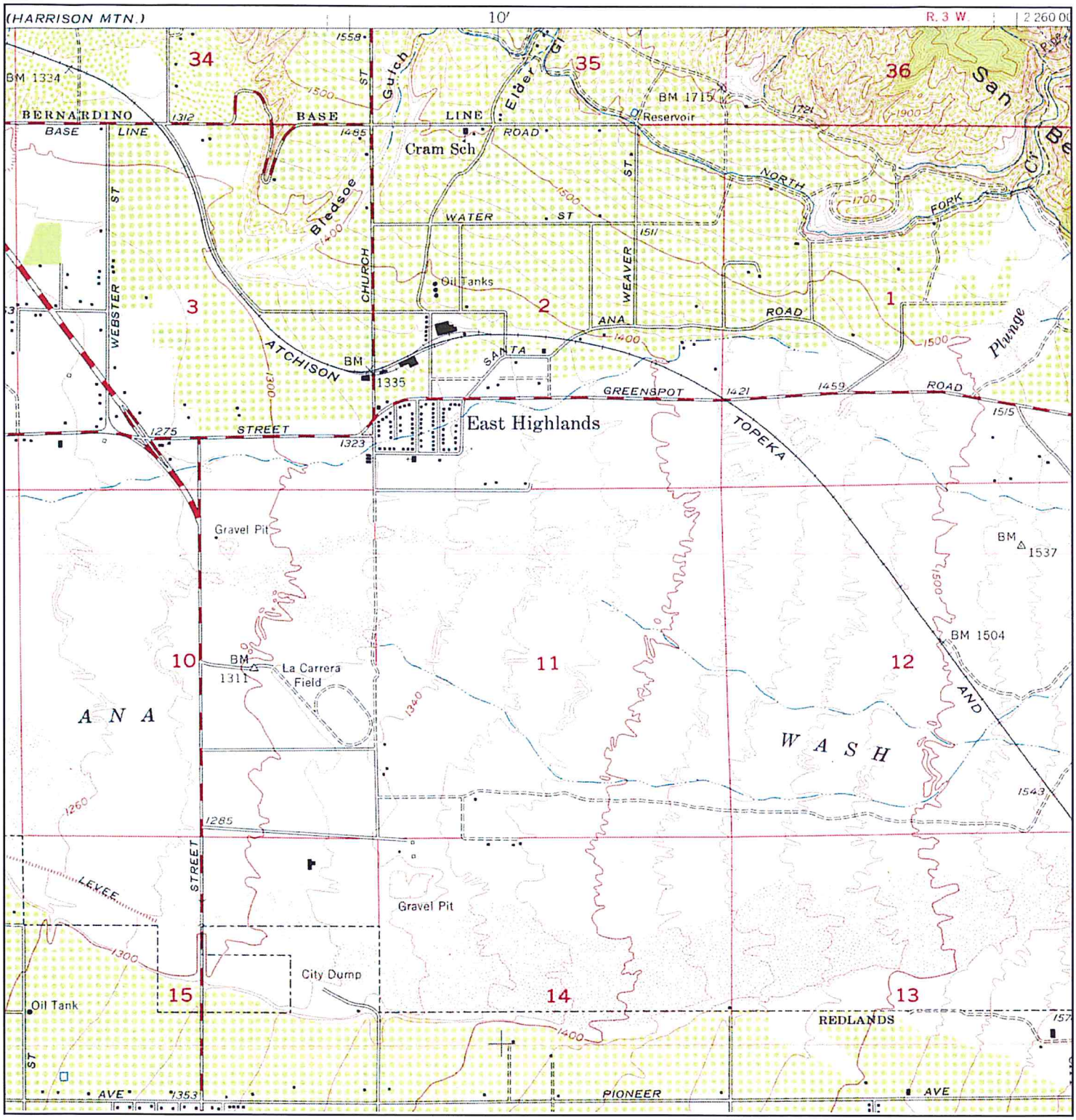
N	TARGET QUAD NAME: SOUTHERN CA SHEET 1 MAP YEAR: 1901 SERIES: 60 SCALE: 1:250000	SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland, CA 92346 LAT/LONG: 34.122 / -117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY#: 3794498.4 RESEARCH DATE: 11/22/2013

Historical Topographic Map



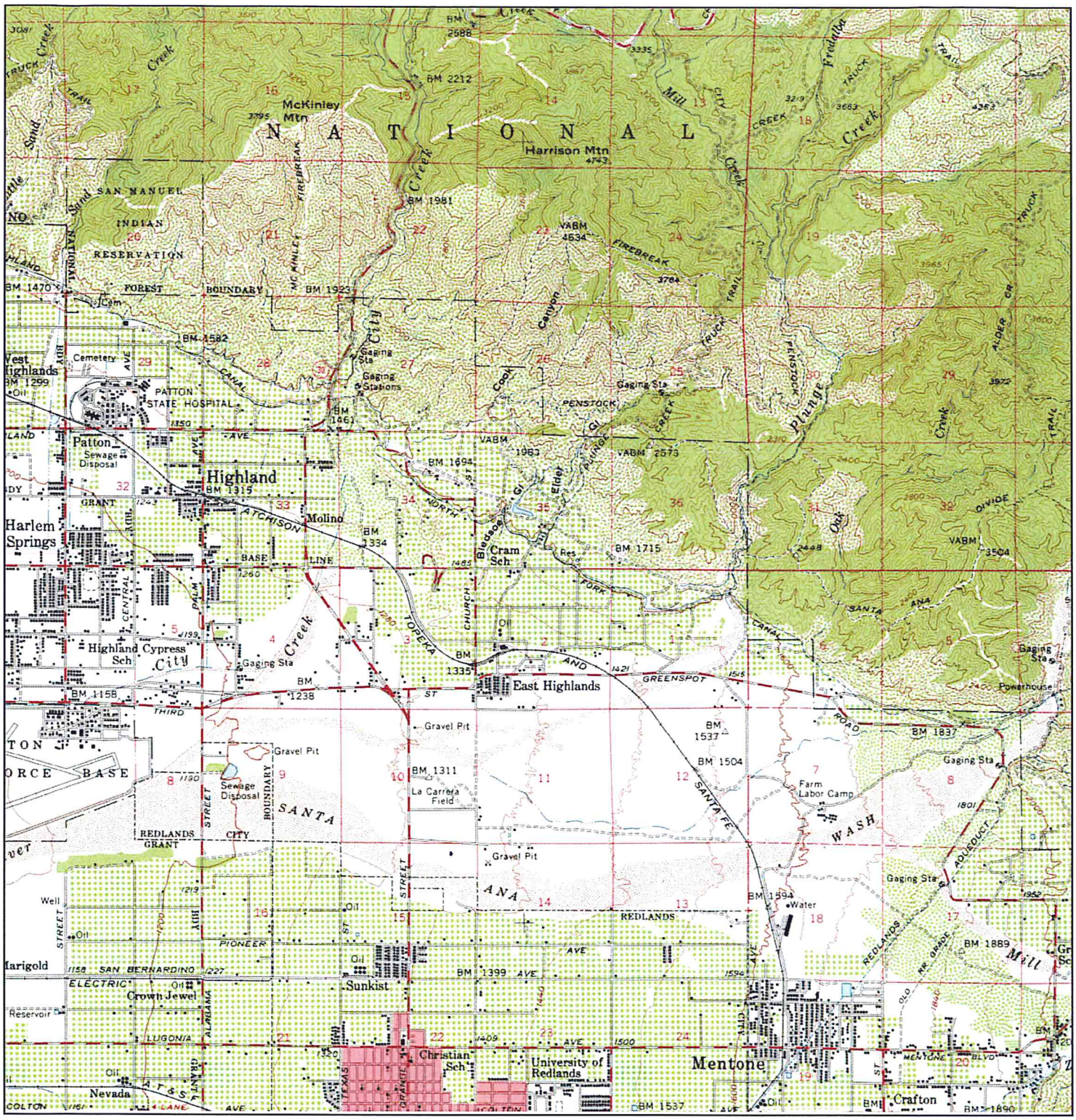
N	TARGET QUAD NAME: REDLANDS AND VICINITY MAP YEAR: 1943 SERIES: 7.5 SCALE: 1:31680	SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland, CA 92346 LAT/LONG: 34.122 / -117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY#: 3794498.4 RESEARCH DATE: 11/22/2013

Historical Topographic Map



N	TARGET QUAD NAME: REDLANDS MAP YEAR: 1954 SERIES: 7.5 SCALE: 1:24000	SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland, CA 92346 LAT/LONG: 34.122 / -117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY#: 3794498.4 RESEARCH DATE: 11/22/2013

Historical Topographic Map



N	TARGET QUAD NAME: REDLANDS MAP YEAR: 1954 SERIES: 15 SCALE: 1:62500	SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland, CA 92346 LAT/LONG: 34.122 / -117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY#: 3794498.4 RESEARCH DATE: 11/22/2013

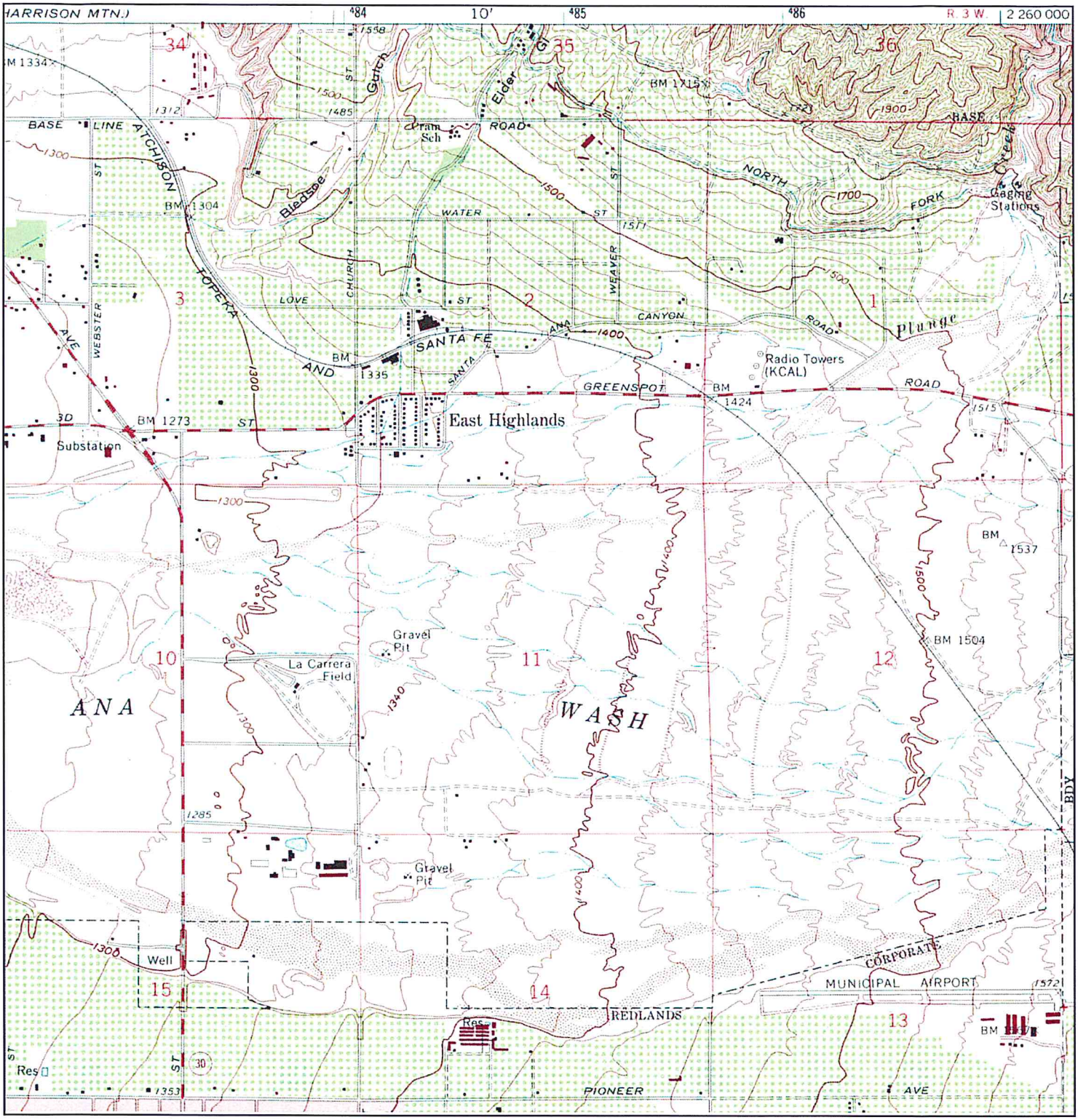
Historical Topographic Map

N	TARGET QUAD NAME: REDLANDS MAP YEAR: 1967 SERIES: 7.5 SCALE: 1:24000	SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland, CA 92346 LAT/LONG: 34.122 / -117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY#: 3794498.4 RESEARCH DATE: 11/22/2013

Historical Topographic Map

N	TARGET QUAD NAME: REDLANDS MAP YEAR: 1973 PHOTOINSPECTED FROM : 1967 SERIES: 7.5 SCALE: 1:24000	SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland, CA 92346 LAT/LONG: 34.122 / -117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY#: 3794498.4 RESEARCH DATE: 11/22/2013

Historical Topographic Map

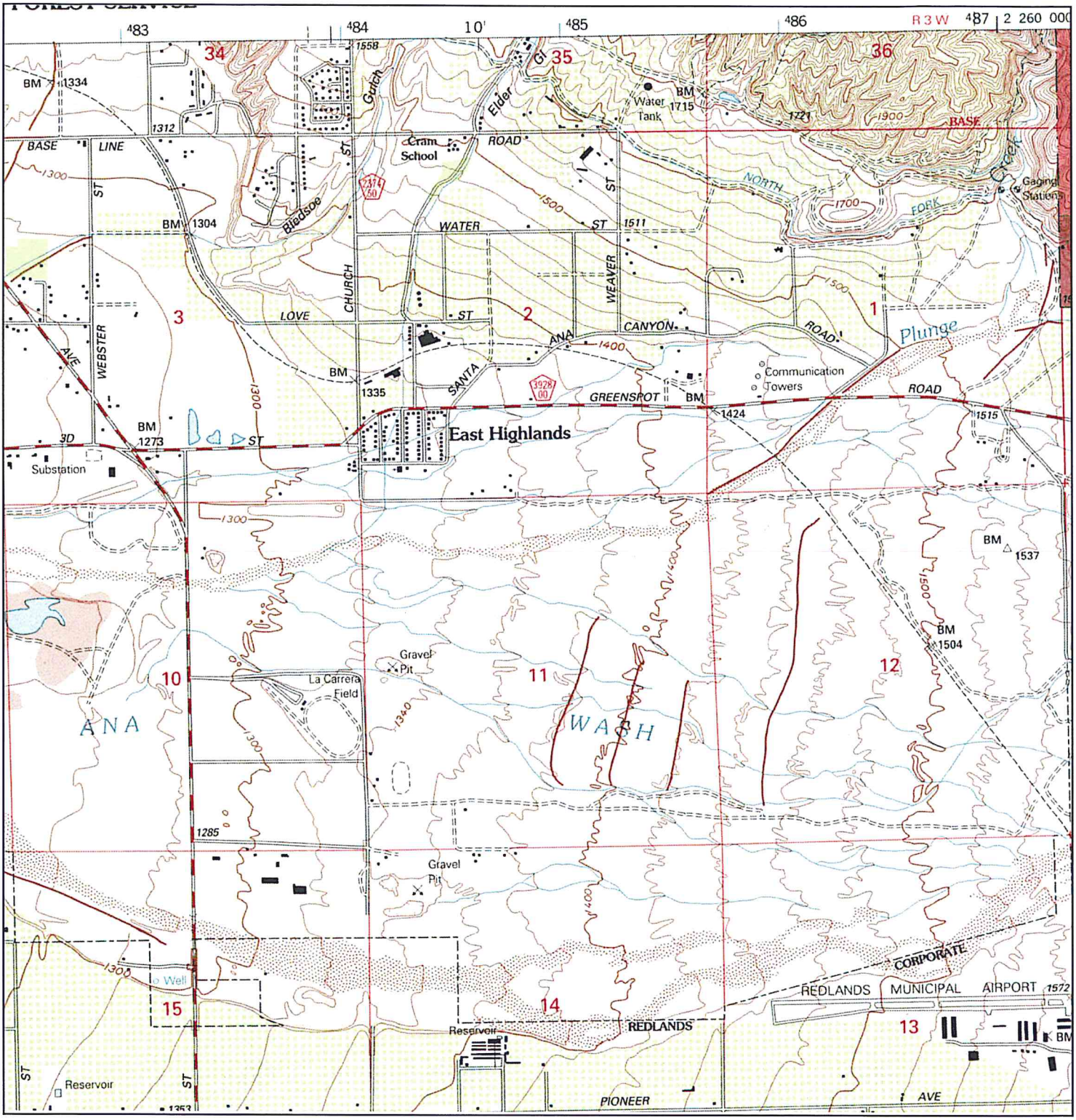


N	TARGET QUAD NAME: REDLANDS MAP YEAR: 1980 PHOTOREVISED FROM :1967 SERIES: 7.5 SCALE: 1:24000	SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland, CA 92346 LAT/LONG: 34.122 / -117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY#: 3794498.4 RESEARCH DATE: 11/22/2013

Historical Topographic Map

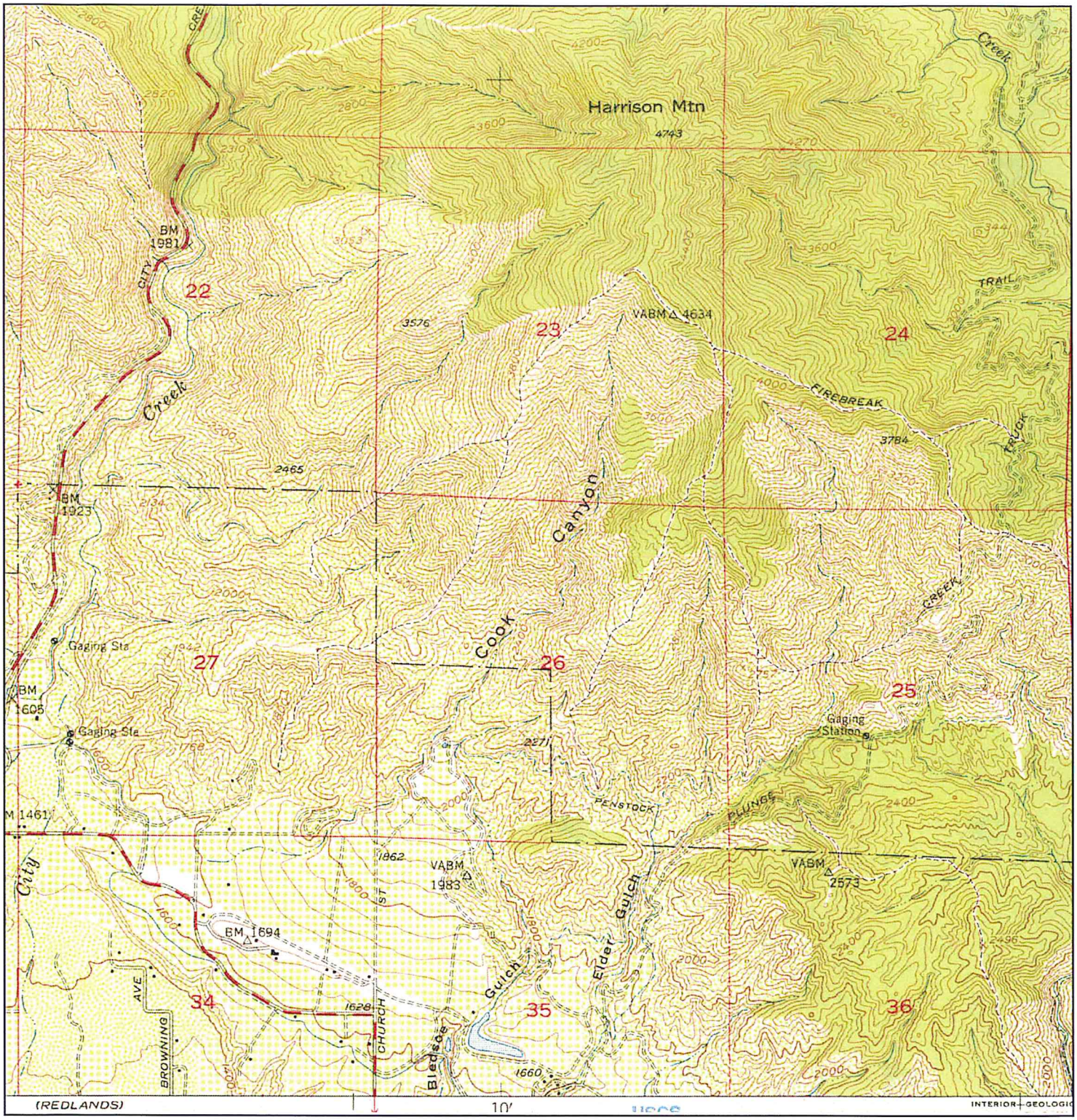
N	TARGET QUAD NAME: REDLANDS MAP YEAR: 1988 PHOTOREVISED FROM :1967 SERIES: 7.5 SCALE: 1:24000	SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland, CA 92346 LAT/LONG: 34.122 / -117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY#: 3794498.4 RESEARCH DATE: 11/22/2013

Historical Topographic Map



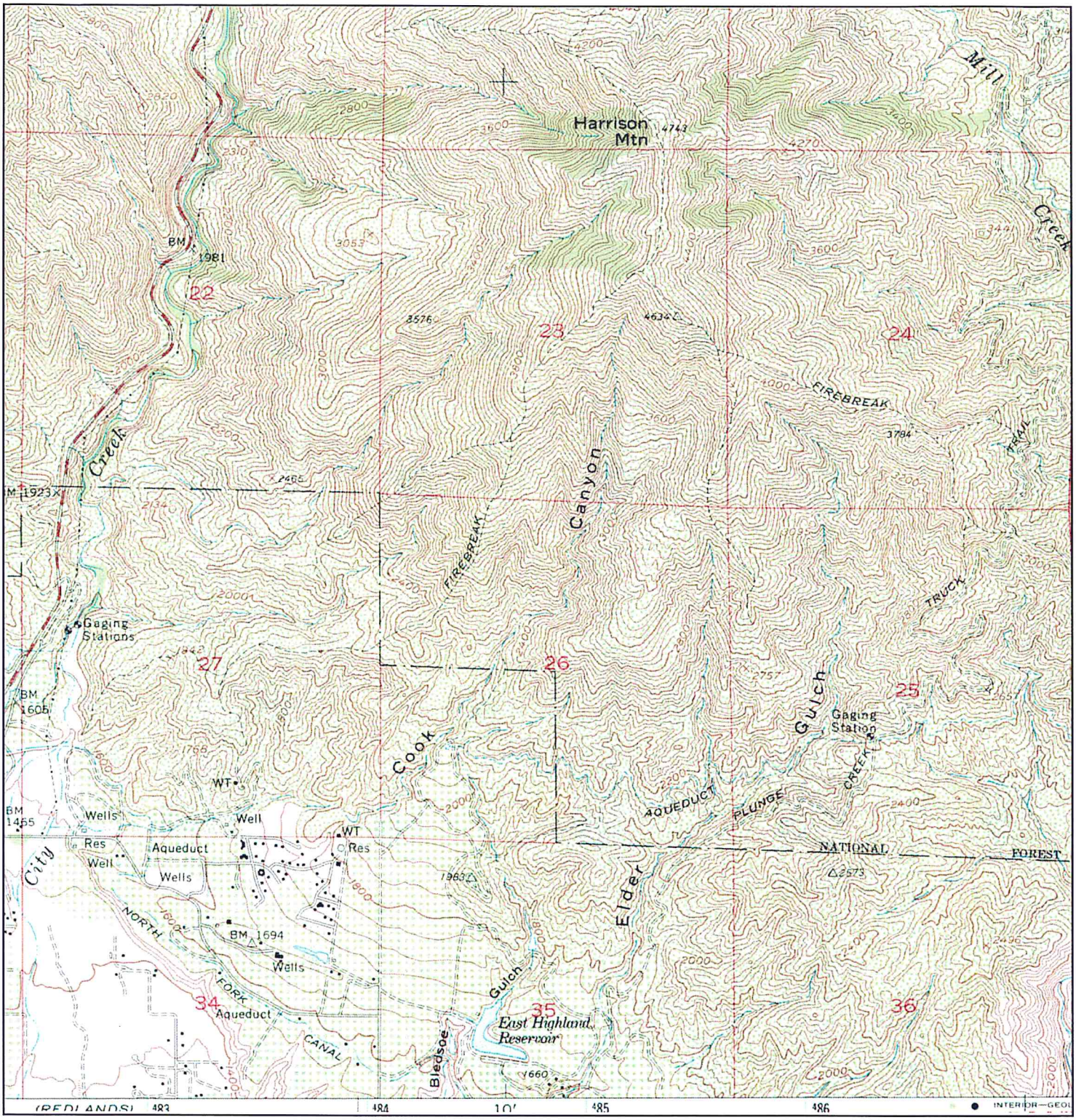
N	TARGET QUAD NAME: REDLANDS MAP YEAR: 1996 SERIES: 7.5 SCALE: 1:24000	SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland, CA 92346 LAT/LONG: 34.122 / -117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY#: 3794498.4 RESEARCH DATE: 11/22/2013

Historical Topographic Map



N	ADJOINING QUAD NAME: HARRISON MOUNTAIN MAP YEAR: 1953 SERIES: 7.5 SCALE: 1:24000	SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland, CA 92346 LAT/LONG: 34.122 / -117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY#: 3794498.4 RESEARCH DATE: 11/22/2013

Historical Topographic Map



N	ADJOINING QUAD NAME: HARRISON MOUNTAIN MAP YEAR: 1967 SERIES: 7.5 SCALE: 1:24000	SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland, CA 92346 LAT/LONG: 34.122 / -117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY#: 3794498.4 RESEARCH DATE: 11/22/2013

Historical Topographic Map

N	ADJOINING QUAD NAME: HARRISON MOUNTAIN MAP YEAR: 1973 PHOTOREVISED FROM :1967 SERIES: 7.5 SCALE: 1:24000	SITE NAME: 29300 Baseline Avenue ADDRESS: 29300 Baseline Avenue Highland, CA 92346 LAT/LONG: 34.122 / -117.1647	CLIENT: Petra Geotechnical Inc CONTACT: Jon Cain INQUIRY#: 3794498.4 RESEARCH DATE: 11/22/2013

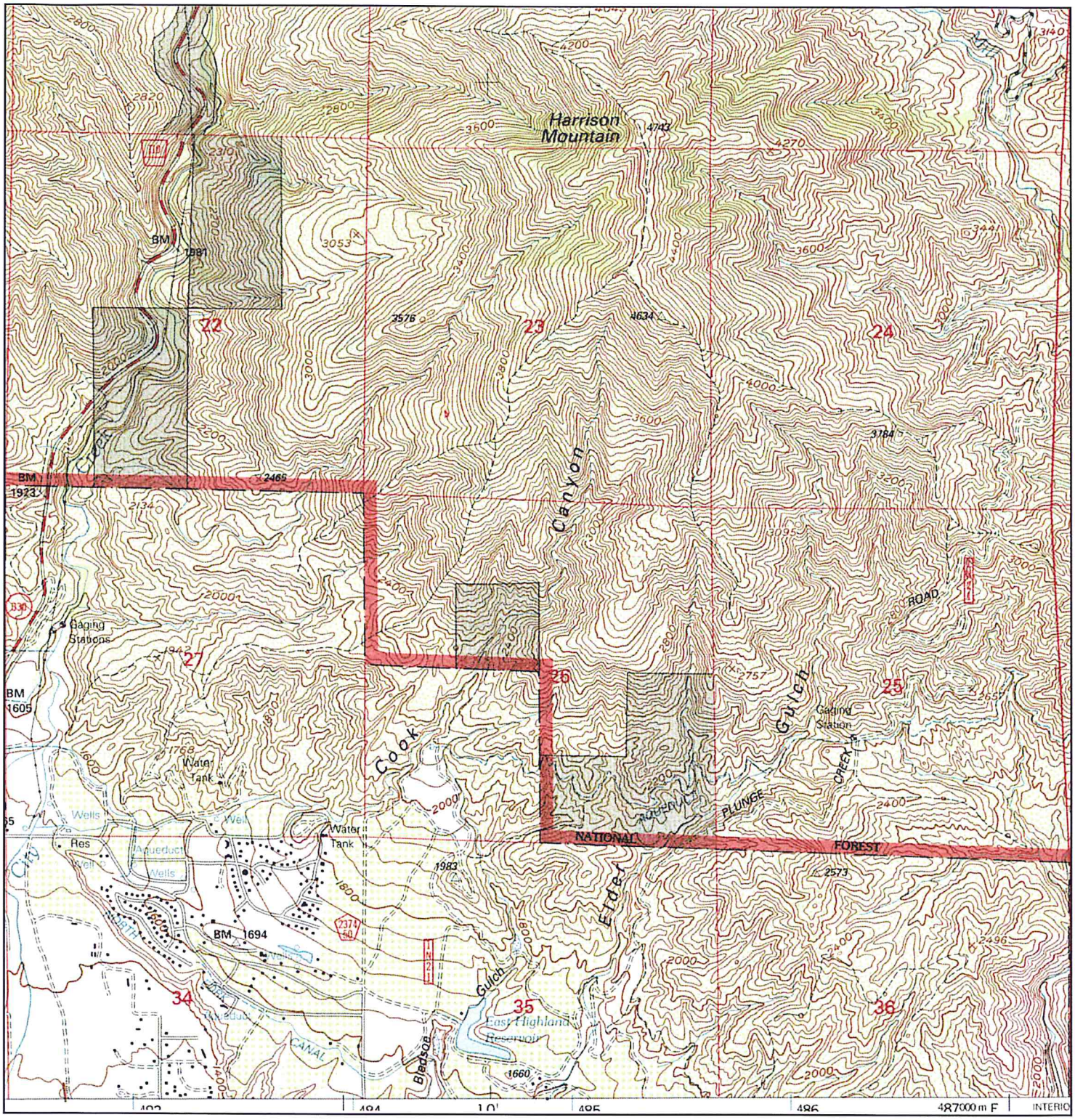
Historical Topographic Map

N	ADJOINING QUAD				
	NAME:	HARRISON MOUNTAIN	SITE NAME:	29300 Baseline Avenue	CLIENT: Petra Geotechnical Inc
	MAP YEAR:	1980	ADDRESS:	29300 Baseline Avenue	CONTACT: Jon Cain
	PHOTOREVISED FROM :	1967		Highland, CA 92346	INQUIRY#: 3794498.4
	SERIES:	7.5	LAT/LONG:	34.122 / -117.1647	RESEARCH DATE: 11/22/2013
	SCALE:	1:24000			

Historical Topographic Map

N	ADJOINING QUAD		
	NAME: HARRISON MOUNTAIN	SITE NAME: 29300 Baseline Avenue	CLIENT: Petra Geotechnical Inc
	MAP YEAR: 1988	ADDRESS: 29300 Baseline Avenue	CONTACT: Jon Cain
	PHOTOREVISED FROM :1967	Highland, CA 92346	INQUIRY#: 3794498.4
	SERIES: 7.5	LAT/LONG: 34.122 / -117.1647	RESEARCH DATE: 11/22/2013
	SCALE: 1:24000		

Historical Topographic Map



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29300 Baseline Avenue
29300 Baseline Avenue
Highland, CA 92346

Inquiry Number: 3794498.5
November 27, 2013

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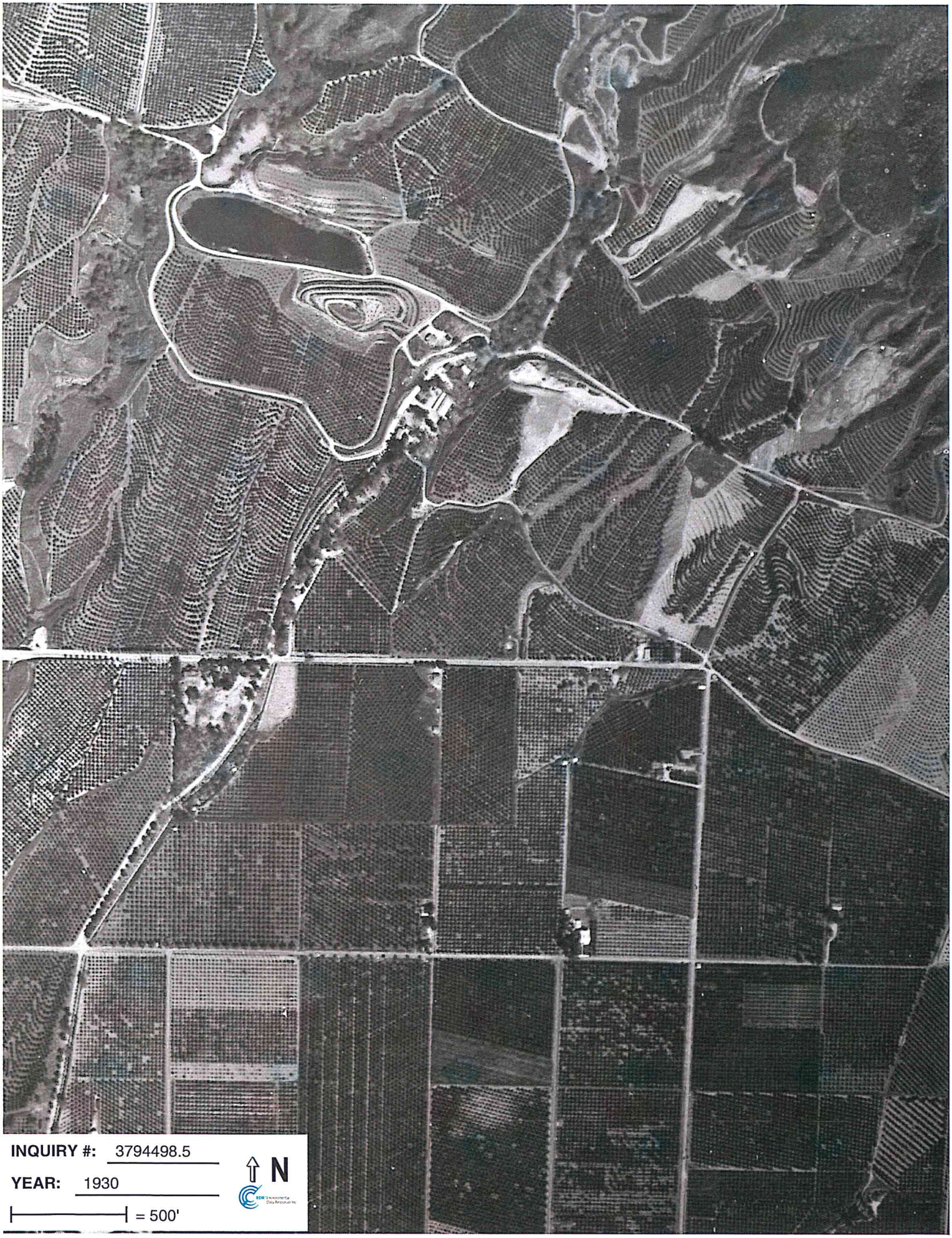
Date EDR Searched Historical Sources:

Aerial Photography November 27, 2013

Target Property:

29300 Baseline Avenue
Highland, CA 92346

Year	*Scale*	*Details*	*Source*
1930	Aerial Photograph. Scale: 1"=500'	Flight Year: 1930	Fairchild
1938	Aerial Photograph. Scale: 1"=500'	Flight Year: 1938	Laval
1953	Aerial Photograph. Scale: 1"=500'	Flight Year: 1953	Southwestern
1966	Aerial Photograph. Scale: 1"=500'	Flight Year: 1966	USGS
1976	Aerial Photograph. Scale: 1"=500'	Flight Year: 1976	AMI
1989	Aerial Photograph. Scale: 1"=500'	Flight Year: 1989	USGS
1994	Aerial Photograph. Scale: 1"=500'	/DOQQ - acquisition dates: 1994	EDR
2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	EDR
2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	EDR
2009	Aerial Photograph. Scale: 1"=500'	Flight Year: 2009	EDR
2010	Aerial Photograph. Scale: 1"=500'	Flight Year: 2010	EDR
2012	Aerial Photograph. Scale: 1"=500'	Flight Year: 2012	EDR

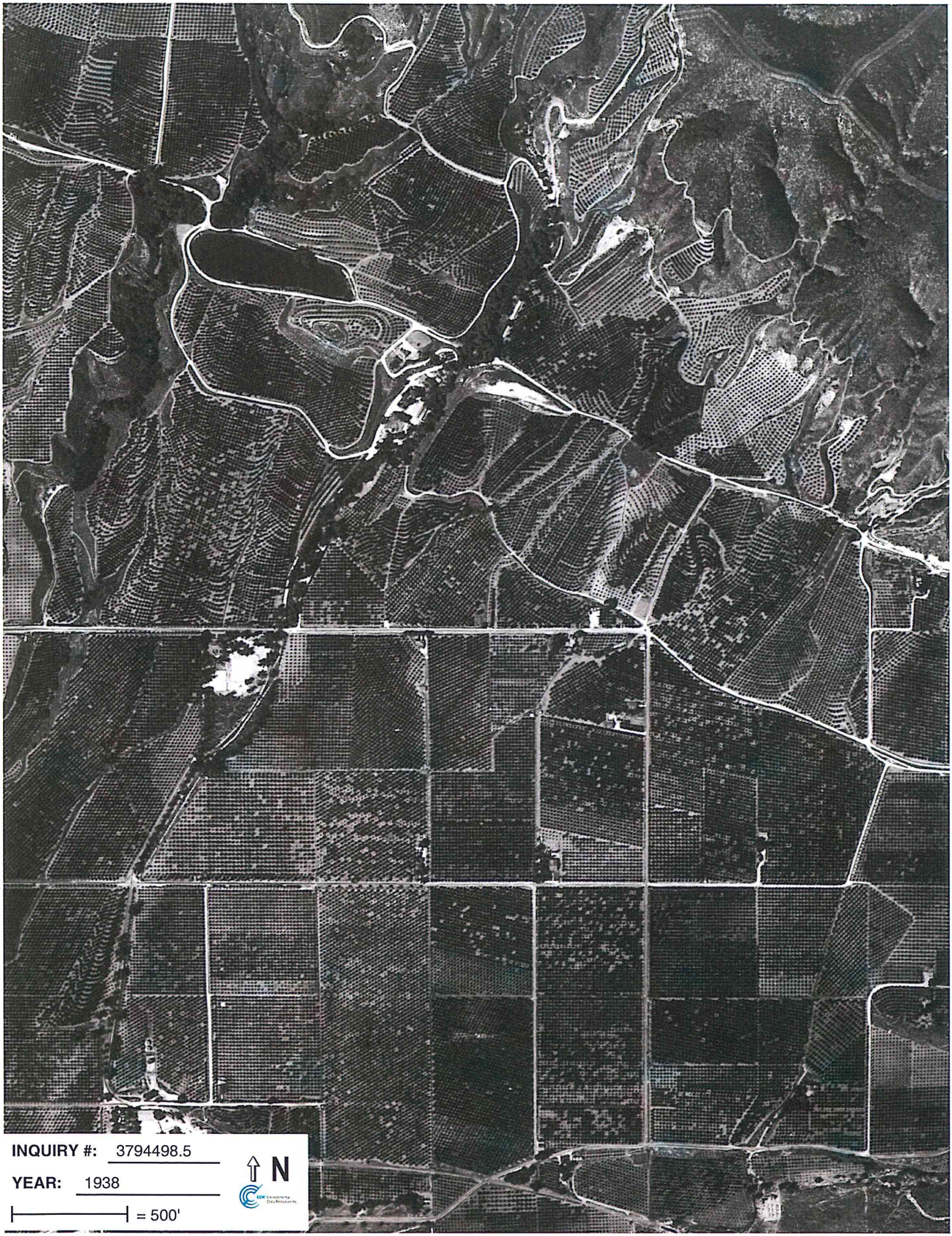


INQUIRY #: 3794498.5

YEAR: 1930

N

= 500'


INQUIRY #: 3794498.5
YEAR: 1938
= 500'
N

INQUIRY #: 3794498.5

YEAR: 1953

N

= 500'

INQUIRY #: 3794498.5

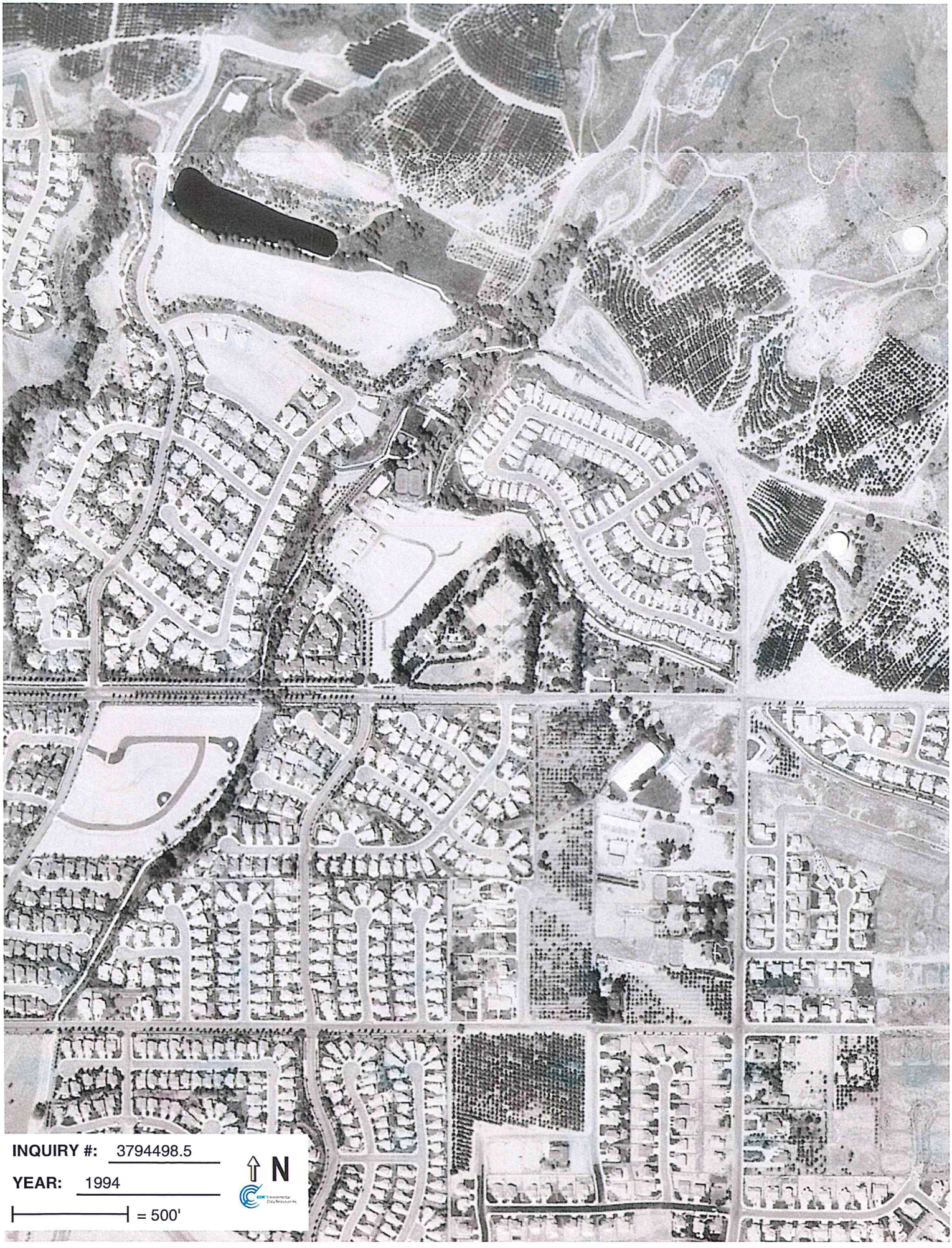
YEAR: 1966

= 500'

N

INQUIRY #: 3794498.5
YEAR: 1976
= 500'
N

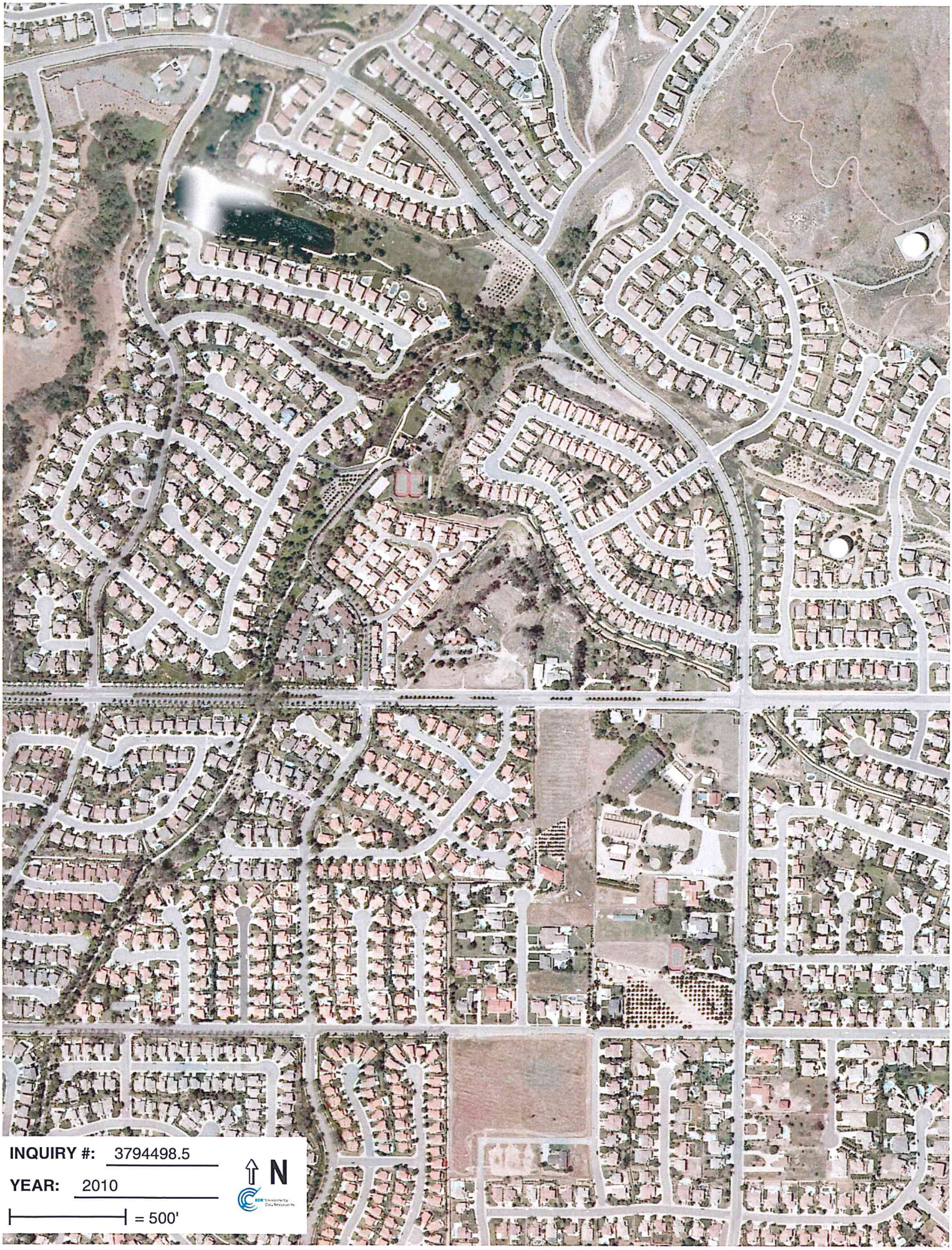
INQUIRY #: 3794498.5
YEAR: 1989
= 500'
N


INQUIRY #: 3794498.5
YEAR: 1994
= 500'
N

INQUIRY #: 3794498.5
YEAR: 2005
= 500'
N

INQUIRY #: 3794498.5
YEAR: 2006
= 500'
N

INQUIRY #: 3794498.5
YEAR: 2009
= 500'
N


INQUIRY #: 3794498.5
YEAR: 2010
= 500'
N

INQUIRY #: 3794498.5
YEAR: 2012
= 500'
N

29300 Baseline Avenue
29300 Baseline Avenue
Highland, CA 92346

Inquiry Number: 3794498.6
November 26, 2013

The EDR-City Directory Image Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

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Executive Summary

Findings

City Directory Images

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OR DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction orforecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2013	☑	☐	Cole Information Services
2008	☑	☐	Cole Information Services
2003	☑	☐	Cole Information Services
1999	☑	☐	Cole Information Services
1995	☑	☐	Haines Criss-Cross Directory
1990	☑	☐	Haines Criss-Cross Directory
1985	☑	☐	Haines Criss-Cross Directory
1980	☑	☐	Haines Criss-Cross Directory
1975	☑	☐	Haines Criss-Cross Directory

RECORD SOURCES

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FINDINGS

TARGET PROPERTY STREET

29300 Baseline Avenue
Highland, CA 92346

Year	*CD Image*	*Source*
BASELINE ST		
2013	pg A1	Cole Information Services
2008	pg A2	Cole Information Services
2003	pg A3	Cole Information Services
1999	pg A4	Cole Information Services
1995	pg A5	Haines Criss-Cross Directory
1990	pg A6	Haines Criss-Cross Directory
1985	pg A7	Haines Criss-Cross Directory
1980	pg A8	Haines Criss-Cross Directory
1975	pg A9	Haines Criss-Cross Directory

FINDINGS

CROSS STREETS

No Cross Streets Identified

City Directory Images

Target Street	Cross Street	Source
✓	-	Cole Information Services

BASELINE ST 2013

27727	OCCUPANT UNKNOWN
27767	HAVE A SNACK VALERONOBEL ROMANS PIZ
	OCCUPANT UNKNOWN
27774	MCDONALDS
27787	PAUL DIMARINO
27879	WENDYS
27880	HAIR FX
	LANDMAX
	STYLISH NAILS
	STYLISH NAILS & HAIR
27951	WALGREENS
28355	IMMANUEL BAPTIST CHURCH
	IMMANUEL BOOK STORE
28422	GEORGE ZAHAROPOULOS
28455	CHERIA CHRISTENSENA
28485	MICHAEL CRAIG
28497	CLARENCE ADAMS
28807	CHRISTOPHER DICKINSON
28841	KERRY HENNON
28909	APPLE TREE LEARNING CENTER
29400	OCCUPANT UNKNOWN
29411	JAMIE BENZOR
29412	LUIS CURIEL
29454	MARK ALLEN
29507	CITY OF HIGHLAND
30003	OCCUPANT UNKNOWN

Target Street	Cross Street	Source
✓	-	Cole Information Services

BASELINE ST 2008

27774	MCDONALDS
27787	PAUL DIMARINO
27879	WENDYS INTERNATIONAL
27880	LAWRENCE HOULE
	VICTORIAN HOUSE VINTAGE AUTO SALES I
27889	BLOCKBUSTER VIDEO
27951	WALGREEN DRUG STORES
28355	IMMANUEL BAPTIST CRUCH
	IMMANUEL CHURCH
28422	JOSHUA MYERS
28455	CHERI CHRISTENSEN
28485	BARKING LOT
	MICHAEL CRAIG
	WHITNEY KENNEL
28497	CLARENCE ADAMS
28807	CHRISTOPHER DICKINSON
28841	KERRY HENNON
28909	APPLE TREE LEARING CENTER
29400	CLIFFORD EKE
29411	JAMIE BENZOR
29412	LARRY STALLINGS
29454	MARK ALLEN

Target Street	Cross Street	Source
✓	-	Cole Information Services

BASELINE ST 2003

27767	JODY DOUGLAS
27774	MCDONALDS RESTAURANTS
27787	CHRISTOPHER FEICHO
27879	WENDYS
27880	LAWRENCE HOULE
	VCTRN HOUSE VNTG AUTO SALES
27925	BLOCKBUSTER VIDEO
27951	WALGREEN DRUG STORES HIGHLAND
28355	IMMANUEL BAPTIST CHURCH
	OCCUPANT UNKNOWN
28422	GEORGE ZAHAROPOULOS
28455	SY SHENKMAN
28485	MICHAEL CRAIG
28497	CLARENCE ADAMS
28807	HARRIET MCLEAN
28841	KERRY HENNON
	TERRA PHYSICS
29300	RUSSEL CHRISTIANSON
29400	ESHNBRNR & JAMES BRYON ANTG
	TERRY ESHENBRENNER
29411	JOSE GUTIERREZ
29412	LARRY STALLINGS
29454	DONALD EVANS
29507	HIGHLAND CITY OF FIRE DEPT

Target Street	Cross Street	Source
✓	-	Cole Information Services

BASELINE ST 1999

27787	OCCUPANT UNKNOWN
	PAUL DIMARINO
27880	LAWRENCE HOULE
28343	OCCUPANT UNKNOWN
28422	GEORGE ZAHAROPOULOS
28455	CHERI CHRISTENSEN
28485	MICHAEL CRAIG
28497	CLARENCE ADAMS
28807	CHRISTOPHER DICKINSON
28841	KERRY HENNON
28929	OCCUPANT UNKNOWN
29300	RICHARD CHRISTIANSON
29378	OCCUPANT UNKNOWN
29400	CLIFFORD EKE
29411	JAMIE BENZOR
29412	LARRY STALLINGS
29454	ANTONIO GONZALES

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

BASELINE ST 1995

28455	SHENKMAN Seymoursy	862-4305	
	SHENKMAN Sue	862-4305	
28485	CRAIG Michael R	862-8623	2
28515	*SHELTONS RANCH	862-3313	4
	*WHITNEYS RANCH	862-3313	+5
28807	ROBERTS Russell DR	862-2825	
28841	REHFUSS Roger	862-8455	6
28909	XXXX	00	
29300	CHRISTIANSON Russ E	862-7057	
29454	HARTSOOK Beryl	864-6057	7
	*HARTSOOK Guy	864-6057	

* 125 BUS 96 RES 50 NEW

BASE LINE 92410
SAN BERNARDINO

WEALTH CODE 1.0

25026	XXXX	00	
25054	*STREBIG CHARLES DDS	889-9591	
	*SULAEMAN LEE W DDS	889-9591	
25066	*LEX INDUSTRIES INC	884-2713	+5
25070	*MURAD LESLIE E MA	885-5281	
25082	*SILVER FOX	885-9485	

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

BASELINE ST 1990

28841	REHFUSS Roger	862-8455	6
28909	*EAST HIGHLANDS RNCH	862-6000	7
29111	CRAM School	862-8463	
29150	XXXX	00	
29182	XXXX	00	
29297	XXXX	00	
29300	CHRISTIANSON Russ E	862-7057	
29372	XXXX	00	
29400	XXXX	00	
29411	XXXX	00	
29454	HARTSOOK Guy B	864-6057	7

* 134 BUS 178 RES 47 NEW

BASE LINE 92410
SAN BERNARDINO

25026	XXXX	00	
25070	MURAD Leslie E MD	885-5281	

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

BASELINE ST 1985

28841	XXXX	00
29111	CRAM SCHOOL	862-8463
29150	XXXX	00
29182	REHFUSS ROGER	862-8455 +5
29186	ROBERTS FLOYD	862-8839
29297	XXXX	00
29300	CHRISTIANSON RUSS E	862-7057 6
29372	XXXX	00
29400	XXXX	00
29411	RETTER CHUCK	864-3108 2
29454	CIMINO JAS M	864-1494 +5

* 121 BUS 200 RES 58 NEW

BASE LINE 92410
SAN BERNARDINO

25026	XXXX	00
25038	SALSMAN G D	885-2802

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

BASELINE ST 1980

28807	ROBERTS RHODA	862-2825	3
	ROBERTS RUSSELL DR	862-2825	3
28841	REHFUSS ROGER	862-5059	+0
29111 *	**CRAM SCHOOL**	**862-8463**	
29182	ROBERTS GARY	862-0542	
29186	ROBERTS FLOYD	862-8839	3
29297	MARTINEZ BENITO	864-2532	9
29300	CHRISTIANSON RUSS	862-7057	6
29372	CHRISTIANSON R R	862-9150	8
29411	BROWNING BERT	862-8469	
*	117 BUS 217 RES	86 NEW	

BASE LINE 92277
TWNTYNINE PLMS

74350 *	**PALM VISTA ELEM SCH**	**367-7538**	
*	**PALM VISTA SPCL CLS**	**367-1805**	+0
74531	TORRES PAUL T JR	367-1670	+0
74545	KELLY JOHN V	367-3140	+0
74557	HAVINS CURTIS	367-3758	+0

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

BASELINE ST 1975

28515*WHITNEYS RANCH 862-3313
28675 TAYLOR DON 864-0314 4
28807 ROBERTS RHODA 862-2825 3
ROBERTS RUSSELL DR 862-2825 3
29111*CRAM SCHOOL 862-8463
29182 ROBERTS GARY 862-0542
29186 ROBERTS FLOYD 862-8839 3
29300 CHRISTIANSON RUSS 862-7057
29372 XXXX 00
29411 BROWNING BERT 862-8469
* 96 BUS 214 RES 99 NEW

BASE LINE 92277 TWENTYNINE PALMS

73570 XXXX 00
74350*PALM VISTA ELEM SCH 367-7538
74531 XXXX 00
74557 LARROQUE R W 367-9759

29300 Baseline Avenue
29300 Baseline Avenue
Highland, CA 92346

Inquiry Number: 3794498.7
November 25, 2013

EDR Environmental Lien and AUL Search

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Environmental Lien and AUL Search

The EDR Environmental Lien and AUL Search Report provides results from a search of available current land title records for environmental cleanup liens and other activity and use limitations, such as engineering controls and institutional controls.

A network of professional, trained researchers, following established procedures, uses client supplied address information to:

- search for parcel information and/or legal description;
- search for ownership information;
- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc.;
- access a copy of the deed;
- search for environmental encumbering instrument(s) associated with the deed;
- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument(s) (title, parties involved, and description); and
- provide a copy of the deed or cite documents reviewed.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EDR Environmental Lien and AUL Search

TARGET PROPERTY INFORMATION

ADDRESS

29300 Baseline Avenue
29300 Baseline Avenue
Highland, CA 92346

RESEARCH SOURCE

Source 1:

San Bernardino Recorder
San Bernardino, CA

PROPERTY INFORMATION

Deed 1:

Type of Deed:	deed
Title is vested in:	Robertert C & Doris Jean Christianson Trustee
Title received from:	Robertert C & Doris Jean Christianson
Deed Dated	12/23/2008
Deed Recorded:	1/6/2009
Book:	NA
Page:	na
Volume:	na
Instrument:	na
Docket:	NA
Land Record Comments:	
Miscellaneous Comments:	
Legal Description:	See Exhibit
Legal Current Owner:	Robertert C & Doris Jean Christianson Trustee
Parcel # / Property Identifier:	0288-562-03
Comments:	See Exhibit

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

OTHER ACTIVITY AND USE LIMITATIONS (AULs)

AULs: Found ☐ Not Found ☒

Deed Exhibit 1

RECORDING REQUESTED BY
J JOHNSON LAW OFFICE, INC.

AND WHEN RECORDED MAIL TO:

Name: **J JOHNSON**
Address: **P.O. Box 3**
City & State: **Grover Beach, CA**
Zip: **93483**

Recorded In Official Records, County of San Bernardino

LARRY WALKER
Auditor/Controller – Recorder

1/06/2009
2:19 PM
FV

R Regular Mail

Doc#: **2009–0005771**

Titles: 1 Pages: 3

Fees	15.00
Taxes	0.00
Other	0.00
PAID	$15.00

ASSESSORS PARCEL NO. 0288-562-03-0-000

SPACE ABOVE THIS LINE FOR RECORDER'S USE

GRANT DEED

The undersigned Grantor(s) declare(s) under penalty of perjury that the following is true and correct:
Documentary transfer tax is $ **0.00 . Transfer to Revocable Trust for Benefit of Grantor**
☐ Computed on full value of property conveyed, or
☐ Computed on full value less value of liens and encumbrances remaining at time of sale.
☐ Unincorporated area: ☒ City of **Highland** , and
FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,
ROBERT C. CHRISTIANSON, a married man as his sole and separate property

hereby GRANT(S) to
ROBERT C. CHRISTIANSON and DORIS JEAN CHRISTIANSON, Trustees of the "ROBERT AND DORIS CHRISTIANSON FAMILY TRUST dated December 23, 2008" and all Successor Trustees, all of his interest, which consists of an undivided one-half (1/2) interest in
the following described real property in the County of **San Bernardino** , State of California:

(See Exhibit "A" for legal description)

Dated **December 23, 2008**

Robert C. Christianson
ROBERT C. CHRISTIANSON

ACKNOWLEDGMENT

State of California)
County of **San Luis Obispo**)

On DEC 23, 2008 before me, **J Johnson, Notary Public**
(HERE INSERT NAME AND TITLE OF THE OFFICER)

personally appeared **ROBERT C. CHRISTIANSON**

who proved to me on the basis of satisfactory evidence to be the person(~~s~~) whose name(~~s~~) is/are subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(~~s~~) on the instrument the person(~~s~~), or the entity upon behalf of which the person(~~s~~) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.
Signature _____

J. JOHNSON
Commission # 1633961
Notary Public - California
San Luis Obispo County
My Comm. Expires Jan 29, 2010

(SEAL)

Title Order No. **Escrow, Loan, or Attorney File No.**

MAIL TAX STATEMENTS TO:
Robert C. Christianson and Doris Jean Christianson, 611 Village Court, Arroyo Grande, CA 93420
NAME ADDRESS CITY, STATE, ZIP

EXHIBIT "A"

THAT PORTION OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 35 AND OF THE SOUTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 35, TOWNSHIP 1 NORTH, RANGE 3 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, ACCORDING TO GOVERNMENT SURVEY, DESCRIBED AS FOLLOWS:

COMMENCING AT A STAKE ON SAN BERNARDINO BASE LINE, 1564.85 FEET WEST FROM THE NORTHWEST CORNER OF THE NORTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 1 SOUTH, RANGE 3 WEST, SAN BERNARDINO BASE AND MERIDIAN; THENCE AT RIGHT ANGLES NORTH 211.1 FEET; THENCE NORTH 40 DEG. 35' EAST, 769.75 FEET; THENCE SOUTH 79 DEG. 24' EAST 74 FEET; THENCE SOUTH 36 DEG. 4' EAST, 70.5 FEET; THENCE SOUTH 18 DEG. 51' EAST 186.5 FEET; THENCE SOUTH 38 DEG. 30' EAST 117 FEET TO AN IRON STAKE ON THE SOUTH SIDE OF NORTH FORK DITCH, SAID POINT BEING THE MOST NORTHERLY CORNER OF THAT CERTAIN PARCEL OF LAND CONVEYED BY PHILIP M. SAVAGE AND BERNICE R. SAVAGE, HIS WIFE, TO HARMON WEAVER BY DEED DATED AUGUST 12, 1926, AND RECORDED IN BOOK 128, PAGE 115, OFFICIAL RECORDS; THENCE ALONG THE WESTERLY LINE OF LAND SO CONVEYED TO HARMON WEAVER, SOUTH 56 DEG. 21' WEST 76.1 FEET; THENCE SOUTH 34 DEG. 30' WEST 64 FEET; THENCE SOUTH 20 DEG. 26' WEST 55 FEET; THENCE SOUTH 4 DEG. 16' WEST 311.6 FEET TO A POINT ON THE BASE LINE; THENCE WEST ALONG THE BASE LINE, 605.5 FEET TO THE POINT OF BEGINNING.

TOGETHER WITH A RIGHT OF WAY OVER AND ACROSS A PARCEL OF LAND DESCRIBED AS FOLLOWS:

ALL THAT PORTION OF SECTION 35, TOWNSHIP 1 NORTH, RANGE 3 WEST, DESCRIBED AS FOLLOWS:

COMMENCING AT A STAKE ON BASE LINE, 939.85 FEET WEST FROM THE NORTHWEST CORNER OF THE NORTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 1 SOUTH, RANGE 3 WEST, SAN BERNARDINO BASE AND MERIDIAN; THENCE NORTH 4 DEG. 10' EAST 326.45 FEET; THENCE NORTH 37 DEG. 4' EAST 164.7 FEET TO AN IRON STAKE ON THE SOUTH SIDE OF THE NORTH FORK DITCH; THENCE SOUTH 56 DEG. 21'

WEST 76.1 FEET; THENCE SOUTH 34 DEG. 30' WEST 64 FEET; THENCE SOUTH 20 DEG. 26' WEST 55 FEET; THENCE SOUTH 4 DEG. 16' WEST 311.6 FEET TO A POINT ON BASE LINE; THENCE ALONG BASE LINE EAST 19.5 FEET TO A POINT OF BEGINNING. TO BE USED IN COMMON BY THE OWNERS OF PROPERTY ADJOINING SAID PARCEL ON THE EAST AND WEST AS A WAY OF INGRESS AND EGRESS TO AND FROM SAID ADJOINING PROPERTIES, AS RESERVED TO PHILIP M. SAVAGE, ET UX, IN THEIR DEED TO HARMON WEAVER ALSO KNOWN AS HERMAN WEAVER, DATED AUGUST 12, 1926 AND RECORDED IN BOOK 128, PAGE 115, OFFICIAL RECORDS.

SAVING AND ACCEPTING FROM ABOVE PARCEL THAT PORTION THEREOF INCLUDED WITHIN THE STRIP OF LAND FOR THE NORTH FORK DITCH AS CONVEYED TO THE NORTH FORK WATER COMPANY, A CORPORATION, BY DEED DATED JANUARY 11, 1892, AND RECORDED IN BOOK 144 OF DEEDS, PAGE 292, A PLAT SHOWING THE LOCATION OF SAID STRIP OF LAND BEING RECORDED IN BOOK 9 OF MAPS, PAGE 40 OF THE RECORDS OF SAN BERNARDINO COUNTY, SAID PLAT BEING REFERRED TO IN AGREEMENT TO CONVEY TO THE NORTH FORK WATER COMPANY RECORDED IN BOOK 144 OF DEEDS, PAGE 292, A PLAT SHOWING A LOCATION OF SAID STRIP OF LAND BEING RECORDED IN BOOK 9 OF MAPS, PAGE 40, RECORDS OF SAID COUNTY, SAID PLAT BEING REFERRED TO IN AGREEMENT TO CONVEY TO THE NORTH FORK WATER COMPANY, RECORDED IN BOOK "N" OF AGREEMENTS, PAGE 243.

A.P.N.: 0288-562-03-0-000

MISCELLANEOUS EXHIBITS

FIRST AMERICAN TITLE

RECORDING REQUESTED BY:

FIRST AMERICAN TITLE

AND WHEN RECORDED MAIL TO:
ROBERT CHRISTIANSON
JOHN CHRISTIANSON
P.O. BOX 1356
ARROYO GRANDE, CA 93421

SEND TAX STATEMENT TO:

Recorded In Official Records, County of San Bernardino

12/28/2004
8:00 AM
LJ

LARRY WALKER
Auditor/Controller – Recorder

698 First American – LH

Doc#: 2004-0952900

Titles: 1 Pages: 2

Fees	9.00
Taxes	542.30
Other	0.00
PAID	$551.30

APN: 0288-562-03-0-000

1523196 DL

X DOCUMENTARY TRANSFER TAX $ ... 542.30 ... ...

.X...Computed on the consideration or value of property conveyed; OR

.....Computed on the consideration or value liens or encumbrances remaining at time of sale.

Signature of Declarant or Agent determining tax- Firm Name

EXECUTOR'S DEED

In consideration of the sum of $493,000.00, receipt of which is hereby acknowledged, RICHARD R. CHRISTIANSON, Executor of the Estate of RUSSELL ELMER CHRISTIANSON aka RUSSELL E. CHRISTIANSON aka RUSSELL CHRISTIANSON, deceased, pursuant to the order for specific performance of decedent's executory contract of sale made by the Superior Court of the State of California, in and for the County of San Bernardino, Central Division, in the matter of the Estate of RUSSELL ELMER CHRISTIANSON, deceased, Case No. SPRSS 03663, on October 8, 2004, directing the execution of a conveyance, hereby grants to ROBERT C. CHRISTIANSON, a married man as his sole and separate property and JOHN D. CHRISTIANSON, an unmarried man as tenants in common, all right, title, interest and estate of the decedent at the time of his death and all right, title and interest that the estate may have subsequently acquired by operation of law or otherwise, in and to the real property in the City of Highland, County of San Bernardino, State of California, described as follows:

Legal Description attached hereto as EXHIBIT "A" and made a part hereof.

Date: NOVEMBER 12, 2004

RICHARD R. CHRISTIANSON

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

On this 12 day of NOV. 2004, before me, the undersigned notary public, personally appeared RICHARD R. CHRISTIANSON, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument, and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Notary Public

TOM JANDRO
COMM. #1356381
NOTARY PUBLIC - CALIFORNIA
SAN BERNARDINO COUNTY
My Comm. Expires Jun. 10, 2006

MAIL TAX STATEMENTS AS DIRECTED ABOVE

2

Exhibit "A"

THAT PORTION OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 35 AND OF THE SOUTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 35, TOWNSHIP 1 NORTH, RANGE 3 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, ACCORDING TO GOVERNMENT SURVEY, DESCRIBED AS FOLLOWS:

COMMENCING AT A STAKE ON SAN BERNARDINO BASE LINE, 1564.85 FEET WEST FROM THE NORTHWEST CORNER OF THE NORTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 1 SOUTH, RANGE 3 WEST, SAN BERNARDINO BASE AND MERIDIAN; THENCE AT RIGHT ANGLES NORTH 211.1 FEET; THENCE NORTH 40 DEG. 35' EAST, 769.75 FEET; THENCE SOUTH 79 DEG. 24' EAST 74 FEET; THENCE SOUTH 36 DEG. 4' EAST, 70.5 FEET; THENCE SOUTH 18 DEG. 51' EAST 186.5 FEET; THENCE SOUTH 38 DEG. 30' EAST 117 FEET TO AN IRON STAKE ON THE SOUTH SIDE OF NORTH FORK DITCH, SAID POINT BEING THE MOST NORTHERLY CORNER OF THAT CERTAIN PARCEL OF LAND CONVEYED BY PHILIP M. SAVAGE AND BERNICE R. SAVAGE, HIS WIFE, TO HARMON WEAVER BY DEED DATED AUGUST 12, 1926, AND RECORDED IN BOOK 128, PAGE 115, OFFICIAL RECORDS; THENCE ALONG THE WESTERLY LINE OF LAND SO CONVEYED TO HARMON WEAVER, SOUTH 56 DEG. 21' WEST 76.1 FEET; THENCE SOUTH 34 DEG. 30' WEST 64 FEET; THENCE SOUTH 20 DEG. 26' WEST 55 FEET; THENCE SOUTH 4 DEG. 16' WEST 311.6 FEET TO A POINT ON THE BASE LINE; THENCE WEST ALONG THE BASE LINE, 605.5 FEET TO THE POINT OF BEGINNING.

TOGETHER WITH A RIGHT OF WAY OVER AND ACROSS A PARCEL OF LAND DESCRIBED AS FOLLOWS:

ALL THAT PORTION OF SECTION 35, TOWNSHIP 1 NORTH, RANGE 3 WEST, DESCRIBED AS FOLLOWS:

COMMENCING AT A STAKE ON BASE LINE, 939.85 FEET WEST FROM THE NORTHWEST CORNER OF THE NORTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 1 SOUTH, RANGE 3 WEST, SAN BERNARDINO BASE AND MERIDIAN; THENCE NORTH 4 DEG. 10' EAST 326.45 FEET; THENCE NORTH 37 DEG. 4' EAST 164.7 FEET TO AN IRON STAKE ON THE SOUTH SIDE OF THE NORTH FORK DITCH; THENCE SOUTH 56 DEG. 21' WEST 76.1 FEET; THENCE SOUTH 34 DEG. 30' WEST 64 FEET; THENCE SOUTH 20 DEG. 26' WEST 55 FEET; THENCE SOUTH 4 DEG. 16' WEST 311.6 FEET TO A POINT ON BASE LINE; THENCE ALONG BASE LINE EAST 19.5 FEET TO A POINT OF BEGINNING.
TO BE USED IN COMMON BY THE OWNERS OF PROPERTY ADJOINING SAID PARCEL ON THE EAST AND WEST AS A WAY OF INGRESS AND EGRESS TO AND FROM SAID ADJOINING PROPERTIES, AS RESERVED TO PHILIP M. SAVAGE, ET UX, IN THEIR DEED TO HARMON WEAVER ALSO KNOWN AS HERMAN WEAVER, DATED AUGUST 12, 1926 AND RECORDED IN BOOK 128, PAGE 115, OFFICIAL RECORDS.

SAVING AND ACCEPTING FROM ABOVE PARCEL THAT PORTION THEREOF INCLUDED WITHIN THE STRIP OF LAND FOR THE NORTH FORK DITCH AS CONVEYED TO THE NORTH FORK WATER COMPANY, A CORPORATION, BY DEED DATED JANUARY 11, 1892, AND RECORDED IN BOOK 144 OF DEEDS, PAGE 292, A PLAT SHOWING THE LOCATION OF SAID STRIP OF LAND BEING RECORDED IN BOOK 9 OF MAPS, PAGE 40 OF THE RECORDS OF SAN BERNARDINO COUNTY, SAID PLAT BEING REFERRED TO IN AGREEMENT TO CONVEY TO THE NORTH FORK WATER COMPANY RECORDED IN BOOK 144 OF DEEDS, PAGE 292, A PLAT SHOWING A LOCATION OF SAID STRIP OF LAND BEING RECORDED IN BOOK 9 OF MAPS, PAGE 40, RECORDS OF SAID COUNTY, SAID PLAT BEING REFERRED TO IN AGREEMENT TO CONVEY TO THE NORTH FORK WATER COMPANY, RECORDED IN BOOK "N" OF AGREEMENTS, PAGE 243.

29300 Baseline Avenue
29300 Baseline Avenue
Highland, CA 92346

Inquiry Number: 3794498.11
November 23, 2013

EDR Building Permit Report

Target Property and Adjoining Properties

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EDR BUILDING PERMIT REPORT

About This Report

The EDR Building Permit Report provides a practical and efficient method to search building department records for indications of environmental conditions. Generated via a search of municipal building permit records gathered from more than 1,600 cities nationwide, this report will assist you in meeting the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05), or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

Building permit data can be used to identify current and/or former operations and structures/features of environmental concern. The data can provide information on a target property and adjoining properties such as the presence of underground storage tanks, pump islands, sumps, drywells, etc., as well as information regarding water, sewer, natural gas, electrical connection dates, and current/former septic tanks.

ASTM and EPA Requirements

ASTM E 1527-05 lists building department records as a "standard historical source," as detailed in § 8.3.4.7: "Building Department Records – The term building department records means those records of the local government in which the property is located indicating permission of the local government to construct, alter, or demolish improvements on the property." ASTM also states that "Uses in the area surrounding the property shall be identified in the report, but this task is required only to the extent that this information is revealed in the course of researching the property itself."

EPA's Standards and Practices for All Appropriate Inquires (AAI) states: "§312.24: Reviews of historical sources of information. (a) Historical documents and records must be reviewed for the purposes of achieving the objectives and performance factors of §312.20(e) and (f). Historical documents and records may include, but are not limited to, aerial photographs, fire insurance maps, building department records, chain of title documents, and land use records."

Methodology

EDR has developed the EDR Building Permit Report through our partnership with BuildFax, the nation's largest repository of building department records. BuildFax collects, updates, and manages building department records from local municipal governments. The database now includes 30 million permits, on more than 10 million properties across 1,600 cities in the United States.

The EDR Building Permit Report comprises local municipal building permit records, gathered directly from local jurisdictions, including both target property and adjoining properties. Years of coverage vary by municipality. Data reported includes (where available): date of permit, permit type, permit number, status, valuation, contractor company, contractor name, and description.

Incoming permit data is checked at seven stages in a regimented quality control process, from initial data source interview, to data preparation, through final auditing. To ensure the building department is accurate, each of the seven quality control stages contains, on average, 15 additional quality checks, resulting in a process of approximately 105 quality control "touch points."

For more information about the EDR Building Permit Report, please contact your EDR Account Executive at (800) 352-0050.

EDR® Environmental Data Resources Inc

BUILDFAX PROPERTY HISTORY

EXECUTIVE SUMMARY: SEARCH DOCUMENTATION

A search of building department records was conducted by Environmental Data Resources, Inc (EDR) on behalf of Petra Geotechnical Inc on Nov 23, 2013.

TARGET PROPERTY

29300 Baseline Avenue
Highland, CA 92346

SEARCH METHODS

EDR searches available lists for both the Target Property and Surrounding Properties.

RESEARCH SUMMARY

Building permits identified: **YES**

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Highland

Year	*Source*	*TP*	*Adjoining*
2011	City of Highland, Building and Safety		X
2010	City of Highland, Building and Safety		X
2009	City of Highland, Building and Safety		X
2008	City of Highland, Building and Safety		X
2007	City of Highland, Building and Safety		X
2006	City of Highland, Building and Safety		X
2005	City of Highland, Building and Safety		X
2004	City of Highland, Building and Safety		X
2003	City of Highland, Building and Safety		X
2002	City of Highland, Building and Safety		
2001	City of Highland, Building and Safety		
2000	City of Highland, Building and Safety		
1999	City of Highland, Building and Safety		
1998	City of Highland, Building and Safety		
1997	City of Highland, Building and Safety		
1996	City of Highland, Building and Safety		
1995	City of Highland, Building and Safety		
1994	City of Highland, Building and Safety		
1993	City of Highland, Building and Safety		
1992	City of Highland, Building and Safety		
1991	City of Highland, Building and Safety		
1990	City of Highland, Building and Safety		
1989	City of Highland, Building and Safety		
1988	City of Highland, Building and Safety		

San Bernardino County

Year	*Source*	*TP*	*Adjoining*
2012	San Bernardino County, Land Use Services Departmen		

EXECUTIVE SUMMARY: SEARCH DOCUMENTATION

Year	Source	TP	Adjoining
2011	San Bernardino County, Land Use Services Departmen		
2010	San Bernardino County, Land Use Services Departmen		
2009	San Bernardino County, Land Use Services Departmen		
2008	San Bernardino County, Land Use Services Departmen		X
2007	San Bernardino County, Land Use Services Departmen		
2006	San Bernardino County, Land Use Services Departmen		
2005	San Bernardino County, Land Use Services Departmen		
2004	San Bernardino County, Land Use Services Departmen		
2003	San Bernardino County, Land Use Services Departmen		
2002	San Bernardino County, Land Use Services Departmen		

BUILDING DEPARTMENT RECORDS SEARCHED

Name: Highland
Years: 1988-2011
Source: City of Highland, Building and Safety, Highland, CA
Phone: (909) 864-6861 x228

Name: San Bernardino County
Years: 2002-2012
Source: San Bernardino County, Land Use Services Department, San Bernardino, CA
Phone: (909) 256-4750

Name: Berkeley
Years: 1992-2012
Source: City of Berkeley, Planning and Development, Berkeley, CA
Phone: (510) 981-7400

Name: San Bernardino
Years: 1996-2010
Source: City of San Bernardino, Building and Safety, San Bernardino, CA
Phone: (909) 384-5071

TARGET PROPERTY FINDINGS

TARGET PROPERTY DETAIL

29300 Baseline Avenue
Highland, CA 92346

No Permits Found

ADJOINING PROPERTY FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

BASELINE ST

29400 BASELINE ST

Date:	**9/19/2007**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-008-410
Status:	Approved
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Brent Bumpus

Date:	**12/2/2004**
Permit Type:	**Reroof**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Reroof
Permit Number:	B00-003-274
Status:	Expired
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

BELLE VILLA CT

29325 BELLE VILLA CT

Date:	**11/1/2004**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-122
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

Date:	**6/10/2003**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-000-358
Status:	Expired
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Elco Construction

ADJOINING PROPERTY FINDINGS

29329 BELLE VILLA CT

Date:	**4/27/2006**
Permit Type:	**Patio Cover/Deck**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Patio
Permit Number:	B00-005-943
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	James Hoover Construction

Date:	**11/1/2004**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-123
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

Date:	**6/10/2003**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-000-359
Status:	Expired
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Elco Construction

ADJOINING PROPERTY FINDINGS

29333 BELLE VILLA CT

Date:	**11/1/2004**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-124
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

Date:	**6/10/2003**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-000-360
Status:	Expired
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Elco Construction

ADJOINING PROPERTY FINDINGS

29334 BELLE VILLA CT

Date:	**11/1/2004**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-129
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

Date:	**3/11/2004**
Permit Type:	**Miscellaneous**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	B00-001-829
Status:	Issued
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Elco Construction

Date:	**6/10/2003**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-000-365
Status:	Issued
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Elco Construction

ADJOINING PROPERTY FINDINGS

29337 BELLE VILLA CT

Date:	**10/1/2008**
Permit Type:	**Plumbing**
Description:	**GAS LINE FOR FUTURE PREFAB BBQ, Plumbing GAS LINE FOR FUTURE PREFAB BBQ**
Permit Description:	
Work Class:	Plumbing
Proposed Use:	
Permit Number:	B00-009-493
Status:	Expired
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**11/1/2004**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-125
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

ADJOINING PROPERTY FINDINGS

Date: **6/10/2003**
Permit Type: **Single Family - New**
Description:

Permit Description:
Work Class:
Proposed Use: Dwellings
Permit Number: B00-000-361
Status: Expired
Valuation: $0.00
Contractor Company:
Contractor Name: Elco Construction

29338 BELLE VILLA CT

Date: **11/1/2004**
Permit Type: **Single Family - New**
Description:

Permit Description:
Work Class:
Proposed Use: Dwellings
Permit Number: B00-003-128
Status: Finaled
Valuation: $0.00
Contractor Company:
Contractor Name: LCI Builders

Date: **6/10/2003**
Permit Type: **Single Family - New**
Description:

Permit Description:
Work Class:
Proposed Use: Dwellings
Permit Number: B00-000-364
Status: Issued
Valuation: $0.00
Contractor Company:
Contractor Name: Elco Construction

ADJOINING PROPERTY FINDINGS

29341 BELLE VILLA CT

Date:	**11/1/2004**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-126
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

Date:	**6/10/2003**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-000-362
Status:	Issued
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Elco Construction

ADJOINING PROPERTY FINDINGS

29345 BELLE VILLA CT

Date:	**11/1/2004**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-127
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

Date:	**6/10/2003**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-000-363
Status:	Issued
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Elco Construction

ADJOINING PROPERTY FINDINGS

CHANDLER W

203 CHANDLER W

Date:	**3/13/2008**
Permit Type:	**BS_RES**
Description:	**RESIDENCE ADDITION**
Permit Description:	**Building Single - Family Residential**
Work Class:	Alteration Permit
Proposed Use:	
Permit Number:	B200801998
Status:	
Valuation:	
Contractor Company:	
Contractor Name:	

Date:	**3/13/2008**
Permit Type:	**BS_RES**
Description:	**RESIDENTIAL ADDITION**
Permit Description:	**Building Single - Family Residential**
Work Class:	Alteration Permit
Proposed Use:	
Permit Number:	B200801999
Status:	
Valuation:	
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

Date: **3/13/2008**
Permit Type: **BS_RES**
Description: **RESIDENCE ADDITION**

Permit Description: **Building Single - Family Residential**
Work Class: Alteration Permit
Proposed Use:
Permit Number: B200802000
Status:
Valuation: $0.00
Contractor Company:
Contractor Name:

Date: **3/13/2008**
Permit Type: **BS_RES**
Description: **ROOM ADDITION AND PORCH**

Permit Description: **Building Single - Family Residential**
Work Class: Alteration Permit
Proposed Use:
Permit Number: B200802001
Status:
Valuation:
Contractor Company:
Contractor Name:

702 CHANDLER W

Date: **4/23/2003**
Permit Type: **Electrical**
Description:

Permit Description:
Work Class:
Proposed Use:
Permit Number: B00-000-158
Status: Finaled
Valuation: $0.00
Contractor Company:
Contractor Name:

ADJOINING PROPERTY FINDINGS

CLEAR VIEW LN

29320 CLEAR VIEW LN

Date:	**3/2/2010**
Permit Type:	**Miscellaneous**
Description:	**F INAL INSPECT ION - PERM IT #5675 FAM ILY RM . / LATT ICE PATIO COVER --- ADD WATER HEATER, Miscellaneous FINAL INSPECTION - PERMIT #5675 FAMILY RM./ LATTICE PATIO COVER --- ADD WATER HEATER**
Permit Description:	
Work Class:	Miscellaneous
Proposed Use:	
Permit Number:	B00-010-825
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

29343 CLEAR VIEW LN

Date:	**10/5/2004**
Permit Type:	**Patio Cover/Deck**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Patio
Permit Number:	B00-002-846
Status:	Expired
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Big Red Construction

ADJOINING PROPERTY FINDINGS

29350 CLEAR VIEW LN

Date:	**10/10/2006**
Permit Type:	**Patio Cover/Deck**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Patio
Permit Number:	B00-006-892
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	West Coast Custom Rooms

29355 CLEAR VIEW LN

Date:	**4/25/2007**
Permit Type:	**Mechanical**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	B00-007-781
Status:	Expired
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Burgeson's Heating And Air Conditioning 620 Tennessee

ADJOINING PROPERTY FINDINGS

29373 CLEAR VIEW LN

Date:	**7/12/2011**
Permit Type:	**Electrical**
Description:	**PHOTOVOLTAIC SYSTEM per approved plans, Electrical PHOTOVOLTAIC SYSTEM per approved plans**
Permit Description:	
Work Class:	Electrical
Proposed Use:	Miscellaneous
Permit Number:	B00-012-426
Status:	Issued
Valuation:	$9,000.00
Contractor Company:	
Contractor Name:	Verengo

Date:	**11/7/2006**
Permit Type:	**Patio Cover/Deck**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Patio
Permit Number:	B00-007-046
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	J H Finishing

ADJOINING PROPERTY FINDINGS

29377 CLEAR VIEW LN

Date:	**3/10/2009**
Permit Type:	**Plumbing**
Description:	**Water Heater change-out, Water heater Water Heater change-out**
Permit Description:	
Work Class:	Water heater
Proposed Use:	Miscellaneous
Permit Number:	B00-009-865
Status:	Finaled
Valuation:	$357.00
Contractor Company:	
Contractor Name:	California Delta Mechanical

Date:	**6/25/2003**
Permit Type:	**Patio Cover/Deck**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Patio
Permit Number:	B00-000-547
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

29403 CLEAR VIEW LN

Date:	**8/31/2009**
Permit Type:	**Plumbing**
Description:	**REPLACE WATER HEATER, Plumbing REPLACE WATER HEATER**
Permit Description:	
Work Class:	Plumbing
Proposed Use:	Miscellaneous
Permit Number:	B00-010-367
Status:	Finaled
Valuation:	$450.00
Contractor Company:	
Contractor Name:	

29436 CLEAR VIEW LN

Date:	**2/8/2010**
Permit Type:	**Reroof**
Description:	**TEAR OFF T ILE REROOF W ITH NEW SHEATH ING - L IGHT WEIGHT TILE- AND EXTEND RAFTERS AND BOX-IN, Roof TEAR OFF TILE REROOF WITH NEW SHEATHING - LIGHT WEIGHT TILE- AND EXTEND RAFTERS AND BOX-IN**
Permit Description:	
Work Class:	Roof
Proposed Use:	Reroof
Permit Number:	B00-010-716
Status:	Finaled
Valuation:	$4,500.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

29446 CLEAR VIEW LN

Date:	**11/29/2004**
Permit Type:	**Walls**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Walls
Permit Number:	B00-003-246
Status:	Expired
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**11/17/2004**
Permit Type:	**Patio Cover/Deck**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Patio
Permit Number:	B00-003-211
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

29463 CLEAR VIEW LN

Date:	**5/7/2007**
Permit Type:	**Walls**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Walls
Permit Number:	B00-007-831
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

CRISTINA VILLA CT

7201 CRISTINA VILLA CT

Date:	**9/21/2006**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-006-584
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Fata Construction

ADJOINING PROPERTY FINDINGS

7205 CRISTINA VILLA CT

Date:	**9/21/2006**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-006-585
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Fata Construction

7211 CRISTINA VILLA CT

Date:	**9/21/2006**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-006-583
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Fata Construction

ADJOINING PROPERTY FINDINGS

7217 CRISTINA VILLA CT

Date:	**2/7/2008**
Permit Type:	**Patio Cover/Deck**
Description:	**ALUMAWOOD PATIO COVER PER ER-2621P, Patio Cover ALUMAWOOD PATIO COVER PER ER-2621P**
Permit Description:	
Work Class:	Patio Cover
Proposed Use:	Patio
Permit Number:	B00-008-814
Status:	Finaled
Valuation:	$4,316.00
Contractor Company:	
Contractor Name:	

Date:	**9/21/2006**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-006-586
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Fata Construction

ADJOINING PROPERTY FINDINGS

7223 CRISTINA VILLA CT

Date:	**9/21/2006**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-006-582
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Fata Construction

7229 CRISTINA VILLA CT

Date:	**9/21/2006**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-006-587
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Fata Construction

ADJOINING PROPERTY FINDINGS

7235 CRISTINA VILLA CT

Date:	**9/21/2006**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-006-581
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Fata Construction

7241 CRISTINA VILLA CT

Date:	**9/21/2006**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-006-588
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Fata Construction

ADJOINING PROPERTY FINDINGS

GREENBRIER PL

7349 GREENBRIER PL

Date:	**6/6/2005**
Permit Type:	**Walls**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Walls
Permit Number:	B00-004-394
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ISABELLA VILLA CT

7265 ISABELLA VILLA CT

Date:	**5/25/2005**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-579
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

ADJOINING PROPERTY FINDINGS

7271 ISABELLA VILLA CT

Date:	**5/25/2005**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-578
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

7272 ISABELLA VILLA CT

Date:	**7/27/2006**
Permit Type:	**Electrical**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	B00-006-512
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

Date:	**5/25/2005**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-570
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

7277 ISABELLA VILLA CT

Date:	**5/25/2005**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-577
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

ADJOINING PROPERTY FINDINGS

7278 ISABELLA VILLA CT

Date:	**5/25/2005**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-571
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

7283 ISABELLA VILLA CT

Date:	**5/25/2005**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-576
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

ADJOINING PROPERTY FINDINGS

7284 ISABELLA VILLA CT

Date:	**5/25/2005**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-572
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

7290 ISABELLA VILLA CT

Date:	**5/25/2005**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-573
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

ADJOINING PROPERTY FINDINGS

7293 ISABELLA VILLA CT

Date:	**5/25/2005**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-575
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

Date:	**1/18/2005**
Permit Type:	**Electrical**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Miscellaneous
Permit Number:	B00-003-454
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Temp Power Systems

ADJOINING PROPERTY FINDINGS

7296 ISABELLA VILLA CT

Date:	**5/25/2005**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-574
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

JASMINE PL

29233 JASMINE PL

Date:	**2/2/2011**
Permit Type:	**Mechanical**
Description:	**REPLACE FAU, Mechanical REPLACE FAU**
Permit Description:	
Work Class:	Mechanical
Proposed Use:	Miscellaneous
Permit Number:	B00-011-840
Status:	Issued
Valuation:	$7,485.00
Contractor Company:	
Contractor Name:	Burgesons Heating And Air Conditioning

ADJOINING PROPERTY FINDINGS

MORENA VILLA DR

29286 MORENA VILLA DR

Date:	**11/1/2004**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-137
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

Date:	**5/19/2003**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-000-293
Status:	Expired
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Elco Construction

ADJOINING PROPERTY FINDINGS

29290 MORENA VILLA DR

Date:	**11/1/2004**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-136
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

Date:	**5/19/2003**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-000-292
Status:	Issued
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Elco Construction

ADJOINING PROPERTY FINDINGS

29294 MORENA VILLA DR

Date:	**11/1/2004**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-135
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

Date:	**5/19/2003**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-000-291
Status:	Expired
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Elco Construction

ADJOINING PROPERTY FINDINGS

29298 MORENA VILLA DR

Date:	**3/7/2005**
Permit Type:	**Miscellaneous**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Miscellaneous
Permit Number:	B00-003-750
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

Date:	**11/1/2004**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-003-134
Status:	Finaled
Valuation:	$0.00
Contractor Company:	
Contractor Name:	LCI Builders

Date:	**10/3/2003**
Permit Type:	**Miscellaneous**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	B00-001-026
Status:	Plan check
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Elco Construction

ADJOINING PROPERTY FINDINGS

Date:	**5/19/2003**
Permit Type:	**Single Family - New**
Description:	
Permit Description:	
Work Class:	
Proposed Use:	Dwellings
Permit Number:	B00-000-290
Status:	Issued
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Elco Construction

GLOSSARY

General Building Department concepts

- **ICC:** The International Code Council. The governing body for the building/development codes used by all jurisdictions who've adopted the ICC guidelines. MOST of the US has done this. Canada, Mexico, and other countries use ICC codes books and guides as well. There are a few states who have added guidelines to the ICC codes to better fit their needs. For example, California has added seismic retrofit requirements for most commercial structures.
- **Building Department (Permitting Authority, Building Codes, Inspections Department, Building and Inspections):** This is the department in a jurisdiction where an owner or contractor goes to obtain permits and inspections for building, tearing down, remodeling, adding to, re-roofing, moving or otherwise making changes to any structure, Residential or Commercial.
- **Jurisdiction:** This is the geographic area representing the properties over which a Permitting Authority has responsibility.
- **GC:** General Contractor. Usually the primary contractor hired for any Residential or Commercial construction work.
- **Sub:** Subordinate contracting companies or subcontractors. Usually a "trades" contractor working for the GC. These contractors generally have an area of expertise in which they are licensed like Plumbing, Electrical, Heating and Air systems, Gas Systems, Pools etc. (called "trades").
- **Journeymen:** Sub contractors who have their own personal licenses in one or more trades and work for different contracting companies, wherever they are needed or there is work.
- **HVAC (Mechanical, Heating & Air companies):** HVAC = Heating, Ventilation, and Air Conditioning.
- **ELEC (Electrical, TempPole, TPole, TPower, Temporary Power, Panel, AMP Change, Power Release):** Electrical permits can be pulled for many reasons. The most common reason is to increase the AMPs of power in an electrical power panel. This requires a permit in almost every jurisdiction. Other commons reason for Electrical permits is to insert a temporary power pole at a new construction site. Construction requires electricity, and in a new development, power has yet to be run to the lot. The temporary power pole is usually the very first permit pulled for new development. The power is released to the home owner when construction is complete and this sometimes takes the form of a Power Release permit or inspection.
- **"Pull" a permit:** To obtain and pay for a building permit.
- **CBO:** Chief Building Official
- **Planning Department:** The department in the development process where the building /structural plans are reviewed for their completeness and compliance with building codes
- **Zoning Department:** The department in the development process where the site plans are reviewed for their compliance with the regulations associated with the zoning district in which they are situated.
- **Zoning District:** A pre-determined geographic boundary within a jurisdiction where certain types of structures are permitted / prohibited. Examples are Residential structure, Commercial/Retail structures, Industrial/Manufacturing structures etc. Each zoning district has regulations associated with it like the sizes of the lots, the density of the structures on the lots, the number of parking spaces required for certain types of structures on the lots etc.
- **PIN (TMS, GIS ID, Parcel#):** Property Identification Number and Tax Map System number.
- **State Card (Business license):** A license card issued to a contractor to conduct business.
- **Building Inspector (Inspector):** The inspector is a building department employee that inspects building construction for compliance to codes.
- **C.O.:** Certificate of Occupancy. This is the end of the construction process and designates that the owners now have permission to occupy a structure after its building is complete. Sometimes also referred to as a Certificate of Compliance.

GLOSSARY

Permit Content Definitions

- Permit Number: The alphanumerical designation assigned to a permit for tracking within the building department system. Sometimes the permit number gives clues to its role, e.g. a "PL" prefix may designate a plumbing permit.
- Description: A field on the permit form that allows the building department to give a brief description of the work being done. More often than not, this is the most important field for EP's to find clues to the prior use(s) of the property.
- Permit Type: Generally a brief designation of the type of job being done. For example BLDG-RES, BLDG-COM, ELEC, MECH etc.

Sample Building Permit Data

Date: Nov 09, 2000
Permit Type: Bldg -
New Permit Number: 101000000405
Status: Valuation: $1,000,000.00
Contractor Company: OWNER-BUILDER
Contractor Name:

Description: New one store retail (SAV-ON) with drive-thru pharmacy. Certificate of Occupancy.

29300 Baseline Avenue
29300 Baseline Avenue
Highland, CA 92346

Inquiry Number: 3794498.3
November 22, 2013

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

11/22/13

Site Name:
29300 Baseline Avenue
29300 Baseline Avenue
Highland, CA 92346

Client Name:
Petra Geotechnical Inc
3190 Airport Loop Drive
Costa Mesa, CA 92626-0000

EDR Inquiry # 3794498.3

Contact: Jon Cain

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Petra Geotechnical Inc were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: 29300 Baseline Avenue
Address: 29300 Baseline Avenue
City, State, Zip: Highland, CA 92346
Cross Street:
P.O. # 13-627
Project: 29300 Baseline Avenue
Certification # 5819-4170-A377

Sanborn® Library search results
Certification # 5819-4170-A377

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✓ Library of Congress
- ✓ University Publications of America
- ✓ EDR Private Collection

The Sanborn Library LLC Since 1866™

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APPENDIX D

INTERVIEWS

PETRA

PETRA GEOTECHNICAL, INC.
Environmental Division
40880 County Center Dr., Suite R, Temecula, CA * (951) 600-9271 * (951) 719-1499

PHASE I INTERVIEW QUESTIONNAIRE

The purpose of this questionnaire is to obtain information from knowledgeable individuals regarding the Subject Site. This questionnaire will become part of the investigation report.

A. SITE INFORMATION

Project Number: _____
Property Name: _____

Property Location: 29300 E. Baseline Highland Ca.

B. INTERVIEW INFORMATION

Date/Time: 1-28-2014 1:41 PM
Interviewer: SELF
Person Interviewed: Robert Christenson
Title/Company: _____

☐ In Person
☐ By Telephone, Number: _____
☒ By Facsimile, Number: _____
☐ Email: _____

1. What is your relationship to the property? PROPERTY OWNER

2. Do you have a good knowledge regarding the uses and physical characteristics of the property?
☒ Yes LAST 15 YRS
☐ No If not, who does? _____ Phone Number: _____

3. Do you have a good knowledge regarding the activities/processes conducted at the property?
☒ Yes LAST 15 YRS
☐ No If not, who does? _____ Phone Number: _____

C. PROPERTY INFORMATION

1. To the best of your knowledge, what are the current and past uses of the property? Please describe with approximate dates.

1972 & PRIOR WAS AN ORANGE GROVE.
1972 UNTIL SOMETIME BEFORE 1997 IT WAS A HORSE RANCH.
FROM 1998 TIL PRESENT IT WAS USED AS A RESIDENCE & THE MAJORITY OF THE PROPERTY WAS FALLOW & UN USED.

PHASE I INTERVIEW QUESTIONNAIRE

2. To your knowledge, are there:

Hazardous substances present on the site? ☐Yes ☒No
Petroleum products present on the site? ☐Yes ☒No

If the preceding items are present, are there indications of any of the following:

An existing release? ☐Yes ☒No
A past release? ☐Yes ☒No
A threat of their release? ☐Yes ☒No

If yes to any of the above, please describe: N/A UNKNOWN

3. Are you aware of the presence of any of the following either currently or previously on the property or any nearby properties:

Potential Recognized Environmental Conditions	Site		Adjacent	
Hazardous substances?	☐ Yes	☒ No	☐ Yes	☒ No
Petroleum products?	☐ Yes	☒ No	☐ Yes	☒ No
Chemicals?	☐ Yes	☒ No	☐ Yes	☒ No
Asbestos or asbestos-containing materials?	☐ Yes	☒ No	☐ Yes	☒ No
Lead-based paints?	☐ Yes	☒ No	☐ Yes	☒ No
Underground storage tanks?	☐ Yes	☒ No	☐ Yes	☒ No
Above-ground storage tanks?	☐ Yes	☒ No	☐ Yes	☒ No
Oil Wells?	☐ Yes	☒ No	☐ Yes	☒ No
Sumps?	☐ Yes	☒ No	☐ Yes	☒ No

If yes to any of the above, please describe: I HAVE NO KNOWLEDGE OF ANY SUBSTANCE

4. Are you aware of any current or previous uses of the property or nearby properties that would suggest the presence of the foregoing items, substances, or materials? ☐Yes ☒No

If yes to any of the above, please describe: UNKNOWN

PHASE I INTERVIEW QUESTIONNAIRE

5. To your knowledge, are there any utility corridors on the property? ☐Yes ☒No

If yes to any of the above, please describe: UNKNOWN

6. To your knowledge, are you aware of any of the following on the property:

Water Wells?	☐Yes ☒No	Disposal Wells?	☐Yes ☒No
Clarifiers?	☐Yes ☒No	Underground Irrigation Systems?	☒Yes ☐No

If yes to any of the above, please describe: THERE IS A 3" PIPE FROM IRRIGATION WIER WHICH RUNS UNDERGROUND APPROX 18" DEEP TO THE WATER TANKS -

7. Are there any occupants on the property? ☐Yes ☒No

If yes to any of the above, please describe: CARETAKER VISITS PROPERTY DAILY

8. Do you have good knowledge regarding the identity of any existing documents relating to the property?
☐Yes
☒No If not, who does? UNKNOWN ?? TITLE CO ?? Phone Number: ———

9. To your knowledge, do any of the following documents exist with respect to the subject property? If yes, please name the document and comment upon whether it is available for review.

Document	Yes	No	Name/Availability
Environmental site assessment reports?			
Environmental audit reports?			
Environmental permits?			
Storage tank registration?			
Material safety data sheets (MSDS)?			
Community right-to-know plans?			
Safety plans?			
Spill Prevention, Countermeasure, & Control Plans?			
Illness and Injury Prevention Plans?			
Reports regarding hydrogeologic conditions on the property or surrounding area?			
Hazardous waste generator notices or reports?			
Geotechnical studies?			

UNKNOWN

PHASE I INTERVIEW QUESTIONNAIRE

10. To your knowledge, do any of the following exist with respect to the subject property?

a. Notices or other correspondence from any government agency relating to past or current violations of environmental laws? ☐Yes ☒No

If yes to any of the above, please describe: _____

b. Notices or other correspondence from any government agency relating to environmental liens encumbering the property? ☐Yes ☒No

If yes to any of the above, please describe: _____

c. Pending, threatened, or past litigation or administrative proceedings relevant to hazardous substances, or petroleum products in, on, or from the property? ☐Yes ☒No

If yes to any of the above, please describe: _____

d. Notices from any government al entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products? ☐Yes ☒No

If yes to any of the above, please describe: _____

11. Please provide any additional information relative to this project.

_____

CHRISTIANSON CHEVROLET

FAX TO: SHEILA KENNY
909-363-8694

SHEILA:

ATTACHED IS THE PHASE I QUESTIONAIRE (4 PAGES)

THANKS

303 Traffic Way • Post Office Box 488 • Arroyo Grande, California 93421-3387 • Phone (805) 489-5518

PETRA GEOTECHNICAL, INC.
Environmental Division
40880 County Center Dr., Suite R, Temecula, CA * (951) 600-9271 * (951) 719-1499

PHASE I CLIENT QUESTIONNAIRE

The purpose of this questionnaire is to obtain information from the client regarding the Property.

Date Sent to Client _____ Date Received from Client _____

A. SITE INFORMATION

1. Property Name: Baseline Street
2. Location (If a map is available, please include it): 29300 Baseline Street, Highland, CA
3. Why is the Phase I required? (Development as a residential parcel, protection from CERCLA liability, etc?): Development as a residential Parcel, Land Purchase
4. Is there an Interview Contact for this job? (A current owner, operator, or someone with knowledge of the history and/or processes occurring at the site). ☒ Yes ☐ No

   If yes, please provide the following information:
   Person to be interviewed: Patrick Obery
   Title/Company: _____
   Phone number and/or email address: 951-906-8923 landinca@live.com
5. Do you have any reports for this job (such as previous Phase I's, biology reports, cultural resource reports, geotechnical reports, etc.) ☐ Yes ☒ No

   If yes, please provide them for Petra to review. *Date Received from Client*_____
6. As part of our investigation, Petra contacts local agencies to obtain miscellaneous information about the project site such as previous investigations, zoning, and flood zone. Do you have any current restrictions regarding Petra contacting these agencies?

   ☐ Yes ☒ No

   If yes, please contact us to discuss further.

12-04-13 Denise/Home contractor 0-12 Sheila

B. SITE ACESS

1. Does Petra have access to the property at this time? ☒ Yes ☐ No
2. Are there any access restrictions such as a locked gate or required insurance forms? NO
3. Is there a site manager that Petra needs to contact prior to visiting the site? yes - Patrick Obery 951-906-8923

PETRA GEOTECHNICAL, INC.
Environmental Division
40880 County Center Dr., Suite R, Temecula, CA * (951) 600-9271 * (951) 719-1499

C. LANDOWNER LIABILITY PROTECTIONS

In order to qualify for one of the Landowner Liability Protections offered by the Small Business liability Relief and Brownfields Revitalization of 2001 (the "Brownfields Amendments"), the client must provide the following information (if available) to the environmental professional. Failure to provide this information could result in a determination that "all appropriate inquiry" is not complete.

1. Are you aware of any environmental clean-up liens against the property that are filed or recorded under federal, tribal, state, or local law? (40 CFR 312.25) ☐ Yes ☒ No

   If no, have you or will you conduct a search for any environmental cleanup liens against the property that are filed or recorded in a registry? ☐ Yes ☒ No

   If yes, please provide Petra with this information. _____

   _____

   _____

   If no, do you require Petra to complete this task? ☒ Yes ☐ No

2. Are you aware of any activity and land use limitations (AULs), such as engineering controls, land use restrictions, or institutional controls that are in place on or for the site and/or have been filed or that environmental cleanup liens against the property that are filed or recorded under federal, tribal, state, or local law? (40 CFR 312.25) ☐ Yes ☒ No

   If no, have you or will you conduct a search for any AULs against the property that are filed or recorded in a registry? ☐ Yes ☒ No

   If yes, please provide Petra with this information. _____

   _____

   _____

   If no, do you require Petra to complete this task? ☒ Yes ☐ No

3. As the user of this Environmental Site Assessment, do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the potential chemicals and processes used by this type of business?
   ☐ Yes ☒ No

   If yes, please provide Petra with this information. _____

   _____

   _____

PETRA GEOTECHNICAL, INC.
Environmental Division
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4. Does the purchase price being paid for this property reasonably reflect the fair market value of the property? ☒ Yes ☐ No

   If you conclude that there is a difference, have you considered whether the lower purchase price is because of any environmental concerns are known or believed to be present at the property?
   ☐ Yes ☐ No

   If yes, please provide Petra with that information. _____

5. Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of hazardous materials/chemical releases or threatened releases? For example,

   A. Do you know the past uses of the property? ☐ Yes ☒ No

   If yes, please provide Petra with the information. _____

   B. Do you know of specific chemicals that are present or once were present at the property?
   ☐ Yes ☒ No

   If yes, please provide Petra with the information. _____

   C. Do you know of spills or other chemical releases that have taken place at the property?
   ☐ Yes ☒ No

   If yes, please provide Petra with the information. _____

   D. Do you know of any environmental cleanups that have taken place at the property or adjacent properties? ☐ Yes ☒ No

   If yes, please provide Petra with the information. _____

6. As the user of this ESA, based on your knowledge and experience related to the property, are there any obvious indicators that point to the presence or likely presence of contamination at the property?
   ☐ Yes ☒ No

   If yes, please provide Petra with the information. _____

APPENDIX E

RESUMES

PETRA

MR. ED LUMP
Associate Geologist

EDUCATION
B.Sc Geology, San Diego State University, San Diego, California

PROFESSIONAL SUMMARY
Mr. Lump has been in the field of Engineering Geology since 1984 and in the field of Environmental Assessment since 1990. Serving as a field technician, soils laboratory technician, and geologist he has gained field experience on numerous hillside and flatland residential and commercial developments throughout southern California. As an engineering geologist he supervised field personnel and conducted numerous geologic and geotechnical evaluations on residential, commercial and industrial developments in California, Arizona and Nevada. His projects have included landslide and fault evaluations, single and multi-tract residential properties, shopping centers/national chain retail developments, and forensic evaluations, as well as grading and construction oversight. Mr. Lump has also conducted and managed numerous Phase I Environmental Site Assessments and Phase II soil, groundwater and soil vapor assessments for vacant, agricultural, residential, commercial and industrial properties in California, Arizona and Nevada.

SELECTED PROJECT EXPERIENCE

Environmental Site Assessments
- Limited Phase II and Soil Vapor Survey, 2013, County of Riverside, future Eastvale fire station, Riverside County, CA
- Phase I ESA, 2013, Wakeland Housing Development, 10 apartment complex portfolio, San Diego County, CA
- Phase I ESA and Limited Phase II, 2013, William Lyon Homes, Upland Residential Development, San Bernardino County, CA
- Limited Phase II Assessment, 2013, KB Homes, Spring Mountain Ranch, Riverside County, CA
- Environmental demolition and grading oversight, 2011/2012, Standard Pacific Homes, Harmony Grove residential development, San Diego County, CA
- Groundwater Mounding Evaluation, 2008, Lowe's HIW, Lowe's of Pacoima, Los Angeles County, CA
- Phase I ESA, Pesticide Residue Survey, Remedial Earthwork Guidelines, and Final As-Built Assessment, 2003/2004, Lennar Homes, Bressi Ranch, San Diego County, CA

Geologic and Geotechnical Evaluations
- Lake Elsinore Marketplace, Diamond Development, Riverside County, CA
- Salton Sea Solar Plant, Chevron Solar, Inc., Imperial County, CA
- Lowe's of Sparks, Nevada, Lowe's HIW, Washoe County, NV
- Walmart Murrieta, Walmart, Inc., Riverside County, CA
- Santa Fe Hills/Paloma Residential Development, KB Homes, San Diego County, CA
- Carmel Mountain Ranch Residential Development, Presley of San Diego, San Diego County, CA
- Lowe's of Bullhead City, Arizona, Lowe's HIW, Mohave County, AZ

Grading and Construction

- Discovery Hills Residential Development, Presley of San Diego, San Diego County, CA
- Lowe's of Prescott, Arizona, Lowe's HIW, Yavapai County, AZ
- Salt Creek Residential Development, KB Homes, San Diego County, CA
- Lowe's of Pacoima, Lowe's HIW, Los Angeles County, CA
- Lake Elsinore Marketplace, Diamond Development, Riverside County, CA
- Carmel Mountain Ranch Residential Development, Presley of San Diego, San Diego County, CA
- Santa Fe Hills/Paloma Residential Development, KB Homes, San Diego County, CA
- Cobra Golf Facility-Carlsbad, Cobra Golf, San Diego County, CA

DR. SIAMAK JAFROUDI
President
Principal-in-Charge

EDUCATION
PhD, Geotechnical Engineering, 1983,
UC Davis
MS, Civil Engineering, 1978, UC Davis

REGISTRATIONS
Civil Engineering, California, PE 36641
Geotechnical Engineer, California, GE 2024
Environmental Assessor, REA 01655

PROFESSIONAL SUMMARY
Dr. Jafroudi has over 34 years of professional experience in geotechnical engineering. His area of specialization is "material characterization" in relation to slope stability evaluation, liquefaction analysis, pavement design, collapse potential, earth retaining structures and earthquake engineering. Dr. Jafroudi's experience encompasses the design and supervision of a multitude of soil mechanics laboratory tests and drilling programs. With a broad range of project experience, he has served as a Principal Engineer on several key projects for such clients as school, university and college districts, public agencies; transportation agencies; residential and commercial developers, as well as private sector clients.

Acquiring a doctorate degree in Geotechnical Engineering as well as a Master of Science degree in Civil Engineering, Dr. Jafroudi maintains extensive working knowledge and experience with respect to these challenging fields. Dr. Jafroudi is a Registered Geotechnical Engineer (GE), a Registered Environmental Assessor (REA), and is registered in Civil Engineering (PE), all in the state of California. Additionally, he is an active member of the American Society of Civil Engineers, the Earthquake Engineering Research Institute and California Geotechnical Engineering Association.

SELECTED PROJECT EXPERIENCE

Environmental Site Assessments
- KB Homes, Hollywood Beverly Christian Church, Hollywood
- Castle & Cooke, Lake Elsinore Outlet Mall, Lake Elsinore
- Covina Transit Plaza, Foothill Transit, Covina
- First Street Bridge Widening, Los Angeles County
- Overland Street Bridge Improvements, Los Angeles County
- 801 Office Tower, Mani Brothers, Los Angeles
- Harmony Grove Site Acquisition, New Urban West, San Diego County
- Site Acquisitions, County of Los Angeles Office of Education, Los Angeles
- Eleven Projects, City of Mission Viejo, Mission Viejo
- Site Acquisitions, Paramount USD, Paramount
- Site Acquisitions, Santa Ana USD, Santa Ana
- Site Acquisition, Nevis Construction, Chino Hills
- Site Acquisitions, Moreno Valley USD, Moreno Valley
- Corona Farms, Confidential Client, Corona
- Amusement Park, Confidential Client, Orange County
- Nursery Site, Confidential Client, Sylmar
- Warehouse Facility, Confidential Client, Norwalk

PETRA

Orange County / Environmental / Corporate

3190 Airport Loop Drive, Suite J1
Costa Mesa, California 92626
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Riverside County

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Valencia, California 91355
T: 661-255-5790 F: 661-255-5242

Desert Region

42-240 Green Way, Suite E
Palm Desert, California 92211
T: 760-340-5303 F: 760-340-5096

PETRA

REPORT OF LIMITED PHASE II ENVIRONMENTAL ASSESSMENT NEAR SURFACE SOIL TESTING 29300 BASELINE STREET ASSESSOR PARCEL NUMBER (APN) 0288-562-03 CITY OF HIGHLAND SAN BERNARDINO COUNTY, CALIFORNIA 92346

MASTERCRAFT HOMES GROUP, LLC

MARCH 10, 2014
J.N. 13-627

PETRA GEOTECHNICAL, INC.
RIVERSIDE COUNTY

40880 County Center Drive, Suite R
Temecula, CA 92591
T: 951.600.9271 F: 951.719.1499

past + present + future
it's in our science

Engineers, Geologists
Environmental Scientists

March 10, 2014
J.N. 13-627

Mr. Ray Dorame
MASTERCRAFT HOMES GROUP, LLC
20201 SW Birch Street, Suite 100
Newport Beach, California 92660

Subject: **Report of Limited Phase II Environmental Assessment, Near Surface Soil Testing, 29300 Baseline Street, Assessor Parcel Number (APN) 0288-562-03, City of Highland, San Bernardino County, California 92346**

Dear Mr. Dorame:

The Environmental Division of Petra Geotechnical, Inc. (Petra) is pleased to present this Limited Phase II Environmental Assessment of near surface soil testing for the above-referenced site. This assessment has been conducted in accordance with our Proposal No. 13-627, dated February 11, 2014.

The information presented in this report discusses the results of our recent field sampling and analytical laboratory testing, as well as a summary of our findings and recommendations. This report was prepared at the request of Mastercraft Homes Group, LLC for their exclusive use. Use of this report or reliance thereon by other parties or projects is not authorized. The report may not be suitable for other parties or other purposes.

SITE DESCRIPTION

The subject site located at 29300 Baseline Street in the City of Highland, San Bernardino County, California (Figure 1). The 8-acre property, currently an inactive equestrian site, consists of one (1) parcel of land designated as APN 0288-562-03. Four (4) main structures currently exist on the subject property, including one (1), 1-story single-family residence with a rear 2-story addition; a carport; and two (2) metal storage sheds. In addition, four (4) 3,800 gallon plastic aboveground water tanks are located near the southeastern property boundary. Farm equipment, tractor trailers, trailers, camper shells, relict horse corrals/pens, and chemical storage areas were also observed onsite during our site reconnaissance.

Topographically, the site consists of moderately sloping terrain to the southwest. A plan showing the current configuration of the site is included as Figure 2.

PURPOSE

Based on the information contained within the referenced Phase I Environmental Site Assessment (ESA) report by Petra (2014), the purpose of this assessment was to evaluate the site for the potential presence of Recognized Environmental Conditions (RECs) from pesticide and herbicide residues in the near-surface soils due to historic agricultural land use from at least 1930 to sometime before 1989. Additionally, the purposes was to evaluate near-surface soils for the presence of petroleum hydrocarbon soil residues related to localized surface-stained areas and around the various known petroleum product storage containers.

SCOPE OF SERVICES

Petra conducted this limited Phase II ESA to evaluate the potential for the presence of Organochlorine Pesticide (OCP), Chlorinated Herbicide and petroleum hydrocarbon residues in near-surface soils, and the potential impacts of such substances on future residential development of the site. Soil testing was completed in previous agricultural land use areas, and in areas with the highest likelihood of contamination (i.e., potential storage and mixing areas) for pesticides and/or herbicides, as well in areas of stained surficial soils and known petroleum-based storage containers. A sample location map is provided as Figure 3. This work consisted of the following tasks:

1. ***Task 1 - Research.*** Petra reviewed the referenced Phase I ESA report (Petra, 2014) along with historic aerial photographs from Environmental Data Resources, Inc. (EDR, 2014) to determine the most appropriate sample locations due to past agricultural land use.

2. ***Task 2 - Soil Sampling.*** Petra hand-augered to ½, 2, and 3 feet below ground surface (bgs) at four (4) locations within the subject site where stained soil and chemical storage areas were noted, and collected discrete samples from eight (8) test pit locations in the former orchard areas. Two (2) additional duplicate soil samples were collected for Quality Control (QC) purposes.

3. ***Task 3 - Laboratory Analysis.*** All samples collected during the sampling phase were submitted under chain-of-custody documentation to Enviro-Chem, Inc., a state-certified laboratory, in Pomona, California.
   - All eight (8) shallow samples collected at ½ foot bgs were analyzed discretely for Organochlorine Pesticides (OCPs) per Environmental Protection Agency (EPA) Test Method 8081A and CAM Title 22 Metals according to EPA Method 6010B/7471A. The deeper samples collected were placed on hold depending on the analytical results of the shallow samples.

- One (1) of the samples collected at 0.5 feet bgs (approximately ten percent of the total number of samples) were also analyzed discretely for Chlorinated Herbicides per EPA Test Method 8151A. The deeper samples collected were placed on hold depending on the analytical results of the shallow samples.

- One (1) additional duplicate sample (approximately ten percent) was collected at ½ foot bgs, and also analyzed for OCPs per EPA Test Method 8081A for QC purposes.

- Four (4) shallow samples collected at ½ foot bgs were analyzed discretely for Total Petroleum Hydrocarbons (TPH) per Environmental Protection Agency (EPA) Test Method 8015B. The deeper samples collected were placed on hold depending on the analytical results of the shallow samples.

4. ***Task 4 – Data Evaluation and Reporting.*** Petra reviewed the laboratory findings and a discussion of these findings is presented herein. A copy of the laboratory results and chain-of-custody form is provided in Appendix A.

SOIL SAMPLING PROTOCOL

The soil samples were obtained utilizing a stainless steel hand auger with a three-inch outside diameter, or collected from test pits excavated concurrently (for geotechnical evaluation) due to difficult hand excavation conditions. Hand auger sampling equipment was decontaminated prior to the collection of each subsequent sample. Samples collected from test pits were collected in situ from the exposed sidewalls. Each soil sample was collected, placed into a glass jar, sealed, labeled, and placed in a cooler with ice for subsequent laboratory analysis. To prevent cross-contamination, all sampling equipment was washed with a Liquinox™ and water solution, and rinsed with distilled water, prior to introduction into the subsurface. Chain-of-custody procedures, including sample labeling, preservation, and handling protocols were followed for identification and tracking of the soil samples obtained.

Soil samples collected were transported to, and analyzed by Enviro-Chem, Inc., Pomona, California, a state certified laboratory. Sample security was maintained and documented using sample labels and chain-of-custody records. Copies of the official laboratory reports and chain-of-custody records are included in Appendix A.

LIMITED PHASE II FIELD ASSESSSMENT

Petra conducted soil sampling activities for the limited Phase II assessment at the subject site on February 19, 2014. A discussion of the field activities is provided below. The approximate hand auger and test pit locations are shown on Figure 3.

Field Activities

To evaluate soil residues associated with petroleum staining onsite, a total of four (4) hand auger borings (HA-1 through HA-4) were advanced on the subject site to a maximum depth of 3 feet bgs. These samples were collected and analyzed for Total Petroleum Hydrocarbons (TPH). To evaluate agricultural chemical residues onsite, a total of eight (8) samples were collected from test pits (TP-1 through TP-5 and TP-8 through TP-10). These soil samples (including QC duplicate samples) were collected and analyzed for Organochlorine Pesticides (OCPs), Chlorinated Herbicides, and CAM Title 22 Metals as part of this evaluation effort. All of the hand auger borings and test pit samples, collected at a depth of ½ foot, were tested for various contaminates.

- Hand auger location HA-1 was located within an area of unlabeled 55-gallon drums containing fluids.
- Hand auger location HA-2 was situated in the carport area east of the residence.
- Hand auger location HA-3 was located near a storage unit, where what appeared to be petroleum-based staining was previously observed in the southwestern portion of the site.
- Hand auger location HA-4 was located near a storage unit, where what appeared to be petroleum-based staining was previously observed northwest of the residence.
- Samples collected from test pits TP-1 through TP-5 and TP-8 through TP-10 were located in former agricultural fields to evaluate general use areas.
- Approximately ten percent of the locations had duplicate samples collected as a QC procedure (i.e., HA-3 @ ½ foot and TP-1 @ ½ foot).
- The decontamination water (rinsate) was also collected during the course of the subsurface field investigation for appropriate laboratory testing.

Laboratory Analysis

All samples analyzed during this investigation were analyzed by Enviro-Chem, Inc. (ECI) in Pomona, California. ECI is accredited by the California Environmental Protection Agency, Department of Health Services, Environmental Laboratory Accreditation Program (ELAP). Analyses were requested on a chain-of-custody record. Below is a discussion of the laboratory results.

Samples collected were analyzed for the following:

- Organochlorine Pesticides (OCPs) using EPA Method 8081A
- Chlorinated Herbicides using EPA Method 8151A

- CAM Title 22 Metals using EPA Method 6010B/7471A
- Total Petroleum Hydrocarbons (TPH) using EPA Method 8015B

Organochlorine Pesticides

Eight (8) discreet samples and one (1) duplicate sample were tested for OCPs. Seven (7) of the samples contained concentrations of 4,4'-DDE and/or 4,4'-DDT above the laboratory reporting limit for organochlorine pesticides. No other analytes were reported at concentrations above the laboratory detection limit. Seven (7) discrete samples (HA-1, HA-2, HA-3, HA-4, HA-6, HA-9, HA-11, and HA-12) contained various amounts of DDE and which ranged from 0.003 milligrams per kilograms (mg/kg) to 0.213 mg/kg. Two (2) discrete samples (TP-1 and TP-4) contained DDT concentrations at 0.016 mg/kg and 0.076 mg/kg, respectively. All concentrations of organochlorine pesticides were found to be below both, the EPA Region 9 Regional Screening Level (RSL) of 1.4 mg/kg for DDE and 1.7 mg/kg for DDT, as well as the California Human Health Screening Level (CHHSL) of 1.6 mg/kg for DDE and 1.6 mg/kg for DDT. The laboratory test results are included in Appendix A.

Chlorinate Herbicides

Two (2) the samples obtained were also analyzed for Chlorinated Herbicides. No detectable levels of Chlorinated Herbicides were present in the samples analyzed. The laboratory test results are included in Appendix A.

CAM Title 22 Metals

Eight (8) discreet samples and one (1) duplicate sample were tested for CAM Metals. All of the samples, with multiple contaminates, contained concentrations above the laboratory reporting limit for metals. On historical agricultural sites, the chemicals of concern are typically arsenic and lead. The results for arsenic were reported to range from 0.308 mg/kg to 1.6 mg/kg. Based upon information provided by the Department of Toxic Substances Control (DTSC, 2008), a concentration of 12.0 mg/kg is a useful screening tool for background levels of arsenic. For comparison purposes, background levels of arsenic in California soils (Kearney Foundation, 1996) in San Bernardino County benchmark soils was listed at 1.0 mg/kg to 2.4 mg/kg. The results for lead were reported to range from 3.68 mg/kg to 15.2 mg/kg. California Environmental Protection Agency (CalEPA) Human Health Screening Levels (CHHSLs) were evaluated for lead residues in soil pertaining to residential land use. A screening level of 150 mg/kg was reported. The laboratory test results are included in Appendix A.

Total Petroleum Hydrocarbons-TPH

Four (4) discreet samples were tested for TPH. Two (2) of the samples (HA-1, 0-½ ft.; HA-2, 0-½ ft.), exhibiting diesel and/or motor oil range soil residues, contained concentrations above the laboratory reporting limit for TPH. The results for HA-1 reported a concentration of 13.1 milligrams per kilogram (mg/kg) for diesel-range residues, and 33.8 mg/kg motor oil-range residues. Results for HA-2 reported a concentration of 122 mg/kg motor oil-range residues. Environmental screening levels (SF Bay RWQCB, 2007) for diesel (i.e., middle distillates) associated with deep soils (greater than 10± feet) is 83 mg/kg, and 5,000 mg/kg for motor oil (i.e., residual fuels). The laboratory test results are included in Appendix A.

Sampling-Derived Wastes

Decontamination water (rinsate) was collected during the course of the subsurface field assessment. One discrete sample of the rinsate was then analyzed by the laboratory prior to appropriate disposal. No detectable levels of OCPs and TPH were present in the sample analyzed. The laboratory test results for the rinsate are included in Appendix A.

CONCLUSIONS

In summary, the pesticide and herbicide levels in the samples analyzed were either non-detect or below their respective Regional Screening Level (RSL) and California Human Health Screening Level (CHHSL). Detected concentrations of arsenic were found to be below the DTSC's screening level for residential soil, and below generally accepted background levels for benchmark soils in San Bernardino County (Kearney Foundation, 1996). Detected concentrations of lead were found to be below the CHHL screening level for residential soil as well. Based on our Phase I ESA (Petra, 2014) and Limited Phase II Environmental Assessment (reported herein), pesticide, herbicide, arsenic, and lead residues detected in soil samples collected onsite do not appear to represent a recognized environmental condition with regards to the site soils analyzed, and no further evaluation and/or testing is considered warranted for the intended residential use of the project, at this time.

Total Petroleum Hydrocarbon (TPH) concentrations in the samples analyzed were non-detect in the gasoline range; however, diesel-range residues were detected on one (1) sample and motor oil-range residues were detected in two (2) samples. Compared with screening levels for deep soil where

groundwater is currently or potentially a source of drinking water (SF Bay RWQCB, 2007), laboratory test results reported concentrations below the residential soil threshold. Based on our Phase I ESA (Petra, 2014) and Limited Phase II Environmental Assessment (reported herein), petroleum-based hydrocarbon residues detected in soil samples collected onsite do not appear to represent a recognized environmental condition with regards to the site soils analyzed, and no further evaluation and/or testing is considered warranted for the intended residential use of the project, at this time.

LIMITATIONS

Petra has completed the above scope of work in general accordance with our Proposal No. 13-627, dated February 11, 2014. The work activities described herein were conducted to address the specific issues as discussed in this report.

This opportunity to be of service to you is sincerely appreciated. Please do not hesitate to call this office if you have questions pertaining to this report.

Respectfully submitted,

Petra Geotechnical, Inc.
ENVIRONMENTAL DIVISION

Edward P. Lump, PG 5975
Associate Geologist

REGISTERED GEOLOGIST
Edward P. Lump
No. 5975
STATE OF CALIFORNIA

Siamak Jafroudi, PhD, GE 2024
President, Senior Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
SIAMAK JAFROUDI
No. GE002024
GEOTECHNICAL
STATE OF CALIFORNIA

EPL/JC/SJ/nbc

Distribution: (3) Addressee

Attachments: References
Figure 1 – Site Location Map
Figure 2 – Site Plan
Figure 3 - Exploration Location Map
Appendix A – Laboratory Test Data and Chain-Of-Custody

REFERENCES

California Environmental Protection Agency, 2005, California Human Health Screening Levels.

Department of Toxic Substances Control (DTSC), 2008, Interim Guide for Sampling Agricultural Properties, Third Revision, dated August 7.

Environmental Data Resources, Inc., 2013, The EDR Aerial Photo Decade Package, 29300 Baseline Avenue, Highland, CA 92346 (Inquiry No. 3794498.5), dated December 27.

Kearney Foundation, 1996, Background Concentrations of Trace and Major Elements in California Soils, Kearney Foundation of Soil Science Division of Agricultural and Natural Resources, University of California, dated March.

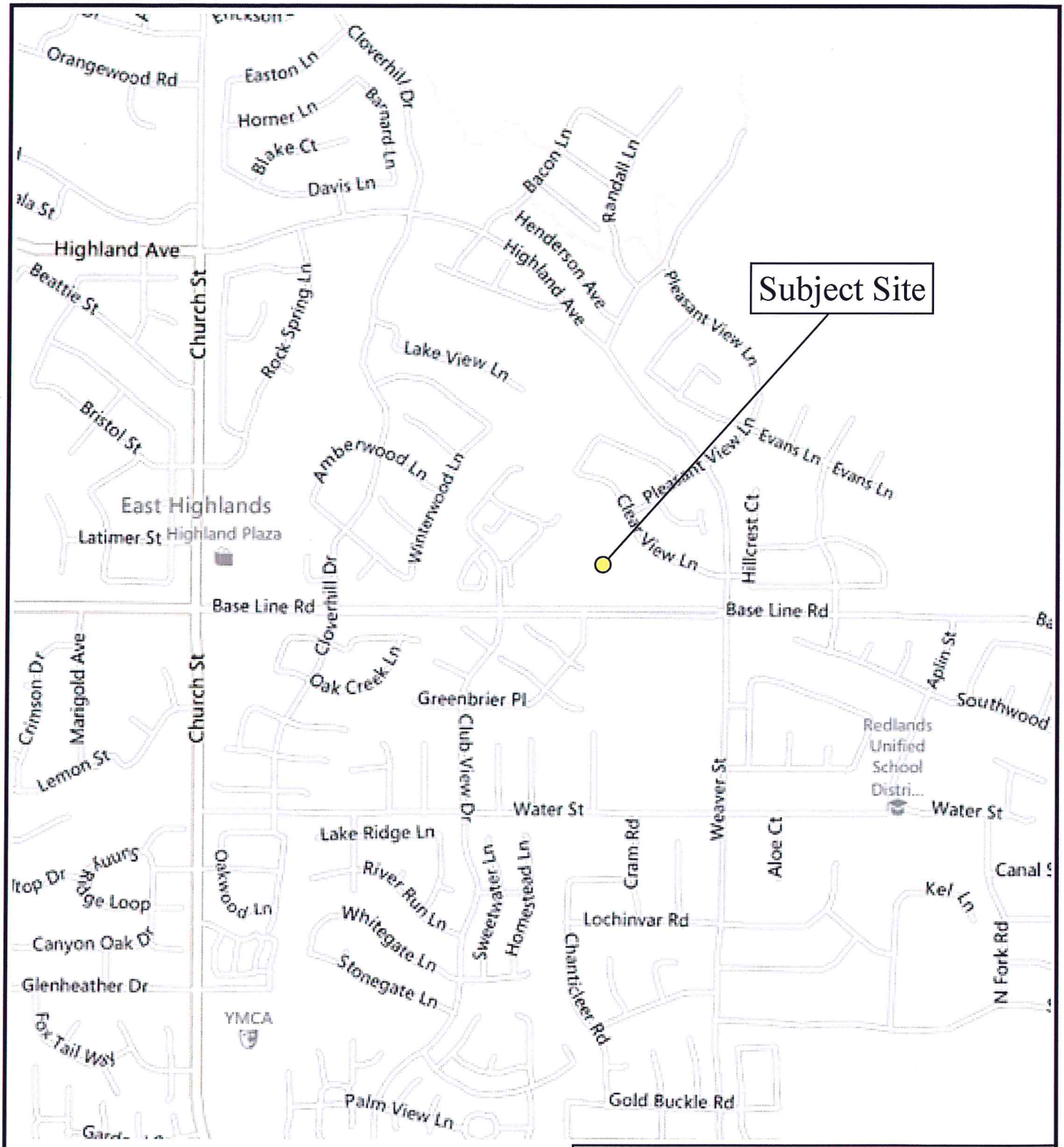
Petra Geotechnical, Inc., 2014, Phase I Environmental Site Assessment; 29300 Baseline Street, Assessor Parcel Number (APN) 0288-562-03-0-000, City of Highland, San Bernardino County, California 92346; Petra Geotechnical, Inc. J.N. 13-627, dated January 31.

San Francisco Bay Regional Water Quality Control Board (SF Bay RWQCB), 2007, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, November (revised May 2008).

United States Environmental Protection Agency, 2013, "EPA Region 9 Regional Screening Levels."

FIGURES

PETRA



N
W E
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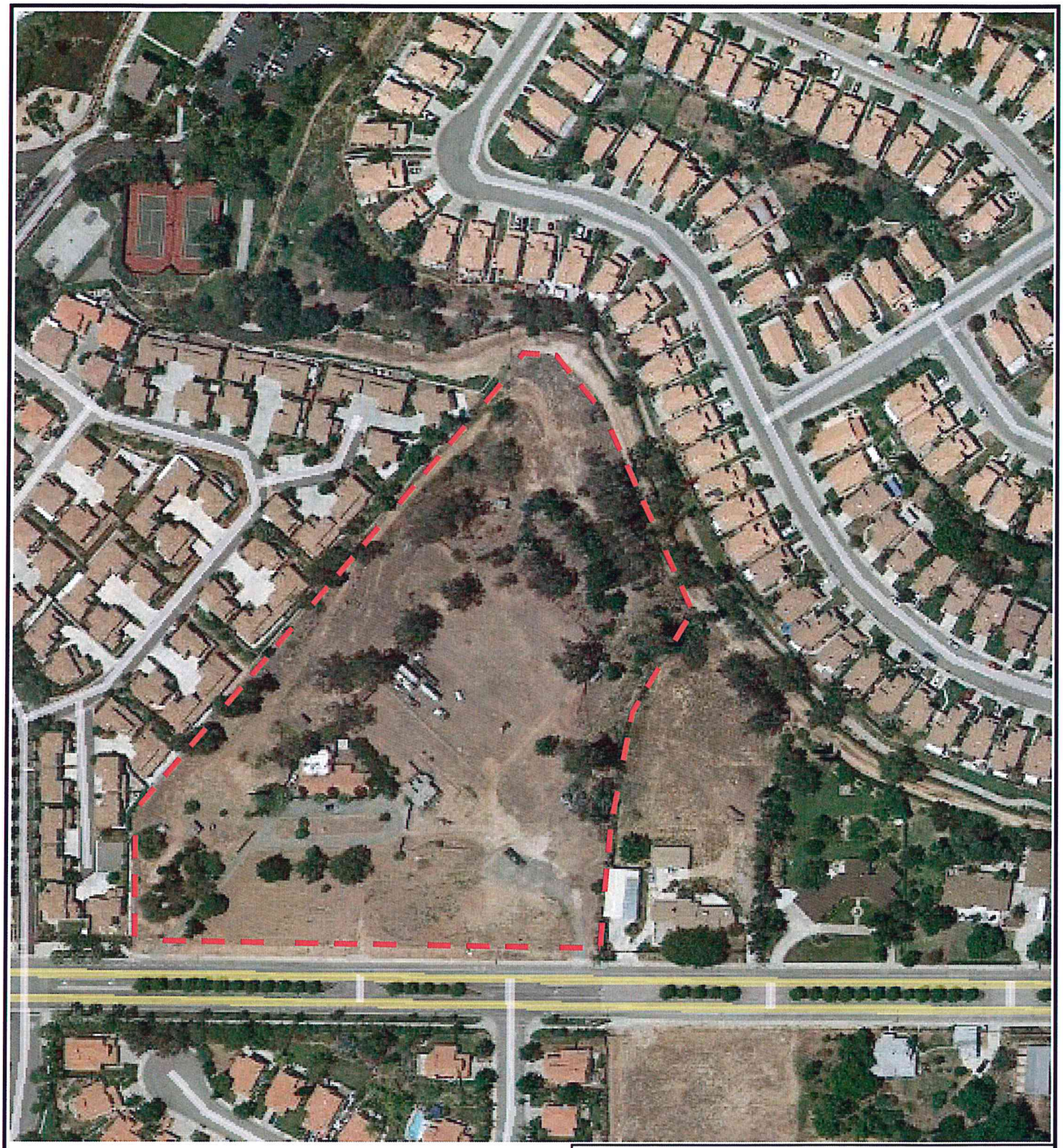
Reference: Bing Maps

PETRA GEOTECHNICAL, INC.
40880 County Center Drive, Suite R
Temecula, California 92591
PHONE: (951) 600-9271
COSTA MESA TEMECULA PALM DESERT SAN DIEGO SANTA CLARITA

SITE LOCATION MAP

29300 Baseline Avenue
Mastercraft Homes
City of Highlands, CA

DATE: March 2014	J.N. 13-627	Figure 1
DWG BY: LH	SCALE: NTS	



EXPLANATION

Approximate Location of Site Boundary

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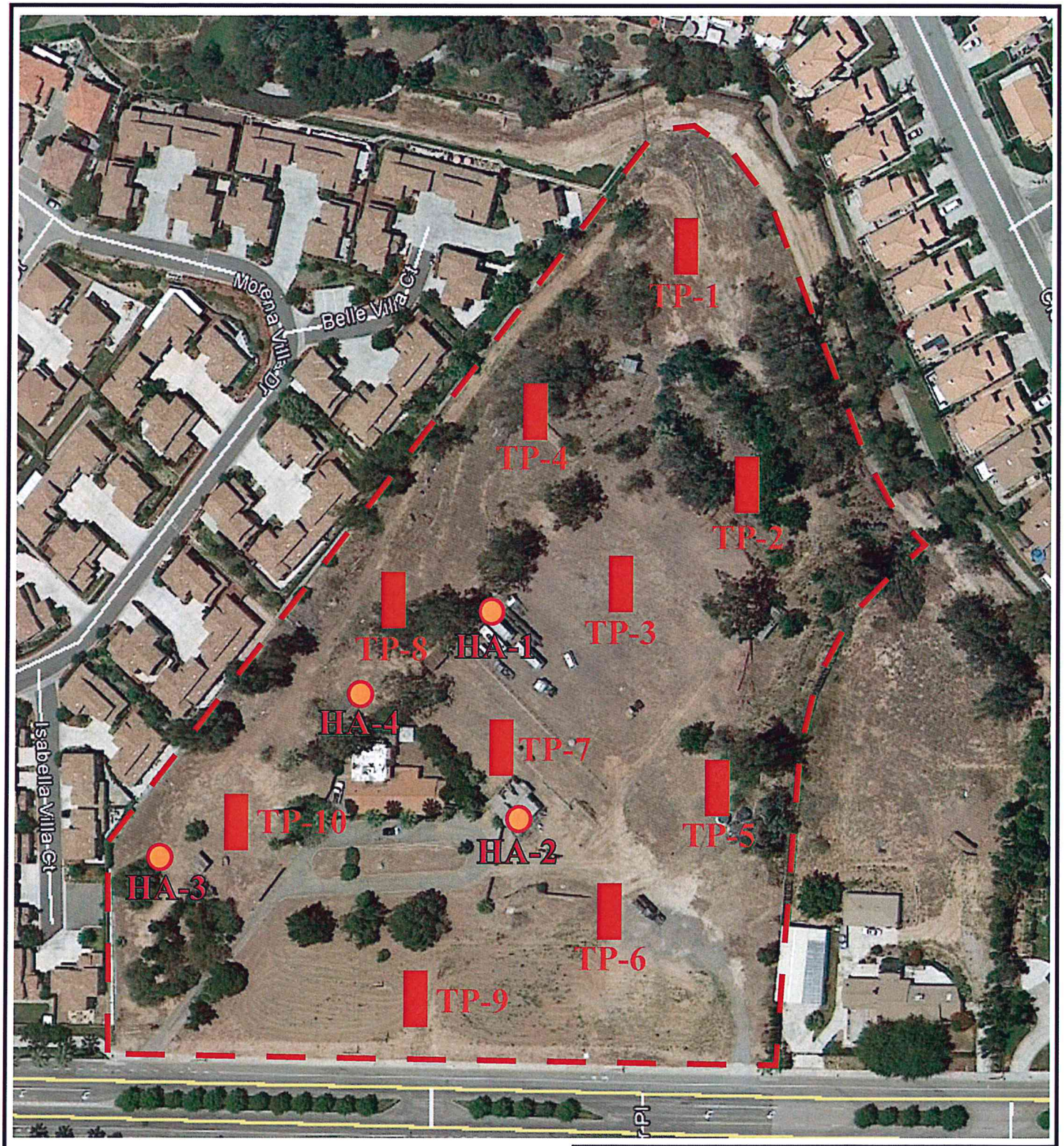
Reference: Google Earth

PETRA GEOTECHNICAL, INC.
40880 County Center Drive, Suite R
Temecula, California 92591
PHONE: (951) 600-9271
COSTA MESA TEMECULA PALM DESERT SAN DIEGO SANTA CLARITA

TEST PIT LOCATION MAP

29300 Baseline Avenue
Mastercraft Homes
City of Highlands, CA

DATE: March 2014	J.N. 13-627	Figure 2
DWG BY: LH	SCALE: NTS	



EXPLANATION

- Approximate Location of Site Boundary
- TP-10 — Approximate Location of Exploratory Testpits
- HA-4 — Approximate Location of Hand-Auger samples

N
W E
S

Reference: Google Earth

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COSTA MESA TEMECULA PALM DESERT SAN DIEGO SANTA CLARITA

EXPLORATION LOCATION MAP

29300 Baseline Avenue
Mastercraft Homes
City of Highlands, CA

DATE: March 2014	J.N. 13-627	Figure 3
DWG BY: JC	SCALE: NS	

APPENDIX A

LABORATORY TEST DATA AND CHAIN-OF-CUSTODY

PETRA

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Date: March 6, 2014

Mr. Jon Cain
Petra Geotechnical Inc.
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

Project: **13-627**
Lab I.D.: **140227-90 through -129**

Dear Mr. Cain:

The **analytical results** for the soil and water samples, received by our lab on February 27, 2014, are attached. The samples were received chilled, intact and accompanying chain of custody record.

Enviro-Chem appreciates the opportunity to provide you and your company this and other services. Please do not hesitate to call us if you have any questions.

Sincerely,

Curtis Desilets
Vice President/Program Manager

Andy Wang
Laboratory Manager

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: Petra Geotechnical Inc.
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: 13-327
MATRIX: SOIL
DATE SAMPLED: 02/27/14
REPORT TO: MR. JON CAIN

DATE RECEIVED: 02/27/14
DATE EXTRACTED: 03/04/14
DATE ANALYZED: 03/04/14
DATE REPORTED: 03/06/14

TOTAL PETROLEUM HYDROCARBONS (TPH) - CARBON CHAIN ANALYSIS
METHOD: EPA 8015B
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

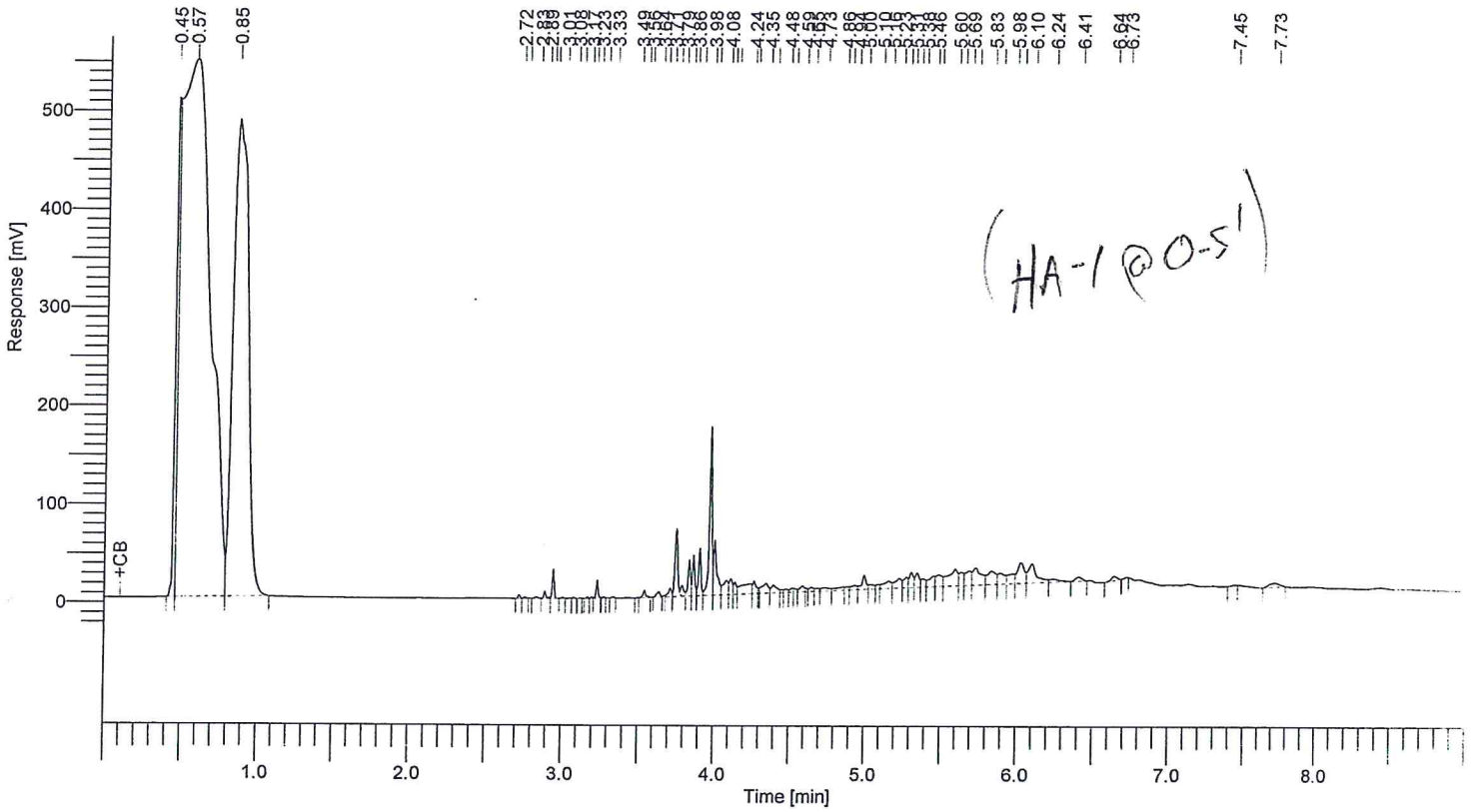
SAMPLE I.D.	LAB I.D.	C4-C10	C11-C22	C23-C35	DF
HA-1 @ 0.5'	140227-118	ND	13.1*	33.8	1
HA-2 @ 0.5'	140227-121	ND	ND	122	1
HA-3 @ 0.5'	140227-124	ND	ND	ND	1
HA-4 @ 0.5'	140227-127	ND	ND	ND	1
METHOD BLANK		ND	ND	ND	1
	PQL	10	10	50	

COMMENTS
C4-C10 = GASOLINE RANGE
C11-C22 = DIESEL RANGE
C23-C35 = MOTOR OIL RANGE
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = DF X PQL
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT
* = PEAKS IN DIESEL RANGE BUT CHROMATOGRAM DOES NOT MATCH THAT OF DIESEL STANDARD

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Software Version	: 6.3.2.0646	Date	: 3/4/2014 3:02:08 PM
Sample Name	: 140227-118 20/2 C RE	Data Acquisition Time	: 3/4/2014 12:33:49 PM
Instrument Name	: GC-I	Channel	: A
Rack/Vial	: 0/10	Operator	: manager
Sample Amount	: 1.000000	Dilution Factor	: 1.000000
Cycle	: 15		

Result File : D:\GC DATA\GC-I\I02014\I1403\I140304\A025.rst
Sequence File : D:\GC DATA\GC-I\I02014\I1403\I140304\I140304.seq



8015 Results

Component Name	Area [uV*sec]	Adjusted Amount
C4-C10	14977	242.3
C11-C22	943708	130.6
C23-C35	775545	337.6
	1734230	710.4

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8015B QA/QC Report

Date Analyzed: 3/4/2014 **Units:** mg/Kg (ppm)

Matrix: **Soil/Solid/Sludge/Liquid**

Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

Spiked Sample Lab I.D.: **140305-15 MS/MSD**

Analyte	SR	spk conc	MS	%MS	MSD	%MSD	%RPD	ACP %MS	ACP RPD
C11~C22 Range	0	200	186	**93%**	177	**89%**	**5%**	**75-125**	**0-20%**

LCS STD RECOVERY:

Analyte	spk conc	LCS	% REC	ACP
C11~C22 Range	200	180	**90%**	**75-125**

Analyzed and Reviewed By: _____

Final Reviewer: _____

Enviro – Chem, Inc.
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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:WATER
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN

DATE RECEIVED:02/27/14
DATE EXTRACTED:02/27/14
DATE ANALYZED:03/04/14
DATE REPORTED:03/06/14

TOTAL PETROLEUM HYDROCARBONS(TPH) - CARBON CHAIN ANALYSIS
METHOD: EPA 8015B
UNIT: ug/L = MICROGRAM PER LITER = PPB

SAMPLE I.D.	LAB I.D.	C4-C10	C11-C22	C23-C35	DF
Rinsate #3	140227-117	ND	ND	ND	1
METHOD BLANK		ND	ND	ND	1
	PQL	500	500	3000	

COMMENTS
C4-C10 = GASOLINE RANGE
C11-C22 = DIESEL RANGE
C23-C35 = MOTOR OIL RANGE
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = DF X PQL
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

Data Reviewed and Approved by:
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro Chem, Inc

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909)590-5905 Fax (909)590-5907

8015B QA/QC Report

Date Analyzed: 3/4/2014 **Units:** ug/L (PPB)

Matrix: **Water/Liquid**

Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

Spiked Sample Lab I.D.: **140304-LCS 1/2**

Analyte	SR	spk conc	MS	%MS	MSD	%MSD	%RPD	ACP %MS	ACP RPD
C11-C22 RANGE	0	12000	10000	**83%**	9930	**83%**	**1%**	**75-125**	**0-20%**

LCS STD RECOVERY:

Analyte	spk conc	LCS	% REC	ACP
C11-C22 RANGE	12000	10800	**90%**	**75-125**

Analyzed and Reviewed by: Aw

Final Reviewer:

Enviro – Chem, Inc.
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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN
DATE RECEIVED:02/27/14
DATE ANALYZED:02/28&03/04/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-1 @ .5'**
LAB I.D.: 140227-90

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	1.0	1	500	15	6010B
Arsenic(As)	0.605	0.3	1	500	5.0	6010B
Barium(Ba)	74.1	5.0	1	10,000	100	6010B
Beryllium(Be)	ND	0.5	1	75	0.75	6010B
Cadmium(Cd)	ND	0.5	1	100	1.0	6010B
Chromium Total(Cr)	56.6 **	0.5	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.1	1	500	5.0	7196A
Cobalt(Co)	10.9	1.0	1	8,000	80	6010B
Copper(Cu)	14.8	1.0	1	2,500	25	6010B
Lead(Pb)	5.19	0.5	1	1,000	5.0	6010B
Mercury(Hg)	ND	0.01	1	20	0.2	7471A
Molybdenum(Mo)	ND	5.0	1	3,500	350	6010B
Nickel(Ni)	9.96	2.5	1	2,000	20	6010B
Selenium(Se)	ND	1.0	1	100	1.0	6010B
Silver(Ag)	ND	1.0	1	500	5.0	6010B
Thallium(Tl)	ND	1.0	1	700	7.0	6010B
Vanadium(V)	70.6	5.0	1	2,400	24	6010B
Zinc(Zn)	55.7	0.5	1	5,000	250	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
* = STLC analysis for the metal is recommended (if marked)
** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
-- = Not analyzed/not requested

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN
DATE RECEIVED:02/27/14
DATE ANALYZED:02/28&03/04/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-1 @ .5' Dupe**
LAB I.D.: 140227-91

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	1.0	1	500	15	6010B
Arsenic(As)	0.308	0.3	1	500	5.0	6010B
Barium(Ba)	66.4	5.0	1	10,000	100	6010B
Beryllium(Be)	ND	0.5	1	75	0.75	6010B
Cadmium(Cd)	ND	0.5	1	100	1.0	6010B
Chromium Total(Cr)	46.0	0.5	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.1	1	500	5.0	7196A
Cobalt(Co)	9.62	1.0	1	8,000	80	6010B
Copper(Cu)	11.3	1.0	1	2,500	25	6010B
Lead(Pb)	3.68	0.5	1	1,000	5.0	6010B
Mercury(Hg)	ND	0.01	1	20	0.2	7471A
Molybdenum(Mo)	ND	5.0	1	3,500	350	6010B
Nickel(Ni)	6.37	2.5	1	2,000	20	6010B
Selenium(Se)	ND	1.0	1	100	1.0	6010B
Silver(Ag)	ND	1.0	1	500	5.0	6010B
Thallium(Tl)	ND	1.0	1	700	7.0	6010B
Vanadium(V)	65.1	5.0	1	2,400	24	6010B
Zinc(Zn)	48.5	0.5	1	5,000	250	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
* = STLC analysis for the metal is recommended (if marked)
** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
-- = Not analyzed/not requested

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
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Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN
DATE RECEIVED:02/27/14
DATE ANALYZED:02/28&03/04/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-2 @ .5'**
LAB I.D.: 140227-94

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	1.0	1	500	15	6010B
Arsenic(As)	0.629	0.3	1	500	5.0	6010B
Barium(Ba)	100	5.0	1	10,000	100	6010B
Beryllium(Be)	ND	0.5	1	75	0.75	6010B
Cadmium(Cd)	ND	0.5	1	100	1.0	6010B
Chromium Total(Cr)	69.3 **	0.5	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.1	1	500	5.0	7196A
Cobalt(Co)	14.0	1.0	1	8,000	80	6010B
Copper(Cu)	18.5	1.0	1	2,500	25	6010B
Lead(Pb)	5.12	0.5	1	1,000	5.0	6010B
Mercury(Hg)	ND	0.01	1	20	0.2	7471A
Molybdenum(Mo)	ND	5.0	1	3,500	350	6010B
Nickel(Ni)	12.0	2.5	1	2,000	20	6010B
Selenium(Se)	ND	1.0	1	100	1.0	6010B
Silver(Ag)	ND	1.0	1	500	5.0	6010B
Thallium(Tl)	ND	1.0	1	700	7.0	6010B
Vanadium(V)	84.9	5.0	1	2,400	24	6010B
Zinc(Zn)	61.2	0.5	1	5,000	250	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
* = STLC analysis for the metal is recommended (if marked)
** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
-- = Not analyzed/not requested

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
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Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN
DATE RECEIVED:02/27/14
DATE ANALYZED:02/28&03/04/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-3 @ .5'**
LAB I.D.: 140227-97

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	1.0	1	500	15	6010B
Arsenic(As)	0.499	0.3	1	500	5.0	6010B
Barium(Ba)	106	5.0	1	10,000	100	6010B
Beryllium(Be)	ND	0.5	1	75	0.75	6010B
Cadmium(Cd)	ND	0.5	1	100	1.0	6010B
Chromium Total(Cr)	61.4 **	0.5	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.1	1	500	5.0	7196A
Cobalt(Co)	11.9	1.0	1	8,000	80	6010B
Copper(Cu)	18.3	1.0	1	2,500	25	6010B
Lead(Pb)	4.55	0.5	1	1,000	5.0	6010B
Mercury(Hg)	ND	0.01	1	20	0.2	7471A
Molybdenum(Mo)	ND	5.0	1	3,500	350	6010B
Nickel(Ni)	10.8	2.5	1	2,000	20	6010B
Selenium(Se)	ND	1.0	1	100	1.0	6010B
Silver(Ag)	ND	1.0	1	500	5.0	6010B
Thallium(Tl)	ND	1.0	1	700	7.0	6010B
Vanadium(V)	75.0	5.0	1	2,400	24	6010B
Zinc(Zn)	58.0	0.5	1	5,000	250	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
* = STLC analysis for the metal is recommended (if marked)
** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
-- = Not analyzed/not requested

Data Reviewed and Approved by:
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
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Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX: SOIL
DATE SAMPLED: 02/27/14
REPORT TO: MR. JON CAIN
DATE RECEIVED: 02/27/14
DATE ANALYZED: 02/28&03/04/14
DATE REPORTED: 03/06/14

SAMPLE I.D.: **TP-4 @ .5'**
LAB I.D.: 140227-100

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	1.0	1	500	15	6010B
Arsenic(As)	0.955	0.3	1	500	5.0	6010B
Barium(Ba)	117	5.0	1	10,000	100	6010B
Beryllium(Be)	ND	0.5	1	75	0.75	6010B
Cadmium(Cd)	ND	0.5	1	100	1.0	6010B
Chromium Total(Cr)	67.5 **	0.5	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.1	1	500	5.0	7196A
Cobalt(Co)	13.4	1.0	1	8,000	80	6010B
Copper(Cu)	27.2	1.0	1	2,500	25	6010B
Lead(Pb)	10.2	0.5	1	1,000	5.0	6010B
Mercury(Hg)	ND	0.01	1	20	0.2	7471A
Molybdenum(Mo)	ND	5.0	1	3,500	350	6010B
Nickel(Ni)	12.3	2.5	1	2,000	20	6010B
Selenium(Se)	ND	1.0	1	100	1.0	6010B
Silver(Ag)	ND	1.0	1	500	5.0	6010B
Thallium(Tl)	ND	1.0	1	700	7.0	6010B
Vanadium(V)	83.4	5.0	1	2,400	24	6010B
Zinc(Zn)	85.0	0.5	1	5,000	250	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
* = STLC analysis for the metal is recommended (if marked)
** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
-- = Not analyzed/not requested

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX: SOIL
DATE SAMPLED: 02/27/14
REPORT TO: MR. JON CAIN
DATE RECEIVED: 02/27/14
DATE ANALYZED: 02/28&03/04/14
DATE REPORTED: 03/06/14

SAMPLE I.D.: **TP-5 @ .5'**
LAB I.D.: 140227-103

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	1.0	1	500	15	6010B
Arsenic(As)	1.03	0.3	1	500	5.0	6010B
Barium(Ba)	87.9	5.0	1	10,000	100	6010B
Beryllium(Be)	ND	0.5	1	75	0.75	6010B
Cadmium(Cd)	ND	0.5	1	100	1.0	6010B
Chromium Total(Cr)	66.5 **	0.5	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.1	1	500	5.0	7196A
Cobalt(Co)	13.3	1.0	1	8,000	80	6010B
Copper(Cu)	22.2	1.0	1	2,500	25	6010B
Lead(Pb)	9.74	0.5	1	1,000	5.0	6010B
Mercury(Hg)	ND	0.01	1	20	0.2	7471A
Molybdenum(Mo)	ND	5.0	1	3,500	350	6010B
Nickel(Ni)	10.7	2.5	1	2,000	20	6010B
Selenium(Se)	ND	1.0	1	100	1.0	6010B
Silver(Ag)	ND	1.0	1	500	5.0	6010B
Thallium(Tl)	ND	1.0	1	700	7.0	6010B
Vanadium(V)	83.0	5.0	1	2,400	24	6010B
Zinc(Zn)	84.8	0.5	1	5,000	250	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
* = STLC analysis for the metal is recommended (if marked)
** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
-- = Not analyzed/not requested

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
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Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX: SOIL
DATE SAMPLED: 02/27/14
REPORT TO: MR. JON CAIN

DATE RECEIVED: 02/27/14
DATE ANALYZED: 02/28&03/04/14
DATE REPORTED: 03/06/14

SAMPLE I.D.: **TP-8 @ .5'**
LAB I.D.: 140227-106

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	1.0	1	500	15	6010B
Arsenic(As)	1.53	0.3	1	500	5.0	6010B
Barium(Ba)	89.6	5.0	1	10,000	100	6010B
Beryllium(Be)	ND	0.5	1	75	0.75	6010B
Cadmium(Cd)	ND	0.5	1	100	1.0	6010B
Chromium Total(Cr)	64.4 **	0.5	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.1	1	500	5.0	7196A
Cobalt(Co)	11.5	1.0	1	8,000	80	6010B
Copper(Cu)	31.2	1.0	1	2,500	25	6010B
Lead(Pb)	14.6	0.5	1	1,000	5.0	6010B
Mercury(Hg)	ND	0.01	1	20	0.2	7471A
Molybdenum(Mo)	ND	5.0	1	3,500	350	6010B
Nickel(Ni)	11.2	2.5	1	2,000	20	6010B
Selenium(Se)	ND	1.0	1	100	1.0	6010B
Silver(Ag)	ND	1.0	1	500	5.0	6010B
Thallium(Tl)	ND	1.0	1	700	7.0	6010B
Vanadium(V)	75.8	5.0	1	2,400	24	6010B
Zinc(Zn)	104	0.5	1	5,000	250	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
* = STLC analysis for the metal is recommended (if marked)
** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
-- = Not analyzed/not requested

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN
DATE RECEIVED:02/27/14
DATE ANALYZED:02/28&03/04/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-9 @ .5'**
LAB I.D.: 140227-109

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	1.0	1	500	15	6010B
Arsenic(As)	1.28	0.3	1	500	5.0	6010B
Barium(Ba)	77.7	5.0	1	10,000	100	6010B
Beryllium(Be)	ND	0.5	1	75	0.75	6010B
Cadmium(Cd)	ND	0.5	1	100	1.0	6010B
Chromium Total(Cr)	48.9	0.5	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.1	1	500	5.0	7196A
Cobalt(Co)	10.4	1.0	1	8,000	80	6010B
Copper(Cu)	21.6	1.0	1	2,500	25	6010B
Lead(Pb)	11.0	0.5	1	1,000	5.0	6010B
Mercury(Hg)	ND	0.01	1	20	0.2	7471A
Molybdenum(Mo)	ND	5.0	1	3,500	350	6010B
Nickel(Ni)	8.37	2.5	1	2,000	20	6010B
Selenium(Se)	ND	1.0	1	100	1.0	6010B
Silver(Ag)	ND	1.0	1	500	5.0	6010B
Thallium(Tl)	ND	1.0	1	700	7.0	6010B
Vanadium(V)	61.8	5.0	1	2,400	24	6010B
Zinc(Zn)	81.3	0.5	1	5,000	250	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
* = STLC analysis for the metal is recommended (if marked)
** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
-- = Not analyzed/not requested

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN
DATE RECEIVED:02/27/14
DATE ANALYZED:02/28&03/04/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-10 @ .5'**
LAB I.D.: 140227-112

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	1.0	1	500	15	6010B
Arsenic(As)	1.60	0.3	1	500	5.0	6010B
Barium(Ba)	89.4	5.0	1	10,000	100	6010B
Beryllium(Be)	ND	0.5	1	75	0.75	6010B
Cadmium(Cd)	ND	0.5	1	100	1.0	6010B
Chromium Total(Cr)	56.6 **	0.5	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.1	1	500	5.0	7196A
Cobalt(Co)	11.0	1.0	1	8,000	80	6010B
Copper(Cu)	29.7	1.0	1	2,500	25	6010B
Lead(Pb)	15.2	0.5	1	1,000	5.0	6010B
Mercury(Hg)	ND	0.01	1	20	0.2	7471A
Molybdenum(Mo)	ND	5.0	1	3,500	350	6010B
Nickel(Ni)	10.6	2.5	1	2,000	20	6010B
Selenium(Se)	ND	1.0	1	100	1.0	6010B
Silver(Ag)	ND	1.0	1	500	5.0	6010B
Thallium(Tl)	ND	1.0	1	700	7.0	6010B
Vanadium(V)	67.9	5.0	1	2,400	24	6010B
Zinc(Zn)	114	0.5	1	5,000	250	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
* = STLC analysis for the metal is recommended (if marked)
** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
-- = Not analyzed/not requested

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
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METHOD BLANK REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX: SOIL
DATE SAMPLED: 02/27/14
REPORT TO: MR. JON CAIN
DATE RECEIVED: 02/27/14
DATE ANALYZED: 02/28&03/04/14
DATE REPORTED: 03/06/14

METHOD BLANK FOR LAB I.D.:
140227-90, -91, -94, -97, -100, -103, -106, -109, -112

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	1.0	1	500	15	6010B
Arsenic(As)	ND	0.3	1	500	5.0	6010B
Barium(Ba)	ND	5.0	1	10,000	100	6010B
Beryllium(Be)	ND	0.5	1	75	0.75	6010B
Cadmium(Cd)	ND	0.5	1	100	1.0	6010B
Chromium Total(Cr)	ND	0.5	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.1	1	500	5.0	7196A
Cobalt(Co)	ND	1.0	1	8,000	80	6010B
Copper(Cu)	ND	1.0	1	2,500	25	6010B
Lead(Pb)	ND	0.5	1	1,000	5.0	6010B
Mercury(Hg)	ND	0.01	1	20	0.2	7471A
Molybdenum(Mo)	ND	5.0	1	3,500	350	6010B
Nickel(Ni)	ND	2.5	1	2,000	20	6010B
Selenium(Se)	ND	1.0	1	100	1.0	6010B
Silver(Ag)	ND	1.0	1	500	5.0	6010B
Thallium(Tl)	ND	1.0	1	700	7.0	6010B
Vanadium(V)	ND	5.0	1	2,400	24	6010B
Zinc(Zn)	ND	0.5	1	5,000	250	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
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** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
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Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

QA/QC for Metals Analysis --TTLC--SOLID/SOIL MATRIX

Matrix Spike/ Matrix Spike Duplicate/ LCS :

ANALYSIS DATE: 3/4/2014

Unit : mg/Kg(ppm)

Analysis	Spk.Sample ID	CONC.	LCS %Rec.	LCS STATUS	Sample Result	Spike Conc.	MS	% Rec MS	MSD	% Rec MSD	% RPD
Arsenic(As)	140227-94	50.0	106	PASS	0.629	50.0	48.6	96%	49.4	98%	2%
Chromium(Cr)	140227-94	50.0	98	PASS	69.3	50.0	111	83%	111	83%	0%
Lead(Pb)	140227-94	50.0	107	PASS	5.12	50.0	59.0	108%	59.7	109%	1%

ANALYSIS DATE. : 2/28/2014

Analysis	Spk.Sample ID	LCS CONC.	LCS %Rec.	LCS STATUS	Sample Result	Spike Conc.	MS	% Rec MS	MSD	% Rec MSD	% RPD
Mercury (Hg)	140227-112	0.125	95	PASS	0	0.125	0.106	85%	0.104	83%	2%

MS/MSD Status:

Analysis	%MS	%MSD	%LCS	%RPD
Arsenic(As)	PASS	PASS	PASS	PASS
Chromium(Cr)	PASS	PASS	PASS	PASS
Lead(Pb)	PASS	PASS	PASS	PASS
Mercury (Hg)	PASS	PASS	PASS	PASS
Accepted Range	**75 ~ 125**	**75 ~ 125**	**85 ~ 115**	**0 ~ 20**

ANALYST: _____

FINAL REVIEWER: _____

Enviro – Chem, Inc.
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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:WATER
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN
DATE RECEIVED:02/27/14
DATE ANALYZED:02/28&03/03/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **Rinsate #2**
LAB I.D.: 140227-116

TOTAL METALS ANALYSIS
UNIT: mg/L = MILLIGRAM PER LITER = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	EPA METHOD
Antimony(Sb)	ND	0.02	1	200.7
Arsenic(As)	ND	0.01	1	200.7
Barium(Ba)	ND	0.10	1	200.7
Beryllium(Be)	ND	0.01	1	200.7
Cadmium(Cd)	ND	0.01	1	200.7
Chromium(Cr)	ND	0.01	1	200.7
Cobalt(Co)	ND	0.02	1	200.7
Copper(Cu)	ND	0.02	1	200.7
Lead(Pb)	ND	0.01	1	200.7
Mercury(Hg)	ND	0.0005	1	245.1
Molybdenum(Mo)	ND	0.1	1	200.7
Nickel(Ni)	ND	0.05	1	200.7
Selenium(Se)	ND	0.02	1	200.7
Silver(Ag)	ND	0.02	1	200.7
Thallium(Tl)	ND	0.02	1	200.7
Vanadium(V)	ND	0.1	1	200.7
Zinc(Zn)	ND	0.01	1	200.7

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection limit or non-detected

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

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METHOD BLANK REPORT

CUSTOMER: **Petra Geotechnical Inc.**
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Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:WATER
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN
DATE RECEIVED:02/27/14
DATE ANALYZED:02/28&03/03/14
DATE REPORTED:03/06/14

METHOD BLANK FOR LAB I.D.: 140227-116

TOTAL METALS ANALYSIS
UNIT: mg/L = MILLIGRAM PER LITER = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	EPA METHOD
Antimony(Sb)	ND	0.02	1	200.7
Arsenic(As)	ND	0.01	1	200.7
Barium(Ba)	ND	0.10	1	200.7
Beryllium(Be)	ND	0.01	1	200.7
Cadmium(Cd)	ND	0.01	1	200.7
Chromium(Cr)	ND	0.01	1	200.7
Cobalt(Co)	ND	0.02	1	200.7
Copper(Cu)	ND	0.02	1	200.7
Lead(Pb)	ND	0.01	1	200.7
Mercury(Hg)	ND	0.0005	1	245.1
Molybdenum(Mo)	ND	0.1	1	200.7
Nickel(Ni)	ND	0.05	1	200.7
Selenium(Se)	ND	0.02	1	200.7
Silver(Ag)	ND	0.02	1	200.7
Thallium(Tl)	ND	0.02	1	200.7
Vanadium(V)	ND	0.1	1	200.7
Zinc(Zn)	ND	0.01	1	200.7

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection limit or non-detected

Data Reviewed and Approved by:_____
CAL-DHS ELAP CERTIFICATE No.: 1555

QA/QC for TTLC Metals Analysis --WATER MATRIX

Matrix Spike/ Matrix Spike Duplicate/ LCS :

ANALYSIS DATE: 3/3/2014

Unit : mg/L(ppm)

Analysis	Spk.Sample BATCH ID	LCS CONC.	LCS %Rec.	LCS STATUS	Sample Result	Spike Conc.	MS	% Rec MS	MSD	% Rec MSD	% RPD
Chromium(Cr)	140228-33	1.00	95	PASS	0	1.00	0.955	96%	0.945	95%	1%
Zinc(Zn)	140228-33	1.00	102	PASS	0.173	1.00	1.12	95%	1.11	94%	1%
Iron(Fe)	140228-33	1.00	94	PASS	0.286	1.00	1.21	92%	1.21	92%	0%

ANALYSIS DATE. : 2/28/2014

Analysis	Spk.Sample BATCH ID	LCS CONC.	LCS %Rec.	LCS STATUS	Sample Result	Spike Conc.	MS	% Rec MS	MSD	% Rec MSD	% RPD
Mercury (Hg)	140227-116	0.00250	92	PASS	0	0.00250	0.00210	84%	0.00210	84%	0%

MS/MSD Status:

Analysis	%MS	%MSD	%LCS	%RPD
Chromium(Cr)	PASS	PASS	PASS	PASS
Zinc(Zn)	PASS	PASS	PASS	PASS
Iron(Fe)	PASS	PASS	PASS	PASS
Mercury (Hg)	PASS	PASS	PASS	PASS
Accepted Range	**75 ~ 125**	**75 ~ 125**	**85 ~ 115**	**0 ~ 20**

ANALYST: _____

FINAL REVIEWER: _____

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN

DATE RECEIVED:02/27/14
DATE EXTRACTED:03/03/14
DATE ANALYZED:03/03/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-1 @ .5'**

LAB I.D.: 140227-90

Organochlorine Pesticides Analysis
Method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.001	10
alpha-BHC	ND	0.001	10
beta-BHC	ND	0.001	10
gamma-BHC (Lindane)	ND	0.001	10
delta-BHC	ND	0.001	10
alpha-Chlordane	ND	0.001	10
gamma-Chlordane	ND	0.001	10
Total Chlordane (Technical)	ND	0.005	10
4,4'-DDD	ND	0.001	10
4,4'-DDE	0.058	0.001	10
4,4'-DDT	0.016	0.001	10
Dieldrin	ND	0.001	10
Endosulfan I	ND	0.001	10
Endosulfan II	ND	0.001	10
Endosulfan Sulfate	ND	0.001	10
Endrin	ND	0.001	10
Endrin Aldehyde	ND	0.001	10
Endrin Ketone	ND	0.001	10
Heptachlor Epoxide	ND	0.001	10
Heptachlor	ND	0.001	10
Methoxyclor	ND	0.001	10
Toxaphene	ND	0.020	10

COMMENTS:
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = PQL X DF
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

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LABORATORY REPORT

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PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN

DATE RECEIVED:02/27/14
DATE EXTRACTED:03/03/14
DATE ANALYZED:03/03/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-1 @ .5' Dupe**

LAB I.D.: 140227-91

Organochlorine Pesticides Analysis
Method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.001	10
alpha-BHC	ND	0.001	10
beta-BHC	ND	0.001	10
gamma-BHC (Lindane)	ND	0.001	10
delta-BHC	ND	0.001	10
alpha-Chlordane	ND	0.001	10
gamma-Chlordane	ND	0.001	10
Total Chlordane (Technical)	ND	0.005	10
4,4'-DDD	ND	0.001	10
4,4'-DDE	0.011	0.001	10
4,4'-DDT	ND	0.001	10
Dieldrin	ND	0.001	10
Endosulfan I	ND	0.001	10
Endosulfan II	ND	0.001	10
Endosulfan Sulfate	ND	0.001	10
Endrin	ND	0.001	10
Endrin Aldehyde	ND	0.001	10
Endrin Ketone	ND	0.001	10
Heptachlor Epoxide	ND	0.001	10
Heptachlor	ND	0.001	10
Methoxyclor	ND	0.001	10
Toxaphene	ND	0.020	10

COMMENTS:
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = PQL X DF
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY:_____
CAL-DHS ELAP CERTIFICATE No.: 1555

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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
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Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN

DATE RECEIVED:02/27/14
DATE EXTRACTED:03/03/14
DATE ANALYZED:03/03/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-2 @ .5'**

LAB I.D.: 140227-94

Organochlorine Pesticides Analysis
Method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.001	1
alpha-BHC	ND	0.001	1
beta-BHC	ND	0.001	1
gamma-BHC (Lindane)	ND	0.001	1
delta-BHC	ND	0.001	1
alpha-Chlordane	ND	0.001	1
gamma-Chlordane	ND	0.001	1
Total Chlordane (Technical)	ND	0.005	1
4,4'-DDD	ND	0.001	1
4,4'-DDE	0.003	0.001	1
4,4'-DDT	ND	0.001	1
Dieldrin	ND	0.001	1
Endosulfan I	ND	0.001	1
Endosulfan II	ND	0.001	1
Endosulfan Sulfate	ND	0.001	1
Endrin	ND	0.001	1
Endrin Aldehyde	ND	0.001	1
Endrin Ketone	ND	0.001	1
Heptachlor Epoxide	ND	0.001	1
Heptachlor	ND	0.001	1
Methoxyclor	ND	0.001	1
Toxaphene	ND	0.020	1

COMMENTS:
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = PQL X DF
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

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Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN

DATE RECEIVED:02/27/14
DATE EXTRACTED:03/03/14
DATE ANALYZED:03/03/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-3 @ .5'**

LAB I.D.: 140227-97

Organochlorine Pesticides Analysis
Method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.001	1
alpha-BHC	ND	0.001	1
beta-BHC	ND	0.001	1
gamma-BHC (Lindane)	ND	0.001	1
delta-BHC	ND	0.001	1
alpha-Chlordane	ND	0.001	1
gamma-Chlordane	ND	0.001	1
Total Chlordane (Technical)	ND	0.005	1
4,4'-DDD	ND	0.001	1
4,4'-DDE	ND	0.001	1
4,4'-DDT	ND	0.001	1
Dieldrin	ND	0.001	1
Endosulfan I	ND	0.001	1
Endosulfan II	ND	0.001	1
Endosulfan Sulfate	ND	0.001	1
Endrin	ND	0.001	1
Endrin Aldehyde	ND	0.001	1
Endrin Ketone	ND	0.001	1
Heptachlor Epoxide	ND	0.001	1
Heptachlor	ND	0.001	1
Methoxyclor	ND	0.001	1
Toxaphene	ND	0.020	1

COMMENTS:
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = PQL X DF
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN

DATE RECEIVED:02/27/14
DATE EXTRACTED:03/03/14
DATE ANALYZED:03/03/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-4 @ .5'**

LAB I.D.: 140227-100

Organochlorine Pesticides Analysis
Method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.001	50
alpha-BHC	ND	0.001	50
beta-BHC	ND	0.001	50
gamma-BHC (Lindane)	ND	0.001	50
delta-BHC	ND	0.001	50
alpha-Chlordane	ND	0.001	50
gamma-Chlordane	ND	0.001	50
Total Chlordane (Technical)	ND	0.005	50
4,4'-DDD	ND	0.001	50
4,4'-DDE	0.152	0.001	50
4,4'-DDT	0.076	0.001	50
Dieldrin	ND	0.001	50
Endosulfan I	ND	0.001	50
Endosulfan II	ND	0.001	50
Endosulfan Sulfate	ND	0.001	50
Endrin	ND	0.001	50
Endrin Aldehyde	ND	0.001	50
Endrin Ketone	ND	0.001	50
Heptachlor Epoxide	ND	0.001	50
Heptachlor	ND	0.001	50
Methoxyclor	ND	0.001	50
Toxaphene	ND	0.020	50

COMMENTS:
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = PQL X DF
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN

DATE RECEIVED:02/27/14
DATE EXTRACTED:03/03/14
DATE ANALYZED:03/03/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-5 @ .5'**

LAB I.D.: 140227-103

Organochlorine Pesticides Analysis
Method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.001	10
alpha-BHC	ND	0.001	10
beta-BHC	ND	0.001	10
gamma-BHC (Lindane)	ND	0.001	10
delta-BHC	ND	0.001	10
alpha-Chlordane	ND	0.001	10
gamma-Chlordane	ND	0.001	10
Total Chlordane (Technical)	ND	0.005	10
4,4'-DDD	ND	0.001	10
4,4'-DDE	0.031	0.001	10
4,4'-DDT	ND	0.001	10
Dieldrin	ND	0.001	10
Endosulfan I	ND	0.001	10
Endosulfan II	ND	0.001	10
Endosulfan Sulfate	ND	0.001	10
Endrin	ND	0.001	10
Endrin Aldehyde	ND	0.001	10
Endrin Ketone	ND	0.001	10
Heptachlor Epoxide	ND	0.001	10
Heptachlor	ND	0.001	10
Methoxyclor	ND	0.001	10
Toxaphene	ND	0.020	10

COMMENTS:
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = PQL X DF
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY:
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN

DATE RECEIVED:02/27/14
DATE EXTRACTED:03/03/14
DATE ANALYZED:03/03/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-8 @ .5'**

LAB I.D.: 140227-106

Organochlorine Pesticides Analysis
Method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.001	50
alpha-BHC	ND	0.001	50
beta-BHC	ND	0.001	50
gamma-BHC (Lindane)	ND	0.001	50
delta-BHC	ND	0.001	50
alpha-Chlordane	ND	0.001	50
gamma-Chlordane	ND	0.001	50
Total Chlordane (Technical)	ND	0.005	50
4,4'-DDD	ND	0.001	50
4,4'-DDE	0.213	0.001	50
4,4'-DDT	ND	0.001	50
Dieldrin	ND	0.001	50
Endosulfan I	ND	0.001	50
Endosulfan II	ND	0.001	50
Endosulfan Sulfate	ND	0.001	50
Endrin	ND	0.001	50
Endrin Aldehyde	ND	0.001	50
Endrin Ketone	ND	0.001	50
Heptachlor Epoxide	ND	0.001	50
Heptachlor	ND	0.001	50
Methoxyclor	ND	0.001	50
Toxaphene	ND	0.020	50

COMMENTS:
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = PQL X DF
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
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Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN

DATE RECEIVED:02/27/14
DATE EXTRACTED:03/03/14
DATE ANALYZED:03/03/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-9 @ .5'**

LAB I.D.: 140227-109

Organochlorine Pesticides Analysis
Method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.001	50
alpha-BHC	ND	0.001	50
beta-BHC	ND	0.001	50
gamma-BHC (Lindane)	ND	0.001	50
delta-BHC	ND	0.001	50
alpha-Chlordane	ND	0.001	50
gamma-Chlordane	ND	0.001	50
Total Chlordane (Technical)	ND	0.005	50
4,4'-DDD	ND	0.001	50
4,4'-DDE	0.085	0.001	50
4,4'-DDT	ND	0.001	50
Dieldrin	ND	0.001	50
Endosulfan I	ND	0.001	50
Endosulfan II	ND	0.001	50
Endosulfan Sulfate	ND	0.001	50
Endrin	ND	0.001	50
Endrin Aldehyde	ND	0.001	50
Endrin Ketone	ND	0.001	50
Heptachlor Epoxide	ND	0.001	50
Heptachlor	ND	0.001	50
Methoxyclor	ND	0.001	50
Toxaphene	ND	0.020	50

COMMENTS:
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = PQL X DF
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN

DATE RECEIVED:02/27/14
DATE EXTRACTED:03/03/14
DATE ANALYZED:03/03/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-10 @ .5'**

LAB I.D.: 140227-112

Organochlorine Pesticides Analysis
Method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.001	20
alpha-BHC	ND	0.001	20
beta-BHC	ND	0.001	20
gamma-BHC (Lindane)	ND	0.001	20
delta-BHC	ND	0.001	20
alpha-Chlordane	ND	0.001	20
gamma-Chlordane	ND	0.001	20
Total Chlordane (Technical)	ND	0.005	20
4,4'-DDD	ND	0.001	20
4,4'-DDE	0.090	0.001	20
4,4'-DDT	ND	0.001	20
Dieldrin	ND	0.001	20
Endosulfan I	ND	0.001	20
Endosulfan II	ND	0.001	20
Endosulfan Sulfate	ND	0.001	20
Endrin	ND	0.001	20
Endrin Aldehyde	ND	0.001	20
Endrin Ketone	ND	0.001	20
Heptachlor Epoxide	ND	0.001	20
Heptachlor	ND	0.001	20
Methoxyclor	ND	0.001	20
Toxaphene	ND	0.020	20

COMMENTS:
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = PQL X DF
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY:_____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

METHOD BLANK REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN

DATE RECEIVED:02/27/14
DATE EXTRACTED:03/03/14
DATE ANALYZED:03/03/14
DATE REPORTED:03/06/14

METHOD BLANK FOR LAB I.D.:
140227-90, -91, -94, -97, -100, -103, -106, -109, -112

Organochlorine Pesticides Analysis
Method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.001	1
alpha-BHC	ND	0.001	1
beta-BHC	ND	0.001	1
gamma-BHC (Lindane)	ND	0.001	1
delta-BHC	ND	0.001	1
alpha-Chlordane	ND	0.001	1
gamma-Chlordane	ND	0.001	1
Total Chlordane (Technical)	ND	0.005	1
4,4'-DDD	ND	0.001	1
4,4'-DDE	ND	0.001	1
4,4'-DDT	ND	0.001	1
Dieldrin	ND	0.001	1
Endosulfan I	ND	0.001	1
Endosulfan II	ND	0.001	1
Endosulfan Sulfate	ND	0.001	1
Endrin	ND	0.001	1
Endrin Aldehyde	ND	0.001	1
Endrin Ketone	ND	0.001	1
Heptachlor Epoxide	ND	0.001	1
Heptachlor	ND	0.001	1
Methoxyclor	ND	0.001	1
Toxaphene	ND	0.020	1

COMMENTS:
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = PQL X DF
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY:_____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro-Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909)590-5905 Fax (909)590-5907

EPA 8081 QA/QC Report

Matrix: **Soil/Solid/Liquid(Oil)** Date Analyzed: **3/3/2014**

Unit: **mg/Kg (ppm)**

Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

Spiked Sample Lab I.D.: **140227-97 MS/MSD**

Analyte	S.R.	spk conc	MS	%REC	MSD	%REC	%RPD	ACP %RPD	ACP %REC
Gamma-BHC	0.000	0.00500	0.00518	**104%**	0.00520	**104%**	**0%**	**0-20%**	**70-130**
Aldrin	0.000	0.00500	0.00508	**102%**	0.00509	**102%**	**0%**	**0-20%**	**70-130**
4,4-DDE	0.000	0.00500	0.00513	**103%**	0.00521	**104%**	**2%**	**0-20%**	**70-130**

Lab Control Spike (LCS) Recovery:

Analyte	spk conc	LCS	% REC	ACP %REC
Gamma-BHC	0.00500	0.00519	**104%**	**75-125**
Aldrin	0.00500	0.00512	**102%**	**75-125**
4,4-DDE	0.00500	0.00509	**102%**	**75-125**
Dieldrin	0.00500	0.00458	**92%**	**75-125**

Surrogate Recovery	ACP%	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.		MB	140227-90	140227-91	140227-94	140227-97	140227-100	140227-103
Tetra-chloro-meta-xylene	50-150	94%	95%	88%	112%	106%	99%	96%
Decachlorobiphenyl	50-150	88%	90%	92%	141%	104%	99%	101%

Surrogate Recovery	ACP%	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.		140227-106	140227-109	140227-112				
Tetra-chloro-meta-xylene	50-150	72%	99%	89%				
Decachlorobiphenyl	50-150	68%	99%	86%				

Surrogate Recovery	ACP%	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.								
Tetra-chloro-meta-xylene	50-150							
Decachlorobiphenyl	50-150							

S.R. = Sample Result

spk conc = Spike Concentration

%REC = Percent Recovery

ACP %RPD = Acceptable Percent RPD Range

ACP %REC = Acceptable Percent Recovery Range

** = Surrogate fail due to matrix interference (If Marked)*

Note: *LCS, MS, MSD are in control therefore results are in control.*

Analyzed and Reviewed By: _____

Final Reviewer: _____

Enviro – Chem, Inc.
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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:WATER
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN

DATE RECEIVED:02/27/14
DATE EXTRACTED:02/27/14
DATE ANALYZED:03/03/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **Rinsate #1**

LAB I.D.: 140227-115

Organochlorine Pesticides Analysis
Method: EPA 8081A
Unit: ug/L = Microgram per Liter = PPB

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.100	1
alpha-BHC	ND	0.100	1
beta-BHC	ND	0.100	1
gamma-BHC (Lindane)	ND	0.100	1
delta-BHC	ND	0.100	1
alpha-Chlordane	ND	0.100	1
gamma-Chlordane	ND	0.100	1
Total Chlordane (Technical)	ND	0.500	1
4,4'-DDD	ND	0.100	1
4,4'-DDE	ND	0.100	1
4,4'-DDT	ND	0.100	1
Dieldrin	ND	0.100	1
Endosulfan I	ND	0.100	1
Endosulfan II	ND	0.100	1
Endosulfan Sulfate	ND	0.100	1
Endrin	ND	0.100	1
Endrin Aldehyde	ND	0.100	1
Endrin Ketone	ND	0.100	1
Heptachlor Epoxide	ND	0.100	1
Heptachlor	ND	0.100	1
Methoxyclor	ND	0.100	1
Toxaphene	ND	2.00	1

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Non detected or below the Actual Detection Limit

Data Reviewed and Approved by:
CAL-DHS CERTIFICATE # 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

METHOD BLANK REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:WATER
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN

DATE RECEIVED:02/27/14
DATE EXTRACTED:02/27/14
DATE ANALYZED:03/03/14
DATE REPORTED:03/06/14

METHOD BLANK FOR LAB I.D.: 140227-115

Organochlorine Pesticides Analysis
Method: EPA 8081A
Unit: ug/L = Microgram per Liter = PPB

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.100	1
alpha-BHC	ND	0.100	1
beta-BHC	ND	0.100	1
gamma-BHC (Lindane)	ND	0.100	1
delta-BHC	ND	0.100	1
alpha-Chlordane	ND	0.100	1
gamma-Chlordane	ND	0.100	1
Total Chlordane (Technical)	ND	0.500	1
4,4'-DDD	ND	0.100	1
4,4'-DDE	ND	0.100	1
4,4'-DDT	ND	0.100	1
Dieldrin	ND	0.100	1
Endosulfan I	ND	0.100	1
Endosulfan II	ND	0.100	1
Endosulfan Sulfate	ND	0.100	1
Endrin	ND	0.100	1
Endrin Aldehyde	ND	0.100	1
Endrin Ketone	ND	0.100	1
Heptachlor Epoxide	ND	0.100	1
Heptachlor	ND	0.100	1
Methoxyclor	ND	0.100	1
Toxaphene	ND	2.00	1

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Non detected or below the Actual Detection Limit

Data Reviewed and Approved by:
CAL-DHS CERTIFICATE # 1555

Enviro-Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909)590-5905 Fax (909)590-5907

EPA 8081 QA/QC Report

Matrix: **Water/Liquid** Date Analyzed: 3/3/2014
Unit: ug/L

Matrix Spike (MS)/Matrix Spike Duplicate (MSD)
Spiked Sample Lab I.D.: 140303-LCS 1/2

Analyte	S.R.	spk conc	MS	%REC	MSD	%REC	%RPD	ACP %RPD	ACP %REC
Gamma-BHC	0	0.500	0.511	**102%**	0.511	**102%**	**0%**	**0-20%**	**70-130**
Aldrin	0	0.500	0.503	**101%**	0.501	**100%**	**0%**	**0-20%**	**70-130**
4,4-DDE	0	0.500	0.472	**94%**	0.483	**97%**	**2%**	**0-20%**	**70-130**

Lab Control Spike (LCS) Recovery:

Analyte	spk conc	LCS	% REC	ACP %REC
Gamma-BHC	0.500	0.513	**103%**	**75-125**
Aldrin	0.500	0.505	**101%**	**75-125**
4,4-DDE	0.500	0.460	**92%**	**75-125**
Dieldrin	0.500	0.452	**90%**	**75-125**

Surrogate Recovery	ACP%	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.		M-BLK	140227-115					
Tetra-chloro-meta-xylene	50-150	98%	123%					
Decachlorobipneyl	50-150	97%	121%					

Surrogate Recovery	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.								
Tetra-chloro-meta-xylene								
Decachlorobipneyl								

Surrogate Recovery	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.						
Tetra-chloro-meta-xylene						
Decachlorobipneyl						

S.R. = Sample Result
Spk conc = Spike Concentration
%REC = Percent Recovery
ACP %RPD = Acceptable Percent RPD Range
ACP %REC = Acceptable Percent Recovery Range

Analyzed and Reviewed By: AW

Final Reviewer: [illegible]

* = Surrogate fail due to matrix interference

Note: LCS, MS, MSD are in control therefore results are in control.

Enviro – Chem, Inc.
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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX: SOIL
DATE SAMPLED: 02/27/14
REPORT TO: MR. JON CAIN

DATE RECEIVED: 02/27/14
DATE EXTRACTED: 02/28&03/03/14
DATE ANALYZED: 03/03/14
DATE REPORTED: 03/06/14

SAMPLE I.D.: **TP-3 @ .5'**

LAB I.D.: 140227-97

Chlorinated Herbicides Analysis
Method: EPA 8151A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
2,4,5-T	ND	0.020	1
2,4,5-TP (Silvex)	ND	0.020	1
2,4-D	ND	0.200	1
2,4-DB	ND	0.200	1
Dalapon (Dichloroacetic Acid)	ND	0.500	1
Dicamba	ND	0.020	1
Dichloroprop	ND	0.200	1
Dinoseb (DNBP)	ND	0.100	1
MCPA	ND	20.0	1
MCPP	ND	20.0	1

COMMENTS:
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = PQL X DF
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

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LABORATORY REPORT

CUSTOMER: **Petra Geotechnical Inc.**
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Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: **13-327**
MATRIX:SOIL
DATE SAMPLED:02/27/14
REPORT TO:MR. JON CAIN

DATE RECEIVED:02/27/14
DATE EXTRACTED:02/28&03/03/14
DATE ANALYZED:03/03/14
DATE REPORTED:03/06/14

SAMPLE I.D.: **TP-10 @ .5'**
LAB I.D.: 140227-112

Chlorinated Herbicides Analysis
Method: EPA 8151A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
2,4,5-T	ND	0.020	1
2,4,5-TP (Silvex)	ND	0.020	1
2,4-D	ND	0.200	1
2,4-DB	ND	0.200	1
Dalapon (Dichloroacetic Acid)	ND	0.500	1
Dicamba	ND	0.020	1
Dichloroprop	ND	0.200	1
Dinoseb (DNBP)	ND	0.100	1
MCPA	ND	20.0	1
MCPP	ND	20.0	1

COMMENTS:
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = PQL X DF
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

METHOD BLANK REPORT

CUSTOMER: Petra Geotechnical Inc.
38655 Sky Canyon Drive
Murrieta, CA 92563
Tel(951)600-9271 Fax(951)600-9215

PROJECT: 13-327
MATRIX: SOIL
DATE SAMPLED: 02/27/14
REPORT TO: MR. JON CAIN

DATE RECEIVED: 02/27/14
DATE EXTRACTED: 02/28&03/03/14
DATE ANALYZED: 03/03/14
DATE REPORTED: 03/06/14

METHOD BLANK FOR LAB I.D.: 140227-97, -112

Chlorinated Herbicides Analysis
Method: EPA 8151A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
2,4,5-T	ND	0.020	1
2,4,5-TP (Silvex)	ND	0.020	1
2,4-D	ND	0.200	1
2,4-DB	ND	0.200	1
Dalapon (Dichloroacetic Acid)	ND	0.500	1
Dicamba	ND	0.020	1
Dichloroprop	ND	0.200	1
Dinoseb (DNBP)	ND	0.100	1
MCPA	ND	20.0	1
MCPP	ND	20.0	1

COMMENTS:
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = PQL X DF
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro-Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909)590-5905 Fax (909)590-5907

QA/QC Report
Analysis: EPA 8151A

Matrix: **Soil/Solid/Liquid** Date Analyzed: **3/3/2014**
Unit: **mg/Kg (PPM)**

Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

Spiked Sample Lab I.D.: 140227-97 MS/MSD

Analyte	S.R.	spk conc	MS	% REC	MSD	% REC	%RPD	ACP %RPD	ACP %REC
2,4,5-T	0	0.0500	0.0360	**72%**	0.0405	**81%**	**12%**	**0-20%**	**50-150**

Lab Control Spike (LCS) Recovery:

Analyte	spk conc	LCS	% REC	ACP %REC
2,4,5-T	0.0500	0.0360	**72%**	70-130
2,4,5-TP	0.0500	0.0374	**75%**	70-130
DINOSEB	0.250	0.179	**72%**	70-130

Surrogate Recovery:

Analyte	ACP %	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample ID:		M-BLK	140227-1	140227-97	140227-112				
DCAA	50-150	91%	84%	93%	89%				

Analyte	ACP %	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample ID:									
DCAA	50-150								

Analyte	ACP %	%REC	%REC	%REC	%REC	%REC			
Sample ID:									
DCAA	50-150								

S.R. = Sample Result
spk conc = Spike Concentration
%REC = Percent Recovery
ACP %RPD = Acceptable Percent RPD Range
ACP %REC = Acceptable Percent Recovery Range

* = *Surrogate fail due to matrix interference (If Marked)*
Note: ***LCS, MS, MSD are in control therefore results are in control.***

Analyzed and Reviewed By: _____

Final Reviewer: _____

Enviro-Chem, Inc. Laboratories
1214 E. Lexington Avenue,
Pomona, CA 91766
Tel: (909) 590-5905 Fax: (909) 590-5907
CA-DHS ELAP CERTIFICATE #1555

Turnaround Time
0 Same Day
0 24 Hours
0 48 Hours
0 72 Hours
0 1 Week (Standard)
Other:

SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	No. OF CONTAINERS	TEMPERATURE	PRESERVATION	OCPs 8081A	Metals 6010B/7471A	8151A	8015B								Misc./PO#	COMMENTS
								Analysis Required												
TP-1@.5'	140227-90	02/27/14	11:22	soil	1		ICE	X	X											
TP-1@.5'	-91		11:23					X	X											Dupe
TP-1@1.5'	-92		11:26																	
TP-1@3.0'	-93		11:28																	
TP-2@.5'	-94	02/27/14	11:40	soil	1		ICE	X	X											
TP-2@1.5'	-95		11:42																	
TP-2@3.0	-96		11:45																	
TP-3@.5'	-97	02/27/14	12:16	soil	1		ICE	X	X	X										
TP-3@1.5'	-98		12:20																	
TP-3@3.0'	-99		12:27																	
TP-4@.5'	-100	02/27/14	12:00	soil	1		ICE	X	X											
TP-4@1.5'	-101		12:02																	
TP-4@3.0'	-102		12:05																	
TP-5@.5'		02/27/14	12:34																	
TP-5@1.5'			12:40																	

Company Name: Petra Geotechnical Inc.
Address: 40880 County Center Dr.
City/State/Zip: Temecula CA 92591

Project Contact: Jon Cain
Tel: 951-600-9271
Fax: 951-719-1499

Sampler's Signature:
Project Name/ID: 13-627

Relinquished by:	02/27/14 15:35	Received by:	Date & Time: 2/27/14 1635
Relinquished by:		Received by:	Date & Time:
Relinquished by:		Received by:	Date & Time:

Instructions for Sample Storage After Analysis:
O Dispose of O Return to Client O Store (30 Days)
O Other:

CHAIN OF CUSTODY RECORD

Date: _____

WHITE WITH SAMPLE • YELLOW TO CLIENT

Enviro-Chem, Inc. Laboratories
1214 E. Lexington Avenue,
Pomona, CA 91766
Tel: (909) 590-5905 Fax: (909) 590-5907
CA-DHS ELAP CERTIFICATE #1555

Turnaround Time
0 Same Day
0 24 Hours
0 48 Hours
0 72 Hours
0 1 Week (Standard)
Other:

SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	No. OF CONTAINERS	TEMPERATURE	PRESERVATION	Analysis Required: DCP's	8081A Methods 608/1947A	8015A Hexavalent Carbon 8015B								COMMENTS
TP-5@.5'	140227-103	02/27/14	1:00	soil	1		ICE	X	X									
TP-5@1.5'	-104	↓	1:03	↓	↓		↓											
TP-5@3.0'	-105	↓	1:05	↓	↓		↓											
TP-8@.5'	-106	02/27/14	2:23	soil	1		ICE	X	X									
TP-8@1.5'	-107	↓	2:25	↓	↓		↓											
TP-8@3.0'	-108	↓	2:27	↓	↓		↓											
TP-9@.5'	-109	02/27/14	3:07	soil	1		ICE	X	X									
TP-9@1.5'	-110	↓	3:09	↓	↓		↓											
TP-9@3.0'	-111	↓	3:11	↓	↓		↓											
TP-10@.5'	-112	02/27/14	2:48	soil	1		ICE	X	X	X								
TP-10@1.5'	-113	↓	2:50	↓	↓		↓											
TP-10@3.0'	-114	↓	2:53	↓	↓		↓											
Rinsate #1	-115	02/27/14	3:23	water	1		ICE	X										
Rinsate #2	-116	↓	3:28	↓	↓		↓		X									
Rinsate #3	-117	↓	3:32	↓	↓		↓				X							

Company Name: Petra Geotechnical Inc.
Address: 40880 County Center Dr.
City/State/Zip: Temecula, CA 92591

Project Contact: Jon Cain
Tel: 951-600-9271
Fax: 951-719-1499

Sampler's Signature:
Project Name/ID: 13-627

Relinquished by:	02/27/14 15:35	Received by:	Date & Time: 2/27/14 1635
Relinquished by:		Received by:	Date & Time:
Relinquished by:		Received by:	Date & Time:

Instructions for Sample Storage After Analysis:
O Dispose of O Return to Client O Store (30 Days)
O Other:

CHAIN OF CUSTODY RECORD

Date: _____

WHITE WITH SAMPLE • YELLOW TO CLIENT

Enviro-Chem, Inc. Laboratories
1214 E. Lexington Avenue,
Pomona, CA 91766
Tel: (909) 590-5905 Fax: (909) 590-5907
CA-DHS ELAP CERTIFICATE #1555

Turnaround Time
0 Same Day
0 24 Hours
0 48 Hours
0 72 Hours
0 1 Week (Standard)
Other:

SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	No. OF CONTAINERS	TEMPERATURE	PRESERVATION	Analysis Required: OCPs 8081A	Metals 6010B / 7471A	8151A (Comp. chem.)	8015B	Misc.	COMMENTS
HA-1@.5'	140227-118	02/27/14	12:34	soil	1		ICE	X	X	X			
HA-1@1.5'	-119		12:40										
HA-1@3.0'	-120		12:43										
HA-2@.5'	-121	02/27/14	1:20	soil	1		ICE			X			
HA-2@1.5'	-122		1:22										
HA-2@3.0'	-123		1:25										
HA-3@.5'	-124	02/27/14	1:40	soil	1		ICE			X			
HA-3@1.5'	-125		1:42										
HA-3@3.0'	-126		1:45										
HA-4@.5'	-127	02/27/14	2:05	soil	1		ICE			X			
HA-4@1.5'	-128		2:07										
HA-4@3.0'	-129		2:10										

Company Name: Petra Geotechnical Inc.
Address: 40880 County Center Dr
City/State/Zip: Temecula, CA 92591

Project Contact: Jon Cain
Tel: 951-600-9271
Fax: 951-719-1499

Sampler's Signature:
Project Name/ID: 13-627

Relinquished by:	02/27/14 15:30	Received by:
Relinquished by:		Received by:
Relinquished by:		Received by:

Date & Time: 2/27/14 1635
Date & Time:
Date & Time:

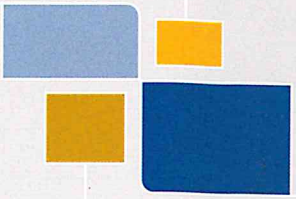
Instructions for Sample Storage After Analysis:
O Dispose of O Return to Client O Store (30 Days)
O Other:

CHAIN OF CUSTODY RECORD

Date: _____

WHITE WITH SAMPLE • YELLOW TO CLIENT

PETRA



Orange County / Environmental / Corporate

3190 Airport Loop Drive, Suite J1
Costa Mesa, California 92626
T: 714-549-8921 F: 714-549-1438

Riverside County

40880 County Center Drive, Suite R
Temecula, California 92591
T: 951-600-9271 F: 951-600-9215

Los Angeles County

25050 Avenue Kearney, Suite 110A
Valencia, California 91355
T: 661-255-5790 F: 661-255-5242

Desert Region

42-240 Green Way, Suite E
Palm Desert, California 92211
T: 760-340-5303 F: 760-340-5096

URBAN CROSSROADS

41 Corporate Park | Suite 300 | Irvine, CA 92606 | (949) 660-1994
www.urbanXroads.com

January 11, 2016

Mr. Ray Dorame
MasterCraft Homes Group
20201 SW Birch St., Suite 100
Newport Beach, CA 92660

SUBJECT: HIGHLAND PARK TRIP GENERATION ASSESSMENT

Dear Mr. Ray Dorame:

Urban Crossroads, Inc. is pleased to submit this Trip Generation Assessment for the proposed Highland Park ("Project"), which is located which is located north of Base Line Street and west of Weaver Street in the City of Highland. The Project site plan is shown on Exhibit 1 and consists of 46 detached single family dwelling units. The Project's access will be via a single driveway on Baseline Street.

Table 1 presents the trip generation rates used to calculate the trip generation for the proposed site use. The trip generation rates have been obtained from the Institute of Transportation Engineers publication Trip Generation (9th Edition, 2012). The trip generation estimates for the proposed Project are shown on Table 2. The Project is projected to generate an estimated 438 trip-ends per day with 35 AM peak hour trips and 46 PM peak hour trips.

The City of Highland generally utilizes the San Bernardino County Congestion Management Program (CMP) traffic study guidelines when developing the requirements for traffic studies within the City. The CMP traffic study guidelines indicate that detailed traffic analysis is required if a project generates more than 250 two-way peak hour trips The Project will generate a maximum of 46 two-way peak hour trips. Therefore, no detailed traffic analysis is anticipated to be required.

If you have any questions, please contact me directly at (949) 660-1994 ext. 205.

Respectfully submitted,

URBAN CROSSROADS, INC.

Pranesh Tarikere, P.E.

Senior Engineer

EXHIBIT 1: SITE PLAN

09366 - site plan.dwg

URBAN CROSSROADS

TABLE 1

TRIP GENERATION RATES[1]

LAND USE	ITE Land Use Code	UNITS[2]	PEAK HOUR TRIP RATES						DAILY
			AM			PM			
			IN	OUT	TOTAL	IN	OUT	TOTAL	
Single Family Detached	210	DU	0.19	0.56	0.75	0.63	0.37	1	9.52

TABLE 2

TRIP GENERATION SUMMARY

LAND USE	QUANTITY	UNITS[2]	PEAK HOUR						DAILY
			AM			PM			
			IN	OUT	TOTAL	IN	OUT	TOTAL	
Single Family Detached	46	DU	9	26	35	29	17	46	438

[1] Source: ITE (Institute of Transportation Engineers) Trip Generation Manual, 9th Edition, 2012.

[2] DU = Dwelling Units

URBAN CROSSROADS

41 Corporate Park | Suite 300 | Irvine, CA 92606 | (949) 660-1994
www.urbanXroads.com

September 9, 2014

Mr. Ray Dorame
MasterCraft Homes Group
20201 SW Birch St., Suite 100
Newport Beach, CA 92660

SUBJECT: HIGHLAND PARK TRIP GENERATION ASSESSMENT

Dear Mr. Plasencia:

Urban Crossroads, Inc. is pleased to submit this Trip Generation Assessment for the proposed Highland Park ("Project"), which is located which is located north of Base Line Street and west of Weaver Street in the City of Highland. The Project site plan is shown on Exhibit 1 and consists of 44 detached single family dwelling units. The Project's access will be via a single driveway on Baseline Street.

Table 1 presents the trip generation rates used to calculate the trip generation for the proposed site use. The trip generation rates have been obtained from the Institute of Transportation Engineers publication Trip Generation (9th Edition, 2012). The trip generation estimates for the proposed Project are shown on Table 2. The Project is projected to generate an estimated 419 trip-ends per day with 33 AM peak hour trips and 44 PM peak hour trips.

The City of Highland generally utilizes the San Bernardino County Congestion Management Program (CMP) traffic study guidelines when developing the requirements for traffic studies within the City. The CMP traffic study guidelines indicate that detailed traffic analysis is required if a project generates more than 250 two-way peak hour trips The Project will generate a maximum of 44 two-way peak hour trips. Therefore, no detailed traffic analysis is anticipated to be required.

If you have any questions, please contact me directly at (949) 660-1994 ext. 205.

Respectfully submitted,

URBAN CROSSROADS, INC.

Pranesh Tarikere

Senior Engineer

EXHIBIT 1: SITE PLAN

TABLE 1

TRIP GENERATION RATES[1]

LAND USE	ITE Land Use Code	UNITS[2]	PEAK HOUR TRIP RATES						DAILY
			AM			PM			
			IN	OUT	TOTAL	IN	OUT	TOTAL	
Single Family Detached	210	DU	0.19	0.56	0.75	0.63	0.37	1	9.52

TABLE 2

TRIP GENERATION SUMMARY

LAND USE	QUANTITY	UNITS[2]	PEAK HOUR						DAILY
			AM			PM			
			IN	OUT	TOTAL	IN	OUT	TOTAL	
Single Family Detached	44	DU	8	25	33	28	16	44	419

[1] Source: ITE (Institute of Transportation Engineers) Trip Generation Manual, 9th Edition, 2012.

[2] DU = Dwelling Units

CASC
Engineering and Consulting

May 19, 2015 **Transmitted Via US Mail**

Jim Godfredsen, P.E., L.S.
Engineering Department
CITY OF HIGHLAND
27215 Base Line
Highland, CA 92346

Subject: **119-539 - Tract No. 19915**
Conceptual WQMP - Recommendation for Acceptance – with conditions

Dear Jim,

CASC Engineering and Consulting (CASC Consulting), as a consultant to the City of Highland, has performed a review of the Conceptual Water Quality Management Plan (C-WQMP) prepared by MDS Consulting, (Preparer) for 119-539 Tentative Tract 19915 (Project) and submitted by 29300 Baseline Partners, LLC (Applicant). Based on information presented in the C-WQMP, CASC has found that the C-WQMP is preliminarily in conformance with the document, "Technical Guidance Document for Water Quality Management Plans" (Guidance), prepared June 7, 2013, and approved by the Santa Ana Regional Water Quality Control Board. CASC's review and findings are limited to determination of a preliminary conformance with the Guidance document only. The Applicant and Preparer of the C-WQMP remain responsible for all civil design elements and assertions in the C-WQMP, and the Applicant remains responsible for implementation, maintenance, and funding of all elements of the C-WQMP and for any and all liability and damages (environmental or otherwise) arising out of the implementation or failure to implement any portion of the C-WQMP.

The purpose of this letter is to transmit our recommendation for acceptance of the project listed below as incorporating BMPs for the preservation of water quality into the project's preliminary design as shown in the attached C-WQMP Site Plan.

Applicant:	29300 Baseline Partners, LLC.
Project:	119-539 Tentative Tract 19915
Project Location:	North of Baseline Road, West of Weaver Street
Review Stage:	**Conceptual**

Conditions of Acceptance

1. The Applicant shall submit, for approval, a Final WQMP that is in substantial conformance with the Conceptual WQMP and associated comments. The Final WQMP shall be in full conformance with the Guidance Document. The Final WQMP shall be submitted and

approved prior to submittal of precise grading plans and the application for grading or building permits.

2. Applicant shall include a copy of the Project's grading plan, landscape plan and utility plan for review with the first submittal of the Final WQMP.

Best regards,
CASC Engineering and Consulting

Christopher Ogaz
EIT, CPESC
Environmental Engineer

Attachment C-WQMP Document