APPENDICES
INITIAL STUDY
San Antonio Heights Trails Project
County of San Bernardino, California

Prepared for:

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Air Quality Analysis

Air Quality and Greenhouse Gas Analysis Report
San Antonio Heights Trail
County of San Bernardino, California

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ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	micrograms per cubic meter
AB	Assembly Bill
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
CEQA	California Environmental Quality Act
CO	carbon monoxide
CO_2	carbon dioxide
DPM	diesel particulate matter
EPA	Environmental Protection Agency
LOS	Level of Service
$MTCO_2e$	metric tons of carbon dioxide equivalent
$MMTCO_2e$	million metric tons of carbon dioxide equivalent
NO_x	nitrogen oxides
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
ppm	parts per million
ppt	parts per trillion
ROG	reactive organic gases
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SO_x	sulfur oxides
URBEMIS	Urban Emissions Computer Model
VOC	volatile organic compounds

SECTION 1: INTRODUCTION

1.1 - Purpose and Methods of Analysis

The following air quality analysis was prepared to evaluate whether the expected criteria air pollutant emissions generated from the project would cause significant impacts to air resources in the project area. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000 et seq.). The methodology follows the CEQA Air Quality Handbook prepared by the South Coast Air Quality Management District (SCAQMD) for quantification of emissions and evaluation of potential impacts to air resources (SCAQMD 1993 and SCAQMD 2009a).

In 2006, Governor Arnold Schwarzenegger signed AB 32, which charged the California Air Resources Board (ARB) with developing regulations on how the State would address climate change (also known as “global warming”). This analysis also evaluates the potential impact of the project’s greenhouse gas emissions.

1.2 - Findings

- The construction and operation of the project would not exceed the SCAQMD regional significance emission thresholds.
- The onsite construction emissions from the project would not exceed the SCAQMD localized significance thresholds (LSTs).
- The onsite operational emissions would not exceed the LSTs after application of mitigation measure AQ-1.
- The project is consistent with the Air Quality Management Plan (AQMP) after application of mitigation measure AQ-1.
- The project would not result in an air quality violation after application of mitigation measures.
- The project would not result in a cumulative impact after application of mitigation measure AQ-1.
- The project would not expose sensitive receptors to substantial pollutant concentrations after application of mitigation measure AQ-1.
- The project would not create objectionable odors that affect sensitive receptors near the project.
- The project is consistent with the San Bernardino County General Plan after application of mitigation measure AQ-2.
- Although the project would emit greenhouse gases during construction and operation, these emissions would not have a significant impact on the environment. The project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing emissions of greenhouse gases.

1.3 - Mitigation Measures Designed to Reduce Air Emissions

AQ-1 Signs shall be posted at all trail entrances that indicate that motorized vehicles are prohibited from the trails. Telephone numbers shall be posted on the signs that indicate a number to call for violations.

AQ-2 Project landscaping, if any, shall use drought tolerant native plants that do not require a watering system.

1.4 - Project Description

The proposed five-mile long public multi-use recreational trail (Project) will be located along the northern boundary of the community of San Antonio Heights in the unincorporated area of the County of San Bernardino (see Exhibit 1 and Exhibit 2). In addition, two proposed staging areas will be located strategically along the trail. There are also six alternatives proposed as a part of the Project. The proposed Project would generally run along the existing alignment of the San Antonio Creek Trail. The County of San Bernardino will oversee the construction of the Project.

The proposed Project will be used for equestrian activities, mountain bike riding, and hiking. Much of the Project will be constructed on a prepared surface of crushed decomposed granite, which will allow water to permeate into the underlying ground without substantial erosion. Minor improvements may be implemented along the existing dirt paths chosen for trail construction where erosion has occurred as well as widening improvements in order to accommodate multiple uses of the trail. In addition, removal of large debris throughout the trail may be required by light construction equipment. There is no lighting proposed for the recreational trail system.

The proposed Project would generally run in an east-west direction on County land north of the City of Upland city limits. The proposed trail system provides two staging areas and links between existing or proposed trail systems in Claremont and Rancho Cucamonga. The staging areas would be used to park and unload bicycles, horses, and other equipment, and are directly linked to the proposed trail system. The staging areas will be approximately 5,000 square feet in size and will include parking for vehicles with trailers, secondary access to the primary trail, equestrian hitching posts, equestrian drinking troughs, wood benches, picnic tables, toilet facilities, and composting bins.

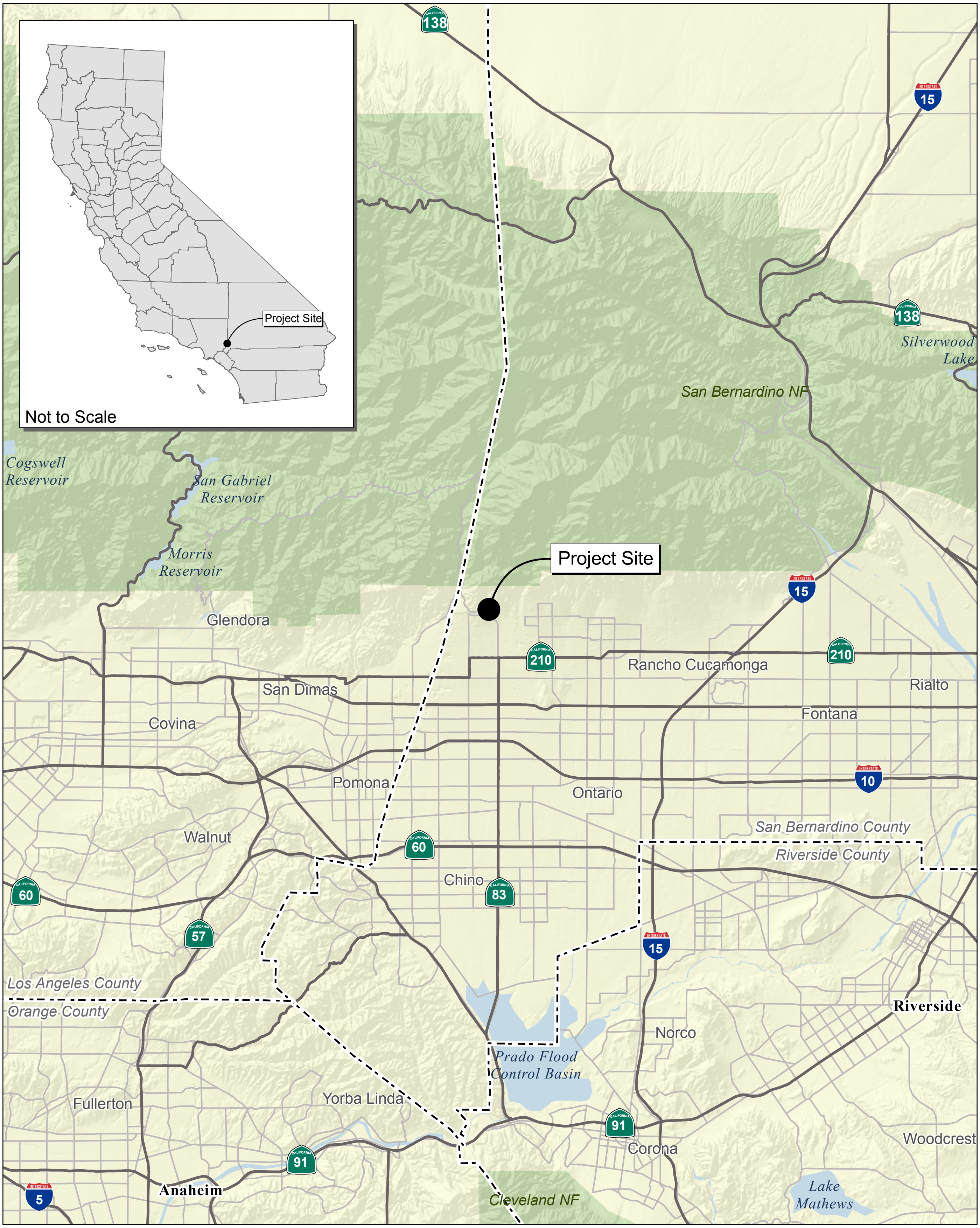
Staging Area No. 1 will be located on the western side of Cucamonga Channel at the east end of W. 24th Street. Vehicular access to Staging Area No. 1 will be provided via W. 24th Street and will be configured to accommodate a limited number of vehicles using a controlled gate. The site entrance will be improved to accommodate an inbound travel lane and an outbound travel lane for vehicles using horse trailers. There is no lighting proposed for Staging Area No. 1. Small infrastructure hookups may be required for the drinking troughs and restroom facilities.

Staging Area No. 2 will be located approximately 75 yards south of the Arctic Dr. and W. 26th Street intersection, just 0.25 mile northeast of the San Antonio Heights Community Church. Vehicular access to Staging Area No. 2 will be provided via Arctic Dr. and will be configured to accommodate a limited number of vehicles using a controlled gate. The site entrance will have an inbound and outbound travel lane for vehicles using horse trailers. There is no lighting proposed for Staging Area No. 2. Small infrastructure hookups may be required for the drinking troughs and restroom facilities.

A limited number of vehicular parking spots would be available for the public per the San Bernardino County Development Code regulations. Vehicular parking is not proposed on the roadways near the staging areas; however, the staging areas will be large enough to accommodate 10 vehicles with trailers. Security at the staging areas will be provided via a controlled gate at the entrance of the parking lot. The Regional Parks Division of the County Public Works Department would be responsible for maintenance related to the multiuse trails, including the removal of animal waste.

1.5 - Sensitive Receptors

Those who are sensitive to air pollution include children, the elderly, and persons with preexisting respiratory or cardiovascular illness. For purposes of CEQA, the SCAQMD considers a sensitive receptor to be a location where a sensitive individual could remain for 24 hours, such as residences, hospitals, or convalescent facilities. Commercial and industrial facilities are not included in the definition because employees do not typically remain onsite for 24 hours. However, when assessing the impact of pollutants with 1-hour or 8-hour standards (such as nitrogen dioxide and carbon monoxide), commercial and/or industrial facilities would be considered sensitive receptors for those purposes. There are sensitive receptors in the form of residences located near the project.



Source: Census 2000 Data, The CaSIL, MBA GIS 2009.

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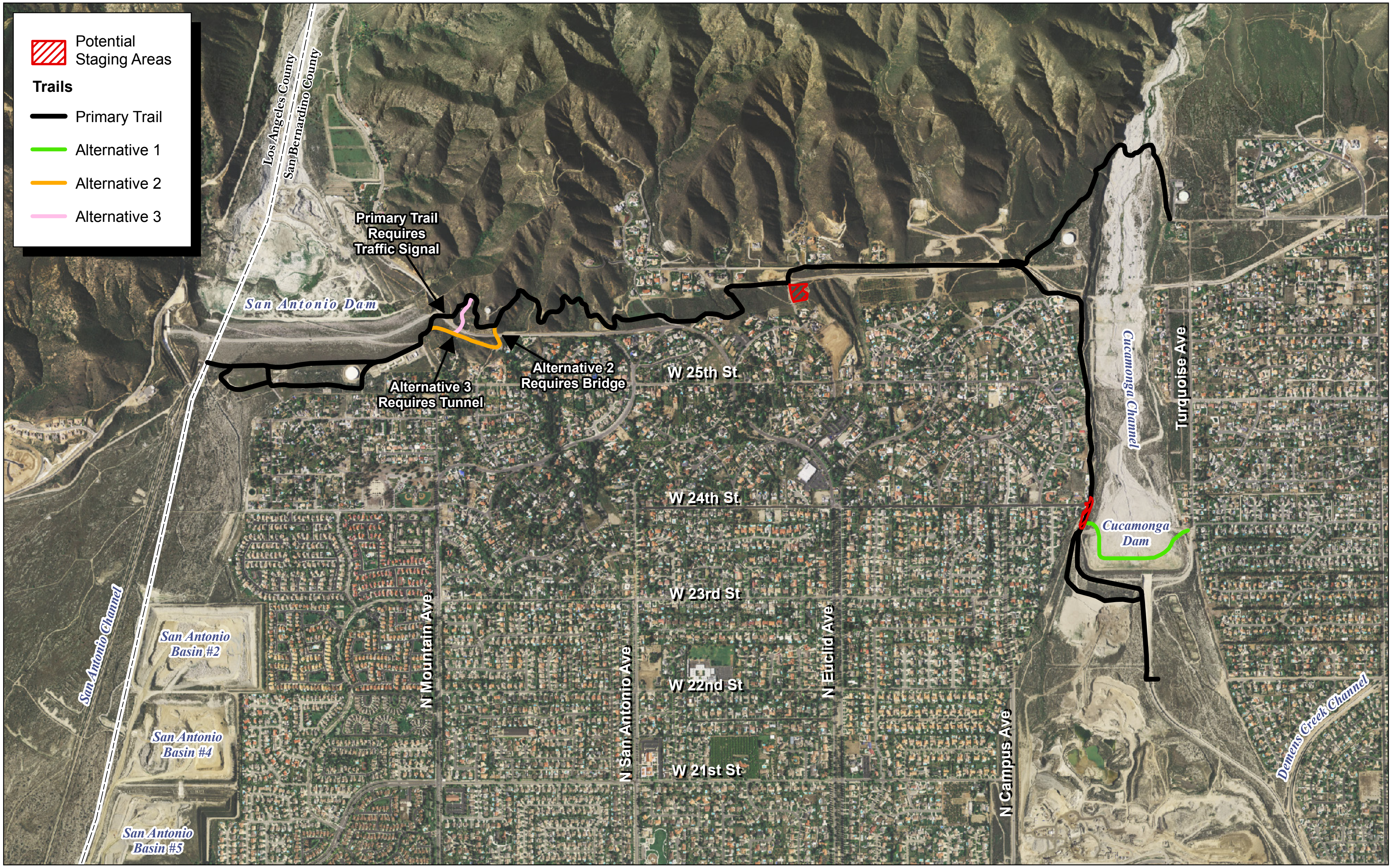
NORTH

5 2.5 0 5 Miles

Exhibit 1
Regional Location Map



Source: San Bernardino County Aerials (2007) Census (2000).

Exhibit 2
Project Vicinity Aerial Photograph

SECTION 2: SETTING

2.1 - Existing Air Quality Conditions

2.1.1 - Local Climate

The project is located in the County of San Bernardino and is within the South Coast Air Basin (basin). To the west of the basin is the Pacific Ocean. To the north and east of the basin are the San Gabriel, San Bernardino, and San Jacinto mountains, while the southern limit of the basin is the San Diego County line. The basin consists of Orange County, all of Los Angeles County except for the Antelope Valley, the non-desert portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County. The air quality in the basin is impacted by dominant airflows, topography, atmospheric inversions, location, season, and time of day.

Dominant airflows provide the driving mechanism for transport and dispersion of air pollution. The mountains surrounding the region form natural horizontal barriers to the dispersion of air contaminants. Air pollution created in the coastal areas and around the Los Angeles area is transported inland until it reaches the mountains where the combination of mountains and inversion layers generally prevent further dispersion. This poor ventilation results in a gradual degradation of air quality from the coastal areas to inland areas. Air stagnation may occur during the early evening and early morning periods of transition between day and nighttime flows. The region also experiences periods of hot, dry winds from the desert, known as Santa Ana winds. If the Santa Ana winds are strong, they can surpass the sea breeze, which blows from the ocean to the land, and carry the suspended dust and pollutants out to the ocean. If the winds are weak, they are opposed by the sea breeze and cause stagnation, resulting in high pollution events.

The annual average temperature varies little throughout much of the basin, ranging from the low to middle 60s, measured in degrees Fahrenheit. With more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas where the project site is located. The climatological station closest to the project site is a National Weather Service Coop weather station located in Fontana about two miles south of the project site. Climatological data from the National Weather Service at this station spanning the period 1971-2000 indicate an annual average temperature of 66° Fahrenheit, with December and January the coldest months (mean minimum daily temperatures of 44° Fahrenheit) and July and August the warmest months (mean daily maximum temperatures of 95° Fahrenheit).

The majority of the annual rainfall in the basin occurs between November and April. Summer rainfall is minimal and generally limited to scattered thunderstorms in the coastal regions and slightly heavier showers in the eastern portion of the basin along the coastal side of the mountains. The climatological data from the Fontana National Weather Service Coop station spanning the period 1971- 2000 indicate an annual average precipitation of 15.3 inches. Eighty-five (85) percent of the annual rainfall occurs during the November to March rain season. Highest monthly average rainfall occurs during January. Year-to-year patterns in rainfall are unpredictable due to fluctuations in the weather.

Temperature inversions limit the vertical depth through which pollution can be mixed. Among the most common temperature inversions in the basin are radiation inversions, which form on clear winter nights when cold air off mountains sink to the valley floor while the air aloft over the valley remains warm. These inversions, in conjunction with calm winds, trap pollutants near the source. Other types of temperature inversions include marine, subsidence, and high-pressure inversions.

Summers are often periods of hazy visibility and occasionally unhealthful air, while air quality impacts in the winter tend to be highly localized and can consist of odors from agricultural operations.

2.1.2 - Local Air Quality

The local air quality can be evaluated by reviewing relevant air pollution concentrations near the project area. For evaluation purposes, the SCAQMD has divided the basin into 36 Source Receptor Areas operating monitoring stations in most of the areas. These areas are designated to provide a general representation of the local meteorological, terrain, and air quality conditions within the particular geographical area. SCAQMD operates an air monitoring station in SRA 32. Table 1 summarizes 2007 through 2009 published monitoring data, which is the most recent 3-year period available. The data shows that the project area exceeds the ozone, PM_{10}, and $PM_{2.5}$ ambient air quality standards.

Table 1: Air Quality Monitoring Summary

Air Pollutant, Location	Averaging Time	Item	2007	2008	2009
Ozone, Upland	1 Hour	Max 1 Hour (ppm)	0.145	0.155	0.146
		Days > State Standard (0.09 ppm)	32	51	51
	8 Hour	Max 8 Hour (ppm)	0.115	0.122	0.121
		Days > State Standard (0.07 ppm)	55	65	70
		Days > National Standard (0.075 ppm)	35	50	48
Carbon monoxide, Upland	1 Hour	Max 1 Hour (ppm)*	2	2	ND
		Days > State Standard (20 ppm)	0	0	ND
		Days > National Standard (35 ppm)	0	0	ND
	8 Hour	Max 8 Hour (ppm)	1.65	1.59	1.46
		Days > State Standard (9.0 ppm)	0	0	0
		Days > National Standard (9 ppm)	0	0	0

Table 1: Air Quality Monitoring Summary (continued)

Air Pollutant, Location	Averaging Time	Item	2007	2008	2009
Nitrogen dioxide, Upland	Annual	Annual Average (ppm)	0.027	0.023	0.024
	1 Hour	Max 1 Hour (ppm)	0.095	0.094	0.096
		Days > State Standard (0.18 ppm)	0	0	0
		Days > Federal Standard (0.10 ppm)	0	0	0
Inhalable coarse particles (PM_{10}), Fontana-Arrow Highway	Annual	Annual Average (μg/m^3)	60.7	40.2	ID
	24 Hour	24 Hour (μg/m^3)	276	75	73
		Days > State Standard (50 μg/m^3)	33	11	3
		Days > National Standard (150 μg/m^3)	2	0	0
Fine particulate matter ($PM_{2.5}$), Fontana-Arrow Highway	Annual	Annual Average (μg/m^3)	18.8	15.2	ID
	24 Hour	24 Hour (μg/m^3)	77.5	49.0	46.4
		Days > National Standard (35 μg/m^3)	10	6	1

Abbreviations:
> = exceed ppm = parts per million μg/m^3 = micrograms per cubic meter
ID = insufficient data ND = no data max = maximum
State Standard = California Ambient Air Quality Standard
National Standard = National Ambient Air Quality Standard
Sources: California Air Resources Board (ARB 2010b).
* South Coast Air Quality Management District (SCAQMD 2009b).

Local Sources of Air Pollution

The sources of air pollution in the project vicinity are from motor vehicle exhaust. There could also be fugitive dust (PM_{10} and $PM_{2.5}$) from the unpaved trails and roads near the project area.

2.1.3 - Attainment Status

The EPA and the ARB designate air basins where ambient air quality standards are exceeded as “nonattainment” areas. If standards are met, the area is designated as an “attainment” area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered “unclassified.” National nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. Each standard has a different definition, or ‘form’ of what constitutes attainment, based on specific air quality statistics. For example, the Federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the Federal annual $PM_{2.5}$ standard is met if the three-year average of the annual average $PM_{2.5}$ concentration is less than or equal to the standard.

The current attainment designations for the basin are shown in Table 2. The basin is designated as nonattainment for the State and national ozone, PM_{10}, and $PM_{2.5}$, standards. The basin is also in nonattainment for the State nitrogen dioxide standard.

Table 2: South Coast Air Basin Attainment Status

Pollutant	State Status	National Status
Ozone	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Nonattainment	Unclassified[1]
Sulfur Dioxide	Attainment	Attainment
PM_{10}	Nonattainment	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment

Source: State Status from ARB 2010c; National Status from EPA 2009a.
[1] EPA set a new one-hour standard for nitrogen dioxide at a level of 100 parts per billion on January 25, 2010, which will become effective April 12, 2010. EPA expects to identify or designate areas not meeting the new standard, based on the existing community-wide monitoring network, by January 2012

2.2 - Air Pollutant Regulatory Setting

Air pollutants are regulated at the national, State, and air basin level; each agency has a different level of regulatory responsibility. The United States Environmental Protection Agency (EPA) regulates at the national level. The California Air Resources Board (ARB) regulates at the State level. The South Coast Air Quality Management District (SCAQMD) regulates at the air basin level.

2.2.1 - National and State Regulatory Agencies

The EPA handles global, international, national, and interstate air pollution issues and policies. The EPA sets national vehicle and stationary source emission standards, oversees approval of all State Implementation Plans, provides research and guidance for air pollution programs, and sets National Ambient Air Quality Standards, also known as federal standards. There are national standards for six common air pollutants, called criteria air pollutants, which were identified from provisions of the Clean Air Act of 1970. The criteria pollutants are:

- Ozone;
- Particulate matter (PM10 and PM2.5);
- Nitrogen dioxide;
- Carbon monoxide (CO);
- Lead; and
- Sulfur dioxide.

The national standards were set to protect public health, including that of sensitive individuals; thus, the standards continue to change as more medical research is available regarding the health effects of the criteria pollutants. Primary national standards are the levels of air quality necessary, with an adequate margin of safety, to protect the public health (ARB 2010a).

A State Implementation Plan is a document prepared by each State describing existing air quality conditions and measures that will be followed to attain and maintain National standards. The State Implementation Plan for the State of California is administered by the ARB, which has overall responsibility for statewide air quality maintenance and air pollution prevention. The ARB also administers California Ambient Air Quality Standards for the 10 air pollutants designated in the California Clean Air Act. The 10 State air pollutants are the six National standards listed above as well as the following: visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride.

The national and State ambient air quality standards, the most relevant effects, the properties, and sources of the pollutants are summarized in Table 3.

Several pollutants listed in Table 3 are not addressed in this analysis. Analysis of lead is not included in this report because the project is not anticipated to emit lead. Visibility-reducing particles are not explicitly addressed in this analysis because particulate matter is addressed. The project is not expected to generate or be exposed to vinyl chloride because proposed project uses do not utilize the chemical processes that create this pollutant and there are no such uses in the project vicinity. The proposed project is not expected to cause exposure to hydrogen sulfide because it would not generate hydrogen sulfide in any substantial quantity. There is no generation of hydrogen sulfide usage in the project area.

Table 3: Air Pollutants

Air Pollutant	Averaging Time	California Standard	National Standard [a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Ozone	1 Hour	0.09 ppm	—	(a) Decrease of pulmonary function and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; (f) Property damage.	Ozone is a photochemical pollutant as it is not emitted directly into the atmosphere, but is formed by a complex series of chemical reactions between volatile organic compounds (VOC), NO_x, and sunlight. Ozone is a regional pollutant that is generated over a large area and is transported and spread by the wind.	Ozone is a secondary pollutant; thus, it is not emitted directly into the lower level of the atmosphere. The primary sources of ozone precursors (VOC and NO_x) are mobile sources (on-road and off-road vehicle exhaust).
	8 Hour	0.070 ppm	0.075 ppm			
Carbon Monoxide (CO)	1 Hour	20 ppm	35 ppm	(a) Aggravation of angina pectoris (chest pain) and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses.	CO is a colorless, odorless, toxic gas. CO is somewhat soluble in water; therefore, rainfall and fog can suppress CO conditions. CO enters the body through the lungs, dissolves in the blood, replaces oxygen as an attachment to hemoglobin, and reduces available oxygen in the blood.	CO is produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). Sources include motor vehicle exhaust, industrial processes (metals processing and chemical manufacturing), residential wood burning, and natural sources.
	8 Hour	9.0 ppm	9 ppm			
Nitrogen Dioxide [c] (NO_2)	1 Hour	0.18 ppm	0.100 ppm	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration.	During combustion of fossil fuels, oxygen reacts with nitrogen to produce nitrogen oxides - NO_x (NO, NO_2, NO_3, N_2O, N_2O_3, N_2O_4, and N_2O_5). NO_x is a precursor to ozone, PM_{10}, and $PM_{2.5}$ formation. NO_x can react with compounds to form nitric acid and related particles.	NO_x is produced in motor vehicle internal combustion engines and fossil fuel-fired electric utility and industrial boilers. NO_2 concentrations near major roads can be 30 to 100 percent higher than those at monitoring stations.
	Annual	0.030 ppm	0.053 ppm			

Table 3 (cont.): Air Pollutants

Air Pollutant	Averaging Time	California Standard	National Standard [a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm	0.075 ppm [d]	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient sulfur dioxide levels. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.	Sulfur dioxide is a colorless, pungent gas. At levels greater than 0.5 ppm, the gas has a strong odor, similar to rotten eggs. Sulfur oxides (SO_x) include sulfur dioxide and sulfur trioxide. Sulfuric acid is formed from sulfur dioxide, which can lead to acid deposition and can harm natural resources and materials. Although sulfur dioxide concentrations have been reduced to levels well below State and national standards, further reductions are desirable because sulfur dioxide is a precursor to sulfate and PM_{10}.	Human caused sources include fossil-fuel combustion, mineral ore processing, and chemical manufacturing. Volcanic emissions are a natural source of sulfur dioxide. The gas can also be produced in the air by dimethylsulfide and hydrogen sulfide. Sulfur dioxide is removed from the air by dissolution in water, chemical reactions, and transfer to soils and ice caps. The sulfur dioxide levels in the State are well below the maximum standards.
	3 Hour[1]	—	0.5 ppm			
	24 Hour	0.04 ppm	0.14 ppm			
	Annual	—	0.030 ppm			
Particulate Matter (PM_{10})	24 hour	50 $\mu g/m^3$	150 $\mu g/m^3$	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; (c) Increased risk of premature death from heart or lung diseases in the elderly. Daily fluctuations in $PM_{2.5}$ levels have been related to hospital admissions for acute respiratory conditions, school absences, and increased medication use in children and adults with asthma.	Suspended particulate matter is a mixture of small particles that consist of dry solid fragments, droplets of water, or solid cores with liquid coatings. The particles vary in shape, size, and composition. PM_{10} refers to particulate matter that is between 2.5 and 10 microns in diameter, (1 micron is one-millionth of a meter). $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter.	Stationary sources include fuel combustion for electrical utilities, residential space heating, and industrial processes; construction and demolition; metals, minerals, and petrochemicals; wood products processing; mills and elevators used in agriculture; erosion from tilled lands; waste disposal, and recycling. Mobile or transportation-related sources are from vehicle exhaust and road dust.
	Mean	20 $\mu g/m^3$	—			
Particulate Matter ($PM_{2.5}$)	24 Hour	—	35 $\mu g/m^3$			
	Annual	12 $\mu g/m^3$	15.0 $\mu g/m^3$			

Table 3 (cont.): Air Pollutants

Air Pollutant	Averaging Time	California Standard	National Standard [a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfates	24 Hour	25 µg/m^3	—	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage.	The sulfate ion is a polyatomic anion with the empirical formula SO_4^{2-}. Sulfates occur in combination with metal and/or hydrogen ions. Many sulfates are soluble in water.	Sulfates are particulates formed through the photochemical oxidation of sulfur dioxide. In California, the main source of sulfur compounds is combustion of gasoline and diesel fuel.
Lead [b]	30-day	1.5 µg/m^3	—	Lead accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. It can cause impairment of blood formation and nerve conduction. The more serious effects of lead poisoning include behavior disorders, mental retardation, neurological impairment, learning deficiencies, and low IQs. Lead may also contribute to high blood pressure and heart disease.	Lead is a solid heavy metal that can exist in air pollution as an aerosol particle component. An aerosol is a collection of solid, liquid, or mixed-phase particles suspended in the air. Lead was first regulated as an air pollutant in 1976. Leaded gasoline was first marketed in 1923 and was used in motor vehicles until around 1970. Lead concentrations have not exceeded State or national air quality standards at any monitoring station since 1982.	Lead ore crushing, lead-ore smelting, and battery manufacturing are currently the largest sources of lead in the atmosphere in the United States. Other sources include dust from soils contaminated with lead-based paint, solid waste disposal, and crustal physical weathering. Lead can be removed from the atmosphere through deposition to soils, ice caps, oceans, and inhalation.
	Quarter	—	1.5 µg/m^3			
	Rolling 3-month average	—	0.15 µg/m^3			
Vinyl Chloride [b]	24 Hour	0.01 ppm	—	Short-term exposure to high levels of vinyl chloride in the air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers.	Vinyl chloride, or chloroethene, is a chlorinated hydrocarbon and a colorless gas with a mild, sweet odor. In 1990, ARB identified vinyl chloride as a toxic air contaminant and estimated a cancer unit risk factor.	Most vinyl chloride is used to make polyvinyl chloride plastic and vinyl products, including pipes, wire and cable coatings, and packaging materials. It can be formed when plastics containing these substances are left to decompose in solid waste landfills. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites.

Table 3 (cont.): Air Pollutants

Air Pollutant	Averaging Time	California Standard	National Standard [a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Hydrogen Sulfide	1 Hour	0.03 ppm	—	High levels of hydrogen sulfide can cause immediate respiratory arrest. It can irritate the eyes and respiratory tract and cause headache, nausea, vomiting, and cough. Long exposure can cause pulmonary edema.	Hydrogen sulfide (H_2S) is a flammable, colorless, poisonous gas that smells like rotten eggs.	Manure, storage tanks, ponds, anaerobic lagoons, and land application sites are the primary sources of hydrogen sulfide. Anthropogenic sources include the combustion of sulfur containing fuels (oil and coal).
Volatile Organic Compounds (VOC)		There are no State or national ambient air quality standards for VOCs because they are not classified as criteria pollutants.		Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations because of interference with oxygen uptake. In general, concentrations of VOCs are suspected to cause eye, nose, and throat irritation; headaches; loss of coordination; nausea; and damage to the liver, the kidneys, and the central nervous system. Many VOCs have been classified as toxic air contaminants.	Reactive organic gases (ROGs), or VOCs, are defined as any compound of carbon—excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate—that participates in atmospheric photochemical reactions. Although there are slight differences in the definition of ROGs and VOCs, the two terms are often used interchangeably.	Indoor sources of VOCs include paints, solvents, aerosol sprays, cleansers, tobacco smoke, etc. Outdoor sources of VOCs are from combustion and fuel evaporation. A reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOCs are transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} and lower visibility.
Benzene		There are no ambient air quality standards for benzene.		Short-term (acute) exposure of high doses from inhalation of benzene may cause dizziness, drowsiness, headaches, eye irritation, skin irritation, and respiratory tract irritation, and at higher levels, loss of consciousness can occur. Long-term (chronic) occupational exposure of high doses has caused blood disorders, leukemia, and lymphatic cancer.	Benzene is a VOC. It is a clear or colorless light-yellow, volatile, highly flammable liquid with a gasoline-like odor. The EPA has classified benzene as a “Group A” carcinogen.	Benzene is emitted into the air from fuel evaporation, motor vehicle exhaust, tobacco smoke, and from burning oil and coal. Benzene is used as a solvent for paints, inks, oils, waxes, plastic, and rubber. It is used in the extraction of oils from seeds and nuts and in the manufacture of detergents, explosives, and pharmaceuticals.

Table 3 (cont.): Air Pollutants

Air Pollutant	Averaging Time	California Standard	National Standard [a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Diesel Particulate Matter (DPM)		There are no ambient air quality standards for DPM.		Some short-term (acute) effects of diesel exhaust exposure include eye, nose, throat, and lung irritation, and can cause coughs, headaches, light-headedness, and nausea. Studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Human studies on the carcinogenicity of DPM demonstrate an increased risk of lung cancer, although the increased risk cannot be clearly attributed to diesel exhaust exposure.	DPM is a source of $PM_{2.5}$—diesel particles are typically 2.5 microns and smaller. Diesel exhaust is a complex mixture of thousands of particles and gases that is produced when an engine burns diesel fuel. Organic compounds account for 80 percent of the total particulate matter mass, which consists of compounds such as hydrocarbons and their derivatives, and polycyclic aromatic hydrocarbons and their derivatives. Fifteen polycyclic aromatic hydrocarbons are confirmed carcinogens, a number of which are found in diesel exhaust.	Diesel exhaust is a major source of ambient particulate matter pollution in urban environments. In 2002 in the South Coast Air Basin, the main sources of diesel particulate matter were due to the combustion of diesel fuel in diesel-powered engines. Such engines can include on-road vehicles such as diesel trucks, off-road construction vehicles, diesel electrical generators, and various pieces of stationary construction equipment.

Abbreviations:
ppm = parts per million (concentration) μg/m^3 = micrograms per cubic meter Annual = Annual Arithmetic Mean 30-day = 30-day average Quarter = Calendar quarter

a) National standard refers to the primary national ambient air quality standard, or the levels of air quality necessary, with an adequate margin of safety to protect the public health. All standards listed are primary standards except for 3 Hour SO_2, which is a secondary standard. A secondary standard is the level of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

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

c) Effective April 12, 2010, to attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb, or 188 ug/m^3

d) To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

Source of effects: SCAQMD 2007b; OEHHA 2002; ARB 2009b; EPA 2007; EPA 2000; NTP 2005a.
Source of standards: ARB 2010a
Source of properties and sources: EPA 1999; EPA 2003; EPA 2009b; EPA 2009d; NTP 2005b.

2.2.2 - South Coast Air Quality Management District

The agency for air pollution control for the South Coast Air Basin (basin) is the South Coast Air Quality Management District (SCAQMD). SCAQMD is responsible for controlling emissions primarily from stationary sources. SCAQMD maintains air quality monitoring stations throughout the basin. SCAQMD, in coordination with the Southern California Association of Governments, is also responsible for developing, updating, and implementing the Air Quality Management Plan (AQMP) for the basin. An AQMP is a plan prepared and implemented by an air pollution district for a county or region designated as nonattainment of the national and/or California ambient air quality standards. The term nonattainment area is used to refer to an air basin where one or more ambient air quality standards are exceeded.

The 2003 AQMP is to lead the basin and portions of the Salton Sea Air Basin under SCAQMD jurisdiction into compliance with the 1-hour ozone and PM_{10} national standards (SCAQMD 2003). The 2007 AQMP is to lead the basin into compliance of the national 8-hour ozone and $PM_{2.5}$ standards.

The 2003 AQMP also replaced the 1997 attainment demonstration for the national CO standard and provided a basis for a maintenance plan for CO for the future, and updated the maintenance plan for the national nitrogen dioxide standard that the South Coast Air Basin has met since 1992 (2003 AQMP, page 1-1).

The 2003 AQMP also incorporated new scientific data in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2003 AQMP utilized complex modeling to show that with the control measures, the basin would be in compliance with the national and State standards for all pollutants by 2010, except for the State ozone and PM_{10} standards and the State ozone and PM_{10} standard after 2010 or by the earliest practicable date, as mandated by the California Health and Safety Code Section 40462. The ARB approved the 2003 AQMP on August 1, 2003. EPA's adequacy finding on the emissions budgets for conformity determination in the basin was published in the Federal Register (69 FR 15325-15326).

The current AQMP for the basin is the 2007 AQMP, which was adopted by the SCAQMD on June 1, 2007 (SCAQMD 2007b). On July 13, 2007, the SCAQMD Board adopted the 2007 Final AQMP Transportation Conformity Budgets and directed the Executive Officer to forward them to ARB for its approval and subsequent submittal to the EPA. On September 27, 2007, ARB adopted the State Strategy for the 2007 State Implementation Plan and the 2007 AQMP as part of the State Implementation Plan. On January 15, 2009, EPA's regional administrator signed a final rule to approve in part and disapprove in part the SCAQMD 2003 1-hour ozone plan and the nitrogen dioxide maintenance plan. The parts of the plan that were approved strengthen the State Implementation Plan. The Clean Air Act does not require the disapproved portions of the plan, and the disapprovals do not start sanctions clocks.

The 2007 AQMP outlines a detailed strategy for meeting the national health-based standards for $PM_{2.5}$ by 2015 and 8-hour ozone by 2024 while accounting for and accommodating future expected growth. The 2007 AQMP incorporates significant new emissions inventories, ambient measurements, scientific data, control strategies, and air quality modeling. Most of the reductions will be from mobile sources, which are currently responsible for about 75 percent of all smog and particulate forming emissions. The 2007 AQMP includes 37 control measures proposed for adoption by the SCAQMD, including measures to reduce emissions from new commercial and residential developments, more reductions from industrial facilities, and reductions from wood burning fireplaces and restaurant charbroilers.

The AQMP for the basin establishes a program of rules and regulations administered by SCAQMD to obtain attainment of the State and national air quality standards. The rules and regulations that apply to this project include, but are not limited to, the following:

South Coast Air Quality Management District Rules

SCAQMD Rule 402 prohibits a person from discharging from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

SCAQMD Rule 403 governs emissions of fugitive dust during construction and operation activities. Compliance with this rule is achieved through application of standard Best Management Practices (BMP), such as application of water or chemical stabilizers to disturbed soils, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 miles per hour, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph, and establishing a permanent ground cover on finished sites.

SCAQMD Rule 1186 limits the presence of fugitive dust on paved and unpaved roads and sets certification protocols and requirements for street sweepers that are under contract to provide sweeping services to any federal, State, county, agency or special district such as water, air, sanitation, transit, or school district.

State of California Regulations

ARB Regulation for In-Use Off-Road Diesel Vehicles. On July 26, 2007, the ARB adopted a regulation to reduce diesel particulate matter and NOx emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. The regulation imposed limits on idling, buying older off-road diesel vehicles, and selling vehicles beginning in 2008; requires all vehicles to be reported to ARB and labeled in 2009; and then in 2010 begins gradual requirements for fleets to clean up their fleet by getting rid of older engines, using newer engines, and installing exhaust retrofits. The regulation requires equipment to be retrofitted or retired. The regulation takes effect in phases, requiring the largest fleets to comply by 2010, medium fleets by 2013, and smaller fleets by 2015.

2.3 - Climate Change

Climate change is a change in the average weather of the earth that is measured by alterations in wind patterns, storms, precipitation, and temperature. These changes are assessed using historical records of temperature changes occurring in the past, such as during previous ice ages. Many of the concerns regarding climate change use this data to extrapolate a level of statistical significance specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change constructed several emission trajectories of greenhouse gases needed to stabilize global temperatures and climate change impacts. The Intergovernmental Panel on Climate Change predicted that global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1 degrees Celsius (°C) to 6.4°C. Regardless of analytical methodology, global average temperatures and sea levels are expected to rise under all scenarios (IPCC 2007a).

In California, climate change may result in consequences such as the following (from CCCC 2006 and Moser et al. 2009).

- **A reduction in the quality and supply of water to the State from the Sierra snowpack.** If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. This can lead to challenges in securing adequate water supplies. It can also lead to a potential reduction in hydropower.
- **Increased risk of large wildfires.** If rain increases as temperatures rise, wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30 percent toward the end of the 21^{st} century because more winter rain will stimulate the growth of more plant "fuel" available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90 percent more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- **Reductions in the quality and quantity of certain agricultural products.** The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.
- **Exacerbation of air quality problems.** If temperatures rise to the medium warming range, there could be 75 to 85 percent more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range.

- **A rise in sea levels resulting in the displacement of coastal businesses and residences.** During the past century, sea levels along California's coast have risen about seven inches. If heat-trapping emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Elevations of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.
- Damage to marine ecosystems and the natural environment.
- An increase in infections, disease, asthma, and other health-related problems.
- A decrease in the health and productivity of California's forests.

2.3.1 - Greenhouse Gases

Gases that trap heat in the atmosphere are referred to as greenhouse gases. The effect is analogous to the way a greenhouse retains heat. Common greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxides, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. Natural processes and human activities emit greenhouse gases. The presence of greenhouse gases in the atmosphere affects the earth's temperature. It is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

Climate change is driven by forcings and feedbacks. Radiative forcing is the difference between the incoming energy and outgoing energy in the climate system. Positive forcing tends to warm the surface while negative forcing tends to cool it. Radiative forcing values are typically expressed in watts per square meter. A feedback is a climate process that can strengthen or weaken a forcing. For example, when ice or snow melts, it reveals darker land underneath which absorbs more radiation and causes more warming. The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere. The global warming potential of a gas is essentially a measurement of the radiative forcing of a greenhouse gas compared with the reference gas, carbon dioxide.

Individual greenhouse gas compounds have varying global warming potential and atmospheric lifetimes. Carbon dioxide, the reference gas for global warming potential, has a global warming potential of one. The calculation of the carbon dioxide equivalent is a consistent methodology for comparing greenhouse gas emissions since it normalizes various greenhouse gas emissions to a consistent metric. Methane's warming potential of 21 indicates that methane has a 21 times greater warming affect than carbon dioxide on a molecule per molecule basis. A carbon dioxide equivalent is the mass emissions of an individual greenhouse gas multiplied by its global warming potential.

Greenhouse gases as defined by AB 32 include the following gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexaflouride. Greenhouse gases as defined by AB 32 are summarized in Table 4.

Table 4: Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Nitrous oxide	Nitrous oxide is also known as laughing gas and is a colorless greenhouse gas. It has a lifetime of 114 years. Its global warming potential is 310.	Microbial processes in soil and water, fuel combustion, and industrial processes.
Methane	Methane is a flammable gas and is the main component of natural gas. It has a lifetime of 12 years. Its global warming potential is 21.	Methane is extracted from geological deposits (natural gas fields). Other sources are landfills, fermentation of manure, decay of organic matter, and cattle.
Carbon dioxide	Carbon dioxide (CO_2) is an odorless, colorless, natural greenhouse gas. Carbon dioxide's global warming potential is 1. The concentration in 2005 was 379 parts per million (ppm), which is an increase of about 1.4 ppm per year since 1960.	Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood.
Chloro-fluorocarbons	These are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). Global warming potentials range from 3,800 to 8,100.	Chlorofluorocarbons were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987.
Hydro-fluorocarbons	Hydrofluorocarbons are a group of greenhouse gases containing carbon, chlorine, and at least one hydrogen atom. Global warming potentials range from 140 to 11,700.	Hydrofluorocarbons are synthetic manmade chemicals used as a substitute for chlorofluorocarbons in applications such as automobile air conditioners and refrigerants.
Per-fluorocarbons	Perfluorocarbons have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Global warming potentials range from 6,500 to 9,200.	Two main sources of perfluorocarbons are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride	Sulfur hexafluoride is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. It has a high global warming potential, 23,900.	This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas.
Sources: Compiled from a variety of sources, primarily IPCC 2007a and IPCC 2007b.		

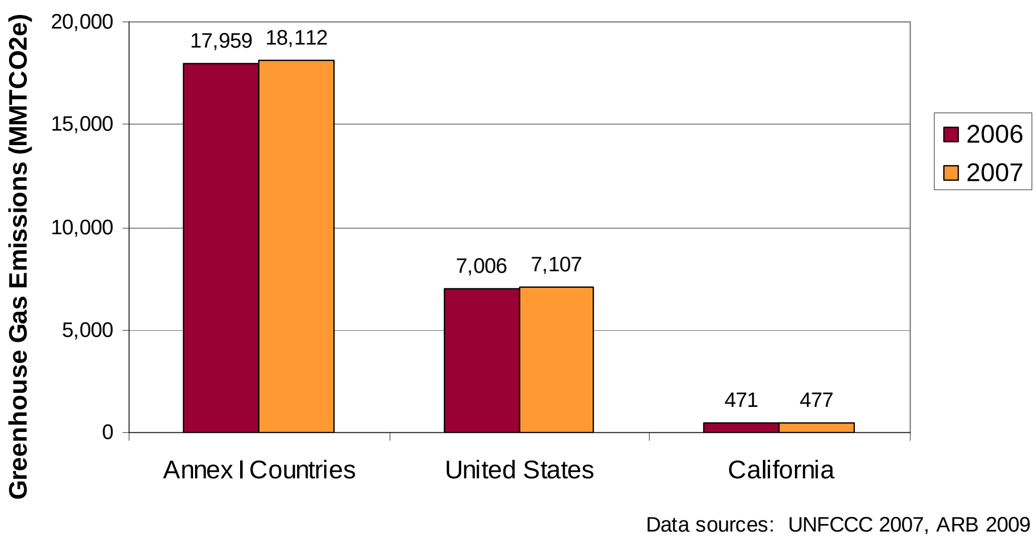
Greenhouse gases not defined by AB 32 include water vapor, ozone, and aerosols. Water vapor is an important component of our climate system and is not regulated. Ozone and aerosols are short-lived greenhouse gases; global warming potentials for short-lived greenhouse gases are not defined by the IPCC. Aerosols can remain suspended in the atmosphere for about a week and can warm the atmosphere by absorbing heat and cool the atmosphere by reflecting light. Black carbon is a type of aerosol that can also cause warming from deposition on snow.

There are no adverse health effects from the concentration of greenhouse gases in the atmosphere at the current levels, with the exception of ozone and aerosols (particulate matter). The potential health effects of ozone and particulate matter are discussed in criteria pollutant analyses. At very high concentrations, carbon dioxide, methane, sulfur hexafluoride, and some chlorofluorocarbons can cause suffocation as the gases can displace oxygen (NIOSH 2005, OSHA 2003).

Emissions Inventories

Emissions worldwide were approximately 49,000 million metric tons of carbon dioxide equivalents ($MMTCO_2e$) in 2004 (IPCC 2007b). Greenhouse gas emissions in 2006 and 2007 are shown in Figure 1. Annex I parties refer to countries that joined the United Nations Framework Convention on Climate Change. California emissions are approximately 6.7 percent of the emissions in the United States.

Figure 1: Greenhouse Gas Emissions Trends



2.3.2 - Regulatory Environment

International and National

International and federal agreements have been enacted to deal with climate change issues. In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change to assess the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

On March 21, 1994, the United States joined a number of countries around the world in signing the United Nations Framework Convention on Climate Change. Under the Convention, governments gather and share information on greenhouse gas emissions, national policies, and best practices; launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

A particularly notable result of the United Nations Framework Convention on Climate Change efforts is a treaty known as the Kyoto Protocol, which went into effect on February 16, 2005. When countries sign the Kyoto Protocol, they demonstrate their commitment to reduce their emissions of greenhouse gases or engage in emissions trading. More than 170 countries are currently participating in the Kyoto Protocol. Industrialized countries are required to reduce their greenhouse gas emissions by an average of 5 percent below their 1990 levels by 2012. In 1998, United States Vice President Al Gore symbolically signed the Protocol; however, in order for the Kyoto Protocol to be formally ratified, the United States Congress must approve it. Congress did not do this during the Clinton Administration. President George W. Bush did not submit the Protocol to Senate to be ratified based on the exemption granted to China. Current President Barack Obama has not taken action regarding the Kyoto Protocol because it is about to end.

Massachusetts v. EPA (Supreme Court Case 05-1120) was argued before the United States Supreme Court on November 29, 2006, in which it was petitioned that EPA regulate four greenhouse gases, including carbon dioxide, under Section 202(a)(1) of the Clean Air Act. A decision was made on April 2, 2007, in which the Supreme Court held that petitioners have a standing to challenge the EPA and that the EPA has statutory authority to regulate greenhouse gases emissions from new motor vehicles.

The Consolidated Appropriations Act of 2008 (HR 2764): Passed in December 2007, this law requires the establishment of mandatory greenhouse gas reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule. The rule requires reporting of greenhouse gas emissions from large sources and suppliers in the United States, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of greenhouse gas emissions are required to submit annual reports to EPA.

On December 7, 2009, the EPA Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act: 1) Current and projected concentrations of the six key well-mixed greenhouse gases--carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride--in the atmosphere threaten the public health and welfare of current and future generations. 2) The combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

Congress first passed the Corporate Average Fuel Economy law in 1975, which is to increase the fuel economy of cars and light trucks thereby reducing energy consumption. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the United States. On April 1, 2010, EPA and the Department of Transportation's National Highway Safety Administration announced a joint final rule establishing a National Program that would reduce greenhouse gas emissions and improve fuel economy for new cars and trucks sold in the United States. The first phase of the National Program would apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements. Together, these standards would cut carbon dioxide emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016). The EPA and the National Highway Safety Administration will now begin working on a second-phase joint rulemaking to establish national standards for light-duty vehicles for model years 2017 and beyond.

California

There has been significant legislative and regulatory activity that affects climate change and greenhouse gases in California, as discussed below.

Title 24. Although not originally intended to reduce greenhouse gases, California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. The 2008 standards became effective January 1, 2010. The requirement for when the 2008 standards must be followed is dependent on when the application for the building permit is submitted. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions.

California Green Building Standards. On January 12, 2010, the State Building Standards Commission unanimously adopted updates to the California Green Building Standards Code, which will go into effect on January 1, 2011. The Code is a comprehensive and uniform regulatory code for all residential, commercial and K-14 school buildings.

The California Green Building Standards Code does not prevent a local jurisdiction from adopting a more stringent code as state law provides methods for local enhancements. The Code recognizes that many jurisdictions have developed existing construction and demolition ordinances, and defers to them as the ruling guidance provided they provide a minimum 50 percent diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. State building code provides the minimum standard, which buildings need to meet in order to be certified for occupancy. Enforcement is generally through the local building official.

The California Green Building Standards Code will require:

- A minimum 50 percent diversion of construction and demolition waste from landfills, increasing voluntarily to 65 and 75 percent for new homes and 80 percent for commercial projects;
- 20 percent mandatory reduction in indoor water use with voluntary goal standards for 30, 35 and 40 percent reductions;
- Separate water meters for buildings in excess of 50,000 square feet or buildings projected to consume more than 1,000 gallons per day;
- Moisture-sensing irrigation systems for larger landscaped areas;
- Low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring and particle board;
- Mandatory inspections of energy systems (i.e. heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies.

AB 1493. California AB 1493 (Pavley), enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light duty trucks. The regulation was stalled by automaker lawsuits and by the EPA's denial of an implementation waiver. On January 21, 2009, the ARB requested that EPA reconsider its previous waiver denial. On January 26, 2009, President Obama directed that EPA assess whether the denial of the waiver was appropriate. On June 30, 2009, EPA granted the waiver request, which begins with motor vehicles in the 2009 model year.

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

- By 2010, reduce greenhouse gas emissions to 2000 levels.
- By 2020, reduce greenhouse gas emissions to 1990 levels.
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be an aggressive, but achievable, mid-term target. The Climate Action Team's Report to the Governor in 2006 contains recommendations and strategies to help ensure the 2020 targets in Executive Order S-3-05 are met.

Executive Order S-01-07. The Governor signed Executive Order S-01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. It also requires that a Low Carbon Fuel Standard for transportation fuels be established for California.

In particular, the executive order established a Low-Carbon Fuel Standard and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, the ARB, the University of California, and other agencies to develop and propose protocols for measuring the “life-cycle carbon intensity” of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by California Energy Commission on December 24, 2007) and was submitted to ARB for consideration as an “early action” item under AB 32. The ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

SB 1368. In 2006, the State Legislature adopted Senate Bill (SB) 1368, which was subsequently signed into law by the Governor. SB 1368 directs the California Public Utilities Commission to adopt a performance standard for greenhouse gas emissions 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 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. Because of 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’s energy demand, as SB 1368 will effectively prohibit California utilities from purchasing power from out-of-state producers that cannot satisfy the performance standard for greenhouse gas emissions required by SB 1368.

SB 97. Passed in August 2007, SB 97 added Section 21083.05 to the Public Resources Code. The code states “(a) On or before July 1, 2009, the Office of Planning and Research shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the Office of Planning and Research pursuant to subdivision (a).” Section 21097 was also added to the Public Resources Code. It provided CEQA protection until January 1, 2010 for transportation projects funded by the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 or projects funded by the Disaster Preparedness and Flood Prevention Bond Act of 2006, in stating that the failure to adequately analyze the effects of greenhouse gases would not violate CEQA.

On April 13, 2009, OPR submitted to the Secretary for Natural Resources its recommended amendments to the State CEQA Guidelines for addressing greenhouse gas emissions, as required by SB 97. On July 3, 2009, the Natural Resources Agency commenced the Administrative Procedure Act rulemaking process for certifying and adopting these amendments pursuant to Public Resources Code section 21083.05. Following a 55-day public comment period and two public hearings, the Natural Resources Agency proposed revisions to the text of the proposed Guidelines amendments.

The Natural Resources Agency transmitted the adopted amendments and the entire rulemaking file to the Office of Administrative Law on December 31, 2009. On February 16, 2010, the Office of Administrative Law approved the Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The Amendments became effective on March 18, 2010.

AB 32. The California State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires that greenhouse gases emitted in California be reduced to 1990 levels by the year 2020. "Greenhouse gases" as defined under AB 32 include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. ARB is the State agency charged with monitoring and regulating sources of greenhouse gases. AB 32 states the following:

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

The ARB Board approved the 1990 greenhouse gas emissions level of 427 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) on December 6, 2007 (ARB 2007). Therefore, emissions generated in California in 2020 are required to be equal to or less than 427 $MMTCO_2e$. Emissions in 2020 in a "business as usual" scenario are estimated to be 596 $MMTCO_2e$.

Under AB 32, the ARB published its Final Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California. Discrete early action measures are currently underway or are enforceable by January 1, 2010. The ARB has 44 early action measures that apply to the transportation, commercial, forestry, agriculture, cement, oil and gas, fire suppression, fuels, education, energy efficiency, electricity, and waste sectors. Of these early action measures, nine are considered discrete early action measures, as they are regulatory and enforceable by January 1, 2010. The ARB estimates that the 44 recommendations are expected to result in reductions of at least 42 $MMTCO_2e$ by 2020, representing approximately 25 percent of the 2020 target.

The ARB approved the Climate Change Scoping Plan in December 2008. The Scoping Plan contains measures designed to reduce the State's emissions to 1990 levels by the year 2020. The Scoping Plan identifies recommended measures for multiple greenhouse gas emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. The measures in the Scoping Plan will be in place by 2012. Most of the measures target the transportation and electricity sectors. As stated in the Scoping Plan, the key elements of the strategy for achieving the 2020 greenhouse gas target include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

In addition, the Scoping Plan differentiates between "capped" and "uncapped" strategies. "Capped" strategies are subject to the proposed cap-and-trade program. The Scoping Plan states that the inclusion of these emissions within the cap-and trade program will help ensure that the year 2020 emission targets are met despite some degree of uncertainty in the emission reduction estimates for any individual measure. Implementation of the capped strategies is calculated to achieve a sufficient amount of reductions by 2020 to achieve the emission target contained in AB 32. "Uncapped" strategies that will not be subject to the cap-and-trade emissions caps and requirements are provided as a margin of safety by accounting for additional greenhouse gas emission reductions.

SB 375. Passing the Senate on August 30, 2008, SB 375 was signed by the Governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of greenhouse gas emissions, which emits over 40 percent of the total greenhouse gas emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing greenhouse gas emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies. Concerning CEQA, SB 375, section 21159.28 states that CEQA findings determinations for certain projects are not required to reference, describe, or discuss (1) growth inducing impacts or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network if the project:

1. Is in an area with an approved sustainable communities strategy or an alternative planning strategy that the ARB accepts as achieving the greenhouse gas emission reduction targets.
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies).
3. Incorporates the mitigation measures required by an applicable prior environmental document.

Executive Order S-13-08. Executive Order S-13-08 indicates that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the order, in December 2009, the California Natural Resources Agency released its 2009 California Climate Adaptation Strategy (CNRA 2009). The Strategy is the "…first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

SB 1078, SB 107, and Executive Order S-14-08. On September 12, 2002, Governor Gray Davis signed SB 1078 requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020.

CEQA Guidelines Update. As required by SB 97, the Governor's Office of Planning and Research prepared and transmitted recommended Amendments to the CEQA Guidelines for greenhouse gas emissions to the California Natural Resources Agency on April 13, 2009. After a public comment period, the Natural Resources Agency proposed revisions to the text of the Proposed Guidelines Amendments. The Natural Resources Agency provided additional public comment time on the revised text. The Natural Resources Agency adopted the CEQA Guidelines Amendments with minor, non-substantial changes.

The Natural Resources Agency transmitted the Adopted Amendments and the entire rulemaking file to the Office of Administrative Law on December 31, 2009. The Office of Administrative Law reviewed the Adopted Amendments and the Natural Resources Agency's rulemaking file. The Adopted Amendments were filed with the Secretary of State, and became effective March 18, 2010.

The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of greenhouse gas emissions in draft CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

A new section, CEQA Guidelines Section 15064.4, was added to assist agencies in determining the significance of greenhouse gas emissions. The new section allows agencies the discretion to determine whether a quantitative or qualitative analysis is best for a particular project. Importantly, however, little guidance is offered on the crucial next step in this assessment process—how to determine whether the project's estimated greenhouse gas emissions are significant or cumulatively considerable.

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 emissions 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 a determination that a project's cumulative effect is not cumulatively considerable, according to proposed Section 15183.5(b).

In addition, the amendments revised Appendix F of the CEQA Guidelines, which focuses on Energy Conservation, and Appendix G, which includes the sample Environmental Checklist Form. The Checklist was also amended to include greenhouse gas questions, as identified in the Threshold section of this document.

Regional

The project is within the South Coast Air Basin, which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD).

SCAQMD Regulation XXVII, Climate Change

SCAQMD Regulation XXVII currently includes three rules:

- The purpose of Rule 2700 is to define terms and post global warming potentials.

- The purpose of Rule 2701, SoCal Climate Solutions Exchange, is to establish a voluntary program to encourage, quantify, and certify voluntary, high quality certified greenhouse gas emission reductions in the SCAQMD.
- Rule 2702, Greenhouse Gas Reduction Program, was adopted on February 6, 2009. The purpose of this rule is to create a Greenhouse Gas Reduction Program for greenhouse gas emission reductions in the SCAQMD. The SCAQMD will fund projects through contracts in response to requests for proposals or purchase reductions from other parties. All reductions will follow approved protocols in the rule. The reductions can be purchased for a variety of uses. Projects funded through this program may also reduce criteria or toxic pollutants that can help local and regional air quality.

SECTION 3: THRESHOLDS

3.1 - CEQA Guidelines

The following significance thresholds are contained in Appendix G of the CEQA Guidelines. A significant impact would occur if the project would:

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

CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a project would have a significant impact on air quality, the type, level, and impact of emissions generated by the project must be evaluated.

While the final determination of whether or not a project is significant is within the purview of the lead agency pursuant to Section 15064(b) of the CEQA Guidelines, SCAQMD recommends that its quantitative air pollution thresholds be used to determine the significance of project emissions. If the lead agency finds that the project has the potential to exceed these air pollution thresholds, the project should be considered to have significant air quality impacts.

3.2 - Regional Significance Thresholds

The following regional significance thresholds have been established by SCAQMD. Projects within the South Coast Air Basin region with construction or operational emissions in excess of any of the thresholds presented in Table 5 are considered significant.

Regional thresholds were set to protect air resources within the basin as a whole, as project emissions can potentially contribute to the existing emission burden and possibly affect the attainment of ambient air quality standards. These thresholds set daily limits for construction and operational emissions.

Table 5: SCAQMD Regional Thresholds

Pollutant	Construction (pounds per day)	Operation (pounds per day)
Nitrogen Oxides (NO_x)	100	55
Volatile Organic Compounds (VOC)	75	55
Particulate Matter (PM_{10})	150	150
Particulate Matter ($PM_{2.5}$)	55	55
Sulfur Oxides (SO_x)	150	150
Carbon Monoxide (CO)	550	550
Source: South Coast Air Quality Management District, SCAQMD 2009c.		

3.3 - Local Significance Thresholds

The SCAQMD Governing Board adopted a methodology for calculating localized air quality impacts through localized significance thresholds (LSTs), which is consistent with SCAQMD's Environmental Justice Enhancement 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 state or national ambient air quality standard.

The LSTs are developed based on the ambient concentrations of that pollutant for each source receptor area and are applicable to NO_x, CO, PM_{10}, and $PM_{2.5}$. LSTs were developed in recognition of the fact that criteria pollutants such as CO, NO_x, and PM_{10} and $PM_{2.5}$ in particular, can have local impacts as well as regional impacts. LSTs were set to protect sensitive receptors near onsite project emissions.

To facilitate the localized assessment process, the SCAQMD LST methodology (SCAQMD 2008) provides a series of look-up tables that contain LSTs for the Source Receptor Areas (SRAs) within the basin. If onsite emissions were above the LST, the project would be considered to have a significant air quality impact. This methodology applies to projects with disturbed areas up to 5 acres in area.

The current look-up tables cover the years 2006 through 2008. There are LSTs for construction and operation. The LSTs were obtained from the look-up tables in the SCAQMD Final LST Methodology for a project with 2 acres disturbed during construction in SRA 32. The LSTs for operation are for 5 acres of disturbed area. The distance to the nearest sensitive receptor is assumed at 25 meters. The LSTs are summarized in Table 6.

Table 6: SCAQMD Localized Thresholds

Pollutant	Localized Significance Threshold (pounds per day)	
	Construction	Operation
Nitrogen dioxide	170	270
Carbon monoxide	1,232	2,193
PM_{10}	6	4
$PM_{2.5}$	5	2
Source: South Coast Air Quality Management District (SCAQMD 2006 and SCAQMD 2008).		

Carbon Monoxide Hotspot Analysis Threshold

Carbon monoxide (CO) "hotspot" thresholds were established to ensure that emissions of CO associated with traffic impacts from a project in combination with CO emissions from existing and forecasted regional traffic do not exceed state or federal ambient air quality standards for CO at any traffic intersection impacted by the project. Project concentrations may be considered significant if a CO hotspot intersection analysis determines that project generated CO concentrations cause a localized violation of the state CO 1-hour standard of 20 ppm, state CO 8-hour standard of 9 ppm, federal CO 1-hour standard of 35 ppm, or federal CO 8-hour standard of 9 ppm.

3.4 - Climate Change Thresholds

CEQA requires that Lead Agencies inform decision makers and the public regarding potential significant environmental effects of proposed projects and feasible ways that environmental damage can be avoided or reduced, through feasible mitigation measures and/or project alternatives. The Lead Agencies must also disclose the reasons why a project is approved if significant environmental effects are involved (CEQA Guidelines Section 15002). CEQA also requires Lead Agencies to evaluate potential environmental effects based on, to the fullest extent possible, scientific and factual data (CEQA Guidelines Section 15064[b]). Significance conclusions must be based on substantial evidence, which includes facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts (CEQA Guidelines Section 15064f [5]).

As discussed above in the Climate Change Regulatory Section, "CEQA Guidelines Update", Amendments to the CEQA Guidelines became effective March 18, 2010.

The following checklist questions will be the thresholds used for this project. Would the project:

> Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

SECTION 4: EMISSIONS ANALYSIS

This section calculates the expected emissions from the construction and operation of the project as a necessary requisite for assessing the regulatory significance of project emissions on a regional level.

4.1 - Short-Term Impacts

Short-term impacts refer to emissions generated during construction because they occur on a short-term basis. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and prevailing weather conditions. Construction emissions result from onsite and offsite activities. Onsite emissions principally consist of exhaust emissions (NO_x, SO_x, CO, VOC, PM_{10}, and $PM_{2.5}$) from heavy-duty construction equipment, motor vehicle operation, and fugitive dust (mainly PM_{10}) from disturbed soil. Offsite emissions are caused by motor vehicle exhaust from delivery vehicles, worker traffic, and road dust (PM_{10} and $PM_{2.5}$). Construction-related activities include the following:

- Laying and grooming of trail surface and parking areas
- Construction of a small bridge and/or miscellaneous construction activities

Portions of the project site would require fine grading, with approximately 2 acres being the maximum acreage graded on any one day. It is assumed that construction equipment would operate for 6 hours per day during the grading phase and the entire construction period would last for 8 weeks.

Note that details regarding construction, including the length of construction, the construction equipment list, and construction phase details were not available for incorporation into this assessment. Therefore, a worst-case scenario was developed to portray the maximum emissions on any one day during the various construction activities. One assumption made was that 5,000 cubic yards of soil or decomposed granite would be imported. The emissions for this import of material are contained within the fine grading phase of construction.

SCAQMD Rule 403 requires fugitive dust generating activities follow best available control measures (BACM) to reduce emissions of fugitive dust. These BACM are accounted for in URBEMIS as "mitigation" because URBEMIS categorizes the BACM as "mitigation," even though they are technically not mitigation. The BACM and the associated measure in URBEMIS are displayed in Table 7.

Table 7: Best Available Control Measures - SCAQMD Rule 403

Best Available Control Measure[1]	Associated Measure in URBEMIS [2]
Clearing and Grubbing 02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing 02-2 Stabilize soil during clearing and grubbing activities 02-3 Stabilize soil immediately after clearing and grubbing activities Earth Moving Activities 08-1 Pre-apply water to depth of proposed cuts 08-2 Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction 08-3 Stabilize soils once earth-moving activities are complete	- Water exposed surfaces two times per day
Import/Export of Bulk Materials 09-1 Stabilize material while loading to reduce fugitive dust emissions 09-2 Maintain at least six inches of freeboard on haul vehicles 09-3 Stabilize material while transporting to reduce fugitive dust emissions 09-4 Stabilize material while unloading to reduce fugitive dust emissions 09-5 Comply with Vehicle Code Section 23114	- Equipment loading/unloading
Landscaping 10-1 Stabilize soils, materials, slopes Guidance: Apply water to materials to stabilize; Maintain materials in a crusted condition; Maintain effective cover over materials; Stabilize sloping surfaces using soil until vegetation or ground cover can effectively stabilize the slopes; Hydroseed prior to rain season	- Replace ground cover in disturbed areas quickly
Staging Areas 13-1 Stabilize staging areas during use by limiting vehicle speeds to 15 miles per hour	- Reduce speed on unpaved roads to 15 miles per hour.
Traffic Areas for Construction Activities 15-1 Stabilize all off-road traffic and parking areas 15-2 Stabilize all haul routes 15-3 Direct construction traffic over established haul routes Guidance: Apply gravel/paving to all haul routes as soon as possible to all future roadway areas; Barriers can be used to ensure vehicles are only used on established parking areas/haul routes	- Haul road dust watering 2 times per day
Sources: 1) SCAQMD Rule 403; 2) URBEMIS output in Appendix A.	

Unmitigated Short-Term Emissions

Table 8 summarizes these construction-related emissions (without mitigation). The emission estimates were derived using the URBEMIS2007 Version 9.2.4 emission model. The information shown in Table 8 indicates that the SCAQMD regional emission thresholds would not be exceeded. Therefore, the short-term emissions are considered to have a less than significant regional impact.

Table 8: Short-Term Emissions

Source	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Import of material and laying and grooming of trails	4.3	41.7	20.0	0.0	5.2	2.5
Laying and grooming of trails	3.0	24.6	13.5	0.0	4.4	1.8
Small bridge/miscellaneous construction and grooming of trails	4.7	38.4	25.2	0.0	5.2	2.5
Maximum Daily Emissions	4.7	41.7	25.2	0.0	5.2	2.5
Significance Threshold	75	100	550	150	150	55
Significant Impact?	No	No	No	No	No	No

Note:
The maximum daily emissions refer to the maximum emissions that would occur in one day.
VOC = volatile organic compounds NOx = nitrogen oxides CO = carbon monoxide
SO_x = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
Source: URBEMIS output, Appendix A.

Level of Significance Before Mitigation

Less than significant.

Construction Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant.

4.2 - Long-Term Impacts

Operational, or long-term, emissions occur over the life of the project. Operational emissions include everyday horse, pedestrian, and cyclist usage, wind erosion and periodic trail maintenance.

Emissions from trail use, wind erosion, and fugitive dust from periodic trail maintenance were conservatively estimated at 0.5 pound of PM_{10} per acre per day. The closest industrial emission factor that could be related to the trail surface was the emission factor, 3.5 pounds total particulate matter per acre per day, for uncontrolled, open, inactive sand/gravel stockpiles in AP 42 Chapter 11.19-1 Background Document (EPA 2005). Though similarity between the decomposed granite trail surface and the surface of a sand/gravel stockpile exist, other assumptions about the trail surface can be made which further support the emission factor used for this analysis. These assumptions include the following: the trail has no exposed vertical profile and the surface would be compacted, both which inhibit the creation of fugitive dust; and PM_{10} emissions are only a portion of total particulate emissions. $PM_{2.5}$ emissions are 21 percent of PM_{10} emissions pursuant to the SCAQMD LST

Guidance (SCAQMD 2006). There would be approximately five miles of trail that range between seven feet and fifteen feet wide. This results in approximately five acres of trail area. The trails will use existing paved trails and newly constructed trails most likely made out of decomposed granite. It is assumed that SCAQMD Rule 403 would be complied with during trail maintenance, as Rule 403 applies to any activity or fabricated condition capable of generating fugitive dust.

The emissions from motor vehicles that would park at the project site were estimated using URBEMIS2007. It was assumed that an average of 20 cars/light duty trucks would park at the project site per day.

Although not contained within the project description, the trail might attract off-road vehicle users. Emission factors for the off-road highway vehicles were obtained using the EPA NONROAD model; the spreadsheets that outline the assumptions used are contained in Appendix A.

The operational emissions are show in Table 9. The project's emissions do not exceed the SCAQMD's regional significance thresholds and are considered a less than a significant impact to air quality.

Table 9: Operational Emissions

Source	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Trail fugitive dust (recreational use/wind erosion/maintenance)	0.0	0.0	0.0	0.0	2.5	0.5
Motor vehicles (summer)	0.2	0.2	1.9	0.0	0.3	0.1
Maintenance equipment	0.7	5.4	3.1	0.0	0.3	0.3
Off road recreational vehicles exhaust	0.1	0.0	0.2	0.0	0.0	0.0
Off road recreational vehicles fugitive dust	0.0	0.0	0.0	0.0	2.0	0.4
Total (Maximum daily)	1.0	5.6	5.2	0.0	5.1	1.3
Significance Threshold	55	55	550	150	150	55
Significant Impact?	No	No	No	No	No	No

VOC = volatile organic compounds NOx = nitrous oxides CO = carbon monoxide
SOx = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
Source: URBEMIS output, Appendix A.

4.3 - Criteria Pollutant Localized Analysis

The SCAQMD Governing Board adopted a methodology for calculating localized air quality impacts through localized significance thresholds (LSTs), which is consistent with SCAQMD's Environmental Justice Enhancement Initiative I-4. LSTs represent the maximum emissions from a project that would not cause or contribute to an exceedance of the most stringent applicable State or national ambient air quality standard.

Construction

The onsite emissions during construction are compared with the localized significance thresholds and are summarized in Table 10. Onsite emissions are from fugitive dust during grading and off-road diesel emissions. As shown in Table 10, unmitigated emissions during construction do not exceed the localized significance thresholds. Emissions are less than significant.

Table 10: Localized Significance Analysis (Construction)

Activity	Onsite Emissions (pounds per day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Import of material and trail grooming	24.6	12.3	4.4	1.8
Laying and grooming of trails	24.6	12.3	4.4	1.8
Small bridge/miscellaneous construction and grooming of trails	33.4	16.7	4.9	2.3
Maximum Daily Emissions	33.4	16.7	4.9	2.3
Localized Significance Threshold	170	1232	6	5
Exceed Threshold?	No	No	No	No

Note:
Each of the above activities does not occur at the same time; therefore, the maximum daily emissions represent the maximum emissions that would occur in one day.
Source: Onsite emissions from URBEMIS2007 output in Appendix A.

Operation

The onsite emissions during operation are compared with the localized significance thresholds and are summarized in Table 11. Onsite emissions are from fugitive dust during grading and off-road diesel emissions. As shown in Table 11, unmitigated emissions during operation exceed the localized significance threshold for PM_{10}.

Table 11: Localized Significance Analysis (Operation)

Activity	Onsite Emissions (pounds per day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Trail fugitive dust (recreational use/wind erosion/maintenance)	0.0	0.0	2.5	0.5
Maintenance equipment	5.4	3.1	0.3	0.3
Off road recreational vehicles exhaust	0.0	0.2	0.0	0.0
Off road recreational vehicles fugitive dust	0.0	0.0	2.0	0.4
Total	5.4	3.3	4.8	1.2
Localized Significance Threshold	270	2,193	4	2
Exceed Threshold?	No	No	Yes	No
Source: Onsite emissions from URBEMIS2007 output and spreadsheets in Appendix A.				

Implementation of mitigation measure AQ-1 would remove the off road recreational vehicle emissions and reduce total onsite emissions to below the localized significance thresholds, as shown in Table 12.

Table 12: Localized Significance Analysis (Operation, Mitigated)

Activity	Onsite Emissions (pounds per day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Trail fugitive dust (recreational use/wind erosion/maintenance)	0.0	0.0	2.5	0.5
Maintenance equipment	5.4	3.1	0.3	0.3
Off road recreational vehicles exhaust	0.0	0.0	0.0	0.0
Off road recreational vehicles fugitive dust	0.0	0.0	0.0	0.0
Total	5.4	3.1	2.8	0.8
Localized Significance Threshold	270	2,193	4	2
Exceed Threshold?	No	No	No	No
Source: Onsite emissions from URBEMIS2007 output and spreadsheets in Appendix A.				

4.4 - Carbon Monoxide Hotspot Analysis

A carbon monoxide (CO) hotspot is a localized concentration of CO that is above the State or national 1-hour or 8-hour CO ambient air standards. Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles. It is anticipated that there would be an average of 10 cars/light trucks per day that would access the project site. This small number of cars does not require a CO hotspot analysis. It is anticipated that localized CO hotspots would be less than significant.

SECTION 5: IMPACT ANALYSIS

This section contains an analysis of the criteria in the CEQA Guidelines as well as an assessment of project conformity with the General Plan.

5.1 - Conformance with Air Quality Management Plan

The CEQA Guidelines indicate that a significant impact would occur if the project would conflict with or obstruct implementation of the applicable air quality plan. This assessment uses the following criteria for determining project consistency with the current AQMP, as discussed below.

According to the 1993 SCAQMD Handbook, there are two criteria to use to determine if a project would conflict with the AQMP. One criterion is that a project would conflict with the AQMP if it will exceed the assumptions in the AQMP in 2010 or increments based on the year of project build-out and phase. The Handbook indicates that key assumptions to use in this analysis are population number and location and a regional housing needs assessment. The parcel-based land use and growth assumptions and inputs used in the Regional Transportation Model run by the Southern California Association of Governments (SCAG) that generated the mobile inventory used by the SCAQMD for AQMP is not available. Therefore, this indicator is not applicable.

Project's Contribution to Air Quality Violations

According to the SCAQMD (1993, page 12-3), the project is consistent with the AQMP if the 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 timely attainment of air quality standards or the interim emission reductions specified in the AQMP.

As shown in Section 4.3, the project could violate the PM_{10} ambient air quality standard during operation without mitigation. Therefore, the project does not meet this criterion.

If a project's emissions exceed the SCAQMD regional thresholds for NO_x, VOC, PM_{10}, or $PM_{2.5}$, it follows that the emissions could cumulatively contribute to an exceedance of a pollutant for which the basin is in nonattainment (ozone, PM_{10}, $PM_{2.5}$) at a monitoring station in the basin. An exceedance of a nonattainment pollutant at a monitoring station would not be consistent with the goals of the AQMP - to achieve attainment of pollutants. As discussed in Section 4.1 and 4.2, the project would not exceed the regional significance thresholds.

Control Measures

The next criterion is compliance with the control measures in the 2003 and the 2007 AQMPs. The 2007 AQMP has been adopted by the SCAQMD and ARB, but the EPA has not adopted it. Therefore, the two plans are discussed separately herein.

The 2003 AQMP contains a number of land use and transportation control measures including the following: the District's Stationary and Mobile Source Control Measures; State Control Measures proposed by ARB; and Transportation Control Measures provided by SCAG. ARB's strategy for reducing mobile source emissions include the following approaches: new engine standards; reduce emissions from in-use fleet, require clean fuels, support alternative fuels and reduce petroleum dependency, work with EPA to reduce emissions from national and state sources, and pursue long-term advanced technology measures (AQMP 2003, page 4-25). Transportation control measures provided by SCAG include those contained in the Regional Transportation Plans (RTP), the most current version being the 2008 RTP. The RTP has control measures to reduce emissions from on-road sources by incorporating strategies such as high occupancy vehicle interventions, transit, and information-based technology interventions (AQMP 2003, page 4-19). The measures implemented by ARB and SCAG affect the project indirectly by regulating the vehicles that the residents may use and regulating public transportation. The project indirectly would comply with the control measures set by ARB and SCAG.

The focus of the 2007 AQMP is to demonstrate attainment of the federal $PM_{2.5}$ ambient air quality standard by 2015 and the federal 8-hour ozone standard by 2024, while making expeditious progress toward attainment of state standards. The proposed strategy, however, does not attain the previous federal 1-hour ozone standard by 2010 as previously required prior to the recent change in federal regulations. This is to be accomplished by building upon improvements from the previous plans and incorporating all feasible control measures while balancing costs and socioeconomic impacts. The 2007 AQMP indicates that $PM_{2.5}$ is formed mainly by secondary reactions or sources. Therefore, instead of reducing fugitive dust, the strategy for reducing $PM_{2.5}$ focuses on reducing precursor emissions of SO_x, directly emitted $PM_{2.5}$, NO_x, and VOC.

The Final 2007 AQMP control measures consist of four components. The first component is SCAQMD's Stationary and Mobile Source Control Measures. The Final 2007 AQMP includes 30 short-term and mid-term stationary and seven mobile source control measures for SCAQMD implementation. A complete listing of the measures is in the 2007 AQMP and includes measures such as VOC reductions from gasoline transfer and dispensing facilities, further NO_x reductions from space heaters, localized control program for PM emission hot spots, urban heat island, energy efficiency and conservation, etc. Some of the measures will become new rules and some will be amendments to existing rules. When the rules pass, the project inhabitants will follow the applicable rules.

The second component is ARB's Proposed State Strategy, which includes short- and mid-term control measures aimed at reducing emissions from sources that are primarily under state jurisdiction, including on-road and off-road mobile sources, and consumer products. These measures are required in order to achieve the remaining emission reductions necessary for $PM_{2.5}$ attainment. ARB's strategy includes measures such as improvements to California's Smog Check Program, expanded passenger vehicle retirement, cleaner in-use heavy-duty trucks, reductions from port related sources, cleaner off-road equipment, evaporative and exhaust strategies, pesticide strategies, etc. When these measures are implemented by the ARB, the project would be required to follow them.

The third component is SCAQMD Staff's Proposed Policy Options to Supplement ARB's Control Strategy. SCAQMD staff believes that a combination of regulatory actions and public funding is the most effective means of achieving emission reductions. As such, the 2007 Final AQMP proposes three policy options for the decision makers to consider in achieving additional reductions. The first option is the SCAQMD proposed additional control measures as a menu of selections further reducing emissions from sources primarily under state and federal jurisdiction. The second option is to have the state fulfill its NO_x emission reduction obligations under the 2003 AQMP by 2010 for its short-term defined control measures plus additional reductions needed to meet the NO_x emission target between 2010 and 2014. The third option is based on the same rate of progress under Policy Option 1, but it relies heavily on public funding assistance to achieve the needed NO_x reductions via accelerated fleet turnover to post-2010 on-road emission standards or the cleanest off-road engine standards in effect today or after 2010. This strategy does not apply to the project.

The fourth component is Regional Transportation Strategy and Control Measures provided by SCAG. Transportation plans within the basin are statutorily required to conform to air quality plans in the region, as established by the 1990 Federal Clean Air Act and reinforced by other Acts. The region must demonstrate that its transportation plans and programs conform to the mandate to meet the national ambient air quality standards in a timely manner. The long-term transportation planning requirements for emission reductions from on-road mobile sources within the basin are met by SCAG's Regional Transportation Plan (RTP), which is developed every four years with a 20-year planning horizon. The biennial Regional Transportation Improvement Program (RTIP) requires that the short-term implementation requirements of the Transportation Conformity Rule be met by SCAG. The first two years of the program are fiscally constrained and demonstrate timely implementation of a special category of transportation projects called Transportation Control Measures (TCMs). In general, TCMs are those projects that provide emission reductions from on-road mobile sources, based on changes in the patterns and modes by which the regional transportation system is used. Strategies are grouped into three categories: high occupancy vehicle strategy; transit and systems management; and information-based technology (traveling during a less congested time of day). SCAG approved the transportation measures in the RTP, which have been included in the region's air quality plans. The TCMs will be implemented and will subsequently reduce emissions in the basin. The inhabitants of the project that will use the transportation system may experience less congestion due to the implementation of the TCMs.

The project would comply with all of the SCAQMD's applicable rules and regulations. Therefore, the project complies with this criterion.

Level of Significance Before Mitigation

Potentially significant.

Mitigation Measures

Mitigation measure AQ-1 is required.

Level of Significance After Mitigation

Less than significant.

5.2 - Potential for Air Quality Standard Violation

The CEQA Guidelines indicate that a significant impact would occur if the project would violate any air quality standard or contribute substantially to an existing or projected air quality violation.

LSTs are specific to each source receptor area. If the project results in emissions that do not exceed those thresholds, it follows that those emissions would not cause or contribute to a local exceedance of the appropriate ambient air quality standard.

The localized construction analysis contained in Section 4.3 demonstrates that without mitigation, the project would not exceed the LSTs for CO, nitrogen dioxide, PM_{10}, or $PM_{2.5}$ and would therefore not exceed the ambient air quality standards for CO, nitrogen dioxide, PM_{10}, or $PM_{2.5}$.

The LST analysis for operational emissions demonstrates that the project would not exceed the LSTs for CO, nitrogen dioxide, or $PM_{2.5}$. However, without mitigation, the project could exceed the LST for PM_{10}. Therefore, during operation, the project could have the potential to violate an ambient air quality standard for PM_{10}.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

Mitigation measure AQ-1 is required.

Level of Significance After Mitigation

Less than significant. As shown in Table 12 above, implementation of mitigation measure AQ-1 would reduce impacts to less than the LSTs and therefore to less than significant.

5.3 - Cumulative Impacts

According to the checklist in the CEQA Guidelines, a project would create a significant impact if it would "result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)."

Section 15130(b) of the CEQA Guidelines states the following:

> The following elements are necessary to an adequate discussion of significant cumulative impacts: 1) Either: (A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or (B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact.

In accordance with CEQA Guidelines 15130(b), this analysis of cumulative impacts incorporates a summary of projections. The following tiered approach is to assess cumulative air quality impacts.

1. Consistency with the regional thresholds for nonattainment pollutants;
2. Project consistency with existing air quality plans; and
3. Assessment of the cumulative health effects of the pollutants.

The SCAQMD 1993 Handbook suggests three voluntary approaches to determining cumulative significance. The first approach is a 1-percent-per-year reduction (or 18 percent over 18 years to the year 2010) in project emissions of VOC, NO_x, CO, PM_{10}, and SO_x. This approach is not straightforward and operational reductions are not easy to quantify. The second approach is not applicable because it relies on SCAQMD Regulation XV, which was repealed in 1995. The third approach is to reduce the rate of growth in vehicle miles traveled (VMT) and trips. In this approach, the rate of growth in VMT and trips "should be held to the rate of population or household growth." Data that was used by SCAG in the AQMP should be used in this approach; however, that data is not available. Therefore, the approaches in the 1993 SCAQMD Handbook are not used.

Regional Analysis

If an area is in nonattainment for a criteria pollutant, then the background concentration of that pollutant has historically been over the ambient air quality standard. It follows that if a project exceeds the regional threshold for that nonattainment pollutant, then it would result in a cumulatively considerable net increase of that pollutant and result in a significant cumulative impact.

The South Coast Air Basin is in nonattainment for PM_{10}, $PM_{2.5}$, and ozone. Therefore, if the project exceeds the regional thresholds for PM_{10}, or $PM_{2.5}$, then it contributes to a cumulatively considerable impact for those pollutants. Additionally, if the project exceeds the regional threshold for NO_x or VOC, then it follows that the project would contribute to a cumulatively considerable impact for ozone.

The regional significance analysis demonstrated that emissions would not be over the regional significance thresholds for any pollutants. Therefore, the project does not contribute to a significant cumulative impact according to this criterion.

Plan Approach

The geographic scope for cumulative criteria pollution from air quality impacts is the South Coast Air Basin, because that is the area in which the air pollutants generated by the sources within the basin circulate and are often trapped. The SCAQMD is required to prepare and maintain an AQMP and a State Implementation Plan to document the strategies and measures to be undertaken to reach attainment of ambient air quality standards. While the SCAQMD does not have direct authority over land use decisions, it is recognized that changes in land use and circulation planning are necessary to maintain clean air. The SCAQMD evaluated the entire Basin when it developed the AQMP.

According to the analysis contained in Section 5.1, the project is not consistent with the most recent AQMP without mitigation. Therefore, mitigation measure AQ-1 is required and the project does not meets this criterion without mitigation.

Cumulative Health Impacts

The Basin is in nonattainment for ozone, PM_{10}, and $PM_{2.5}$, which means that the background levels of those pollutants are at times higher than the ambient air quality standards. The air quality standards were set to protect public health, including the health of sensitive individuals (such as the elderly, children, and the sick). Therefore, when the concentration of those pollutants exceeds the standard, it is likely that some sensitive individuals in the population would experience health effects as described above in Table 3. However, the health effects are a factor of the dose-response curve. Concentration of the pollutant in the air (dose), the length of time exposed, and the response of the individual are factors involved in the severity and nature of health impacts. If a significant health impact results from project emissions, it does not mean that 100 percent of the population would experience health effects.

The regional analysis of construction emissions indicates that emissions would be under the regional significance thresholds. Therefore, no cumulative health effects would occur because of the proposed project.

Level of Significance Before Mitigation

Potentially significant.

Mitigation Measures

Mitigation measure AQ-1 is required.

Level of Significance After Mitigation

Less than significant.

5.4 - Expose Sensitive Receptors to Substantial Pollutant Concentrations

The CEQA Guidelines indicate that a significant impact would occur if the project would expose sensitive receptors to substantial pollutant concentrations.

The localized significance threshold analysis uses thresholds that represent the maximum emissions for a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard (SCAQMD 2003). The thresholds are developed based on the ambient concentrations of that pollutant for each source receptor area and on the location of the sensitive receptors. If the project results in emissions under those thresholds, it follows that the project would not cause or contribute to an exceedance of the standard. If the standards are not exceeded at the sensitive receptor locations, it follows that the receptors would not be exposed to substantial pollutant concentrations.

The localized construction analysis contained in Section 4.3 demonstrates that without mitigation, the project would not exceed the LSTs for CO, nitrogen dioxide, PM_{10}, or $PM_{2.5}$ and would therefore not exceed the ambient air quality standards for CO, nitrogen dioxide, PM_{10}, or $PM_{2.5}$.

The LST analysis for operational emissions demonstrates that the project would not exceed the LSTs for CO, nitrogen dioxide, or $PM_{2.5}$. However, without mitigation, the project could exceed the LST for PM_{10}. Therefore, during operation, the project could have the potential to violate an ambient air quality standard for PM_{10}. Without mitigation, the project could cause the following health effects to the residents within 25 meters from exposure to PM_{10}: (a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; and/or (c) Increased risk of premature death from heart or lung diseases in the elderly. However, with implementation of mitigation measure AQ-1, the project would not expose sensitive receptors to significant pollutant levels that would cause health effects.

The construction equipment would emit diesel particulate matter, which is a carcinogen. However, the diesel particulate matter emissions are short term in nature. Determination of risk from diesel particulate matter is considered over a 70-year exposure time. Therefore, considering the dispersion of the emissions and the short time frame, exposure to diesel particulate matter is anticipated to be less than significant.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

Mitigation measure AQ-1 is required.

Level of Significance After Mitigation

Less than significant.

5.5 - Odors

The CEQA Guidelines indicate that a significant impact would occur if the project would create objectionable odors affecting a substantial number of people.

Background Information

Individual responses to odors are highly variable and can result in a variety of effects. Generally, the impact of an odor results from a variety of interacting factors such as frequency, duration, offensiveness, location, and sensory perception. The frequency is a measure of how often an individual is exposed to an odor in the ambient environment. The intensity refers to an individual's or group's perception of the odor strength or concentration. The duration of an odor refers to the elapsed time over which an odor is experienced. The offensiveness of the odor is the subjective rating of the pleasantness or unpleasantness of an odor. The location accounts for the type of area in which a potentially affected person lives, works or visits; the type of activity they are engaged in, and the sensitivity of the impacted receptor.

Sensory perception has four major components: detectability, intensity, character, and hedonic tone. The detection (or threshold) of an odor is based on a panel of responses to the odor. There are two types of thresholds: the odor detection threshold and the recognition threshold. The detection threshold is the lowest concentration of an odor that will elicit a response in a percentage of the population, typically presented as the mean (or 50 percent of the population) but is sometimes indicated as 100 percent or 10 percent. The recognition threshold is the minimum concentration that is recognized as having a characteristic odor quality by x percent (usually 50 percent) of the population (AIHA 1989). The intensity refers to the perceived strength of the odor. The odor character is what the substance smells like. The hedonic tone is a judgment of the pleasantness or unpleasantness of the odor. The hedonic tone varies based on subjective experience, frequency, odor character, odor intensity, and duration.

Odor is typically a warning system that prevents animals and humans from consuming spoiled food or toxic materials. Odor-related symptoms reported in a number of studies include nervousness, headache, sleeplessness, fatigue, dizziness, nausea, loss of appetite, stomach ache, sinus congestion, eye irritation, nose irritation, runny nose, sore throat, cough, and asthma exacerbation (SCAQMD 2007a).

The SCAQMD's role is to protect the public's health from air pollution by overseeing and enforcing regulations (SCAQMD 2007a). The SCAQMD's resolution activity for odor compliance is mandated under California Health & Safety Code Section 41700, and falls under AQMD Rule 402. This rule on Public Nuisance Regulation states: "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals".

The SCAQMD indicates that the number of overall complaints has declined over the last five years. Over the last four years, odor complaints make up 50 to 55 percent of the total nuisance complaints. Over the past decade, odors from paint and coating operations have decreased from 27 to 7 percent and odors from refuse collection stations has increased from 9 to 34 percent (SCAQMD 2007a).

Project Analysis

Land uses typically considered associated with odors include wastewater treatment facilities, waste-disposal facilities, or agricultural operations. The project does not contain land uses typically associated with emitting objectionable odors. Horses would likely utilize the proposed trails. Horses can be associated with odors. However, these odors would be minimal, would dissipate with distance, and should not reach an objectionable level at the neighboring residences.

Diesel exhaust and VOCs would be emitted during construction of the project, which are objectionable to some; however, emissions would disperse rapidly from the project site and therefore should not reach an objectionable level at neighboring residences.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant.

5.6 - Conformance with General Plan Policies

The County of San Bernardino General Plan was updated in 2007 (GP 2007). The Conservation Element of the General Plan contains air quality goal CO 4, which states, "the County will ensure good air quality for its residents, businesses, and visitors to reduce impacts on human health and the economy." The goal is supported by various policies.

The General Plan does not contain goals or policies that relate directly to climate change, which resulted in it being sued by the California Office of the Attorney General. The settlement agreement of that lawsuit required the County of San Bernardino to prepare a General Plan amendment that adds a policy that describes the County's goal of reducing those greenhouse gas emissions reasonably attributable to the County's discretionary land use decisions and the County's internal government operations, and calls for adoption of a Greenhouse Gas Emissions Reduction Plan. The General Plan update and the reduction plan have not been completed as of the date of this report. However, some of the policies in the Conservation Element would likely reduce greenhouse gas emissions as well as the other criteria pollutant emissions because they attempt to reduce vehicle miles traveled and increase energy efficiency.

The General Plan policies are contained in Table 13 below. As shown in the table, with mitigation, the project is consistent with the feasible and applicable policies.

Table 13: Consistency with County of San Bernardino General Plan Air Quality Policies

General Plan Policy	Project Consistency
CO 4.1 Because developments can add to the wind hazard (due to increased dust, the removal of wind breaks, and other factors), the County will require either as mitigation measures in the appropriate environmental analysis required by the County for the development proposal or as conditions of approval if no environmental document is required, that developments in areas identified as susceptible to wind hazards to address site-specific analysis of: a. Grading restrictions and/or controls on the basis of soil types, topography or season. b. Landscaping methods, plant varieties, and scheduling to maximize successful revegetation. c. Dust-control measures during grading, heavy truck travel, and other dust generating activities.	The proposed project would follow dust control requirements contained in SCAQMD Rule 403. Mitigation measure AQ-2 requires drought tolerant native landscaping.
CO 4.4 Because congestion resulting from growth is expected to result in a significant increase in the air quality degradation, the County may manage growth by insuring the timely provision of infrastructure to serve new development.	Not applicable because the project is not anticipated to generate a large number of motor vehicle trips.
Program CO 4.4(1) Consistent with the land use designations in the Land Use Policy Map (see the Land Use Element) that will improve growth management at a subregional level in relation to major activity centers, review new development to encourage new intensified development around transit nodes and along transit corridors.	Not applicable. However, the project would provide recreational opportunities in the area thereby potentially reducing trips made to other locations.
Source of General Plan Policy: San Bernardino County General Plan (GP 2007) Source of Project Consistency: Michael Brandman Associates	

5.7 - Greenhouse Gases

5.7.1 - Project Inventory

The project would generate a variety of greenhouse gases during construction and operation, including several defined by AB 32 such as carbon dioxide, methane and nitrous oxide.

The project may also emit greenhouse gases that are not defined by AB 32. For example, the project may generate aerosols. Aerosols are short-lived greenhouse gases, as they remain in the atmosphere for about one week. Black carbon is a component of aerosol. A couple of studies have indicated that black carbon has a high global warming potential; however, the IPCC states that it has a low level of scientific certainty (IPCC 2007a and IPCC2007b). Water vapor could be emitted from evaporated water used for landscaping, but this is not a significant impact because water vapor concentrations in the upper atmosphere are primarily due to climate feedbacks rather than emissions from project-related activities. The project would emit nitrogen oxides and volatile organic compounds, which are ozone precursors. Ozone is a greenhouse gas; however, unlike the other greenhouse gases, ozone in the troposphere is relatively short-lived and can be reduced in the troposphere on a daily basis.

Certain greenhouse gases defined by AB 32 would not be emitted by the project. Perfluorocarbons and sulfur hexafluoride are typically used in industrial applications, none of which would be used by the project. Therefore, it is not anticipated that the project would emit perfluorocarbons or sulfur hexafluoride.

Construction

The project would emit greenhouse gases from upstream emission sources and direct sources (combustion of fuels from worker vehicles and construction equipment).

An upstream emission source (also known as life cycle emissions) refers to emissions that were generated during the manufacture of products to be used for construction of the project. Upstream emission sources for the project include but are not limited to the following: emissions from the manufacture of cement; emissions from the manufacture of steel; and/or emissions from the transportation of building materials for the proposed bridge. The upstream emissions were not estimated because they are not within the control of the project and to do so would be speculative at this time. Additionally, the CAPCOA White Paper on CEQA & Climate Change supports this conclusion by stating, “The full life-cycle of GHG [greenhouse gas] emissions from construction activities is not accounted for … and the information needed to characterize [life-cycle emissions] would be speculative at the CEQA analysis level” (CAPCOA 2008). Therefore, pursuant to CEQA Guidelines Sections 15144 and 15145, upstream /life cycle emissions are speculative and no further discussion is necessary.

Greenhouse gas emissions from construction were estimated using URBEMIS2007, as was discussed in Section 4.1.

The emissions of carbon dioxide from project construction equipment and worker vehicles are shown in Table 14. Emissions of nitrous oxide and methane are negligible. The emissions are from all phases of construction.

Table 14: Construction Exhaust Carbon Dioxide Emissions

Phase	Carbon Dioxide Emissions (tons)	Emissions ($MTCO_2e$)
Import of material and laying and grooming of trails	22	20
Laying and grooming of trails	32	29
Small bridge construction and grooming of trails	19	17
Total	**73**	**66**
Notes: $MTCO_2e$ = metric tons of carbon dioxide equivalent, converted from tons by multiplying by 0.9072 and the global warming potential of 1. Source of carbon dioxide emissions: URBEMIS2007 output in Appendix A.		

Operation

Operational or long-term emissions occur over the life of the project. The operational emissions for business as usual and the project are shown in Table 15.

Table 15: Project Operational Greenhouse Gases

Source	Emissions ($MTCO_2e$ per year)	
	Business as Usual	Project
Motor vehicles	64	31
Maintenance equipment	0	3
Off road recreational vehicles exhaust	1	1
Subtotal Operational	*65*	*35*
Averaged Construction	*0*	*2*
Total	**65**	**37**
Reduction from Business as Usual		**43%**
MTCO2e = metric tons of carbon dioxide equivalent, converted from tons of carbon dioxide by multiplying by 0.9072 and the global warming potential of 1. Averaged construction = construction emissions averaged over 30 years (66 ÷ 30). Source: URBEMIS2007 Output and spreadsheets, Appendix A.		

The business as usual emissions refer to emissions that would occur if the project were not constructed. If the project was not constructed, recreational users would go to another site for recreational activities. Other mountain biking areas in the area are located in the San Bernardino Mountains and are more than 40 miles east of the project site (www.trails.com). There is a trail on Mount Baldy, which is approximately 8 miles north of the project site. There are also mountain biking trails in the Loma Linda hills, which are 30 miles southeast of the project site. Therefore, the distance to other trails from the project area would be 10 to 30 miles.

Studies have shown that vehicle miles traveled is related to accessibility to destinations (such as recreational facilities) and street network design variables (Ewing and Cervero 2010). Therefore, the project would reduce vehicle miles traveled because it is placing another recreational site near residential uses.

The average vehicle miles traveled per trip for the project is 9.5 miles, which is the default URBEMIS2007 value for an urban project from home to “other.” The vehicle miles traveled per trip for the business as usual case is 19.5 miles (9.5 plus 10 miles).

5.7.2 - California Air Resources Board Scoping Plan

Emission reductions in only California would not be able to stabilize the concentration of greenhouse gases in the atmosphere. However, California’s actions set an example and drive progress towards a reduction in greenhouse gases. If other countries were to follow California’s emission reduction targets, this could avoid medium or higher ranges of global temperature increases. Thus, severe consequences of climate change could also be avoided.

The ARB approved a Climate Change Scoping Plan in December 2008. The Plan “proposes a comprehensive set of actions designed to reduce overall greenhouse gas emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health” (ARB 2008). The measures in the Scoping Plan will be developed over the next two years and be in place by 2012.

This Scoping Plan calls for an “ambitious but achievable” reduction in California’s greenhouse gas emissions, cutting approximately 30 percent from business-as-usual emission levels projected for 2020, or about 10 percent from today’s levels. On a per-capita basis, that means reducing annual emissions of 14 tons of carbon dioxide for every man, woman and child in California down to about 10 tons per person by 2020.

The project will comply with all applicable Scoping Plan measures as they become regulations in the future.

5.7.3 - Level of Significance

During construction of the Project, the following activities would emit a total of 66 $MTCO_2e$: import of material, laying and grooming of trails, and small bridge construction. Averaged over 30 years, the emissions would be 2 $MTCO_2e$ per year.

In the No Project Alternative, business as usual emissions would be approximately 65 $MTCO_2e$ per year. During operation of the Project, approximately 46 $MTCO_2e$ per year would be emitted from motor vehicles that would access the Project site, maintenance equipment, and off road recreational vehicle exhaust.

Operational emissions in 2020 would be lower than the emissions presented due to regulations that would reduce vehicle emissions (Pavley standards and Low Carbon Fuel Standard).

Pursuant to CEQA Guidelines Section 15064(h)(3), this assessment will use AB 32 and the Scoping Plan as a "previously approved plan or mitigation program." CEQA Guidelines Section 15064(h)(3) states:

> A lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including, but not limited to, water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plan, plans or regulations for the reduction of greenhouse gas emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem (e.g. water quality control plan, air quality plan, integrated waste management plan) within the geographic area in which the project is located. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. When relying on a plan, regulation or program, the lead agency should explain how implementing the particular requirements in the plan, regulation or program ensure that the project's incremental contribution to the cumulative effect is not cumulatively considerable. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding that the project complies with the specified plan or mitigation program addressing the cumulative problem, an EIR must be prepared for the project.

AB 32 requires the ARB, the State agency charged with regulating statewide air quality, to adopt rules and regulations that would reduce greenhouse gas emissions to 1990 levels by the year 2020. On December 6, 2007, ARB approved the 1990 greenhouse gas emissions level of 427 million $MTCO_2e$. Emissions in 2020 are estimated to be 596 million $MTCO_2e$, which is an approximate 28 percent reduction from business as usual emissions.

Through implementation of the project, emissions compared with business as usual are reduced by 43 percent, which is greater than the 28 percent reduction than AB 32 requires. Therefore, the project is consistent with AB 32.

The SCAQMD's draft tiered threshold for all land use projects (SCAQMD 2009e) is 3,000 tons per year of CO_2e (operational emissions plus construction emissions averaged over 30 years). The project's operational emissions plus the averaged construction emissions would be 48 $MTCO_2e$ per year, which is substantially lower than the SCAQMD draft threshold.

The project objective is to provide a trail. Studies have shown that vehicle miles traveled is related to accessibility to destinations (such as recreational facilities) and street network design variables (Ewing and Cervero 2010). The project objective would result in reductions in vehicle miles traveled since the project provides a facility for non-motorized transportation and provides recreational uses near existing residential uses.

Considering the information contained above, although the project would emit greenhouse gases during construction and operation, these emissions would not have a significant impact on the environment. In addition, the project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

Therefore, the project results in a less than significant impact to climate change.

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URBEMIS 2007 URBEMIS, Environmental Management Software. Version 9.2.4. www.urbemis.com

Appendix A:
URBEMIS Output and Spreadsheets

5/14/2009 8:31:44 AM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Mitigated Emissions (Pounds/Day)

File Name: C:\MBA\Client\00520123 San Antonio Heights Trail\San Antonio Heights Trail Construction.urb924

Project Name: San Antonio Heights Trail Construction

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 11/2/2009-11/13/2009 Active Days: 10	4.28	**41.74**	20.01	**0.02**	3.23	1.96	5.19	0.68	1.80	2.49	**4,315.04**
Mass Grading 11/02/2009-11/13/2009	4.28	41.74	20.01	0.02	3.23	1.96	5.19	0.68	1.80	2.49	4,315.04
Mass Grading Dust	0.00	0.00	0.00	0.00	3.15	0.00	3.15	0.66	0.00	0.66	0.00
Mass Grading Off Road Diesel	2.96	24.57	12.32	0.00	0.00	1.24	1.24	0.00	1.14	1.14	2,071.41
Mass Grading On Road Diesel	1.28	17.10	6.56	0.02	0.07	0.71	0.79	0.02	0.66	0.68	2,119.20
Mass Grading Worker Trips	0.04	0.07	1.13	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.43
Time Slice 11/16/2009-11/27/2009 Active Days: 10	3.00	24.64	13.45	0.00	3.16	1.24	4.40	0.66	1.14	1.80	2,195.84
Fine Grading 11/16/2009-12/24/2009	3.00	24.64	13.45	0.00	3.16	1.24	4.40	0.66	1.14	1.80	2,195.84
Fine Grading Dust	0.00	0.00	0.00	0.00	3.15	0.00	3.15	0.66	0.00	0.66	0.00
Fine Grading Off Road Diesel	2.96	24.57	12.32	0.00	0.00	1.24	1.24	0.00	1.14	1.14	2,071.41
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.04	0.07	1.13	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.43

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Time Slice 11/30/2009-12/24/2009 Active Days: 19	**4.66**	38.41	**25.18**	0.01	3.21	**2.00**	5.20	0.68	**1.84**	2.51	4,219.30
Building 11/30/2009-12/24/2009	1.66	13.77	11.73	0.01	0.05	0.75	0.80	0.02	0.69	0.71	2,023.46
Building Off Road Diesel	1.14	8.83	4.36	0.00	0.00	0.54	0.54	0.00	0.50	0.50	811.52
Building Vendor Trips	0.39	4.70	3.25	0.01	0.03	0.20	0.22	0.01	0.18	0.19	756.64
Building Worker Trips	0.13	0.25	4.12	0.00	0.02	0.01	0.03	0.01	0.01	0.02	455.30
Fine Grading 11/16/2009-12/24/2009	3.00	24.64	13.45	0.00	3.16	1.24	4.40	0.66	1.14	1.80	2,195.84
Fine Grading Dust	0.00	0.00	0.00	0.00	3.15	0.00	3.15	0.66	0.00	0.66	0.00
Fine Grading Off Road Diesel	2.96	24.57	12.32	0.00	0.00	1.24	1.24	0.00	1.14	1.14	2,071.41
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.04	0.07	1.13	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.43

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 11/16/2009 - 12/24/2009 - Laying and grooming of trails

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

The following mitigation measures apply to Phase: Mass Grading 11/2/2009 - 11/13/2009 - Import of Material and trail grooming

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

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For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

<u>Phase Assumptions</u>

Phase: Fine Grading 11/16/2009 - 12/24/2009 - Laying and grooming of trails

Total Acres Disturbed: 2

Maximum Daily Acreage Disturbed: 2

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 6 hours per day

Phase: Mass Grading 11/2/2009 - 11/13/2009 - Import of Material and trail grooming

Total Acres Disturbed: 2

Maximum Daily Acreage Disturbed: 2

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 500

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 6 hours per day

Phase: Building Construction 11/30/2009 - 12/24/2009 - Construction of Bridge

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

7/14/2010 5:05:14 PM

Urbemis 2007 Version 9.2.4

Detail Report for Annual Construction Mitigated Emissions (Tons/Year)

File Name: C:\MBA\Client\San Antonio\San Antonio Heights Trail Construction.urb924

Project Name: San Antonio Heights Trail Construction

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2009	0.08	0.70	0.41	0.00	0.06	0.03	0.10	0.01	0.03	0.05	72.64
Mass Grading 11/02/2009-11/13/2009	0.02	0.21	0.10	0.00	0.02	0.01	0.03	0.00	0.01	0.01	21.58
Mass Grading Dust	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.01	0.12	0.06	0.00	0.00	0.01	0.01	0.00	0.01	0.01	10.36
Mass Grading On Road Diesel	0.01	0.09	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.60
Mass Grading Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.62
Fine Grading 11/16/2009-12/24/2009	0.04	0.36	0.19	0.00	0.05	0.02	0.06	0.01	0.02	0.03	31.84
Fine Grading Dust	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.01	0.00	0.01	0.00
Fine Grading Off Road Diesel	0.04	0.36	0.18	0.00	0.00	0.02	0.02	0.00	0.02	0.02	30.04
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.80
Building 11/30/2009-12/24/2009	0.02	0.13	0.11	0.00	0.00	0.01	0.01	0.00	0.01	0.01	19.22
Building Off Road Diesel	0.01	0.08	0.04	0.00	0.00	0.01	0.01	0.00	0.00	0.00	7.71
Building Vendor Trips	0.00	0.04	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.19
Building Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.33

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 11/16/2009 - 12/24/2009 - Laying and grooming of trails

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

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PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

The following mitigation measures apply to Phase: Mass Grading 11/2/2009 - 11/13/2009 - Import of Material and trail grooming

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Phase Assumptions

Phase: Fine Grading 11/16/2009 - 12/24/2009 - Laying and grooming of trails

Total Acres Disturbed: 2

Maximum Daily Acreage Disturbed: 2

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 6 hours per day

Phase: Mass Grading 11/2/2009 - 11/13/2009 - Import of Material and trail grooming

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Total Acres Disturbed: 2

Maximum Daily Acreage Disturbed: 2

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 500

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 6 hours per day

Phase: Building Construction 11/30/2009 - 12/24/2009 - Construction of Bridge

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

San Antonio
OHV use per year
Prepared by Michael Brandman Associates
5/14/2009

Operation (hours/vehicle)	4
OHV Use per year =	400

Type of Vehicle	Percentage	Vehicles per year
Motorcycles	60%	240
All-terrain Vehicles	40%	160
Other (4x4s, Sand Rails, etc.)	0%	-
Total	100%	400

Equipment Description	Percent of Total	Project Vehicles per year	Vehicle operation (hours per year)
Motorcycles - 2 stroke	43%	104	415
Motorcycles - 4 stroke	57%	136	545
Total Motorcycles	100%	240	960
ATV - 2 stroke	9%	15	60
ATV - 4 stroke	91%	145	580
Total ATV	100%	160	640
Total Motorcycle & ATV		400	1,600

Total miles per vehicle	2
Total miles per year	800

San Antonio
OHV Emissions
Prepared by Michael Brandman Associates
5/14/2009

Exhaust Emission Factors (grams per mile)

Equipment	Total HC	NOx	CO	PM10	SO2	CO2
Motorcycles - 2 stroke	50.7	0.2	54.7	1.9	0	213.9
ATV - 2 stroke	43.2	0.2	55.7	1.6	0	153.7
Motorcycles - 4 stroke	5.2	0.4	46.6	0.1	0	220.6
ATV - 4 stroke	5.7	0.3	51.6	0.1	0	234.3

Emissions (tons per year)

Equipment	Vehicle Operation (miles/yr)	HC	NOx	CO	PM10	SO2	CO2
Motorcycles - 2 stroke	173	0.01	0.00	0.01	0.00	-	0.04
ATV - 2 stroke	227	0.01	0.00	0.01	0.00	-	0.03
Motorcycles - 4 stroke	38	0.00	0.00	0.01	0.00	-	0.04
ATV - 4 stroke	362	0.00	0.00	0.01	0.00	-	0.04
Total	**800**	**0.02**	**0.00**	**0.04**	**0.00**	**-**	**0.16**

Emissions (pounds per day)

Equipment	Vehicle Operation (miles/yr)	HC	NOx	CO	PM10	SO2	CO2
Motorcycles - 2 stroke	173	0.05	0.00	0.06	0.00	-	0.22
ATV - 2 stroke	227	0.05	0.00	0.06	0.00	-	0.16
Motorcycles - 4 stroke	38	0.01	0.00	0.05	0.00	-	0.23
ATV - 4 stroke	362	0.01	0.00	0.05	0.00	-	0.24
Total	800	**0.11**	**0.00**	**0.22**	**0.00**	**-**	**0.86**

Emission Factors by SCC and Pollutant

All Fuels **Grams/Operating Hour** **San Bernardino County**

San Antonio Trail
(AntOHV)

Total for year: 2010

Date of Model Run: May 14 09:18:13: 2009 Today's Date: 5/14/2009

Fuel Type	SCC	Equipment Description	Engine Type	Exhaust THC	Exhaust NOx	Exhaust CO	Exhaust PM10	Exhaust SO2	Exhaust CO2	Crankcase THC	Diurnal THC
Gasoline											
Recreational Equipment (MC & ATV are Grams/Mile)											
	2260001010	Motorcycles: Off-Road	2 Stroke	48.1	0.2	54.7	1.9	0.0	213.9	0.0	0.4
	2260001030	ATVs	2 Stroke	39.9	0.2	55.7	1.6	0.0	153.7	0.0	0.6
	2265001010	Motorcycles: Off-Road	4 Stroke	2.5	0.4	46.6	0.1	0.0	220.6	0.2	0.4
	2265001030	ATVs	4 Stroke	2.3	0.3	51.6	0.1	0.0	234.3	0.2	0.6

Emission Factors by SCC and Pollutant

All Fuels | **Grams/Operating Hour** | **San Bernardino County**

San Antonio Trail
(AntOHV)

Total for year: 2010

Date of Model Run: May 14 09:18:13: 2009 | Today's Date: 5/14/2009

Fuel Type	SCC	Equipment Description	Engine Type	Vapor Displacement THC	Spillage THC	Hot Soak THC	Running Loss THC	Tank Permeation THC	Hose Permeation THC	Total THC
Gasoline										
	Recreational Equipment (MC & ATV are Grams/Mile)									
	2260001010	Motorcycles: Off-Road	2 Stroke	0.2	0.2	0.1	0.6	0.4	0.7	50.7
	2260001030	ATVs	2 Stroke	0.1	0.1	0.3	1.2	0.5	0.5	43.2
	2265001010	Motorcycles: Off-Road	4 Stroke	0.1	0.1	0.1	0.6	0.4	0.7	5.2
	2265001030	ATVs	4 Stroke	0.1	0.1	0.3	1.2	0.5	0.5	5.7

7/13/2010 7:20:50 PM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\MBA\Client\San Antonio\San Antonio Heights Trail Operation.urb924

Project Name: San Antonio Heights Trail Operation

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 1/4/2010-1/15/2010 Active Days: 10	**0.72**	**5.35**	**3.11**	**0.00**	**2.50**	**0.34**	**2.84**	**0.52**	**0.31**	**0.83**	**600.90**
Fine Grading 01/04/2010-01/15/2010	0.72	5.35	3.11	0.00	2.50	0.34	2.84	0.52	0.31	0.83	600.90
Fine Grading Dust	0.00	0.00	0.00	0.00	2.50	0.00	2.50	0.52	0.00	0.52	0.00
Fine Grading Off Road Diesel	0.70	5.31	2.42	0.00	0.00	0.33	0.33	0.00	0.31	0.31	515.54
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.02	0.04	0.69	0.00	0.00	0.00	0.01	0.00	0.00	0.00	85.36

Phase Assumptions

Phase: Fine Grading 1/4/2010 - 1/15/2010 - Trail maintenance

Total Acres Disturbed: 5

Maximum Daily Acreage Disturbed: 5

Fugitive Dust Level of Detail: Default

0.5 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

6/9/2009 12:25:56 PM

Urbemis 2007 Version 9.2.4

Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name: C:\MBA\Client\00520123 San Antonio Heights Trail\San Antonio Heights Trail Operation.urb924

Project Name: San Antonio Heights Trail Operation

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

	CO2
2010	3.00
Fine Grading 01/04/2010-01/15/2010	3.00
Fine Grading Dust	0.00
Fine Grading Off Road Diesel	2.58
Fine Grading On Road Diesel	0.00
Fine Grading Worker Trips	0.43

Phase Assumptions

Phase: Fine Grading 1/4/2010 - 1/15/2010 - Trail maintenance

Total Acres Disturbed: 4

Maximum Daily Acreage Disturbed: 4

Fugitive Dust Level of Detail: Default

0.5 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

7/14/2010 2:02:53 PM

Urbemis 2007 Version 9.2.4

Detail Report for Winter Operational Unmitigated Emissions (Pounds/Day)

File Name: C:\MBA\Client\San Antonio\San Antonio Heights Trail Operation.urb924

Project Name: San Antonio Heights Trail Operation

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Winter Pounds Per Day, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Trail	0.18	0.26	1.85	0.00	0.33	0.06	176.63
TOTALS (lbs/day, unmitigated)	0.18	0.26	1.85	0.00	0.33	0.06	176.63

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Trail		4.00	acres	5.00	20.00	190.00
					20.00	190.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.7	1.2	98.6	0.2
Light Truck < 3750 lbs	7.3	2.7	94.6	2.7

7/14/2010 2:02:53 PM

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Truck 3751-5750 lbs	22.9	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.6	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	67.9	32.1	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	9.5	9.5	9.5	9.5	9.5	9.5
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	0.0	0.0	100.0			
% of Trips - Commercial (by land use)						
Trail				2.0	1.0	97.0

Operational Changes to Defaults

The urban/rural selection has been changed from Urban to Rural

Home-based work rural trip length changed from 17.6 miles to 9.5 miles

Home-based shop rural trip length changed from 12.1 miles to 9.5 miles

Home-based other rural trip length changed from 14.9 miles to 9.5 miles

Commercial-based commute rural trip length changed from 15.4 miles to 9.5 miles

Commercial-based non-work rural trip length changed from 9.6 miles to 9.5 miles

Commercial-based customer rural trip length changed from 12.6 miles to 9.5 miles

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Operational Unmitigated Emissions (Pounds/Day)

File Name: C:\MBA\Client\San Antonio\San Antonio Heights Trail Operation.urb924

Project Name: San Antonio Heights Trail Operation

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Trail	0.18	0.22	1.92	0.00	0.33	0.06	195.08
TOTALS (lbs/day, unmitigated)	0.18	0.22	1.92	0.00	0.33	0.06	195.08

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Trail		4.00	acres	5.00	20.00	190.00
					20.00	190.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.7	1.2	98.6	0.2
Light Truck < 3750 lbs	7.3	2.7	94.6	2.7

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Truck 3751-5750 lbs	22.9	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.6	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	67.9	32.1	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	9.5	9.5	9.5	9.5	9.5	9.5
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	0.0	0.0	100.0			
% of Trips - Commercial (by land use)						
Trail				2.0	1.0	97.0

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Operational Changes to Defaults

The urban/rural selection has been changed from Urban to Rural

Home-based work rural trip length changed from 17.6 miles to 9.5 miles

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Commercial-based customer rural trip length changed from 12.6 miles to 9.5 miles

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Operational Unmitigated Emissions (Tons/Year)

File Name: C:\MBA\Client\San Antonio\San Antonio Heights Trail Operation.urb924

Project Name: San Antonio Heights Trail Operation

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Trail	0.03	0.04	0.35	0.00	0.06	0.01	34.48
TOTALS (tons/year, unmitigated)	0.03	0.04	0.35	0.00	0.06	0.01	34.48

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Trail		4.00	acres	5.00	20.00	190.00
					20.00	190.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.7	1.2	98.6	0.2

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Truck < 3750 lbs	7.3	2.7	94.6	2.7
Light Truck 3751-5750 lbs	22.9	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.6	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	67.9	32.1	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	9.5	9.5	9.5	9.5	9.5	9.5
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	0.0	0.0	100.0			
% of Trips - Commercial (by land use)						

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Trail				2.0	1.0	97.0

Operational Changes to Defaults

The urban/rural selection has been changed from Urban to Rural

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Commercial-based non-work rural trip length changed from 9.6 miles to 9.5 miles

Commercial-based customer rural trip length changed from 12.6 miles to 9.5 miles

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Operational Unmitigated Emissions (Tons/Year)

File Name: C:\MBA\Client\San Antonio\San Antonio Heights Trail Operation BAU.urb924

Project Name: San Antonio Heights Trail Operation - Business as Usual

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Trail	0.06	0.08	0.67	0.00	0.12	0.02	70.24
TOTALS (tons/year, unmitigated)	0.06	0.08	0.67	0.00	0.12	0.02	70.24

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Trail		4.00	acres	5.00	20.00	390.00
					20.00	390.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.7	1.2	98.6	0.2

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Truck < 3750 lbs	7.3	2.7	94.6	2.7
Light Truck 3751-5750 lbs	22.9	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.6	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	67.9	32.1	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	19.5	13.3	7.4	8.9
Rural Trip Length (miles)	19.5	19.5	19.5	19.5	19.5	19.5
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	0.0	0.0	100.0			
% of Trips - Commercial (by land use)						

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Trail				2.0	1.0	97.0

Operational Changes to Defaults

The urban/rural selection has been changed from Urban to Rural

Home-based work rural trip length changed from 17.6 miles to 19.5 miles

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Commercial-based commute rural trip length changed from 15.4 miles to 19.5 miles

Commercial-based non-work rural trip length changed from 9.6 miles to 19.5 miles

Commercial-based customer rural trip length changed from 12.6 miles to 19.5 miles

Appendix B: Habitat Assessment

Habitat Assessment Report
Proposed San Antonio Heights Trail
San Bernardino County, California

Mt. Baldy, CA. USGS 7.5-minute Topographic Quadrangle Map
Township 1 North, Range 8 West, Section 24, 25, 26
Township 1 North, Range 7 West, Section 19, 20, 29, 30

Prepared for:

San Bernardino County Land Use Services Department
Advanced Planning Division
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Report Prepared By: Dale Hameister, Project Biologist

Report Date: August 24, 2010

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Appendix B: Fauna Compendium

Appendix C: Site Photographs

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LIST OF EXHIBITS

SECTION 1: INTRODUCTION

At the request of the Regional Parks Division of the Public Works Department, Michael Brandman Associates (MBA) conducted a biological resource assessment of a proposed trail system in unincorporated San Antonio Heights section of San Bernardino County, California. The proposed use of the project area is to build a County maintained trail linking an existing trail(s) in the City of Rancho Cucamonga with a planned for trail across the county line in the City of Claremont. This report presents the results of a literature review and provides a detailed description of current existing conditions and a general habitat assessment for sensitive plant and wildlife species. General recommendations that are necessary to move this project forward are provided.

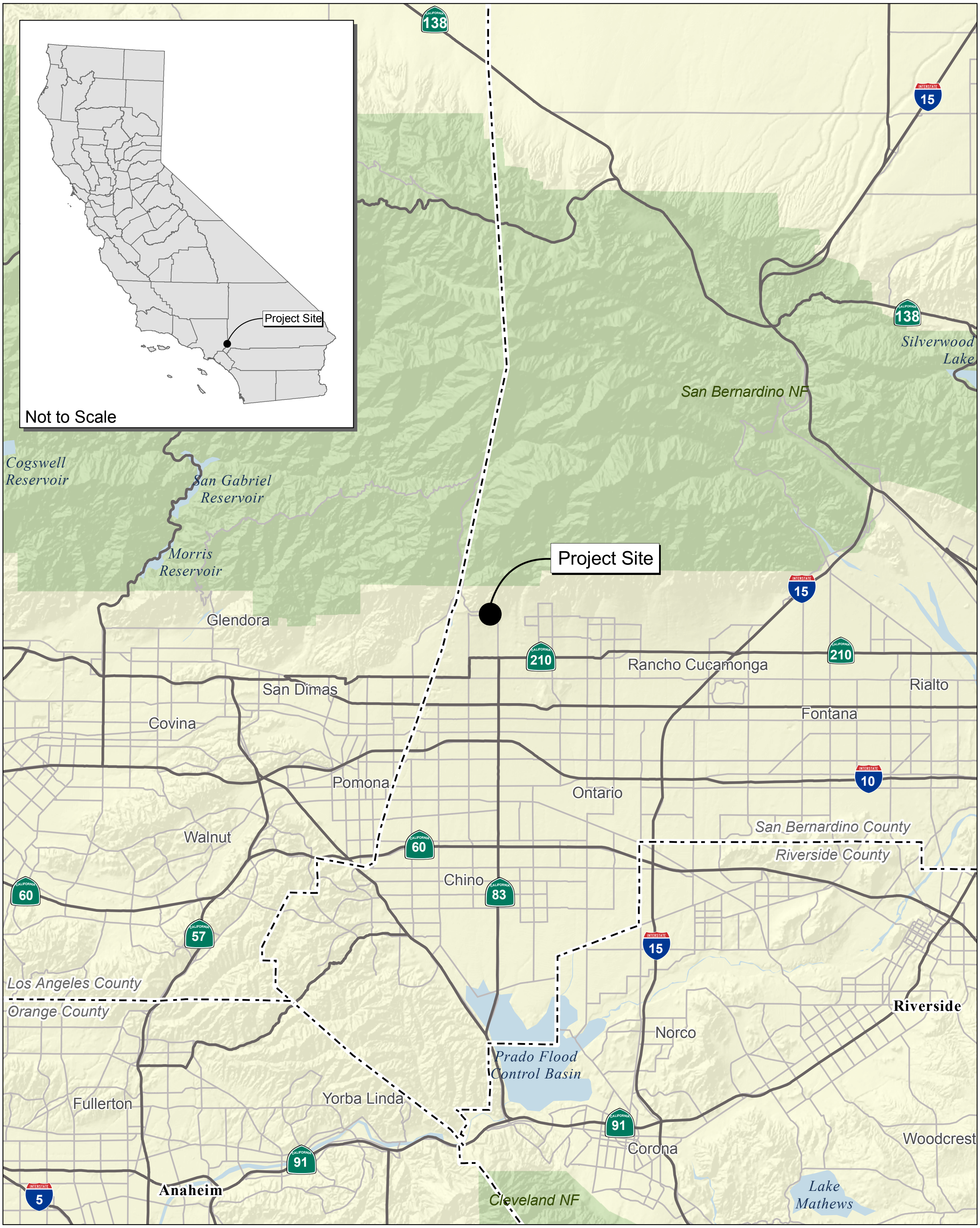
The information contained herein also includes an evaluation of potential impacts to biological resource associated with the development of the two access roads along the proposed alignments, based upon relevant environmental policies and regulations, including the federal Clean Water Act (CWA), the federal Endangered Species Act (ESA), the California Endangered Species Act (CESA), and the California Environmental Quality Act (CEQA).

1.1 - Project Site Location

Approval of the proposed project will result in the construction of approximately five miles of public multi-use recreational trails along the northern boundary of San Antonio Heights along with two staging areas located on the east end of 24th Street and in the center of the project area on 27th Street. Several alternative construction parameters are included in this project description below. The project site is generally located north of State Route 210 (SR-210), south of SR-138, and west of Interstate 15 (I-15) (see Exhibit 1). Situated in the far northwestern portion of the Chino Basin, the project area is located on County land between Cucamonga Creek and San Antonio Creek. The boundaries of the project area can be found within the Mt. Baldy, California U.S. Geological Survey (USGS) 7. 5-minute topographic quadrangle map, in Township 1 North, Range 8 West, Section 24, 25, 26 and Township 1 North, Range 7 West, Section 19, 20, 29, 30 (Exhibit 2). The project area is linear and follows old paved and rarely used roads, existing trails and dirt roads used for access to various flood control facilities. The project site is specifically located north of 22nd Street, east of the Los Angeles/San Bernardino border and west of Turquoise Avenue (see Exhibit 3). Private, County and Federal government lands are located in the project area. The survey required examination of about 40 linear acres of ground.

1.2 - Project Description

The County of San Bernardino is proposing to establish five miles of public multi-use recreational trails along the northern boundary of the community of San Antonio Heights extending from the Cucamonga Channel Dam west to the San Antonio Channel at the Base of the San Gabriel Mountains. The proposed Project would generally run along the existing alignment of the San Antonio Creek Trail. The trail would range in width from approximately seven to fifteen feet wide.



Source: Census 2000 Data, The CaSIL, MBA GIS 2009.

Michael Brandman Associates

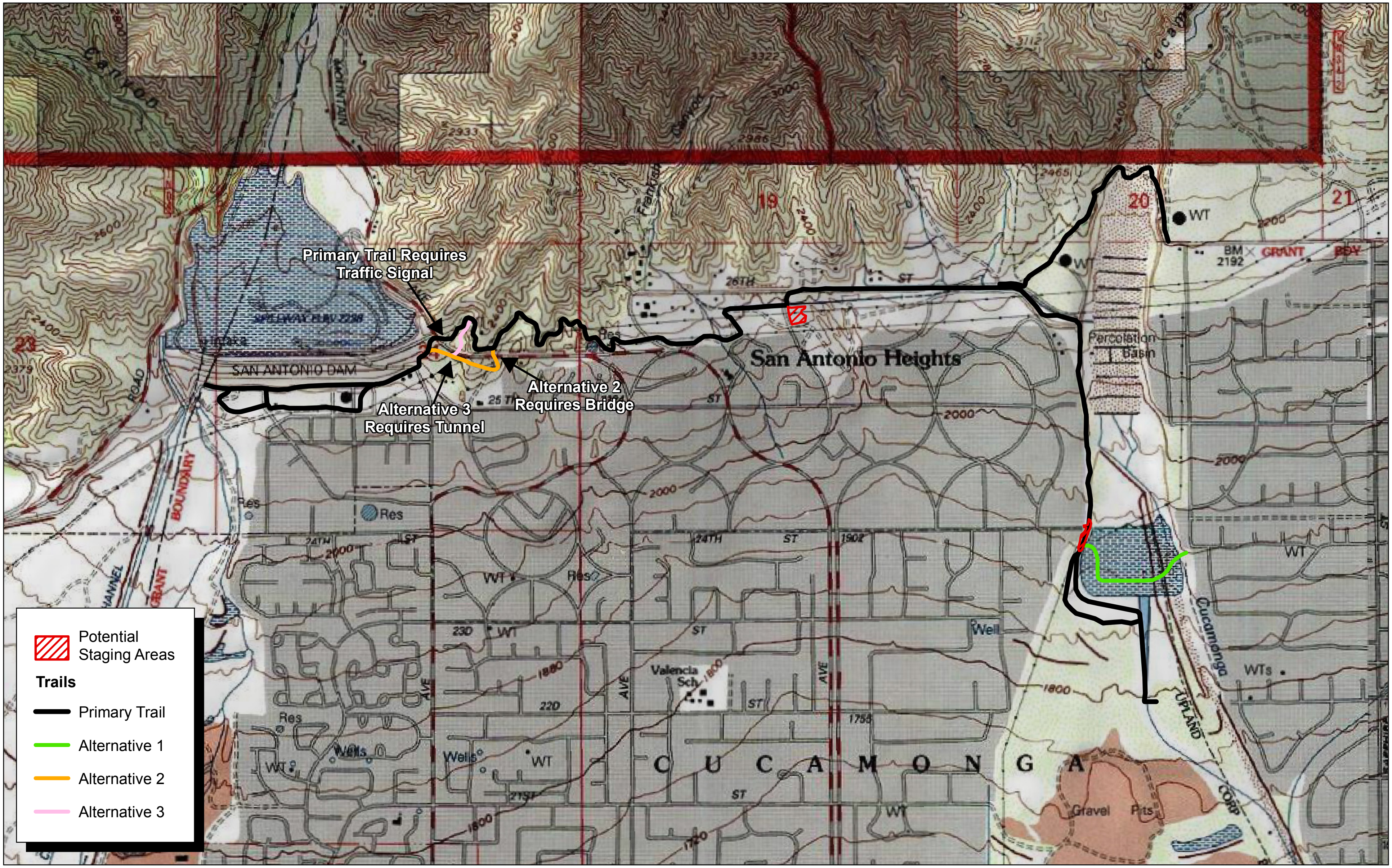
NORTH

5 2.5 0 5 Miles

Exhibit 1
Regional Location Map

00520123 • 06/2009 | 1_regional.mxd

COUNTY OF SAN BERNARDINO • SAN ANTONIO HEIGHTS TRAIL
HABITAT ASSESSMENT



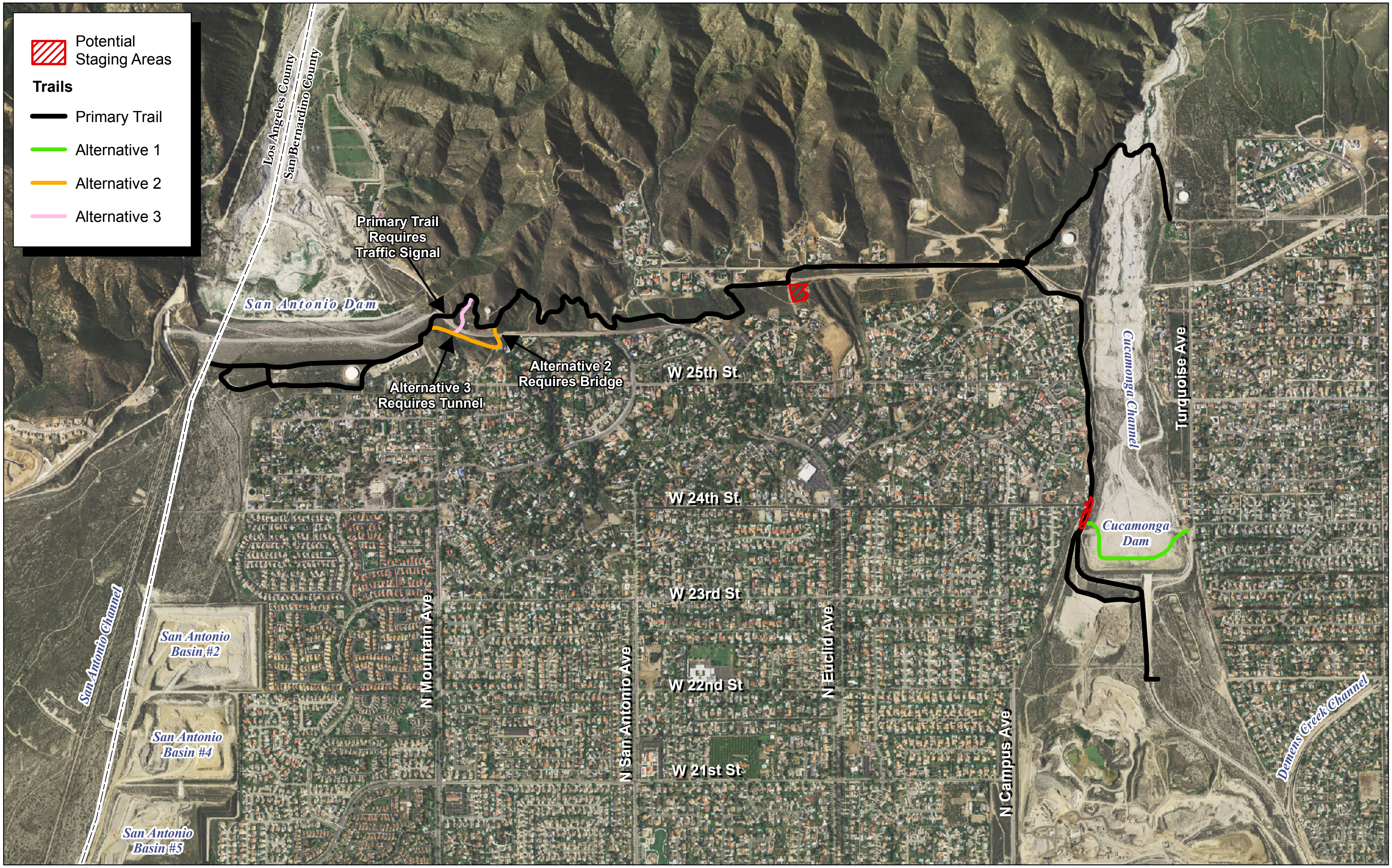
Source: TOPO! USGS Mt. Baldy (1995) 7.5' DRG.

Michael Brandman Associates

NORTH

2,000 1,000 0 2,000 Feet

Exhibit 2
Local Vicinity Map
Topographic Base



Source: San Bernardino County Aerials (2007) Census (2000).

Michael Brandman Associates

NORTH

2,000 1,000 0 2,000 Feet

Exhibit 3
Local Vicinity Map
Aerial Base

00520123 • 06/2009 | 3_aerial.mxd

COUNTY OF SAN BERNARDINO • SAN ANTONIO HEIGHTS TRAIL
HABITAT ASSESSMENT

The project will require the construction of two staging areas, which will be strategically located along the trail route. The proposed multi-use trail will be used for equestrian activities, mountain bike riding, and hiking and will link with existing and/or proposed trail systems in the Claremont and Rancho Cucamonga.

Location

The Project site is generally located north of State Route 210 (SR-210), south of SR-138, and west of Interstate 15 (I-15) (see Exhibit 1). Situated in the far northwestern portion of the Chino Basin, the Project area is located between Cucamonga Creek and San Antonio Creek. The boundaries of the Project area can be found within the Mt. Baldy, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map, in Township 1 North, Range 8 West, Section 24, 25, 26 and Township 1 North, Range 7 West, Section 19, 20, 29, 30 (Exhibit 2). The Project area is linear and follows old paved and rarely used roads, existing trails and dirt roads used for access to various flood control facilities. The Project site is specifically located north of 22nd Street, east of the Los Angeles/San Bernardino border and west of Turquoise Avenue (see Exhibit 3). Private, County and Federal government lands are located in the Project area. The survey required examination of about 40 linear acres of ground.

Connectivity to Other Trails

As shown in Exhibit 3, the primary trail route is 5 miles long and exhibits a linking trail leading to Staging Area No. 1, a link to an alternative trail that crosses Cucamonga Creek about 1.15 miles north of the creek flood control dam, and a link to an alternative trail located generally south of the Dam at Rancho Cucamonga’s Confluence Trail Park near Indigo Avenue.

The proposed trail will form a vital link between existing and proposed trails to the west and east of the project. Specifically, on the west end the project will connect to the planned Claremont Trail, which will terminate on the west bank of San Antonio Wash in the City of Claremont. On the east end, the project will connect to the Cucamonga Creek Trail, which is located along the eastern community boundary of San Antonio Heights in the City of Rancho Cucamonga, south of Cucamonga Dam. The east end of the trail will also cross the Cucamonga Channel approximately 1.2 miles north of Cucamonga Dam to facilitate connectivity to existing trails at the base of the Mountains (north east of the western terminus Almond Street).

Proposed Staging Areas

The proposed multi-use trail includes the construction of two potential staging locations near the east and center of the proposed trail. The staging areas would be used to park and unload bicycles, horses, and other equipment, and are directly linked to the proposed trail system. The staging areas will be approximately 5,000 square feet in size and will include parking for vehicles with trailers, secondary access to the primary trail, equestrian hitching posts, equestrian drinking troughs, wood benches, picnic tables, toilet facilities, and composting bins. Composed of packed earth or decomposed granite. No nighttime lighting is proposed.

Staging Area No. 1 will be located on the western side of Cucamonga Channel at the east end of W. 24th Street. Vehicular access to Staging Area No. 1 will be provided via W. 24th Street and will be configured to accommodate a limited number of vehicles using a controlled gate. The site entrance would be enlarged to accommodate an inbound travel lane and an outbound travel lane for vehicles using horse trailers. There is no lighting proposed for Staging Area No. 1. Small infrastructure hookups may be required for the drinking troughs and restroom facilities.

Staging Area No. 2 will be located approximately 75 yards south of the Arctic Dr. and W. 26th Street intersection, 0.25 mile northeast of the San Antonio Heights Community Church. Vehicular access to Staging Area No. 2 will be provided via Arctic Dr. and will be configured to accommodate a limited number of vehicles using a controlled gate. The site entrance will have an inbound and outbound travel lane for vehicles using horse trailers. There is no lighting proposed for Staging Area No. 2. Small infrastructure hookups may be required for the drinking troughs and restroom facilities.

A limited number of vehicular parking spots would be available for the public per the San Bernardino County Development Code regulations. Vehicular parking is not proposed on the roadways near the staging areas; however, the staging areas will be large enough to accommodate 10 vehicles with trailers. Security at the staging areas will be provided via a controlled gate at the entrance of the parking lot. Finally, The Regional Parks Division of the County Public Works Department would be responsible for maintenance related to the multiuse trails, including the removal of animal waste

Construction

To the maximum extent possible, the proposed project trail utilizes existing paths/trails, bridges and culverts. Much of the trail will be constructed on a prepared surface of crushed decomposed granite, which will allow water to permeate into the underlying ground without substantial erosion. Minor improvements may be implemented along the existing dirt paths chosen for trail construction where erosion has occurred as well as widening improvements in order to accommodate multiple uses of the trail. In addition, removal of large debris throughout the trail may be required by light construction equipment. There is no lighting proposed for the recreational trail system.

Alternative Alignments

In addition to the primary route, several alternative routes were also evaluated with the goal to select the most practicable route.

Three alternatives were considered. Typically, alternative routes were smaller trail segments linking greater, established components in the general east-west trail alignment. See Exhibit 2 and 3 for the locations of the proposed Alternatives. Alternative 1 provides for an alternative crossing of the southern portion of the Cucamonga Channel, and connectivity to the Cucamonga Creek Trail.

Alternatives 2 and 3 provide for the trail crossing of Euclid Avenue, and provide alternative connectivity to the San Antonio Channel and proposed Claremont Trail.

A brief description of each trail alternative is provided as follows:

- Alternative 1: This trail segment would extend southeasterly from Staging Area #1 down the slop of the existing Cucamonga Creek Flood Control Basin, cross the Basin along the northern slope and toe, and then rise up the eastern edge of the Basin to a point at the intersection of Jennet Street and Turquoise Avenue in Rancho Cucamonga.

- Alternative 2: This trail segment would cross a new footbridge built between two high points on Euclid Avenue approximately 140 yards south-southwest of a water tank and 260 yards southeast of the eastern San Antonio Dam top access road. The bridge will take traffic over Euclid Avenue and onto a new path built on vacant ground that runs between the eastern end of Electric Avenue and the southern end of the new bridge.

- Alternative 3: This trail segment replaces the traffic crossing on Euclid Avenue by digging a pedestrian tunnel below North Mountain in the vicinity of an underground storm drain located near the planned-for traffic crossing. Upon exiting the tunnel along the south side of Euclid Avenue, a small trail will be carved into vegetated ground so as to link with the eastern end of Electric Avenue.

SECTION 2: METHODS

Analysis of the biological resources associated with the development of the trail alignment and two access roads began with a thorough review of relevant literature followed by a reconnaissance-level survey. The primary objective of the survey was to document existing site conditions and determine the potential presence of any sensitive biological resources.

For the purpose of this report, sensitive species refers to all species formally listed as threatened and/or endangered under the ESA and CESA, California Species of Special Concern (CSS), designated as Fully Protected by California Department of Fish and Game (CDFG); given a status of 1A, 1B, or 2 by the California Native Plant Society (CNPS); or designated as sensitive by City, County, or other regional planning documents.

2.1 - Literature Review

The literature review provides a baseline from which to evaluate the biological resources potentially occurring along the access road alignments, as well as the surrounding area.

2.1.1 - Sensitive Species

MBA compiled a list of threatened, endangered, and otherwise sensitive species previously recorded to occur on or in the vicinity of the access road alignments. The list was based on a search of the CDFG's California Natural Diversity Database (CNDDB), a sensitive species and plant community account database and the CNPS's Electronic Inventory of Rare and Endangered Vascular Plants of California database for the USGS 7.5-minute topographic quadrangle maps containing the proposes alignments and immediate vicinity.

The CNDDB GIS database along with ArcGIS software was used to determine the distance between known recorded occurrences of sensitive species and the project site. Federal register listings, protocols, and species data provided by the U.S. Fish and Wildlife Service (USFWS) and CDFG were reviewed in conjunction with anticipated federal and State listed species, or proposed for listing, potentially occurring in the vicinity. These and other documents are listed in Section 6, References.

2.1.2 - Topographic Maps and Aerial Photographs

MBA reviewed current USGS 7.5-minute topographic quadrangle map(s) and aerial photographs as a preliminary analysis of the existing conditions within the access road alignments and immediate vicinity. Information obtained from the review of the topographic maps included elevation range, general watershed information, and potential drainage feature locations. Aerial photographs provide an aerial perspective of the most current site conditions with regard to onsite and offsite land use, plant community location, and potential location of wildlife movement corridors.

2.1.3 - Soil Surveys

Many sensitive plant species have a limited distribution based exclusively on soil type. The United States Department of Agriculture (USDA) has published soil surveys that describe the soil series that occur within a particular area. A soil series is a group of soils with similar profiles. These profiles include major horizons with similar thickness, arrangement, and other important characteristics. These series are further subdivided into soil mapping units, which provide specific information regarding soil characteristics. Pertinent USDA soil survey maps were reviewed to determine the existing soil mapping units within the access road alignments and to establish if soil conditions are suitable for any sensitive plant species.

2.2 - Reconnaissance-Level Survey

MBA biologists Dale Hameister conducted the reconnaissance-level field surveys on April 30 and June 16, 2009. An additional survey was conducted on May 6, 2010 by Dale Hameister and MBA Regulatory Specialist Paul Mead to update the habitat assessment and jurisdictional delineation reports. Special attention was paid to sensitive habitats or those areas potentially supporting sensitive floral and faunal species.

The reconnaissance-level survey was conducted on foot during daylight hours. Appendix C provides photographic documentation of various plant communities observed during the site visit.

2.2.1 - Plant Community Mapping

Plant communities were mapped using 7.5-minute USGS topographic base maps and recent aerial photography. Sensitive or unusual biological resources identified during the literature review were ground-truthed during the reconnaissance-level survey for mapping accuracy. The plant communities within the access road alignments were classified according to Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1996 update) and cross-referenced with CDFG's List of Terrestrial Natural Communities (2003). Modifications were made by MBA's biologist where appropriate.

2.2.2 - Plant Species

Common plant species observed during the reconnaissance-level survey were identified by visual characteristics and morphology in the field and recorded in a field notebook. Uncommon and less familiar plants were identified offsite using taxonomical guides. A list of all species observed within the proposed access road alignments was compiled from the survey data, shown in Appendix A. Taxonomic nomenclature used in this study follows Hickman (1993). Common plant names, when not available from Hickman, were taken from other regionally specific references. In this report, scientific names are provided immediately following common names of plant species for the first reference only.

2.2.3 - Wildlife Species

Wildlife species detected during the reconnaissance-level survey by sight, calls, tracks, scat, or other signs were recorded in a field notebook. Notations were made regarding suitable habitat for those sensitive species determined to potentially occur within the access road alignments. Appropriate field guides were used to assist with species identification during surveys. Common names of wildlife species are standard; however, scientific names are provided immediately following common names for the first reference only. Appendix A lists all wildlife species observed or detected during the survey.

2.2.4 - Jurisdictional Waters and Wetlands

Prior to conducting the site visit, MBA's biologist reviewed USGS topographic maps and aerial photography to identify any potential natural drainage features and water bodies. In general, all surface drainage features indicated as blue-line streams on USGS maps and linear patches of vegetation expected to exhibit evidence of flows are considered potentially subject to State and federal regulatory authority as "waters of the US and/or State." The assessment was not intended as a formal delineation of waters of the U.S. or State but rather to identify areas that may require a formal delineation.

2.2.5 - Wildlife Movement Corridors

Wildlife movement corridors link areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat, separating different populations of a single species. Corridors effectively act as links between these populations.

The access road alignments were evaluated for evidence of a wildlife movement corridor. The scope of the biological resources impact assessment did not include a formal wildlife movement corridor study such as the use of track plates, camera stations, scent stations, or snares. However, the focus of this study was to determine if the alteration of current land use along the access road alignments will have significant impacts on the regional movement of wildlife. These conclusions are based on the information compiled from the literature review, including, aerial photographs, USGS topographic maps, and resource maps for the vicinity, the reconnaissance-level survey, and knowledge of desired topography and resource requirements for wildlife potentially utilizing the access road alignments and vicinity.

2.3 - Problems and Limitations

The reconnaissance-level survey was conducted during the late spring season. Most perennial herbs and annuals were still present and although they may have been dying back, were still identifiable.

Many amphibians, reptiles, and mammals are secretive by nature and some are nocturnally active, making diurnal observations problematic. Observations of diagnostic sign may provide evidence of occurrence of these species. Otherwise, conclusions regarding potential occurrence are based on consideration of habitat suitability factors.

SECTION 3: RESULTS

The field surveys were conducted on April 30 and June 16, 2009. An additional survey was conducted on May 6, 2010. Surveys were generally conducted between 0900 and 1630 hours. Weather conditions during the field surveys included temperatures ranging from 75 to 98 degrees Fahrenheit, with clear skies and winds between 0 and 11 miles per hour.

3.1 - Existing Conditions

Historic Land Use. The project vicinity of the trail alignment has been used historically for agricultural and water management purposes. The construction of the San Antonio Dam was completed in 1956 and the Cucamonga Dam was completed in 1980.

Topography and Soils. The project area is located within an area considered to be the upper end of the Chino Basin. The project area generally slopes due south and is situated approximately 2000 feet above sea level. The soils in the project area are very cobbly and range from eroding alluvium to coarse riverwash. The soils in the project area are entirely disturbed because of trail and road use, debris basin and Dam construction, blading and dumping. The trails exhibit recent alluvium in the creek channels and older alluvium on the benches between San Antonio Creek and Cucamonga Creek.

3.2 - Vegetation

The majority of the trail and alternatives will be located on existing roads and trails. The vegetation described here includes the areas adjacent to the proposed trails and the areas that will be impacted by construction of trail connections and staging areas.

3.2.1 - Coastal Sage Scrub

This community is dominated by laurel sumac (*Malosma laurina*), California buckwheat (*Eriogonum fasciculatum*), deer weed (*Lotus scoparius*), white sage (*Salvia apiana*), yerba santa (*Eriodictyon trichocalyx*) and black sage (*Salvia mellifera*). CSS is the dominant plant community along the trail route. CSS will be impacted when the existing trail is improved west of the northern crossing of Cucamonga Channel.

3.2.2 - Riversidean Alluvial Fan Sage Scrub (RAFSS)

The CDFG lists RAFSS as rare and it is considered a sensitive plant community because it is often believed to be suitable habitat for a number of sensitive plant and wildlife species. RAFSS is an open plant community adapted to the harsh conditions of flooding. It grows on sandy, rocky alluvium deposited by streams that experience infrequent episodes of flooding. RAFSS is composed of an assortment of drought-deciduous sub-shrubs and large, evergreen, woody shrubs that are adapted to the periodic and intense episodes of flooding and erosion that occurs along alluvial fans. The RAFSS areas along the bottom of Cucamonga Channel and below San Antonio dam contain typical CSS species including laurel sumac, California buckwheat, and white sage as well as more typical RAFSS species including scalebroom (*Lepidospartum squamatum*) chaparral yucca (*Yucca whipplei*), yerba santa and deerweed. There is a potential for impacts to RAFSS habitat as the trail through Cucamonga Channel could be improved. There is very little vegetation within this area and impacts will be minimal to habitat quality.

3.2.3 - Ruderal

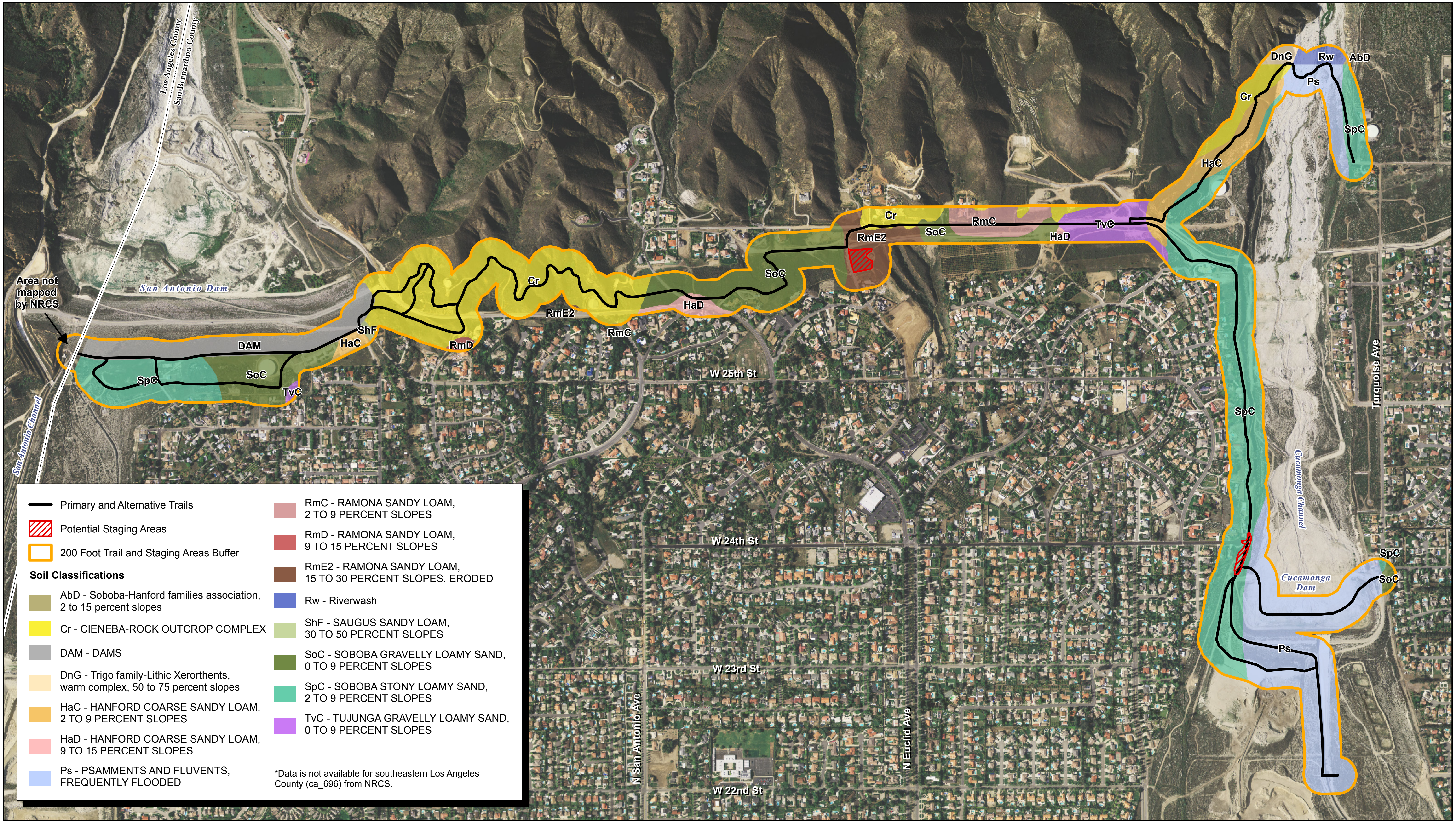
Ruderal plant communities are typically associated with recently disturbed areas and are dominated by plant species that are quick to colonize disturbed lands. The disturbance may be natural (e.g., wildfires), or due to human influence - construction-related (e.g., road construction, building construction or mining), or agricultural (e.g., abandoned farming fields or abandoned irrigation ditches). Species observed in ruderal areas include short-pod mustard (*Hirschfeldia incana*), ripgut brome (*Bromus diandrus*), soft brome (*Bromus hordeaceus*), and wand mullein (*Verbascum virgatum*).

3.2.4 - Disturbed

Areas mapped as disturbed include dirt roads, trails, and graded areas. The majority of the proposed trail and staging area 1 are proposed in areas that are currently disturbed.

3.2.5 - Developed

Areas mapped as developed include residential development, infrastructure and buildings associated with water management, concrete channels, and existing paved roads.



Source: San Bernardino County Aerials (2007), Census (2000) Data, USDA NRCS ca677 (2008) & ca777 (2009) Soils.

Michael Brandman Associates

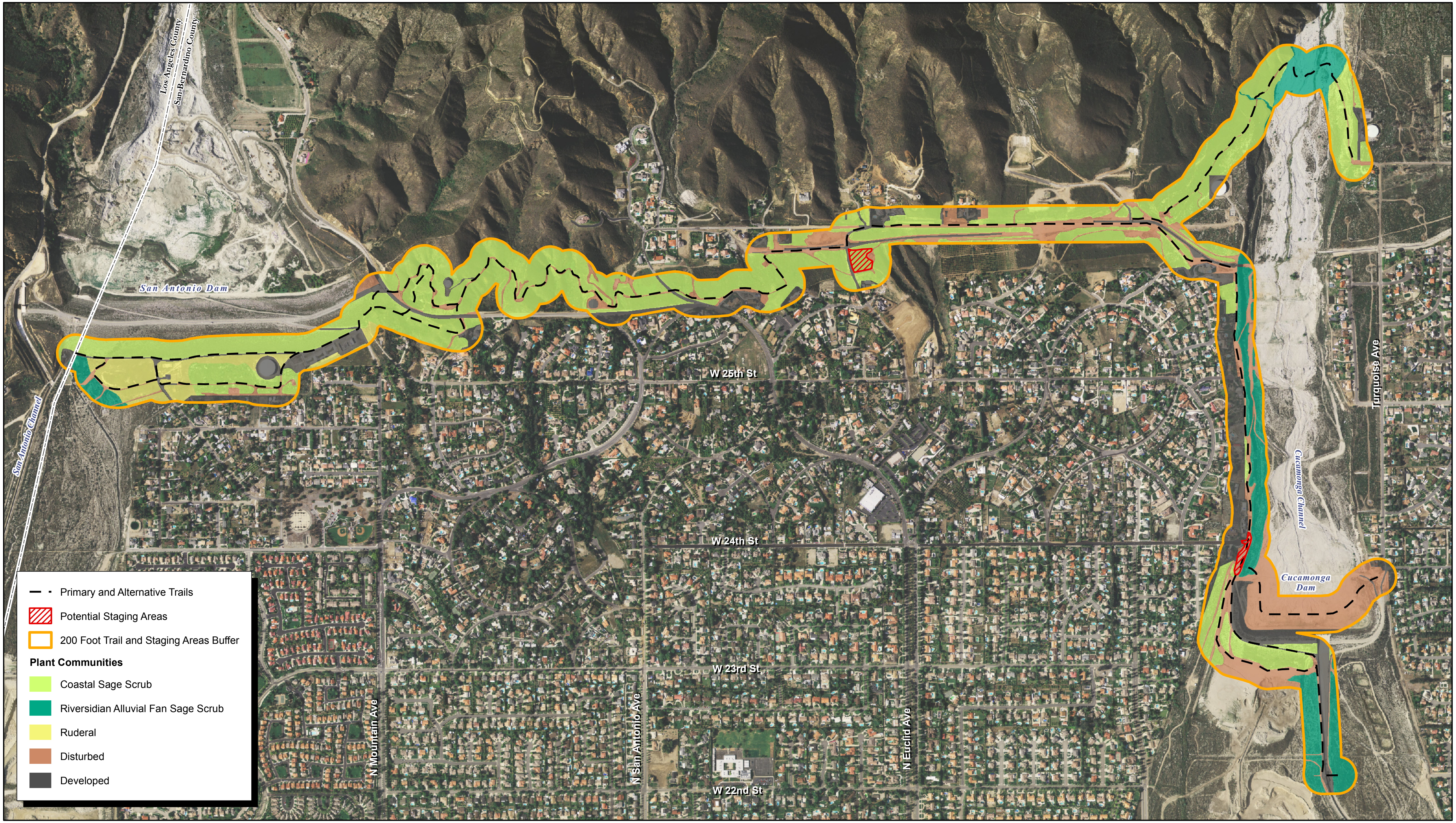
NORTH

1,000 500 0 1,000
Feet

Exhibit 4
USDA Soils Map

00520123 • 06/2009 | 4_Soils.mxd

COUNTY OF SAN BERNARDINO • SAN ANTONIO HEIGHTS TRAIL
HABITAT ASSESSMENT



Source: San Bernardino County Aerials (2007), Census (2000) Data, MBA Field Survey (2009).

Michael Brandman Associates

NORTH

1,000 500 0 1,000 Feet

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Exhibit 5
Plant Communities Map

COUNTY OF SAN BERNARDINO • SAN ANTONIO HEIGHTS TRAIL
HABITAT ASSESSMENT

3.3 - Wildlife

3.3.1 - Reptiles

Reptile species observed during surveys included the western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta elegans*) and southern Pacific rattlesnake (*Crotalus viridis helleri*).

3.3.2 - Birds

Several common bird species were observed during surveys include turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), mourning dove (*Zenaida macroura*), ash-throated flycatcher (*Myiarchus cinerascens*), western scrub jay (*Aphelocoma californica*), northern mockingbird (*Mimus polyglottos*) and spotted towhee (*Pipilo maculatus*). The complete list of birds observed during surveys can be found in Appendix B.

3.3.3 - Mammals

Several mammal species were either directly observed, or their presence was deduced by diagnostic signs (track, scat, burrows, etc.) along the proposed trail alignment and staging areas. Among these were the desert cottontail (*Sylvilagus audubonii*), California ground squirrel (*Spermophilus beecheyi*), and coyote (*Canis latrans*).

3.3.4 - Fish

Fish were not observed in any of the actively flowing on-site drainage systems, including Cucamonga Creek, however, the RWQCB Basin Plan has identified the mountain reach of Cucamonga Creek as supporting “Spawning, Reproduction, and Development” (SPWN) beneficial uses. Most spawning areas are likely located north of the project site, within covered/shaded pools in the mountain/riparian areas offer protection from predators and opportunities for thermal regulation necessary for spawning. Other aquatic vertebrates, including Pacific tree frog tadpoles (*Pseudacris regilla*) were observed in one of the outlet channels south of Cucamonga Dam/Basin. The tadpoles likely spawn in the ponded water within the Cucamonga Basin, and the channel area immediately south of the outlet structure.

Because the project will mostly utilize existing drainage crossings (bridges/culverts, Arizona crossings) effects to aquatic vertebrates should be minimal. The proposed trail crossing over Cucamonga Creek will not impact covered pools or ponded areas where fish and other aquatic vertebrates may typically spawn.

3.3.5 - Special Interest Species

Legal protection for sensitive species varies widely, from the comprehensive protection extended to listed threatened/endangered species to no legal status at present. CDFG, USFWS, local agencies, and special interest groups, such as the CNPS, publish watch lists of declining species. Species on watch lists can be included as part of the sensitive species assessment. Species that are candidates proposed for listing or are candidates for State and/or federal listing are also included in the sensitive species list.

Inclusion of the potential species described in the sensitive species analysis of the study area is based on the following criteria:

1. Direct observation of the species or its sign in the study area or immediate vicinity during surveys conducted for this study or reported in previous biological studies;
2. Sighting by other qualified observers;
3. Record reported by the CNDDB published by CDFG;
4. Presence or location of specific species lists provided by private groups (e.g., CNPS); or
5. Study area lies within known distribution of a given species and contains appropriate habitat.

Tables 2 and 3 list these species with a data summary for each, and a determination as to the likelihood of the species occurring on-site.

3.4 - Critical Habitat

There is no designated Critical Habitat along the proposed path of the trail or potential staging areas.

Table 1: Potential Sensitive Plant Species

Plant Species	Status Fed/State/CNPS	Observed Onsite	Likelihood of Occurrence
Nevin's barberry *(Berberis nevinii)*	FE/SE/1B. 1	No	Very low as species is easily observed
Thread-leaved brodiaea *(Brodiaea filifolia)*	FT/SE/1B. 1	No	None, no suitable habitat
Orcutt's brodiaea *(Brodiaea orcutti)*	None/None/1B. 1	No	None, well outside of its geographic range; no suitable habitat
Plummer's mariposa lily (*Calochortus plummerae)*	None/None/1B. 2	No	Moderate potential to occur; suitable habitat throughout within RAFSS
Parry's spineflower *(Chorizanthe parryi* var. *parryi)*	None/None/1B. 1	No	Moderate potential to occur onsite; suitable habitat within CSS and RAFFS areas.
Many-*stemmed* dudleya *(Dudleya multicaulis)*	None/None/1B. 2	No	None, no suitable habitat
Hot *springs* fimbristylis *(Fimbristylis thermalis)*	None/None/2. 2	No	None, no suitable habitat
Smooth tarplant *(Centromadia pungens* ssp. *laevis)*	None/None/1B. 1	No	Unlikely, marginal habitat and at the margin of its geographic range
Parish's gooseberry *(Ribes divaricatum* var. *parishii)*	None/None/1A	No	Very low likelihood, plant is probably extinct

Source: "Biological Resources Assessment and Report for Martin Ranch", PCR February 1999, subsequent biological resources assessment and report, White and Leatherman Bioservices, 2002, MBA General Biological Resources Report 2007.
*Includes secondary access route.

Federal (USFWS)

- FE Federally listed, endangered
- FT Federally listed, threatened
- FPE Federally proposed endangered
- FPT Federally proposed threatened
- FC Candidate species. Sufficient data are on file to support the federal listing.
- FSC Federal species of concern (former C2 and C3 species)

California Native Plant Society (CNPS) List

- List 1A: Plants presumed extinct in California.
- List 1B: Plants rare, threatened or endangered in California and elsewhere.
- List 2: Plants rare, threatened or endangered in California, but more common elsewhere.
- List 3: Plants about which we need more information- a review list.
- List 4: Plants of limited distribution - a watch list.

State (CDFG)

- SE State listed, endangered
- ST State listed, threatened
- SCE State candidate endangered
- SCT State candidate threatened
- SFP State fully protected
- SP State protected
- CSC California Species of special concern

Table 2: Potential Sensitive Wildlife Species

Species	Status Fed/State	Observed Onsite	Likelihood of Occurrence
Endangered or Threatened			
Santa Ana sucker (*Catostomus santaanae*)	FT/None	No	No suitable habitat. The nearest recorded occurrence is 5.4 miles. Not likely to occur.
San Bernardino kangaroo rat (*Dipodomys merriami parvus*)	FE/None	No	Outside of known range. Suitable habitat onsite; nearest recorded occurrence is 7.0 miles. Not likely to occur.
Coastal California gnatcatcher (*Polioptila californica)*	FT/CSC	No	Suitable habitat onsite; nearest recorded occurrence 3.4 miles. Moderate potential to occur.
Mountain yellow-legged frog *(Rana muscosa)*	FEC/CSC	No	Marginally suitable habitat in Cucamonga Channel or the area below San Antonio Dam. The nearest recorded occurrence 1.8 miles upstream at higher elevations of Cucamonga Creek. Not likely to occur.
Delhi Sands flower-loving fly *(Rhaphiomidas terminatus abdominalis)*	FE/None	No	No suitable habitat. The nearest recorded occurrence is 7 miles. Not likely to occur.
Sensitive Species			
Coast Range newt (*Taricha torosa torosa*)	None/CSC	No	Suitable habitat, high potential to occur within drainages during rainy season. The nearest recorded occurrence is 1.8 miles. High potential to occur in vicinity. Not likely to occur on trail.
California silvery legless lizard (*Anniella pulchra*)	FS/CSC	No	Suitable habitat, high potential to occur onsite. The nearest recorded occurrence is 1.8 miles. High potential to occur.
Southwestern pond turtle *(Clemmys marmorata pallida)*	FSC/CSC	No	No suitable habitat. The nearest recorded occurrence is 7 miles. Not likely to occur.

Table 2 (cont.): Potential Sensitive Wildlife Species

Species	Status Fed/State	Observed Onsite	Likelihood of Occurrence
Coast horned lizard *(Phrynosoma coronatum blainvillei)*	FSC/CSC	No	Suitable habitat onsite. Closest recorded occurrence is 0.7 miles. High potential to occur.
Black swift (*Cypseloides niger*)	BCC/CSC	No	Not observed in vicinity sine 1889. Not likely to occur.
Burrowing owl *(Athene cunicularia)*	BCC/CSC	No	Low quality habitat onsite. The nearest recorded occurrence is 4.7 miles. Low potential to occur.
Northwestern San Diego pocket mouse *(Chaetodipus fallax)*	None/CSC	No	Suitable habitat onsite. Closest recorded occurrence is 0.6 miles. High potential to occur.
Los Angeles pocket mouse *(Perognathus longimembris brevinasus)*	FSC/CSC	No	Suitable habitat onsite. Closest recorded occurrence is 6 miles. Moderate potential to occur.
San Diego desert woodrat *(Neotoma lepida intermedia)*	None/CSC	No	Suitable habitat onsite. Closest recorded occurrence is 0.6 miles. High potential to occur.
Western mastiff bat *(Eumops perotis)*	FSC/CSC	No	No roosting habitat along trail. Closest recorded occurrence is 2.9 miles Low potential to occur.
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)	None/CSC	No	Suitable habitat onsite. Closest recorded occurrence is 4.6 miles. High potential to occur.

<u>Federal (USFWS)</u>
FE Federally listed, endangered
FT Federally listed, threatened
FPE Federally proposed endangered
FPT Federally proposed threatened
FC Candidate species. Sufficient data are on file to support the federal listing.
FSC Federal species of concern (former C2 and C3 species)
FS Federally sensitive
BCC Birds of Conservation Concern

<u>State (CDFG)</u>
SE State listed, endangered
ST State listed, threatened
SCE State candidate endangered
SCT State candidate threatened
SFP State fully protected
SP State protected
CSC California species of special concern

SECTION 4: IMPACTS

4.1 - Impacts to Plant Communities

The majority of the proposed trail will not have significant impacts to vegetation as the proposed alignment is along existing dirt roads and trails.

Staging Area 1 is currently disturbed and would not impact native vegetation communities. The construction of staging area 2 would require the removal of approximately 1.13 acres of CSS.

The following tables detail the approximate impacts to existing vegetation that would be required for each alternatives crossing Mountain Avenue where there is not an existing road linkage:

Table 3: Estimated Impacts of Trail Alternatives

Primary Trail	
Vegetation	Acreage
Coastal Sage Scrub	0.90
Developed	0.10
Disturbed	0.76
Riversidian Alluvial Fan Sage Scrub	0.37
Total	**0.29**
Note: The Primary trail route would require a signal light to allow crossing of Mountain Avenue.	
Alternative 2	
Vegetation	Acreage
Coastal Sage Scrub	0.68
Developed	0.02
Disturbed	0.05
Total	**0.76**
Note: Alternate 2 would require the construction of a bridge over Mountain Avenue.	
Alternative 3	
Vegetation	Acreage
Coastal Sage Scrub	0.56
Developed	0.02
Disturbed	0.01
Total	**0.59**
Note: Alternate 3 would require the construction of a tunnel under Mountain Avenue.	

Recommendations: See recommendations associated with impacts to jurisdictional drainage features and riparian habitats.

4.2 - Sensitive Plant Species

No sensitive plant species were observed along the path of the trail, alternatives, or staging areas.

4.3 - Sensitive Wildlife Species

4.3.1 - Listed Species

The development of the trail would have a less than significant impact on any listed species.

4.3.2 - Nesting Birds

The Migratory Bird Treaty Act (MBTA) protects all common wild birds found in the US except the house sparrow, starling, feral pigeon, and resident game birds such as pheasant, grouse, quail, and wild turkey. Resident game birds are managed separately by each state. The MBTA makes it unlawful for anyone to kill, capture, collect, possess, buy, sell, trade, ship, import, or export any migratory bird including feathers, parts, nests, or eggs.

CDFG administers the California Fish and Game Code (CFG Code). There are particular sections of the CFG Code that are applicable to natural resource management. For example, Section 3503 states it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird that is protected under the MBTA. Section 3503.5 further protects all birds in the orders Falconiformes and Strigiformes, birds of prey such as hawks and owls, and their eggs and nests from any form of take. Section 3511 lists fully protected bird species where CDFG is unable to authorize the issuance of permits or licenses to take these species.

Recommendations: To avoid impacts to nesting birds, it is recommended that any removal of vegetation be done outside of the nesting season, which is typically between mid-January and August 31. If construction activities take place during the nesting season, it is recommended that a survey be conducted to determine the presence or absence of nesting raptors within the area of the proposed access road alignments. If the survey concludes that there is an active nest(s), prevention measures (i.e., buffer zone around nesting area(s) will be needed to avoid “take” of the nesting species and its nest.

4.3.3 - Jurisdictional Waters and Riparian Habitats

The proposed access trail alignments will impact areas that are potentially jurisdictional, depending on the level of improvements within Cucamonga Channel. Potentially jurisdictional areas below San Antonio Dam will not be impacted because the trail will utilize existing roads and bridges and will not impact any existing channels. A formal delineation has been performed for the proposed trail alignments (Michael Brandman Associates, Paul Mead, June 28, 2010 – under separate cover).

The California Department of Fish and Game has jurisdiction over lakes, streambed and the riparian communities associated with such resources. CDFG typically will include Riversidean Alluvial Fan Sage Scrub (RAFSS) habitat as riparian (streambed) habitat. The proposed primary trail alignment will utilize existing bridge/culvert crossings to avoid most impacts to CDFG jurisdictional areas. However, three CDFG jurisdictional areas will be impacted. These areas include (1) The northern reach of Cucamonga Creek/Channel, (2) The Cucamonga Dam Outlet Chanel, and (3) a small unnamed tributary to Cucamonga Creek. Of these impacts, the Cucamonga Creek crossing will impact adjacent jurisdictional RAFSS Habitat. In total, the project will impact 0.405 acre of CDFG jurisdictional streambed and riparian habitat. (See Exhibit 5)

Alternative Alignments along Drainage 1 (Cucamonga Basin) and Drainage 14 (Unnamed Drainage) will result in impacts of 0.834 and 0.030 acre of CDFG jurisdictional streambed and associated riparian habitat.

Impacts to CDFG jurisdictional areas require processing of a Lake and Streambed Alteration Agreement (LSAA) pursuant to Section 1602 of the Fish and Game Code. As part of the LSAA process, mitigation for impacts will be negotiated to compensate for impacts to CDFG jurisdictional resources.

The United States Army Corps of Engineers (USACE) has primary implementation authority over Section 404 of the Clean Water Act (Act). Section 404 of the Act requires that a dredge and fill permit be obtained for any impacts to waters of the U.S., which is broadly defined to include (among other things) navigable water bodies and other drainages and tributaries and there adjacent wetlands (including marshes, vernal pools, etc.) that have a significant nexus to downstream navigable waters.

According to the Jurisdictional Delineation Report prepared for the Project (Michael Brandman Associates, Pail Mead, June 28, 2010 – under separate cover), there are sixteen drainage systems located within the project area, encompassing 22.07 acres, which were determined to be potential waters of the U.S. (Waters). Waters of the U.S. include portions of two named features, the Cucamonga Drainage System (Creek, Basin and Channel) and the San Antonio Dam and Channel. No adjacent wetlands (as defined by the USACE criteria) were determined to be present on the Project Site.

The proposed project will create a recreational trail extending east to west from Cucamonga Creek/Channel to the San Antonio Channel. To minimize potential impacts to jurisdictional waters and aquatic resources, the selected (primary) alignment utilizes existing crossing structures wherever possible.

Recommendations: The County will prepare and submit a Lake and Streambed Alteration Agreement pursuant to Section 1602 of the Fish and Game Code. As part of the LSAA process, mitigation for impacts will be negotiated to compensate for impacts to CDFG jurisdictional resources.

The County will prepare and submit a Nationwide Permit program application (NWP-42) pursuant to section 404 of the CWA. Mitigation for impacts to impacted waters will be as agreed or otherwise required by the USACE subject to the permit authorization process.

4.3.4 - Wildlife Movement within the Study Area

The study area is located at the base of the San Gabriel Mountains with uninhibited movement throughout the study area and to the north, east, and west. There are no physical barriers surrounding the trail area other than residential development to the south and existing fencing around existing flood control facilities. The expanse of undisturbed land to the north of the proposed trail is conducive to wildlife traveling throughout the study area.

4.3.5 - Critical Habitat

There is no designated Critical Habitat along the proposed path of the trail.

SECTION 5: RECOMMENDATIONS

Vegetation Management

It is recommended that an invasive species vegetation management plan be implemented with the development of the trail. The equestrian use of the trail has the potential of introducing non-native seed material.

5.1 - Conclusions

The development of the trail will have minimal impact to native vegetation. The use of existing roads, trails, and bridges will minimize impacts to biological resources. It is recommended that a non-native management plan be implemented by San Bernardino County as a part of trail maintenance.

To avoid impacts to nesting birds, it is recommended that any removal of vegetation be done outside of the nesting season, which is typically between mid-January and August 31. If construction activities take place during the nesting season, it is recommended that a survey be conducted to determine the presence or absence of nesting raptors within the area of the proposed access road alignments. If the survey concludes that there is an active nest(s), prevention measures (i.e., buffer zone around nesting area(s) will be needed to avoid "take" of the nesting species and its nest.

Impacts and mitigations to jurisdictional waters will be negotiated with the regulatory agencies as part of the permitting process with CDFG and USACE.

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Appendix A: Flora Compendium

Flora Compendia

Anacardiaceae		**Sumac or Cashew Family**
Malosma	*laurina*	laurel sumac
Asteraceae		**Sunflower Family**
Artemisia	*californica*	California sagebrush
Baccharis	*salicifolia*	mule fat
Brickellia	*californica*	California brickellbush
Centaurea	*solstitialis*	yellow star thistle
Ericameria	*pinifolia*	pinebush
Eriophyllum	*confertiflorum*	golden yarrow
Hazardia	*squarrosa*	sawtooth goldenbush
Helianthus	*annuus*	common sunflower
Heterotheca	*grandiflora*	telegraphweed
Lepidospartum	*squamatum*	California broomsage
Pseudognaphaliu	*canescens*	everlasting cudweed
Senecio	*flaccidus var. douglasii*	Douglas' groundsel
Boraginaceae		**Borage Family**
Pectocarya	*penicillata*	sleeping combseed
Brassicaceae		**Mustard Family**
Brassica	*nigra*	black mustard
Hirschfeldia	*incana*	short-podded mustard
Caprifoliaceae		**Honeysuckle Family**
Sambucus	*mexicana*	Mexican elderberry
Euphorbiaceae		**Spurge Family**
Ricinus	*communis*	castor bean
Fabaceae		**Legume Family**
Lotus	*scoparius*	common deerweed
Lupinus	*bicolor*	miniature lupine
Lupinus	*hirsutissimus*	stinging lupine
Spartium	*junceum*	Spanish broom
Geraniaceae		**Geranium Family**
Erodium	*cicutarium*	red-stemmed stork's bill
Hydrophyllaceae		**Waterleaf Family**
Emmenanthe	*penduliflora*	whispering bells
Eriodictyon	*trichocalyx*	hairy yerba santa
Phacelia	*cicutaria*	caterpillar phacelia
Phacelia	*distans*	fern-leaf phacelia
Turricula	*parryi*	common turricula
Lamiaceae		**Mint Family**
Salvia	*apiana*	white sage

Flora Compendia

Salvia	*mellifera*	black sage
Moraceae		**Fig Family**
Ficus	*sp.*	fig tree
Onagraceae		**Evening Primrose Family**
Camissonia	*bistorta*	southern sun cup
Camissonia	*hirtella*	Santa Cruz Island sun cup
Papaveraceae		**Poppy Family**
Dendromecon	*rigida*	bush poppy
Platanaceae		**Sycamore Family**
Platanus	*racemosa*	western sycamore
Polemoniaceae		**Phlox Family**
Navarretia	*hamata*	hooked navarretia
Polygonaceae		**Buckwheat Family**
Eriogonum	*fasciculatum*	California buckwheat
Scrophulariaceae		**Figwort Family**
Diplacus	*aurantiacus ssp. aurantiacus*	sticky-leaf monkeyflower
Penstemon	*spectabilis*	showy penstemon
Scrophularia	*californica*	California figwort
Verbascum	*virgatum*	wand mullein
Solanaceae		**Nightshade Family**
Nicotiana	*glauca*	tree tobacco
Liliaceae		**Lilly Family**
Yucca	*whipplei*	Our Lord's Candle
Poaceae		**Grass Family**
Avena	*fatua*	wild oat
Bromus	*diandrus*	ripgut brome
Bromus	*hordeaceus*	soft brome
Bromus	*rubens*	foxtail brome
Hordeum	*murinum ssp. leporinum*	leporinum barley
Vulpia	*myuros*	rat-tail fescue

Appendix B: Fauna Compendium

Fauna Compendia

Phrynosomatidae		**Lizards**
Uta	*stansburiana*	side-blotched lizard
Sceloporus	*occidentalis*	western fence lizard
Viperidae		**Vipers**
Crotalus	*viridis helleri*	southern Pacific rattlesnake
Odontophoridae		**Quail**
Callipepla	*californica*	California quail
Cathartidae		**Vultures**
Cathartes	*aura*	turkey vulture
Accipitridae		**Hawks**
Buteo	*jamaicensis*	red-tailed hawk
Columbidae		**Pigeons/Doves**
Zenaida	*macroura*	mourning dove
Trochilidae		**Hummingbirds**
Archilochus	*alexandri*	black-chinned hummingbird
Calypte	*anna*	Anna's hummingbird
Tyrannidae		**Flycatchers**
Sayornis	*nigricans*	black phoebe
Sayornis	*saya*	Say's phoebe
Myiarchus	*cinerascens*	ash-throated flycatcher
Tyrannus	*verticalis*	western kingbird
Corvidae		**Jays/Crows**
Aphelocoma	*californica*	western scrub-jay
Corvus	*brachyrhynchos*	American crow
Corvus	*corax*	common raven
Mimidae		**Mockingbirds/Thrashers**
Mimus	*polyglottos*	northern mockingbird
Prilogonatidae		**Silky-flycatchers**
Phainopepla	*nitens*	phainopepla
Emberizidae		**Warblers, sparrow, etc.**
Pipilo	*maculatus*	spotted towhee
Fringillidae		**Finches**
Carpodacus	*mexicanus*	house finch
Carduelis	*psaltria*	lesser goldfinch
Passeridae		**True sparrows**
Passer	*domesticus*	house sparrow
Leporidae		**Hares and Rabbits**
Sylvilagus	*audubonii*	desert cottontail
Sciuridae		**Squirrels**

Fauna Compendia

Spermophilus	*beecheyi*	California ground squirrel
Canidae		**Wolves and Foxes**
Canis	*latrans*	coyote

Appendix C: Site Photographs

Photo 1: Step-over gate at the bridge crossing of Cucamonga Channel downstream of the Cucamonga Dam.

Photo 2: Cucamonga Channel looking north downstream of the Cucamonga Dam.


Photo 3: Looking east across Cucamonga Basin upstream of Cucamonga Dam.


Photo 4: Looking southeast across Cucamonga Basin upstream of Cucamonga Dam.

Photo 5: Existing step-over gate and vehicular access gate at the east end of 24th Ave. This would be the access entry to Staging Area 1.

Photo 6: Looking south in Staging Area 1.

Photo 7: Looking south at existing road north of Staging Area 1.

Photo 8: Step-over gate at the east end of 25th Street.

Photo 9: Looking south at step-over gate south the confluence of San Antonio Heights Intercept (D3) and Cucamonga Channel (D1).

Photo 10: Looking east at San Antonio Heights Intercept (D3).

Photo 11: Looking northeast along Alternative Route 1.

Photo 12: Looking northeast along Alternative Route 1 before the trail goes downhill and enters Cucamonga Channel.

Photo 13: Looking south within the Cucamonga Channel at existing trail.

Photo 14: Cucamonga Channel looking north upstream of the Cucamonga Dam.

Photo 15: Existing trail leading southeast out of Cucamonga Channel.

Photo 16: Looking west along the existing dirt road northeast of Staging Area 2.

Photo 17: Looking west along the existing dirt road northwest of Staging Area 2.

Photo 18: Existing dirt road with adjacent coastal sage scrub east of San Antonio Dam.

Photo 19: Existing dirt road path under electrical tower east of San Antonio Dam.

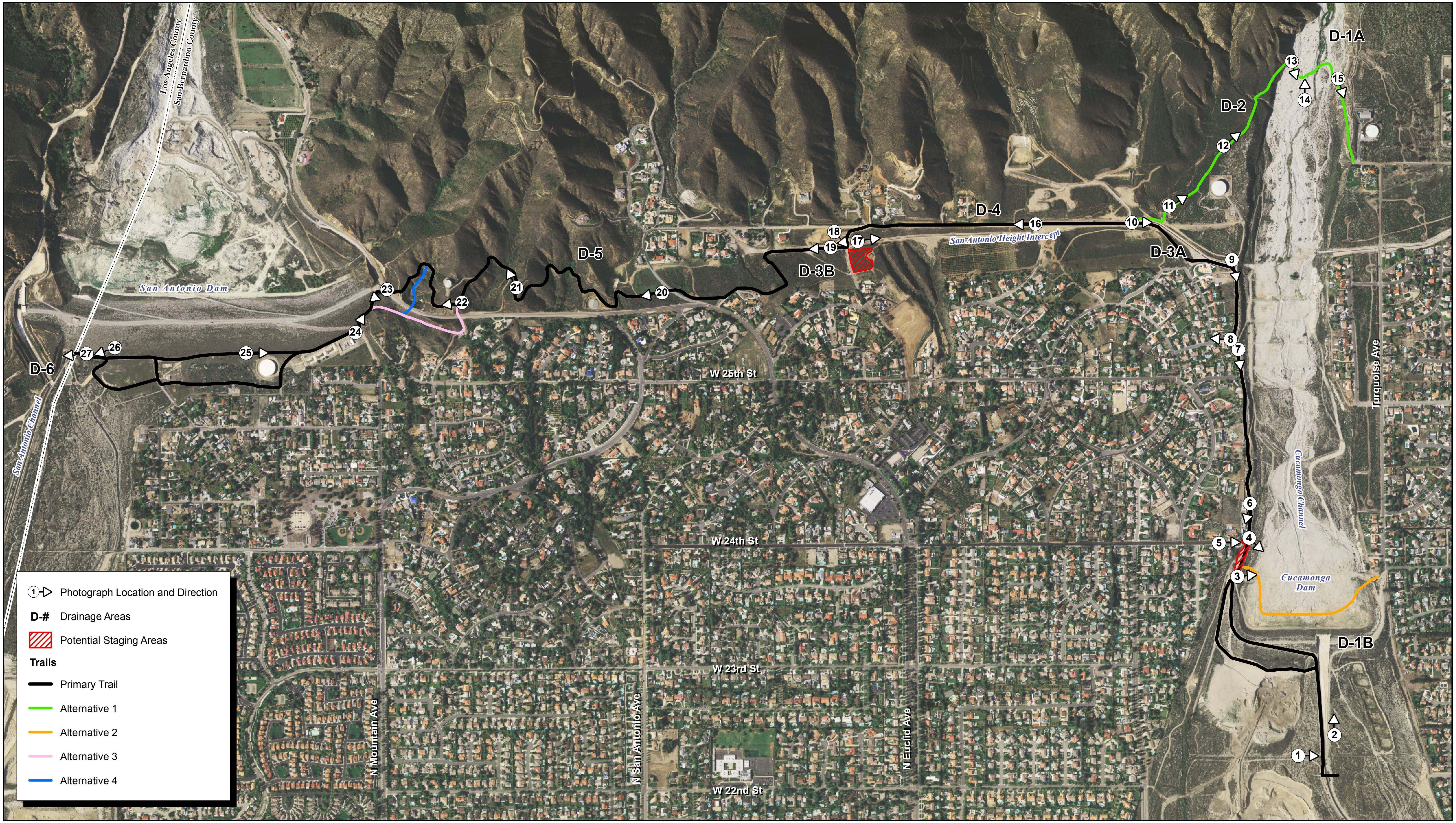
Photo 20: Alternative 3 would require a tunnel constructed at the base of the hill shown under Mountain Ave.

Photo 21: Looking southwest, showing the proposed path south of the San Antonio Dam.

Photo 22: Looking northeast, showing proposed path. This area would require construction of a new section of trail.

Photo 23: Looking east showing existing paved road south of the San Antonio Dam.

Photo 24: Looking west showing existing dirt road south of the San Antonio Dam.



Source: San Bernardino County Aerials (2007) & MBA Field Survey (2009).

Michael Brandman Associates

NORTH

1,000 500 0 1,000 Feet

Appendix C
Photograph Key

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COUNTY OF SAN BERNARDINO • SAN ANTONIO HEIGHTS TRAIL
HABITAT ASSESSMENT

Appendix C: Cultural Resources Assessment

Section 106/CEQA
Cultural Resources Assessment of the Proposed San Antonio Heights Trail San Bernardino County, California

Mt. Baldy, CA., USGS 7.5-minute Topographic Quadrangle Map
Township 1 North, Range 8 West, Section 24, 25, 26
Township 1 North, Range 7 West, Section 19, 20, 29, 30
+/-40 Acre Linear Study Area

Prepared for:

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Fieldwork Conducted By: Michael Dice
Dates Fieldwork Conducted: May and June, 2009
Report Date: June 30, 2009

Keywords: San Antonio Heights, San Antonio Creek, San Antonio Dam, Cucamonga Creek, CA-SBR-6255H

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MANAGEMENT SUMMARY

This report documents a cultural resource survey for a linear project area located north of the City of Upland in unincorporated San Bernardino County, California. Michael Brandman Associates (MBA) has performed this investigation for the proponent, the Regional Parks Division of the Public Works Department. The purpose of the study was to determine if significant cultural resources more than 45 years old (CEQA) and 50 years old (NEPA) were located within the project area and to assess whether or not there is potential for buried cultural resources to be uncovered during grading. This document has been written to fulfill Federal (Section 106) and State/Local (CEQA) environmental compliance needs.

The project area is essentially linear as the proponent proposes to build a mostly graveled equestrian and hiking trail system in the unincorporated community of San Antonio Heights. The new trail will link an existing system in the City of Rancho Cucamonga with a proposed trail in the northeastern section of the City of Claremont. The project consists of a prime trail candidate and a series of alternative segments. The primary route and the alternatives shall be evaluated as part of an Initial Study (IS) and Mitigated Negative Declaration (MND), which this document will support. Portions of the project that cross Federal land must be evaluated for cultural resource impacts before any permits can be granted to the County for the project.

A cultural resource literature search of the project area and vicinity was conducted on May 6, 2009 by MBA staff archaeologist Arabesque Said at the Archaeological Information Center (AIC), which is located at the San Bernardino County Museum, Redlands. Because the project area lies near Los Angeles County, MBA Project Archaeologist Wayne Bonner, M.S. at the Southern Central Coastal Information Center (SCCIC) at CSU-Fullerton, undertook a records search of City of Claremont lands one mile from the project area.

The results of the record search indicated that several small linear sections of the project area had been surveyed in the last 40 years, with the most recent survey in 1976. A few prehistoric sites are known within the search radius. One prehistoric site, CA-SBR-896, may be located near an existing semi-subterranean tank located on a small bench north of the corner of N. Euclid and N. Mountain. It was not observed during the fieldwork and may have been destroyed by construction of N. Mountain Avenue. The site will not be affected by proposed construction because the plan for this section of the proposed trail is to gravel it and not excavate. If excavation of this section of the trail is required, the segment must be monitored by a qualified archaeologist. Two previously unrecorded historic sites and more features associated with a previously recorded site were observed during the survey. These are Temp #1 (the San Antonio Dam), Temp #2 (San Antonio Creek spreading ground features) and Temp #3, which is known as CA-SBR-6255H Cucamonga Creek spreading ground streambed retaining walls. Because none of these resources will be directly impacted by construction of the proposed trail system, a finding of “no effect” (NEPA) and “no impact” (CEQA) has been made.

MBA contacted the Native American Heritage Commission (NAHC) on May 21, 2009 requesting a Sacred Lands File search for traditional cultural properties. The NAHC response, dated May 22, 2009 indicated that no sacred lands or traditional cultural properties are known for the project area. To ensure that Native American concerns are addressed, it was recommended that letters to each of the seven listed tribal contacts be sent. The seven letters were dated and mailed on June 25, 2009. As of the date of this report, no responses from any tribal contact has been received.

The results of the survey showed that the primary and alternative trail routes are entirely located in areas that have been previously impacted by earlier development. No trails through unimproved and vacant land are proposed. Several newly recorded historic resources and one prehistoric resource are discussed herein and direct impacts to them must be avoided during development of the project. Unless excavation into topsoil or remodeling of certain historic resources takes place during trail construction, mitigation-monitoring is not recommended. Staging areas are located in at least two places along the proposed trail. These will allow light levels of parking, unloading of horses from trailers, and will exhibit watering troughs. Mitigation measures have been offered for this report as these are required under CEQA guidelines. Construction of the staging areas should be monitored by a qualified archaeologist.

Site Temp #1 is the San Antonio Dam. Plans are to bring the trail below the toe of the dam, avoiding any erosion to slopes of the Dam, and then cross-paved areas until the County Line is reached. The placement of the trail is restricted to areas away from the slope of the Dam because of erosion concerns. Horses will travel on graveled areas while hikers will use paved paths. There will be no direct impact to this historic resource. Site Temp #2 is the old spreading ground spillway and footbridge site located south of the toe of the Dam. The trail is proposed to pass this site by without any direct impact. Site Temp #3 consists of a series of rock walls in the bottom of Cucamonga Creek channel that were built between 1930-1934. One of the alternative routes may pass by the uppermost wall in this site. As long as the characteristics of the site are not impacted by construction, there will be no direct impact.

One prehistoric site, CA-SBR-896, will likely not be affected by proposed construction because the plan for this section of the proposed trail is to gravel the nearby access road. Deep excavations into the road is not planned for. If excavation does occur in this section of the trail, and if any portion of the excavation is 100 feet or less from the site, that section of the trail route must be tested for the presence of significant cultural resources before allowing excavation to proceed.

SECTION 1: INTRODUCTION

At the request of the Regional Parks Division of the Public Works Department, MBA conducted a cultural resource assessment of a proposed trail system in unincorporated San Antonio Heights section of San Bernardino County, California. The proposed use of the project area is to build a County maintained trail linking an existing trail(s) in the City of Rancho Cucamonga with a planned for trail across the County line in the City of Claremont. The purpose of this report is to identify the presence or absence of potentially significant cultural resources within the project area and recommend avoidance or mitigation measures were necessary.

Federal, State, and local Agencies have developed laws and regulations designed to protect significant cultural resources that may be affected by projects regulated, funded, or undertaken by an Agency. These laws govern the preservation of historic and archaeological resources of national, State, regional, and local significance. The entirety of the project area falls under CEQA environmental compliance requirements, while the Federal land sections of the project fall under NEPA (Section 106) and CEQA regulations.

This cultural resource study was performed in compliance with the California Environmental Quality Act (CEQA), and U.S. Army Corps of Engineers (ACOE) Section 106-mandated guidelines. It closely follows the California Office of Historic Preservation (OHP) procedures for cultural resource surveys and the OHP's Archaeological Resource Management Report (ARMR) reporting format for archaeological reports. This report is organized into sections and appendices, which are summarized as follows:

- Section 1 introduces the project, the location, and the cultural resources team.
- Section 2 summarizes cultural setting.
- Section 3 presents the research design and investigative methods.
- Section 4 provides cultural resource survey and records search results.
- Section 5 provides management recommendations.
- Section 6 contains the project certification.
- Section 7 presents a reference list.
- Appendix A provides required cultural resource compliance documents.
- Appendix B provides personnel qualifications.
- Appendix C presents the regulatory framework.
- Appendix D provides recent photographs of the project area.

1.1 - Project Location

Approval of the proposed project will result in the construction of approximately five miles of public multi-use recreational trails along the northern boundary of San Antonio Heights along with two staging areas located on the east and central locations of the project. Several alternative construction parameters are included in this project description below. Situated in the far northwestern portion of the Chino Basin, the project area is located on County land between Cucamonga Creek and San Antonio Creek (see Exhibit 1). The boundaries of the project area can be found within the *Mt. Baldy, California* U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map, in Township 1 North, Range 8 West, Section 24, 25, 26 and Township 1 North, Range 7 West, Section 19, 20, 29, 30 (Exhibit 2). Specifically, the project area is linear and follows old paved and rarely used roads, existing trails and dirt roads used for access to various flood control facilities (see Exhibit 3). Private, County and Federal government lands are located in the project area. The survey required examination of about 40 linear acres of ground.

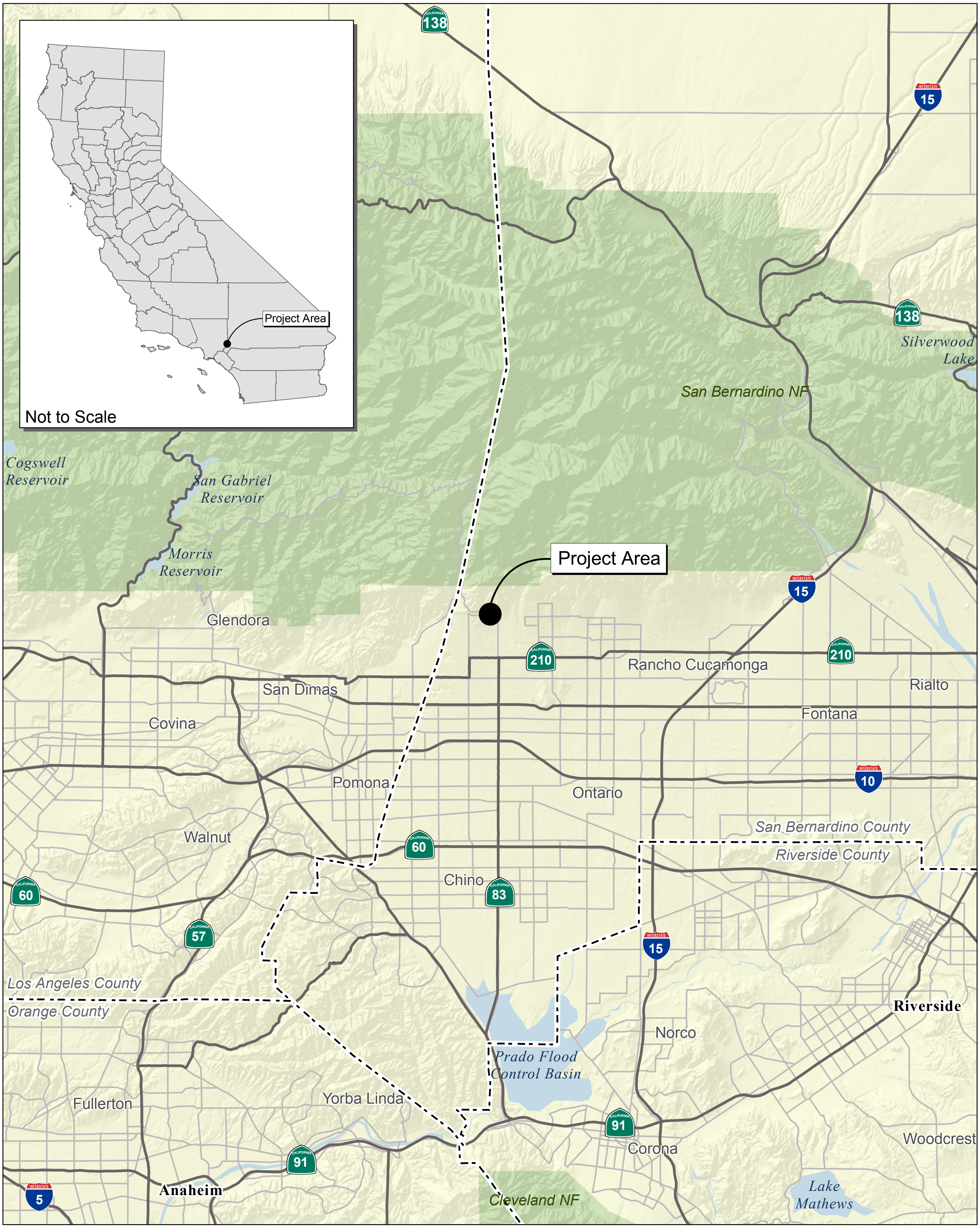
1.2 - Project Description

The proposed five-mile long public multi-use recreational trail (Project) will be located along the northern boundary of the community of San Antonio Heights in the unincorporated area of the County of San Bernardino (See Exhibit 3). In addition, two proposed staging areas will be located strategically along the trail. There are also six alternatives proposed as a part of the Project. The proposed Project would generally run along the existing alignment of the San Antonio Creek Trail. The County of San Bernardino will oversee the construction of the Project.

The proposed multi-use trail will be used for equestrian activities, mountain bike riding, and hiking. Much of the trail will be constructed on a prepared surface of crushed decomposed granite, which will allow water to permeate into the underlying ground without substantial erosion. Minor improvements may be implemented along the existing dirt paths chosen for trail construction where erosion has occurred as well as widening improvements in order to accommodate multiple uses of the trail. In addition, removal of large debris through out the trail may be required by light construction equipment. There is no lighting proposed for the recreational trail system.

The proposed multi-use route would generally run in an east-west direction on County land north of the northern boundary of the City of Upland (San Antonio Trail Initial Study [IS], Exhibit 3). The proposed trail system exhibits two equestrian staging areas (#1 and #2) and links between existing or proposed trail systems in Claremont and Rancho Cucamonga. The proposed project could provide connectivity to the planned-for Claremont Trail, which will terminate on the west bank of San Antonio Wash in the City of Claremont, and to the Cucamonga Creek Trail, which is located along the eastern community boundary of San Antonio Heights in the City of Rancho Cucamonga.

As shown in IS Exhibit 3, the primary trail route is 5 miles long and exhibits a linking trail leading to Staging Area No. 1, a link to an alternative trail that crosses Cucamonga Creek about 1.15 miles north of the creek flood control dam, and a link to an alternative trail located generally south of the Dam at Rancho Cucamonga's Confluence Trail Park near Indigo Avenue.



Source: Census 2000 Data, The CaSIL, MBA GIS 2009.

Michael Brandman Associates

NORTH

5 2.5 0 5 Miles

Exhibit 1
Regional Location Map

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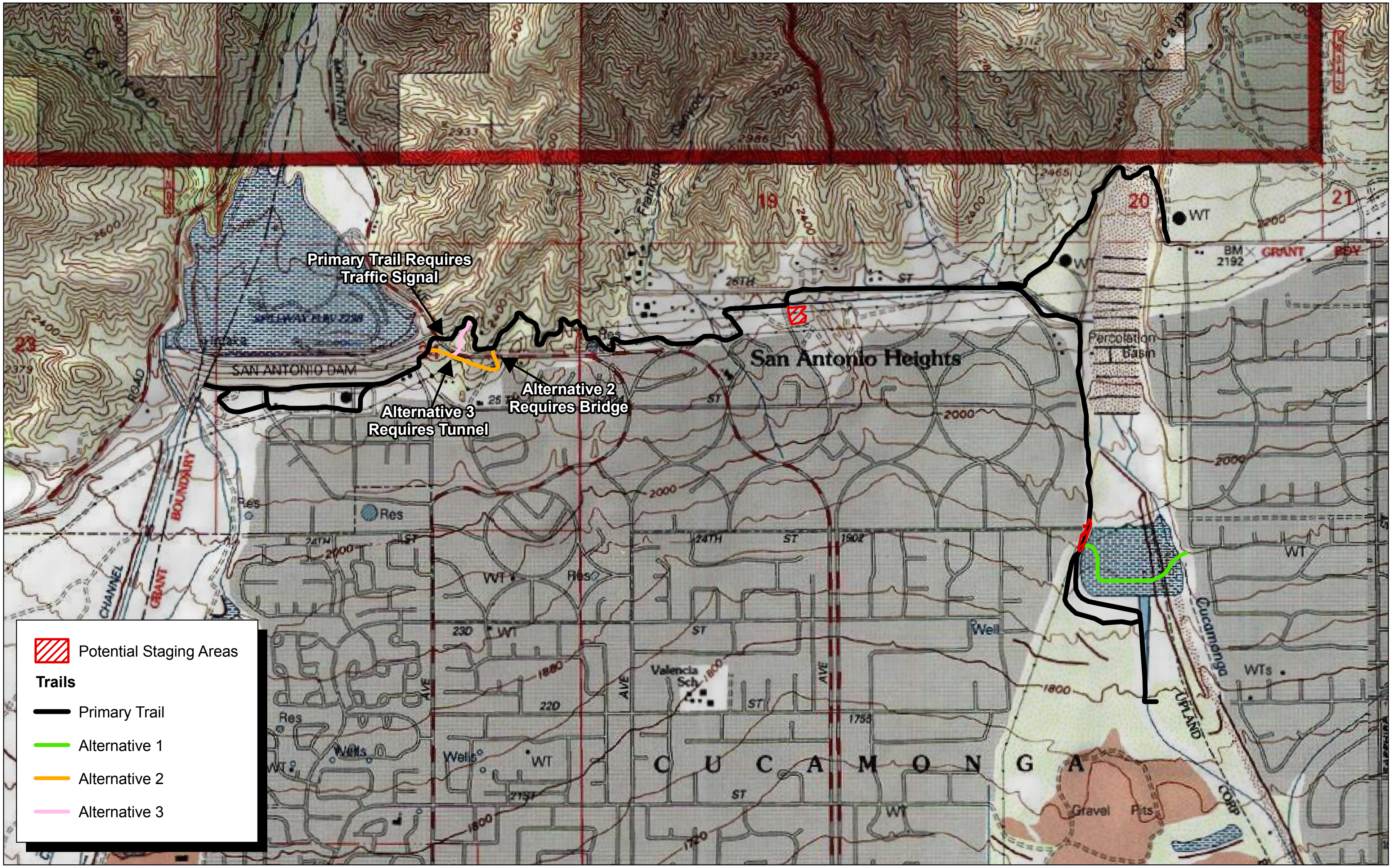
COUNTY OF SAN BERNARDINO • SAN ANTONIO HEIGHTS TRAIL
CULTURAL RESOURCE ASSESSMENT



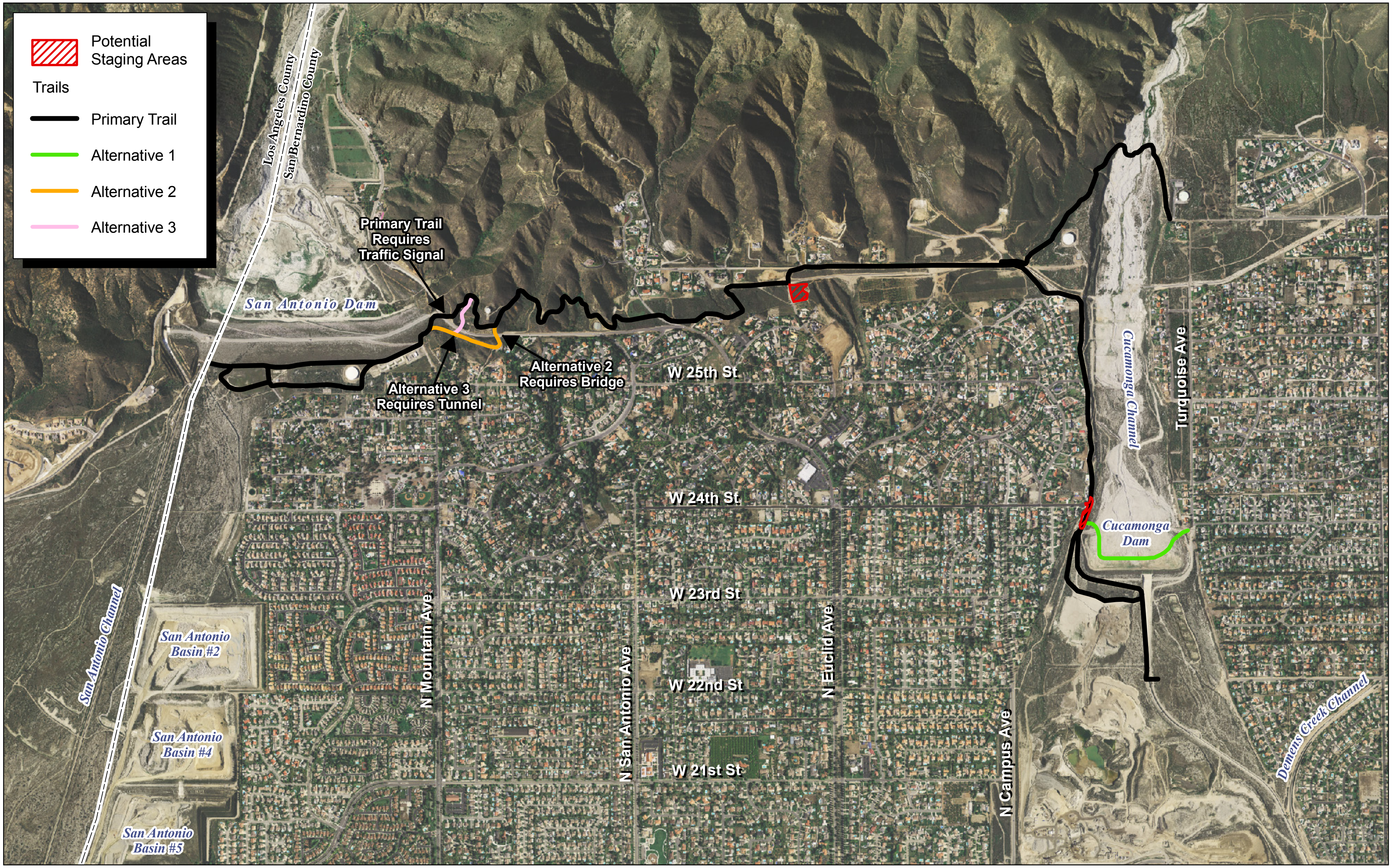
Source: TOPO! USGS Mt. Baldy (1995) 7.5' DRG.

Michael Brandman Associates

NORTH

2,000 1,000 0 2,000 Feet

Exhibit 2
Local Vicinity Map
Topographic Base



Source: San Bernardino County Aerials (2007); Census (2000).

Michael Brandman Associates

Exhibit 3
Local Vicinity Map
Aerial Base

The proposed multi-use trail includes the construction of two potential staging locations near the east and center of the proposed trail. The staging areas would be used to park and unload bicycles, horses, and other equipment, and are directly linked to the proposed trail system. The staging areas will be approximately 5,000 square feet in size and will include parking for vehicles with trailers, secondary access to the primary trail, equestrian hitching posts, equestrian drinking troughs, wood benches, picnic tables, toilet facilities, and composting bins. Composed of packed earth or decomposed granite. No nighttime lighting is proposed.

Staging Area No. 1 will be located on the eastern side of San Antonio Wash at the end of W. 24th Street. Vehicular access to Staging Area No. 1 will be provided via W. 24th Street and will be configured to accommodate a limited number of vehicles using a controlled gate. The site entrance would be enlarged to accommodate an inbound travel lane and an outbound travel lane for vehicles using horse trailers. There is no lighting proposed for Staging Area No. 1. Small infrastructure hookups may be required for the drinking troughs and restroom facilities.

Staging Area No. 2 will be located approximately 75 yards south of the Arctic Dr. and W. 26th Street intersection, just 0.25 miles northeast of the San Antonio Heights Community Church. Vehicular access to Staging Area No. 2 will be provided via a gate at Arctic Drive and will be configured to accommodate a limited number of vehicles using a controlled gate. The site entrance will have an inbound and outbound travel lane for vehicles using horse trailers. There is no lighting proposed for Staging Area No. 2. Small infrastructure hookups may be required for the drinking troughs and restroom facilities.

A limited number of vehicular parking spots would be available for the public per the County Development Code regulations. Vehicular parking is not proposed on the roadways near the staging areas, however, the staging areas will be large enough to accommodate 10 vehicles with trailers. Security at the staging areas will be provided via a controlled gate at the entrance of the parking lot. Finally, the Regional Parks Division of the Public Works Department would be responsible for maintenance related to the multiuse trails, including the removal of animal waste.

1.3 - Environmental Setting

1.3.1 - Topography, Geology, and Soils

The project area is located within an area considered the uppermost end of the Chino Basin. The project area generally slopes due south and is situated approximately 2000 feet above sea level. The soils in the project area are very cobbly and range from eroding alluvium to coarse river wash. The soils in the project area are entirely disturbed because of trail and road use, debris basin and Dam construction, blading and dumping. Vegetation conditions are associated with varied conditions: no trails are proposed for undisturbed ground located outside of washes. None of the proposed trails are located in an area exhibiting undisturbed ground surfaces. The trails exhibit recent alluvium in the creek channels and older alluvium on the benches between San Antonio Creek and Cucamonga

Creek. These benches exhibit older alluvium that was deposited in a high-speed stream environment and is very coarse, which precludes good preservation of paleontologic (fossil) resources.

1.3.2 - Vegetation and Wildlife

The majority of the trail and alternatives will be located on existing roads and trails. The vegetation described here include the areas adjacent to the proposed trails and the areas that may be impacted by construction of trail connections and staging areas. Roughly, one acre of Coastal Sage Scrub may be impacted by construction. This community is dominated by laurel sumac (*Malosma laurina*), California buckwheat (*Eriogonum fasciculatum*), deer weed (*Lotus scoparius*), white sage (*Salvia apiana*), yerba santa (*Eriodictyon trichocalyx*) and black sage (*Salvia mellifera*). CSS is the dominant plant community near the primary trail route. Riversidean Alluvial Fan Sage Scrub (RAFSS) is an open plant community adapted to the harsh conditions of flooding. It grows on sandy, rocky alluvium deposited by streams that experience infrequent episodes of flooding. RAFSS is composed of an assortment of drought-deciduous sub-shrubs and large, evergreen, woody shrubs that are adapted to the periodic and intense episodes of flooding and erosion that occurs along alluvial fans. RAFSS areas along the bottom of Cucamonga Channel and below the San Antonio Dam contain typical CSS species including laurel sumac, California buckwheat, and white sage as well as more typical RAFSS species including scalebroom (*Lepidospartum squamatum*) chaparral yucca (*Yucca whipplei*), yerba santa and deerweed. Ruderal and disturbed vegetated areas also occur near the project area. The vast majority of the project area is considered Developed.

1.4 - Assessment Team

MBA Staff Archaeologist Arabesque Said conducted a records search on May 6, 2009 at the Archaeological Information Center San Bernardino County Museum (AIC), and MBA Project Archaeologist Wayne Bonner conducted a records search at the South Central Coastal Information Center at CSU-Fullerton (SCCIC) on May 4, 2009. The Author conducted the pedestrian survey of the project area on April 30 and June 10, 2009 and wrote all DPR523 form sets. Professional qualifications for the team members can be found in Appendix B.

SECTION 2: CULTURAL SETTING

The following is a brief overview of the prehistoric and historic background that provides a context in which to understand the background and relevance of sites found in the general vicinity of the project area. This section is not intended to be a comprehensive review of the current resources available but rather serves as a generalized overview. Descriptions that are more detailed can be found in ethnographic studies, mission records, and major published sources including Kroeber (1925), Wallace (1955), Warren (1968), Heizer (1978), Moratto (1984), and Chartkoff and Chartkoff (1984).

2.1 - Prehistoric Background

Existing California Colorado desert chronology is generally attributed to Malcom Rogers (1939, 1945, and 1966), with revisions by Crabtree (1981) and Gallegos (1980). Contributions on the filling of Lake Cahuilla by Waters (1982 and 1983) have led to revisionist theories to account for changes to the cultural sequence as forced by filling of the Lake. This latter sequence will be used to discuss the prehistoric background of the Colorado Desert.

The development of a regional chronology in southern California is an understudied but important topic of regional archaeological research. Limited by the small quantity of stratified sites and a general lack of dateable samples and artifacts, fine-grained southern California chronologies are, in our view, substandard and of little use. In his recent book on California prehistory, Fagan (2003) does not utilize traditional cultural sequences, choosing instead to describe the stages in cultural evolution as generalized models related to changes in California environment over time. Regardless of this point of view, regional archaeologists generally follow Wallace's Southern California format, but the loosely established times for each period are regularly challenged and revised as is the meaning of the individual frames of reference. The ultimate purpose of cultural sequencing is to allow for meaningful comparisons of material culture attributes on an intrasite and intersite basis, and to provide the basis for culture-model building.

The most common sequence for southern California is from William Wallace's (1955; 1978). The prehistoric stages are as follows:

- Early Period - before 6000 B.C.
- Millingstone Period - 6000 to 3000 B.C.
- Intermediate Period - 3000 B.C. to A.D. 500
- Late Prehistoric Period (A.D. 500 to A.D. 1769)

Wallace also argued (Wallace, in Heizer 1978) that the stages prior to 2000 B.C. in southern California could be assigned to:

- San Dieguito Period (Period I: 9000 to 6000 B.C.)

- Standard Millingstone Period (Period II: 6000 to 3000 B.C.)
- Modified Millingstone Period (Period III: 3000 to 2000 B.C.)

Warren (1968) uses the following terms to subdivide the periods.

- San Dieguito Tradition (before 5500 B.C.)
- Encinitas Tradition (5500 B.C. to A.D. 600)
- Shoshonean Tradition (A.D. 600 to A.D. 1769)

The Late Prehistoric Period has been further subdivided into the San Luis Rey I (A.D.500 to A.D. 1500) and the San Luis Rey II (post 1500). The difference between the latter two is the introduction of locally made brownware pottery, the first indigenous pottery in southern California (Cameron 1999).

Wallace's cultural stages are associated with material culture patterning observed in the archaeological record, which is believed to have taken place in response to a gradual change from a primarily hunting-subsistence mode to a plant gathering and hunting mode. Archaeologists hypothesize (Fagan 2003) that specialization and selective exploitation of microenvironments seems to have taken place gradually beginning about 3000 B.C. Tool kits become more skillfully made and variations in tool types increase Statewide. Regional and local specializations appear to become distinct Statewide on or about this time. Although the early history of native Californians is poorly understood, ethnographic patterns derived from such analyses may in the future allow archaeologists to determine when particular sites were occupied in the absence of good radiometric or thermoluminescence dating.

A detailed description of the prehistory of southern California can be found in ethnographic studies, mission records and major published sources including Kroeber (1925), Wallace (1955), Warren (1968), Heizer (1978), Moratto (1984), and Chartkoff and Chartkoff (1984). Fagan (2003), Moratto and Chartkoff and Chartkoff provide recent overviews of California archaeology in general and review the history of the coastal regions in southern California. This and the following section provides a brief overview of the prehistory and history of the foothills of Los Angeles County.

2.1.1 - Early Period (Before 6000 B.C.)

Beginning with the first human presence in California, dated to about 11,000 years ago, the artifacts and cultural activities appear to represent a big-game hunting tradition. Much has been made of the few sites that exist in contemporary studies, such as Wallace in Heizer (1978). Unfortunately, very few sites from the Early Period exist, especially in inland areas. Of the Early Period sites that have been found and dated, most exhibit little refuse suggesting short-term occupations. Such sites have been detected in caves and around fluvial lakes fed by streams that existed near the end of the last glaciation. Chipped stone tools at these sites are clearly ancient, are not made until the Late Prehistoric Period, and reflect a specialized took kit used by hunters.

2.1.2 - Millingstone Period (6000 to 3000 B.C.)

The onset of the Millingstone Period appears to correspond with an interval of warm and dry weather known as the Altithermal (Wallace 1978). Artifact assemblages begin to reflect an emphasis on plant foods and foraging subsistence systems. For inland locales, it has been assumed that exploitation of grass seeds formed a primary subsistence activity. Artifact assemblages include choppers and scraper planes, but there is a reduced number projectile points in the excavated assemblages. Settlements appear to be larger and occupied for a greater amount of time than earlier sites.

Although numerous Millingstone Period sites have been identified in the La Verne area, the best understood of these is a site complex consisting of CA-LAN-524, -173 and -166/518, which based on the artifact assemblage characteristics at CA-LAN-166/518 are dated to the Millingstone Period or about 4000 B.C. (Whitney-Desautels et al. 1979a). The distribution of Millingstone sites in the Los Angeles basin reflects the theory that aboriginal groups may have followed a modified central-based wandering settlement pattern. In this semi-sedentary pattern, a base camp would have been occupied for a portion of the year, but small population groups seasonally occupied subsidiary camps in order to exploit resources not generally available near the base camp. Sedentism apparently increased in areas possessing an abundance of resources that were available for longer periods. More arid inland regions would have provided a seasonally and spatially dispersed resource base, restricting sedentary occupation. Overall, the Millingstone tool kit in the Los Angeles basin is typified by large and heavy deep-basin metates, wedge-shaped manos and large choppers and scrapers, with few projectile points. Flaked lithic tools are slightly larger and cruder than later periods and cogged stones first appear.

2.1.3 - Intermediate Period (3000 B.C. to A.D. 500)

Dating between roughly 3000 B.C. and A.D. 500, the Intermediate Period represents a slow technological transition likely related to a very slowly drying and warming climate. Site artifact assemblages retain many attributes of the Millingstone Period, but technologically speaking are difficult to distinguish from other sites in the absence of radiometric dates. Additionally, these sites generally contain a reduced number large-stemmed or notched projectile points but with an increase in portable mortars and pestles. The lack of large points combined with the mortars and pestles suggest that the aboriginal populations may have harvested, processed, and consumed acorns and other seeds over and above hunting. Due to a general lack of data, neither the settlement and subsistence systems nor the cultural evolution of this period is well understood. It has been proposed by some researchers that group sedentarism increased with the exploitation of storable high-yield plant food resources. The duration and intensity of occupation of base camps increased during this period, especially in the later part of the period. Overall, the Intermediate Period tool kit in the Los Angeles basin is vague, with elements of the Millingstone Period, such as heavy grinding implements, and the Late Prehistoric Period seen. A higher percentage of projectile points occur and smaller chipped stone tools are used. It has been assumed for decades that mortars and pestles became commonplace during this period and that most of the bedrock mortars found in southern California were ground during this period.

2.1.4 - Late Prehistoric Period (A.D. 500 to A.D. 1769)

Extending from about A.D. 500 to Spanish contact in A.D. 1769, the Late Prehistoric Period reflects an increased sophistication and diversity in technology. Late assemblages characteristically contain small projectile points, which imply the use of the bow and arrow. In addition, assemblages include steatite bowls, asphaltum, grave goods, and elaborate shell ornaments. Use of bedrock milling stations is purported to have been widespread during this period. Increased hunting efficiency and widespread exploitation of acorns provided reliable and storable food resources. Pottery, previously traded into the area, is made locally and is of simple construction technology, which suggests that the pre-contact Gabrielino may have used pottery as a part of their lifestyle.

One of the key reasons for understanding how culture change is perceived archaeologically is from the standpoint of determining where the ancestors of living indigenous Native Americans came from. Nothing can illustrate this concept better that to examine the “Shoshonean wedge” concept as first proposed by Kroeber (1925). Because the root languages of the indigenous southern Californians are of two types, Hokan and Uto-Aztecan, and because southwest Uto-Aztecan presence in Nevada, Arizona, etc is dated prehistorically late, it is assumed that Uto-Aztecan speakers entered southern California hundreds of years before the Spanish explored the coast, or about A.D. 700 to 1400. Without an analysis of specific cultural markers derived from dated sites, it is not possible to distinguish between culture-material artifact assemblages of newly in-migrated groups and their antecedents (see Drover et al 1983).

2.2 - Indigenous Native American Presence

2.2.1 - The Gabrielino

Kroeber (1925) and Bean and Smith (1978) form the primary historical references for this group. The arrival of Spanish explorers and the establishment of missions and outposts during the eighteenth century ended the prehistoric period in California and, due to the introduction of diseases such as smallpox and the mass removal of local Indian groups to the Missions San Gabriel and Mission San Juan Capistrano, Gabrielino society began to fragment.

The Gabrielino spoke a language that belongs to the Cupan group of the Takic subfamily of the Uto-Aztecan language family, a language family that includes the Shoshonean groups of the Great Basin. The total Gabrielino population at about 1770 A.D. was roughly 5,000 people, based on an estimate of 100 small villages of 50 to 200 people. Their range is generally thought to have been on the Pacific coast from Malibu to San Pedro Bay and south to Aliso Creek, then east to Temescal Canyon, then north to the headwaters of the San Gabriel River. Also included were several islands, including Catalina. This large area encompasses the city of Los Angeles, much of Rancho Cucamonga, Corona, Glendale, and Long Beach. By 1800, most Gabrielinos had either been killed, or were affiliated with the Missions.

The first modern social analyses of Gabrielino culture took place in the early part of the twentieth century (Kroeber 1925), but by that time acculturation and disease had considerably reduced the population. Nonetheless, the early ethnographers viewed the Gabrielino as a chief-oriented society of semi-sedentary hunter-gatherers. Influenced by coastal and interior environmental settings, their material culture was quite elaborate and consisted of well-made wood, bone, stone, and shell items. Included among these was a hunting stick made to bring down numerous types of game. Located in an area of extreme environmental diversity, large villages may have been permanent, such as that found on or near Red Hill, with seasonally utilized satellite villages. Their living structures were large, domed, and circular thatched rooms that may have housed multiple families. The society exhibited a hierarchy, possibly including chiefs, who possessed a much higher level of economic power than unranked tribal members did.

2.3 - A Short History of San Antonio Creek, San Antonio Dam, Cucamonga Creek and Early Water Conservation

The San Antonio Dam was completed in 1956 by the U.S. Army Corps of Engineers[1]. Situated at the mouth of San Antonio Creek, the Dam straddles the Los Angeles County line and is 160 feet high and 49 feet wide at the top. Holding 7,582-acre feet of water when full, the Corps currently permits sand and gravel mining in the reservoir section upstream and water recharge in the spreading ground sections downstream. Certain sections of the Dam and Reservoir area is currently not open to public use. The Cucamonga Dam was completed in 1978-1980 and is therefore cannot be considered a historic resource. Resources north of the Dam were built between 1930-1933 (Hammond 1989).

Early evidence of San Antonio Creek use is sketchy, but summarized nicely in Robinson (1983[2]). Ice was harvested from Icehouse Canyon in the 1850's and brought to Los Angeles in 100-pound cubes by mule-drawn wagon trains. The first ranch at the mount of the canyon was settled by M.M Kincaid who arrived in 1865. Several others homesteaded the canyon, including William Stoddard, who used his property as a camping spot for tourists. Others quickly followed suit. Because the San Antonio Water Company found the influx of campers and sportsmen polluting the creek along with man-made forest fires as a threat to water supplies, the Company began buying up all accessible lands between about 1888 and 1905, when nearly all property in the lower San Antonio Creek watershed had been acquired. One of the tourist camp operators, Himon Pierce, was hired by the company to protect the canyon from his camp at the bottom of Evey Canyon. Evey Canyon is the first canyon on the western side of the canyon wall north of the Dam. The monopoly did not last long for the Forest Service began leasing government lots (circa 1915) and, after a series of lawsuits, the canyon road was opened for travel into the new National Forest. The Water Company bought interests in the leased land (now known as Camp Baldy), improved the road, added tolls (charged between 1908-1922), and named the San Antonio Toll Road. By 1922, an automobile could drive from Los Angeles to Camp

1 www.wikipedia.com
2 Robinson, J.W. 1985ed. *The San Gabriels II: The Mountains from Monrovia Canyon to Lytle Creek*. Big Santa Anita Historical Society, Monrovia, CA.

Baldy in 2.5 hours. Floods in March 1938 destroyed much of the lower canyon road, which was rebuilt by the CCC in 1939. In 1955, Los Angeles County built Mt. Baldy Road well above the high water mark and passing the crest of the new San Antonio Dam.

Prior to construction of the Dam, water had flowed unimpeded from the creek during times of drought and flood (Robinson 1983). During high water, the creek would across a large alluvial fan toward the south-southwest until Chino Creek was reached, and then into the Santa Ana channel. Low water flows would sink into the fan and eventually into artesian basins before overpumping reduced the level of the water table. In 1891, Southern California Edison hired pioneering electrical engineer Almaria Decker to build a power plant on the creek floor[3]. Beginning November 1891, electrical power is sent to Pomona on a line 13 miles in length. This was a single-phase 120 kW plant, and the transmission lines carried 5,000 volts. The voltage increased to 10,000 and line extended 42 miles to San Bernardino within a year. The plant was significant in that it saw the first use of step up and step down transformers in any hydroelectric project. Electric Avenue, in west Rancho Cucamonga, can be seen on early aerial photographs and likely led from a distribution station in town to the powerhouse, which was located about ¾ of a mile below a geological feature known as the "Hogback" in Section 36 north of the modern Dam.

Historic records show that the massive and irregular flooding events that plague Southern California was not limited to major rivers: the smaller creeks flowing south out of the Transverse Range (San Gabriel and San Bernardino Mountains) regularly destroyed roads, bridges and town centers once every twenty years or so. According to Ostrom et al (2008[4]), in 1895 water users in the northwest corner of the Santa Ana River Basin began the practice of spreading creek water downstream from the canyon mouth in order to counteract drops in the level of local wells due to overuse. This required a system of maintainable ditches and spillways that moved water to ground that could soak in excess ground water upstream of population centers. The fan at the mouth of the canyon was perfect for this, whereas the fan south of Cucamonga Canyon was not good for this: Cucamonga Creek water had to be shunted several miles south before good spreading ground could be reached. The Pomona Valley Protective Association (PVPA) was formed in the late 1800's to oversee this activity in San Antonio Creek, and their work continues to this day.

Mendenhall (1908[5]) was the first to show that in order to attack the problem of irregular water supply, broad geological information was needed in order to best design a system for regional conservation, underground water storage and flood control. By this time, local farmers had begun to realize that the underground water supply was limited and greater well depths were needed in order to irrigate crops

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3 http://www.edison.com/files/backgrounder_mtview_historic.pdf and http://www.usbr.gov/power/edu/history.html

4 Ostrom, V, F. Sabetti, B. Allen and M. Sproule-Jones. 2008. *The Practice of Constitutional Government: Vincent Ostrom's Quest to Understand Human Affairs.* Pp. 107-108. Rowman & Littlefield, Lanham, MD.

5 Mendenhall, W.C. 1908. *US Geological Survey Water-Supply Paper No. 219*. Ground Waters and Irrigation Enterprises in the Foothill Belt, Southern California. US Government Printing Office Washington, D.C.

as the citrus-based economy grew. Mendenhall does not note any significant development of water sources upstream from the mouth of either San Antonio Creek or Cucamonga Wash, only that local engineers sent water into spreading districts when the supply was higher than what was needed to satisfy water compacts. Both the San Antonio Water Company and the Cucamonga Water Company battled in court over ownership of surface waters and well pumping.

Long-term water management in Southern California is a difficult chore requiring extensive engineering because heavy rain events are intermittent and at times extremely heavy. In the 1890's local water users began to realize that the wet years of the 1880's were a mirage: drought was severe between 1895 and 1904. Locals realized that region-wide water control and reliable delivery was needed in order to continue rapid development of the area, so the practice of sending water to spreading grounds was developed. When the region was hit by an average rainstorm, any damage was usually confined to one or two small watersheds. During heavy and severe rain events, such as the March 1938 El Nino flood, the entire Southern California region would be impacted. Once rain ended and flood waters had passed, the local spreading grounds and ditches were rebuilt was quickly as possible. Local politicians clamored for a dam to contain flood waters and debris on both San Antonio and Cucamonga Creeks, but although studies for such were undertaken by the State[6], the massive funding required to build large earthen dams was out of reach. Hyatt (1930) stated that the San Antonio Creek watershed geology retained water better that other parts of the Chino Basin so it was separated out from the Cucamonga Creek section during State Planning. San Antonio Creek was apparently channelized behind riprap levees beginning in the 1920's, but no dam was built.

Cucamonga Creek was at risk for greater downstream damage because the channel had cut deeply into its alluvial cone (ibid), leaving high banks of either side. The San Antonio Water Company and the Cucamonga Water Company had built weirs in the bottoms of both creeks during the early part of the century to contain and gradually spread water during storms.

Between the mid-1920's and 1937, another dry cycle impacted Southern California (ibid). The lack of rainfall was not as severe as the 1895-1904 period, but three times the land was under cultivation. Region-wide water management was required, and while local government could handle disbursement, flood and debris control could only ne undertaken through the Depression-Era Federal Government and the ACOE. In the aftermath of the March 1938 flood, the greatest in recorded history second to the floods of 1864, the ACOE planned for and began building dams, reservoirs and debris basins throughout Southern California. An earthen dam was planned for San Antonio Creek as early as 1940[7], but construction was delayed until 1951. The plan for most of the dams and debris basins built by ACOE on the Transverse Range was simple: the area received runoff from numerous canyons located on the south side of the San Gabriel Mountains and all had to be controlled with engineering earth embankments. For western San Bernardino County, this included San Antonio

6 Hyatt, E. 1930. *Santa Ana River Basin: A Plan for Flood Control and Conservation of Water*. State of California Department of Public Works Publications of the Division of Water Resources Bulletin No. 31.
7 http://www.oac.cdlib.org/findaid/ark:/13030/tf3h4nb0ks

Canyon, Cucamonga Canyon Thompson Canyon, Live Oak Canyon and a number of smaller canyons. Flood-control reservoirs at the base of the major canyons intercepted runoff for release to flood control channels, check dams and spreading grounds; the spreading grounds acting as a sponge to allow storm waters to percolate into underground basins. The San Antonio Dam would be placed on private land lying just south of the Los Angeles National Forest boundary that had been bought by the Federal Government.

In 1956, the San Antonio Dam was finished. Review of historic aerial photographs show that the dam has changed little since it was completed[8]. In 1948, any modified San Antonio Creek margins consisted of riprap levees without concrete channel, but improvements were ongoing each year. The creek passed through areas that were entirely citrus and any water behind the riprap either sunk into the ground or was diverted into small recharge basins. In 1951, ACOE aerial photos showed that all of the land from the mountains to US66, and between Mills Avenue in Claremont and Vail Way in Upland was vacant. Development to the sides of the stream channel could only occur once the stream was dammed and any potential overflow contained in a concrete channel. Before 1954, typical creek flows came out on the far western side of the creek floodplain, paralleling Mount Baldy Road behind a large riprap levee that remains in places to this day. One the creek reached the western quarter of Section 24, it turned due south behind riprap at a point about 450 meters east of Padua Avenue until discharging into the creek floodplain several hundred feet south of Baseline Street. Concrete channelization and new development along the creeks length could only occur between the San Gabriel mountains and Chino Creek once the Dam was finished and agreement in place that would deliver runoff to spreading grounds overseen by the PVPA. The concrete channel was probably completed between 1956 and 1965 throughout its length.

For reasons likely geological in nature, Cucamonga Creek was not planned for a dam by ACOE engineers in the 1940's-1950's. It is possible that because of competing jurisdictional interests, creation of a dam at the mouth of the canyon was not possible. Flood and debris control was left to local flood and water agencies, with the ACOE completing the existing Dam during the Modern era. In the early part of the last century, an area containing many dikes and spreading grounds was created between the base of mountains and Arrow Highway to the south. By 1965, heavy runoff was shunted into a channelized (riprap) Cucamonga Creek ditch all the way to Mill Creek in south Chino at the Prado Basin. Complete conversion to concrete was probably complete by 1980. Development of properties directly adjacent to the Cucamonga Creek channel began once the entire system was finished.

Only one major flood event in Southern California has taken place since San Antonio Dam completion: the El Nino event 1969. Two storms, one in January and one in February, took place and exhibited higher rainfall totals than the 1938 flood event. Flood control was far better as of this date

8 Historic aerials from 1948, 1951 and 1954 were inspected. See Exhibit 4, Exhibit 5 and the DPR523 form sets in Appendix E of this report.

but the latter storm created greater damage to downstream communities than the former. One hundred fifteen people were killed during these storms and hundreds of millions in property value was lost[9]. Because all flood control systems for the Cucamonga Creek channel and debris basins were not completed by the ACOE until about 1983, parts of western Rancho Cucamonga and Ontario were flooded out during the 1969 storm. Except for several minor storms, the flood control systems in the project area have not seen an intense storm since the 1969 event, although rainfall in 1978 was quite large and minor flooding did take place.

9 http://www.sbcounty.gov/flood/Flood%20Planning/pages/storm.htm

SECTION 3: RESEARCH DESIGN AND METHODS

The primary purpose of the cultural resource pedestrian survey is to locate and document previously recorded or new cultural resource sites or isolates that are more than 45 years old within the project area, and to determine whether such resources will be or could be impacted by development. The project area was examined using the transect method. All ground was inspected in order to evaluate the areas with the highest surface visibility and highest probability for detecting surface artifacts.

3.1 - Research Design

The goals of a Phase I survey are to determine whether cultural resources are located within or near a defined project area, what type of resources are present or could be present, and to predict the chance for future discoveries of sites in the project area. The pedestrian survey assumptions were based upon the results of the record search conducted at the AIC and at the SCCIC, and consisted of the following:

1. The probability for detecting prehistoric archaeological sites appears to be low because the general lay of the land is steep and native peoples prefer flatter locations. In addition, prehistoric sites located in washes usually do not survive because flooding tends to destroy them.
2. The probability for detecting historic resources appears to be high, because the project area is located in an area with extensive modifications to the existing ground surface up to about 45-50 years ago.

3.2 - Research Goals

The goal of this study was to determine whether cultural resources are located within the project area, whether they will or will not be directly impacted by proposed trail construction. If they will be directly impacted, a second goal must be to determine whether any existing cultural resources should be considered potentially significant resources. Finally, the archaeologist must develop specific mitigation measures that will address potential impacts to existing or potential resources. To achieve these goals, the study consisted of eight distinct efforts:

1. Request of NAHC Sacred Lands File record search and contact with appropriate tribal groups and individuals;
2. Review of previous cultural resource sites and studies in the region;
3. Examination of archived aerial photographs, topographic maps, and road maps;
4. Conduct a survey of the project area;

5. Complete a historic evaluation of buildings more than 45 years old on the property that will be directly impacted by the development, and provide historic mitigation measures;
6. Evaluation of cultural resource sensitivity;
7. Development of recommendations associated with mitigation monitoring and/or impacts to existing cultural resources following CEQA guidelines; and
8. Completion of Department of Parks and Recreation (DPR) forms for any discovered sites or isolated artifacts.

3.3 - Sites and Isolates

Prehistoric and historic cultural resource sites can vary in form and function from area to area. Prehistoric and historic cultural resources are defined as three or more items, such as lithics, stone tools, glass, cans, etc., that are not from a single source or material found within a 10 square meter area. Historic sites that could qualify as significant in California are typically more than 45 years old or have the potential to be more than 45 years old at the time of construction. These definitions assume that items found in an area with a diversity of materials can represent more than a single activity at a location. Discrete components of a site, also known as loci, may be identified to represent repeated activity, such as milling stations, hearths, or isolated structures.

3.4 - Record Search

3.4.1 - Information Center Search

The primary purpose of a cultural resource record search is to determine what cultural resources more than 45 years old have been recorded near or within the project area, and whether such resources will be or could be impacted by development. A records search at the AIC and SCCIC, was conducted to determine the existence of previously documented cultural resources in the County. A one-mile search radius was used. The records search included current inventories of the:

- National Register of Historic Places (NRHP);
- California Register of Historical Resources (CR);
- California Historical Landmarks (CHL);
- California Points of Historical Interest (CPHI);
- California State Historic Resources Inventory (HRI); and
- Archival maps for the City and County.

3.4.2 - Native American Heritage Commission Record Search

A request to the NAHC was sent in an effort to determine whether any sacred sites are located near the project area, as listed in their Sacred Lands File. Additional contact for the purpose of tribal comment was made with all appropriate tribal groups and individuals as named by the NAHC. Our efforts were associated with fact-finding only, and were not affiliated with formal government-to-government consultations as outlined by Senate Bill (SB) 18.

Tribal Consultation Overview and Responsibilities

The following overview is provided to assist the County in meeting its responsibilities for compliance with Tribal Consultation legislation, which is required when a project results in adopting a Specific Plan, Specific Plan Amendment, or a General Plan Amendment.

As of March 1, 2005, California Government Codes 65092; 65351; 65352; 65352.3; 65352.4; 65352.5 and 65560, formerly known as Senate Bill (SB) 18, require city and county governments to consult with California Native American tribes before individual site-specific, project-level land use decisions are made. In particular, this process applies to General Plan Amendments and adoptions of Specific Plans. The intent of this legislation is to provide all tribes, whether federally recognized or not, an opportunity to consult with local governments for the purpose of preserving and protecting their sacred places. See Appendix C for more information.

SECTION 4: RESULTS

4.1 - Information Center Search

On May 6, 2009, MBA Staff Archaeologist Arabesque Said conducted a records search at the EIC, which is located at the University of California, Riverside. On May 6, 2009, MBA Project Archaeologist Wayne Bonner conducted a records search at the SCCIC, which is located at C.S.U-Fullerton. To identify any historic properties, the team examined the current inventories of the NRHP, CR, CHL, and CPHI. In addition, both copied the HRI and certain archival maps of the County to determine the existence of previously documented local historical resources.

According to the AIC and SCCIC files, 48 block-transect surveys and linear surveys have been conducted within the 1-mile search radius. Of these, the linear project area crossed several older study areas (Martz 1976, Martz 1977, SBCMA 1979, Lerch 1982, White 1993, Alexandrowicz et al 1994a, Alexandrowicz et al 1994b, CRMTech 2007). AIC files indicated that there is one cultural resource located within the project area, and twenty-two resources are known within the 1-mile search radius. Site CA-SBR-6255H (Hammond 1989) fills the Cucamonga Basin and consists of flood control works build circa 1930-1933. Portions of this site lie near project Alternative #1. One of the sites near the project area, CA-SBR-896, was recorded in early 1976 and is a prehistoric scatter near an existing dirt road and Edison transmission tower. From the SCCIC files, no cultural resource are located within the one-mile search radius in Los Angeles County. The previously recorded resources, all located on the USGS *Mt. Baldy, California* topographic quadrangle, are briefly described in the following table.

Table 1: Previously Recorded Cultural Resources

Site Name	Location	Type	~1 mile radius	~0.5 mile radius	~0.25 mile radius	On Site?
CA-SBR-3004	Section 17	Milling slick and grinding stone	☐	☒	☐	No
CA-SBR-6255H	various	Cucamonga Creek spreading grounds. Includes P36-020141	☐	☐	☐	Yes
CA-SBR-7153H	Section 29	Historic orchard	☐	☐	☒	No
CA-SBR-7694H	various	Boulder Dam electric transmission lines. Crosses over project area.	☐	☐	☒	No impact possible
CA-SBR-7846H	Section 24	Historic waterworks	☐	☐	☒	No
CA-SBR-7847H	Section 24	Historic flume	☐	☐	☒	No

Table 1: Previously Recorded Cultural Resources (Cont.)

Site Name	Location	Type	~1 mile radius	~0.5 mile radius	~0.25 mile radius	On Site?
CA-SBR-896	Section 24	Prehistoric artifact scatter	☐	☐	☒	No
CA-SBR-8977	Section 19	Historic irrigation canal	☐	☒	☐	No
CA-SBR-8978	Section 19	Historic citrus homestead	☐	☒	☐	No
P36-015982	various	Euclid Avenue	☐	☒	☐	No
P36-018094 CPHI-85	Section 24	Historic railway station	☐	☒	☐	No
P36-018105	Section 32	Historic warehouse	☒	☐	☐	No
P36-018222	Section 30	Historic structure	☒	☐	☐	No
P36-018597	Section 30	Historic structure	☒	☐	☐	No
P36-018600	Section 30	Historic structure	☒	☐	☐	No
P36-018601	Section 30	Historic structure	☒	☐	☐	No
P36-018602	Section 30	Historic structure	☒	☐	☐	No
P36-018603	Section 30	Historic structure	☒	☐	☐	No
P36-018604	Section 30	Historic structure	☒	☐	☐	No
P36-018605	Section 19	San Antonio Forest Fire Station	☐	☒	☐	No
P36-020140	Section 31	Historic structure	☒	☐	☐	No
P36-020142	Section 30	Historic structure	☒	☐	☐	No
P36-020143	Section 30	Historic structure	☒	☐	☐	No
Legend: x = Present within radius blank = Not present within radius Source: AIC, SCCIC						

4.2 - Native American Heritage Commission Record Search

MBA contacted the NAHC on May 21, 2009 requesting a Sacred Lands File search for traditional cultural properties. The NAHC response, dated May 22, 2009 indicated that no sacred lands or traditional cultural properties are known for the project area. To ensure that Native American concerns are addressed, the NAHC recommended that letters to each of the seven listed tribal contacts be sent. This letter was dated and sent June 25, 2009. As of the date of this report, no responses have been received from any tribal contact.

4.3 - Cultural Survey Results

MBA Senior Archaeologist Michael Dice, MA, RPA, surveyed the project area on April 30 and June 10, 2009. The project area was examined using the reconnaissance technique because the project area is linear and located mostly on disturbed ground. Each of the proposed staging areas were examined carefully on both dates. Alternative routes were also examined where possible, although access to some of the alternatives was limited due to trespassing rights.

During the pedestrian survey on April 30, non-federal lands were examined. During the pedestrian survey on June 9, all Federal land was examined, and the Author was accompanied by ACOE staff. Three historic resources were observed. These are the San Antonio Dam, the old spreading ground spillway and footbridge remnants below the Dam, and Cucamonga Creek spreading ground retaining walls. One prehistoric site, CA-SBR-896, is located very near the primary trail route in Section 24 at approximately 0438800mE/3779920mN. Overall, the potential for impacts to potentially significant resources, at least in the upper foot of soil, is considered quite low. A mitigation-monitoring plan appropriate for the project shall be recommended.

4.3.1 - Temp #1: San Antonio Dam

The San Antonio Dam consists of a large earthen berm some 160 feet high stretching from a steep canyon bank located slightly east of Mt. Baldy Road in Claremont to another bank along of N. Mountain Avenue north of the City of Upland. From floor to floor, the width of the Dam is 670 feet wide at the base and 40 feet wide at the top. Water control points are located at the base of the Dam in the western quadrant and through a concrete spillway at the western edge. In wet winters, rainfall not collected or pumped from upstream locations fills the basin to a point where it can be gravity fed to spreading basins controlled by ACOE or PVPA south of the Dam. According to San Antonio Dam staff, no water has ever filled the basin, flowed over the top, and into the spillway. The spillway is popular with skateboarders, whom have covered all exposed concrete surfaces with graffiti. The ACOE works below the dam do not appear to have changed since construction was finished in 1956, although there have been some minor improvements. Older features in the creek channel appear to have been built before the Dam was raised.

Construction of the Dam took place between 1951 and 1956. Earth and rock was probably taken from upstream sources. The aerial photographs available to us consist of March 1953 images from ACOE historic files (Exhibit 4) and a 1954 image from www.historicaerials.com (Exhibit 5), which lacks the detail of the former. The 1953 image is interesting because earth has not yet been moved into place, but the spreading grounds intake gate “K” (currently exposed to view in the debris basin at the base of the Dam), pipeline and exit gate are clearly shown. Mt. Baldy Road ran near the bottom of the channel (dots): this was rerouted in 1954. Creek water was probably diverted into a temporary concrete sluice located along the western bank of the canyon (arrows) at least until the Dam construction could begin. Later, the temporary flume was abandoned and creek surface flows would have been sent back through spreading grounds intake K. The 1954 image shows the Dam’s earthen fill partially in place. Orchards and structures have been removed and a temporary road runs from Mountain Avenue to the western edge of the construction area. Built from the center toward the east, fill was probably trucked down Mountain from a source point and dumped. This image shows that the 1953 temporary flume had been removed and Mt. Baldy Road was put in and near its location.

Water from the creek was likely being stored in the excavated pits upstream. The gap in the Dam was probably closed in 1955 and minor embellishments completed in 1956. Features seen today and also seen in historic aerials Exhibit 4 and 5 are described in DPR523 form sets in Appendix E.

4.3.2 - Temp #2: San Antonio Spreading Grounds Spillway

The San Antonio Water Company (SAWC), established as a growers cooperative in October 1882, provided irrigation to roughly 5,000 acres of citrus in San Antonio Heights, Upland and Ontario by 1912[10]. Adams etal states that all of the normal flow of San Antonio Creek was diverted for hydroelectric power generation up-canyon before the surface flow was returned to the creek bed. This was probably done at the powerhouse located below the Hogback. Above the canyon mouth, surface creek water was then diverted between Ontario and Pomona water companies, including SAWC. Once the surface flow entered the plain, the water was allowed to settle in spreading grounds so that wells could be recharged. The 1953 ACOE aerial photograph in Exhibit 4 below reveals old surface water diversion features that were in place before San Antonio Dam was constructed. The features consist of a small spillway (G) with side gates at 0437166mE/3779600mN, a small wooden bridge that crosses over the downstream channel at 0437233mE/3779535mN (L) and a bridge remnant at 0437110mE/3779536mN (M). These bridges were apparently built to allow Edison to access their transmission towers, which run from the upper right to lower left corners of the 1953 frame and are numbered. Today spillway G still diverts a small amount of water onto the alluvial cone by receiving water running out of metal pipes located about 150 feet north. These pipes carry water diverted from the dam through valves hidden in small structures at the base of the Dam. During the winter, when surface flows crossed the old spillway, the diversion gates were cranked upward to that water could flow to the east, west and center channels. The device was positioned so that gravity would take the flow to all sides of the alluvial cone thereby spreading it out evenly. The age of these works is uncertain: they were probably built after the deluge of March 1938 because that flood quite likely destroyed all small surface features in the canyon.

10 Adams, F., S.T. Harding, R. D. Robertson and C.E. Tait. 1912. *Reports on the Irrigation Resources of California.* Report of the Conservation Commission of the State of California Vol 2 pp: 186-190

Source: United States Army Corps of Engineers (1953).

Michael Brandman Associates

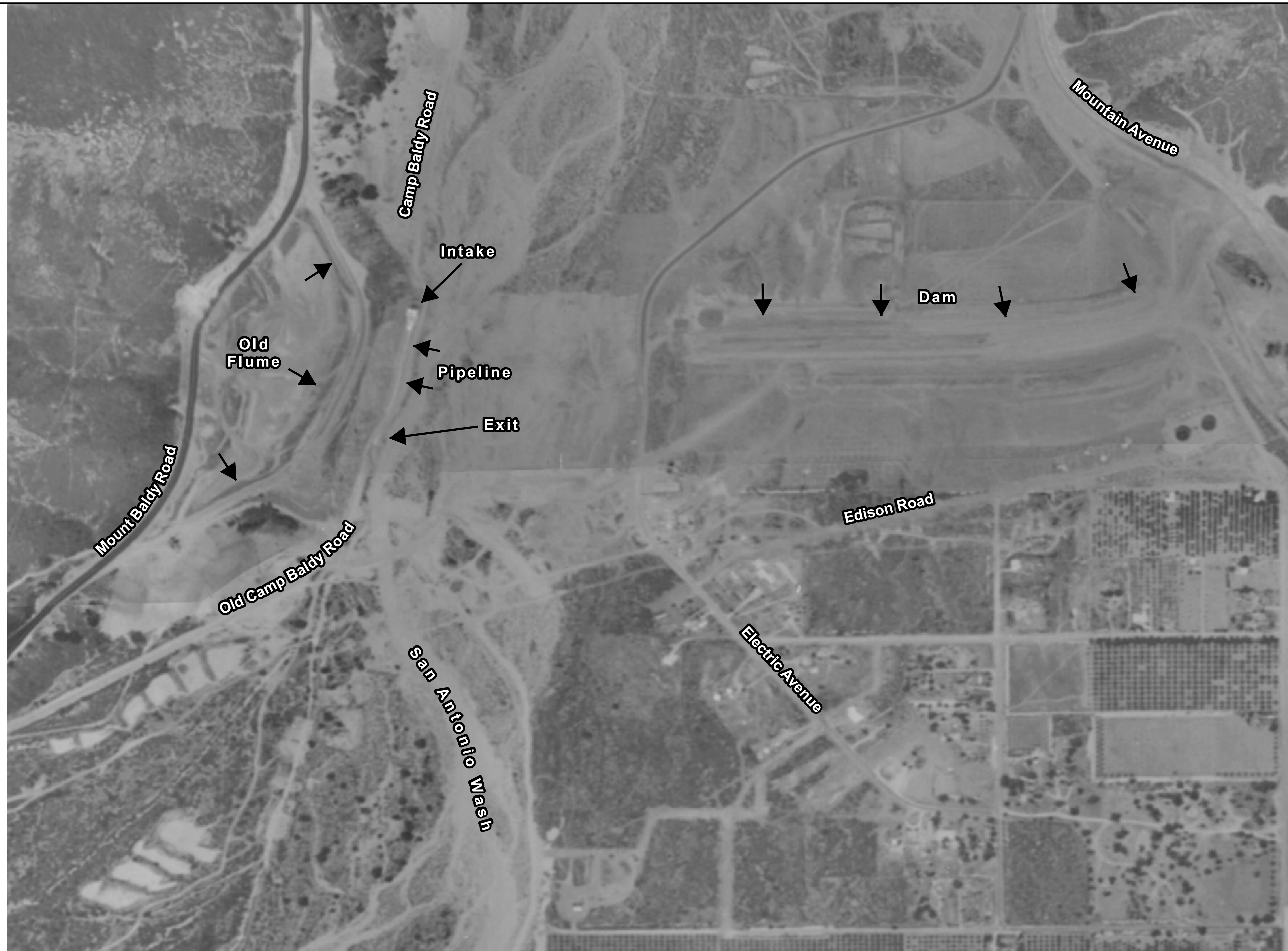
NORTH

Not to Scale

Exhibit 4
Historic Aerial: 1953

00520123 • 06/2009 | 4_HA_1953.mxd

COUNTY OF SAN BERNARDINO • SAN ANTONIO HEIGHTS TRAIL
CULTURAL RESOURCE ASSESSMENT



Source: www.historicaerials.com

Michael Brandman Associates

NORTH

Not to Scale

Exhibit 5
Historic Aerial: 1954

The amount of surface water sent downstream to the spreading grounds was probably mandated by legal decree of which the PVPA is probably a party to. Construction of the dam would have eliminated the natural flow of surface water, so an intake gate and flume/pipeline was built at ground level on the upstream side of the new dam so that the mandated amount of surface flows could pass through the base of the dam and into pipelines or flumes leading to the spreading grounds. Today, the works are dry most of the time, but once the recharge flume leaves the dam, it splits and allows water to pour into a pipeline for recharging the PVPA area. Excess flow would enter the concrete San Antonio Channel. Any substantive amounts of water running down the Dam spillway would crash through the alluvial embankment opposite the exit point and onto the floodplain below the dam. Smaller flows across the spillway could be diverted into San Antonio Channel. Fortunately, this scenario has not yet been tested.

4.3.3 - Temp #3: Rock flow reducer walls in CA-SBR-6255H

The images available of the Cucamonga Creek area in this report can be observed on GoogleEarth. The stream channel has cut a narrow canyon across the San Antonio Heights-West Rancho Cucamonga foothills, which emptied into large desilting basins (former gravel pits) once located in and near the 210 Freeway. The 1954 and 1978 www.historicaerials.com images show the channel to be unfettered by dams, but riprap flow reducers several feet high crossed the entire stream channel until from the canyon mouth to a point near about 24th Street. South of this, San Bernardino County Flood Control built the Cucamonga Dam between 1978 and 1980 forming a percolation basin above that point and helping to recharge existing groundwater supplies. The 1954 aerial shows the flow reducers in place as of that year, but since the reducers are some distance from the Project Site, the existing reducers were not recorded onto DPR523 forms. Wells and pipelines line either side of the stream, as wells provided most of the irrigation water at the time. In the mid-1970’s the groves in north Upland, San Antonio Heights and north Rancho Cucamonga were removed to make way for tract houses.

Cucamonga Creek water spreading efforts were discussed in two State of California flood control bulletins[11]. In Hyatt (1929), the existing Cucamonga Creek flood control works consisted of a wire-bound rock wall spanning the entire channel located due west of Almond Street and a second bound rock wall due west of Ananas Street (now Hillside Road). Small rock walls were built in the floodplain between the two. Additional walls had been placed in the channel west of the west end of Hillside Road and southwest of Banyan Street. Plate 5 from the 1929 report reveals the position of a tunnel built in the San Antonio Heights Mesa, which carried water from an upstream source and possibly ending at a well located near the end of 23rd Street. Finally, Plate 5 shows the location of a conduit bringing water from San Antonio Creek to spreading grounds located south of Highland

11 Hyatt, E. 1929. *Santa Ana Investigation: Flood Control and Conservation*. State of California Division of Water Resources Bulletin No. 19. Sacramento
Hyatt, E. 1930. *Santa Ana River Basin*. State of California Division of Water Resources Bulletin No. 31. Sacramento

Avenue (now 19th Street). In Hyatt (1930), plans were made to improve the existing system by adding a number of dikes and cross walls to lands located south of the rock wall off Hillside Road. If these improvements did in fact take place, many of them would have been located near the existing modern debris detention basin in the project area and many others walls father south. If built, some of the features at the margins of the desilting basin may still exist despite the floods of 1938, 1969 or 1978. In sum, we believe that the flood control works located in the channel near the project area were likely put in after the massive 1938 floods by the Cucamonga Water Company as part of a rebuilt spreading system. They appear to be more than 45 years old and do not function.

SECTION 5: SUMMARY AND RECOMMENDATIONS

5.1 - Summary

In accordance with CEQA and Section 106, MBA assessed the effects of future trail development in and near the project area. The effect of trail construction and use was assessed against the cultural resources in a near the project area. We find that there will be no effect and therefore no impact to sites Temp #1, Temp #2 and Temp #3. There appear to be no direct major demolition, excavations, or modifications of existing historic resources during development of the trail. Slight impacts to the old works at the toe of the Dam will occur, but ACOE staff indicated that any changes would be considered cosmetic from the permitting standpoint.

The results of the cultural resource record search indicate that one prehistoric cultural resource is located very near the proposed route near the corner of Mountain and an Edison transmission tower; there is a chance that cultural resources will be detected when grading more than one foot below the modern ground surface takes place. Therefore, we recommend that limited archaeological monitoring take place during construction-related earthmoving. Table 2 provides specific measures that should be incorporated into the mitigation measures for this project.

Table 2: Recommended Cultural Resource Mitigation Measures

Mitigation No.	Mitigation Text
CR-1	If excavation of ground below 1 foot in depth shall occur within 100 feet of site CA-SBR-896, a qualified Project Archaeologist must shovel-test the trail route in this area. If the site cannot be found, apply measure CR-3 through CR-5. If the site is detected, the qualified archaeologist must determine whether or not the site is a significant resource following appropriate testing guidelines.
CR-2	Excavation below one-foot will likely occur in staging areas. The excavation of staging areas must be monitored by a qualified archaeologist following CR-3, 4 and 5
CR-3	Once a depth below the modern ground surface of one (1) foot is reached by construction-related earthmoving, monitoring of construction-related excavations is required. Surface roughening of the trail prior to laying gravel need not be moitored. Earthmoving should be monitored on a full-time basis, but the Project Archaeologist may, at his or her discretion, terminate monitoring if and only if no buried cultural resources have been detected after 50 percent of the qualifying ground has been graded. If buried cultural resources are detected because of CR-1 or during CR-2 monitoring, monitoring must continue on the project area until 100 percent of virgin earth within the project has been disturbed and inspected by the monitor(s).
CR-4	Monitoring must be guided by a mitigation-monitoring plan written and implemented by the Project Archaeologist. A pre-grade meeting associated with the details of that plan must occur between the monitoring archaeologist(s) and the grading contractor before grading begins.

Table 2: Recommended Cultural Resource Mitigation Measures (Cont.)

Mitigation No.	Mitigation Text
	The plan must discuss contingency plans associated with Native American tribal representation if any prehistoric artifacts are found during earthmoving as these may be considered sacred items by one or more Native American tribes. The mitigation-monitoring plan document must contain a description of how and where artifacts will be curated if found during monitoring.
CR-5	Should previously unidentified cultural resource sites, prehistoric or historic cultural resources, be encountered during the application of CR-2, they should be Phase II tested and evaluated for significance following CEQA and County of Riverside guidelines prior to allowing a continuance of grading in the area.

5.1.1 - Accidental Discovery of Human Remains

There is always the small possibility that ground-disturbing activities during construction may uncover previously unknown buried human remains. Should this occur, federal laws and standards apply including the Native American Graves Protection and Repatriation Act (NAGPRA) and its regulations found in Code of Federal Regulations 43 CFR 10.

In the event of an accidental discovery or recognition of any human remains, California State Health and Safety Code § 7050.5 dictates that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to CEQA regulations and Public Resources Code (PRC) § 5097.98.

5.1.2 - Accidental Discovery of Cultural Resources

It is always possible that ground-disturbing activities during construction will uncover previously unknown, buried cultural resources. In the event that buried cultural resources are discovered during construction, operations shall stop in the immediate vicinity of the find and a qualified archaeologist shall be consulted to determine whether the resource requires further study. The qualified archeologist shall make recommendations to the Lead Agency on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with § 15064.5 of the CEQA Guidelines. Potentially significant cultural resources consist of, but are not limited to, stone, bone, fossils, wood or shell artifacts or features, including hearths, structural remains, or historic dumpsites. Any previously undiscovered resources found during construction within the project area should be recorded on appropriate DPR forms and evaluated for significance in terms of CEQA criteria

If the resources are determined to be unique historic resources as defined under § 15064.5 of the CEQA Guidelines, mitigation measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate mitigation measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds.

No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any archaeological artifacts recovered because of mitigation shall be donated to a qualified scientific institution approved by the Lead Agency where they would be afforded long-term preservation to allow future scientific study.

In addition, reasonable efforts to avoid, minimize, or mitigate adverse effects to the property will be taken and the State Historic Preservation Officer (SHPO) and Native American tribes with concerns about the property, as well as the Advisory Council on Historic Preservation (ACHP) will be notified within 48 hours in compliance with 36 CFR 800.13(b)(3).

SECTION 6: 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.

Date: June 30, 2009 Signed: ______________________

Michael H. Dice, M.A., RPA
Michael Brandman Associates
Irvine, CA

SECTION 7: REFERENCES

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www.wikipedia.com

Appendix A:
Cultural Resources Correspondence

Michael Brandman Associates

Fresno
559.497.0310

Irvine
714.508.4100

Palm Springs
760.322.8847

Sacramento
916.447.1100

San Bernardino
909.884.2255

San Ramon
925.830.2733

May 21, 2009

Native American Heritage Commission
915 Capitol Mall, RM 364
Sacramento, CA 95814

(916) 653-4082 (office)
(916) 657-5390 (fax)

Via email: nahc@pacbell.net

Subject: **Request for a Sacred Lands Search for the San Antonio Heights Trail Project in the County of San Bernardino, California.**

County: San Bernardino

USGS Quadrangle(s): Mt. Baldy, CA

Dear Sir/Madam:

Michael Brandman Associates (MBA) would like to determine whether any listed sacred sites are located within or near a proposed trail project located on County land north of Upland. The project will involve construction of a new trails system linking existing trails located in Claremont to the west of the project and Rancho Cucamonga to the east. Not only must Section 106 be satisfied, but the project may involve CEQA compliance with the Army Corps of Engineers.

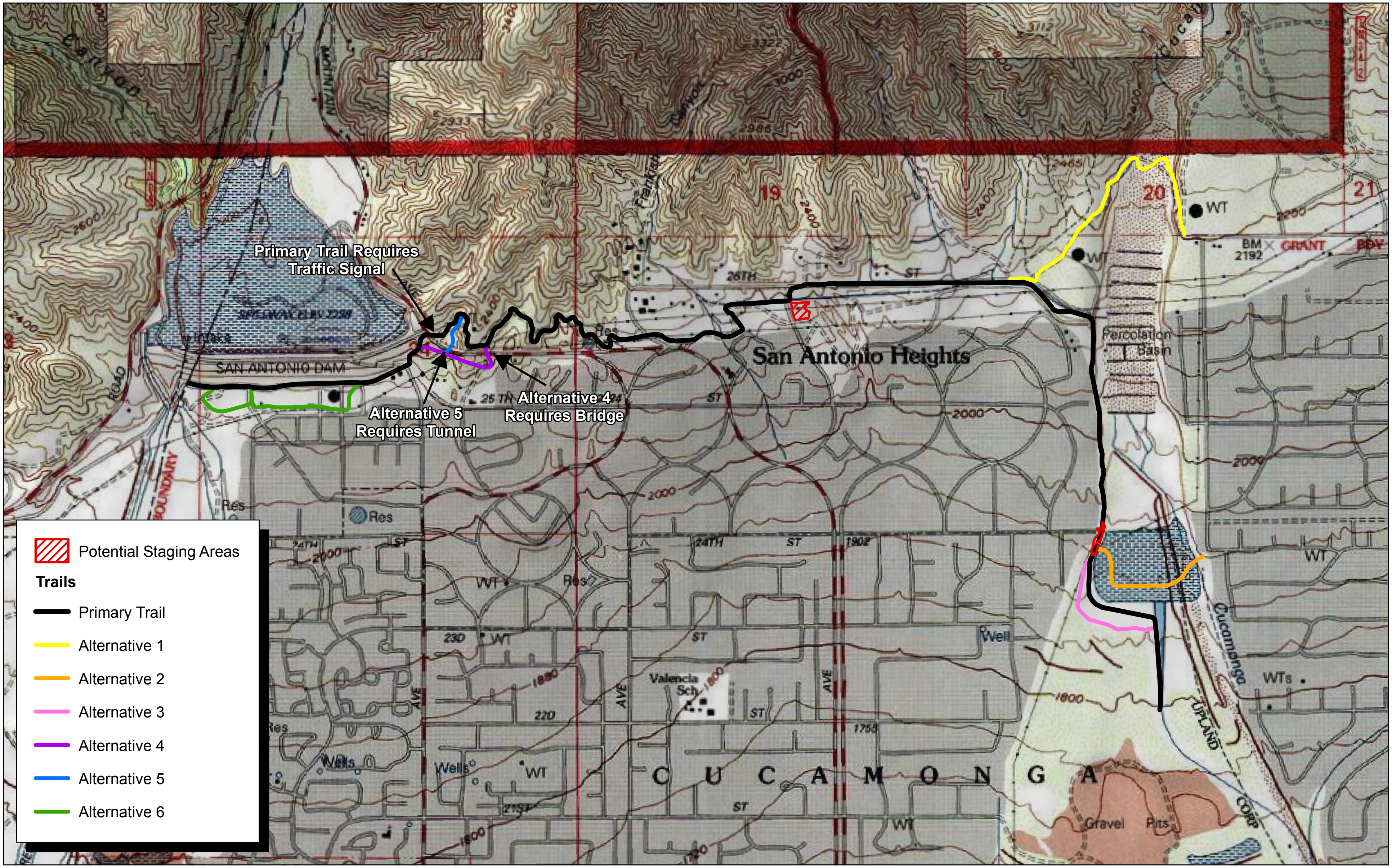
As seen in the attached topographic map, the project is located in Section 24 of Township 1 North and Range 8 West plus Section 35 and 36 of Township 1 N and Range 7 West as found on the USGS Mt. Baldy, CA. topographic quadrangle.

Please notify us of any sacred Native American sites that may be affected by the undertaking. A response can be sent to our FAX, 909-884-2113. If you have any more questions or need to speak with me, please feel free to call me at 714.742.0468. Thank you for your time and effort!

Sincerely,

Michael Dice, M.A. R.P.A.
Michael Brandman Associates
621 E Carnegie Drive. Suite 100
San Bernardino, CA. 92408

Office: 909.884.2255
Cell: 714.742.0468



Source: TOPO! USGS Mt. Baldy (1995) 7.5' DRG.

2,000 1,000 0 2,000 Feet

NORTH

Michael Brandman Associates

Exhibit 2
Local Vicinity Map
Topographic Base

Michael Brandman Associates

June 17, 2009

Ann Brierty, Policy/Cultural Resources Dept.
San Manuel Band of Mission Indians
Highland CA 92346

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Sacramento
916.447.1100

San Bernardino
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San Ramon
925.830.2733

Subject: **Native American Information Request associated with a Cultural Resource Survey: The San Antonio Heights Project located in the County of San Bernardino, California. (USGS Mt. Baldy, CA. quad)**

Dear Ann:

Michael Brandman Associates has recently completed a cultural resource survey associated with a project on roughly 80 acres in the San Antonio Heights area of the County of San Bernardino. The property is located on various Army Corps, Private, Water District and County lands. The proposed project is for future construction of a new hiking and equestrian trail system linking equestrian trails in Rancho Cucamonga with planned-for hiking trails in Claremont. Land the trails shall be resting upon is completely disturbed. This letter is not associated with the SB18 process, but is an information request that shall be included in our cultural resource compliance documents. Because the proposed project may not result in revision to a General Plan, the County may not be required to undertake the SB18 process for this project.

The California Environmental Quality Act (CEQA) and Section 106 of the National Historic Preservation Act of 1966 (NHPA) and CEQA consider the effects a project may have on historic properties. The definition of "historic properties" can include properties of traditional religious and cultural significance to Native American groups. To determine whether the proposed project may impact any historic properties, including traditional cultural properties, MBA has reviewed background information and consulted with entities such as the NAHC. The Native American Heritage Commission does not indicate that any sacred sites are located in this project area, but have listed you as a tribal contact.

The planned for trail routes shall be located on existing dirt roads, a few streets, flood control-related paths and the sides and floors of reservoirs and dry creeks. We have attached a map showing the location of the project area with reference to the *Mt. Baldy, CA.* topographic map.

We wish to ask if you have any information or concerns about this project area, and/or if the proposed project may have an impact on cultural resources that are important to you. Please feel free to contact me at 909.884.2255 if you have any questions or information, or you may address and mail a response to my attention at the address below.

Sincerely,

Michael H. Dice, M.A., R.P.A., Senior Archaeologist
Michael Brandman Associates
621 E. Carnegie Drive. Suite 100
San Bernardino, CA. 92408

Enclosures: Exhibit 1: Topographic Map

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MD:ch

Michael Brandman Associates

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June 17, 2009

Michael Contreras, Cultural Heritage Prog. Manager
Morongo Band of Mission Indians
Banning CA 92220

Subject: **Native American Information Request associated with a Cultural Resource Survey: The San Antonio Heights Project located in the County of San Bernardino, California. (USGS Mt. Baldy, CA. quad)**

Dear Michael:

Michael Brandman Associates has recently completed a cultural resource survey associated with a project on roughly 80 acres in the San Antonio Heights area of the County of San Bernardino. The property is located on various Army Corps, Private, Water District and County lands. The proposed project is for future construction of a new hiking and equestrian trail system linking equestrian trails in Rancho Cucamonga with planned-for hiking trails in Claremont. Land the trails shall be resting upon is completely disturbed. This letter is not associated with the SB18 process, but is an information request that shall be included in our cultural resource compliance documents. Because the proposed project may not result in revision to a General Plan, the County may not be required to undertake the SB18 process for this project.

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Sincerely,

Michael H. Dice, M.A., R.P.A., Senior Archaeologist
Michael Brandman Associates
621 E. Carnegie Drive. Suite 100
San Bernardino, CA. 92408

Enclosures: Exhibit 1: Topographic Map

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Michael Brandman Associates

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San Ramon
925.830.2733

June 17, 2009

Charlie Cooke,
Tehachapi Indian Tribe
Acton CA 93510

Subject: **Native American Information Request associated with a Cultural Resource Survey: The San Antonio Heights Project located in the County of San Bernardino, California. (USGS Mt. Baldy, CA. quad)**

Dear Charlie:

Michael Brandman Associates has recently completed a cultural resource survey associated with a project on roughly 80 acres in the San Antonio Heights area of the County of San Bernardino. The property is located on various Army Corps, Private, Water District and County lands. The proposed project is for future construction of a new hiking and equestrian trail system linking equestrian trails in Rancho Cucamonga with planned-for hiking trails in Claremont. Land the trails shall be resting upon is completely disturbed. This letter is not associated with the SB18 process, but is an information request that shall be included in our cultural resource compliance documents. Because the proposed project may not result in revision to a General Plan, the County may not be required to undertake the SB18 process for this project.

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Sincerely,

Michael H. Dice, M.A., R.P.A., Senior Archaeologist
Michael Brandman Associates
621 E. Carnegie Drive. Suite 100
San Bernardino, CA. 92408

Enclosures: Exhibit 1: Topographic Map

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San Ramon
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June 17, 2009

Anthony Morales, Chairperson
Gabrieleno/Tongva San Gabriel Band of Mission Indians
San Gabriel CA 91778

Subject: **Native American Information Request associated with a Cultural Resource Survey: The San Antonio Heights Project located in the County of San Bernardino, California. (USGS Mt. Baldy, CA. quad)**

Dear Anthony:

Michael Brandman Associates has recently completed a cultural resource survey associated with a project on roughly 80 acres in the San Antonio Heights area of the County of San Bernardino. The property is located on various Army Corps, Private, Water District and County lands. The proposed project is for future construction of a new hiking and equestrian trail system linking equestrian trails in Rancho Cucamonga with planned-for hiking trails in Claremont. Land the trails shall be resting upon is completely disturbed. This letter is not associated with the SB18 process, but is an information request that shall be included in our cultural resource compliance documents. Because the proposed project may not result in revision to a General Plan, the County may not be required to undertake the SB18 process for this project.

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Sincerely,

Michael H. Dice, M.A., R.P.A., Senior Archaeologist
Michael Brandman Associates
621 E. Carnegie Drive. Suite 100
San Bernardino, CA. 92408

Enclosures: Exhibit 1: Topographic Map

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MD:ch

Michael Brandman Associates

June 17, 2009

James Ramos, Chairperson
San Manuel Band of Missin Indians
Highland CA 92346

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Palm Springs
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San Ramon
925.830.2733

Subject: **Native American Information Request associated with a Cultural Resource Survey: The San Antonio Heights Project located in the County of San Bernardino, California. (USGS Mt. Baldy, CA. quad)**

Dear James:

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Michael H. Dice, M.A., R.P.A., Senior Archaeologist
Michael Brandman Associates
621 E. Carnegie Drive. Suite 100
San Bernardino, CA. 92408

Enclosures: Exhibit 1: Topographic Map

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MD:ch

Michael Brandman Associates

Fresno
559.497.0310

Irvine
714.508.4100

Palm Springs
760.322.8847

Sacramento
916.447.1100

San Bernardino
909.884.2255

San Ramon
925.830.2733

June 17, 2009

John Valenzuela, Chariperson
San Fernando Band of Mission Indians
Newhall CA 91322

Subject: **Native American Information Request associated with a Cultural Resource Survey: The San Antonio Heights Project located in the County of San Bernardino, California. (USGS Mt. Baldy, CA. quad)**

Dear John:

Michael Brandman Associates has recently completed a cultural resource survey associated with a project on roughly 80 acres in the San Antonio Heights area of the County of San Bernardino. The property is located on various Army Corps, Private, Water District and County lands. The proposed project is for future construction of a new hiking and equestrian trail system linking equestrian trails in Rancho Cucamonga with planned-for hiking trails in Claremont. Land the trails shall be resting upon is completely disturbed. This letter is not associated with the SB18 process, but is an information request that shall be included in our cultural resource compliance documents. Because the proposed project may not result in revision to a General Plan, the County may not be required to undertake the SB18 process for this project.

The California Environmental Quality Act (CEQA) and Section 106 of the National Historic Preservation Act of 1966 (NHPA) and CEQA consider the effects a project may have on historic properties. The definition of "historic properties" can include properties of traditional religious and cultural significance to Native American groups. To determine whether the proposed project may impact any historic properties, including traditional cultural properties, MBA has reviewed background information and consulted with entities such as the NAHC. The Native American Heritage Commission does not indicate that any sacred sites are located in this project area, but have listed you as a tribal contact.

The planned for trail routes shall be located on existing dirt roads, a few streets, flood control-related paths and the sides and floors of reservoirs and dry creeks. We have attached a map showing the location of the project area with reference to the *Mt. Baldy, CA.* topographic map.

We wish to ask if you have any information or concerns about this project area, and/or if the proposed project may have an impact on cultural resources that are important to you. Please feel free to contact me at 909.884.2255 if you have any questions or information, or you may address and mail a response to my attention at the address below.

Sincerely,

Michael H. Dice, M.A., R.P.A., Senior Archaeologist
Michael Brandman Associates
621 E. Carnegie Drive. Suite 100
San Bernardino, CA. 92408

Enclosures: Exhibit 1: Topographic Map

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MD:ch

Michael Brandman Associates

June 17, 2009

Goldie Walker,
Serrano Nation of Indians
Highland CA 92346

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San Bernardino
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San Ramon
925.830.2733

Subject: **Native American Information Request associated with a Cultural Resource Survey: The San Antonio Heights Project located in the County of San Bernardino, California. (USGS Mt. Baldy, CA. quad)**

Dear Goldie:

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MD:ch

Appendix B: Personnel Qualifications

CORPORATE RESUME

Michael H. Dice, MA, RPA

Senior Cultural Resource Specialist/Project Manager

Overview

- 30+ years experience
- Master's degree, Anthropology – Arizona State University, Tempe. 1993
- Bachelor's degree, Anthropology – Washington State University, Pullman. 1986
- Registered Professional Archaeologist (RPA 2000)
- Registered Archaeologist in Orange County and Riverside County

Michael H. Dice, MA, Senior Cultural Resource Specialist and Project Manager, has more than 30 years experience performing record searches, archaeological surveys, archaeological site testing projects, and data collection projects on private and public lands in the Southwestern United States. He has authored or co-authored more than 150 Cultural Resources Inventory Reports required for CEQA and/or NEPA level documents including several manuscripts for the National Park Service. Michael has extensive experience with California Native American Tribes, having provided direct consultation and coordination with the Agua Caliente Band, Gabrielino Band, Juaneno Band, Morongo Band, and Pechanga Band.

Related Experience

Transportation

State Route 18 and Paine Road Intersection Improvement Project, City of Big Bear. Section 106 Evaluation of Project Areas in the City of Big Bear per Caltrans.

Phase I Cultural Resources Survey Report for the Pepper Street Specific Plan. City of Rialto, San Bernardino County. Cultural survey report for a planned development in the City of Rialto.

Telecommunication

NEPA Compliance/Telecommunication Facilities. Serving as Project Scientist for a variety of telecommunication providers throughout California in complying with the National Environmental Policy Act (NEPA) for the implementation of cellular communication facilities. This project includes the preparation of NEPA compliance documents in accordance with the Federal Communication Commissions regulations pertaining to telecommunication facilities, biological surveys, including focused, sensitive species surveys and wetland delineations and permitting, cultural resource records searches and Phase I surveys, including architectural/historical evaluations and construction monitoring, and arborist surveys.

Water

Victor Valley Recycled Water Project. Project Manager to perform a program-level Section 106/CEQA analysis for the Victor Valley Recycled Water Project through Bauer Environmental. Our project consisted of the analysis of a series of alternative recycled water facility locations and main-line pipeline routes in the County of San Bernardino, the City of Victorville, the City of Hesperia, and the City of Apple Valley. The VVRW project will eventually exhibit four recycled water treatment plants, several pumping stations, numerous main-line recycled water pipelines and numerous secondary pipelines. Four project footprints were evaluated for potential impacts to cultural resources. The results showed that the majority of the project area held "low" sensitivity for cultural resources, there was a minor amount of "medium" sensitivity, while those areas near the Mojave River held "high" sensitivity. We recommended that cultural resource testing take place along the Mojave River if those alternatives are chosen. Specific mitigation-monitoring recommendations will be recommended once the project reaches the "project-level" of analysis.

Utilities

Cultural survey report and Phase 2 testing for new sewer line in the Town of Apple Valley. Prepared a Phase 1 Survey Report for the Navajo Sewer Pipeline Project located in the Town of Apple Valley.

NEPA-Level Cultural Assessment and Paleontological Records Check Associated With The Victor Valley Subregional Facilities Project, County of San Bernardino. Prepared a Cultural survey report for new recycled water project in the Cities of Victorville, Hesperia, Section 106/CEQA project.

Cultural resource monitoring for new sewer line in the Town of Apple Valley. Provided Cultural Monitoring Services at the Navajo Road Sewer Project, Town of Apple Valley.

Planned Development

Cultural survey report and historical testing for planned development in Rancho Cucamonga. Provided a Cultural Resource Survey for Environmental Impact Report for Rancho Cucamonga Tentative Tract Map Number 16072.

Phase 1 Cultural Survey and Evaluation, Rancho El Rivino Specific Plan, City of Rialto, San Bernardino County. Cultural survey report and historical testing for planned development in Rancho Cucamonga.

Final EIR Serra Bella Specific Plan SP 04-001 Annexation and TTM 32023. Cultural survey report and historical testing for planned development in Rancho Cucamonga.

Cultural Resource Survey and Paleontological Assessment Report for John Laing Homes' Englesma Property located at 8011 Kimball Road, City of Chino. Cultural survey report for planned development in the City of Chino.

Phase 1 Cultural Resource Survey,Negative Results, for the Loma Linda Golf Range Project on 15 Acres on Barton Road, City of Loma Linda, San Bernardino County. Cultural survey report for planned development in the City of Loma Linda.

The Trails at Mission Park Phase 2 Archaeological and Historical Assessment of Cultural Resources, City of Loma Linda, County of San Bernardino. Cultural testing report for a single-family residential development project.

Mission Glen Project, City of Loma Linda, County of San Bernardino. Archaeological resources assessment and Cultural survey report for the eastern section of a 41+/- acre site planned development in the City of Loma Linda.

Final Environmental Impact Report College Park Project, City of Upland. Cultural survey report for planned development in the City of Upland.

Phase 1 Cultural Resource Survey for the Distinguished Homes Project Footprint APN# #1055-511-01 and 1055-511-01, City of Chino. Cultural survey report for planned development in the City of Chino.

Cultural Resource and Paleontological Assessment for the McBride RV Storage Property at Kimball and Euclid Avenues, City of Chino. Cultural survey report for planned development in the City of Chino.

Cultural Resource Survey and Architecture Evaluation of Site CA-SBR-6706/H within the Project Footprint of the Lytle Creek North Tentative Tract Map (Map #15900), County of San Bernardino. Cultural testing report for planned development in the County of San Bernardino.

Phase I Cultural Resources Survey for the Victorville Acres Project, Tentative Tract 16847, City of Victorville, San Bernardino County. Cultural survey report for planned development in the City of Victorville.

Phase I Cultural Resources Assessment and Paleontological Records Review Tract No. 16905 Project Victorville, San Bernardino County. Cultural survey report for planned development in the City of Victorville.

Phase I Cultural Resources Assessment and Paleontological Records Review Tract No. 16496 Project Victorville, San Bernardino County. Cultural survey report for planned development in the City of Victorville.

Cultural Resource Survey for Environmental Impact Report. Rancho Cucamonga Tentative Tract Map Number 16072. Cultural survey report and historical testing for planned development in Rancho Cucamonga.

Phase 1 Cultural Survey and Evaluation, Rancho El Rivino Specific Plan, City of Rialto, San Bernardino County. Cultural survey report and historical testing for planned development in Rancho Cucamonga.

Final EIR Serra Bella Specific Plan SP 04-001 Annexation and TTM 32023, City of Rancho Cucamonga. Cultural survey report and historical testing for planned development in Rancho Cucamonga.

Cultural survey report for planned development in the City of Chino. Performed a Cultural Resource and Paleontological Assessment for the McBride RV Storage Property at Kimball and Euclid Avenues in the City of Chino.

Cultural testing report for planned development in the County of San Bernardino. Performed a Cultural Resource Survey and Architecture Evaluation of Site CA-SBR-6706/H within the Project Footprint of the Lytle Creek North Tentative Tract Map (Map #15900), County of San Bernardino.

Cultural survey report for ThreePlanned Developments in the City of Victorville. Performed a Phase I Cultural Resources Assessment and Paleontological Records Review Tract Nos. 16496, 16847, and 16905 in the City of Victorville.

Cultural survey report for planned development in Fontana. Performed a Cultural Resource Survey for a 125 acre Residential Development in the City of Fontana for the Centex Homes Monarch Hills Project.

Cultural survey report for planned development in the City of Chino. Contributed to an Initial Study and Mitigated Negative Declaration for Tentative Tract no. 17147, City of Chino.

Cultural resource peer review for planned development in the City of Redlands. Contributed to the Final Environmental Impact Report and Response to Comments on the Draft Environmental Impact Report for Tentative Tract 16361, City of Redlands.

Cultural survey report for planned development in Rancho Cucamonga. Performed a CEQA-level Archaeological Survey and Paleontological Records Search for 13 acres in the City of Rancho Cucamonga for John Laing Homes Inland Division.

Cultural survey report for planned development in the County of San Bernardino. Performed a Phase 1 Cultural Resource Survey of the Ranch Country View Estates Project, near Cable Creek and Interstate 215, County of San Bernardino.

Cultural survey report for planned development in the City of Victorville. Performed a Phase 1 Cultural Resource Survey of a 65-Acre Property at Tentative Tract #16574 (Foxfire Ranch), located near Cobalt and Dos Palmas Roads, Section 26 of T.5N R.5W, City of Victorville, Including Parcel #3094-131-02.

Cultural survey and testing report for planned development in the City of Fontana. Conducted an Archaeological and Paleontological Resource Evaluation of Tentative Tract #16445, Located South of Riverside Avenue/Sierra Avenue, City of Fontana.

Cultural survey report for planned development in the City of Redlands. Conducted an Archaeological and Paleontological Resource Evaluation of APN #168-132-05-0000 near San Bernardino and Wabash Avenues, City of Redlands, County of San Bernardino.

Cultural Resource Excavation and Monitoring at the Mission Lane Project, Tract #16323, City of Loma Linda. Prepared a cultural survey report, Phase 3 Excavation and Monitoring for a planned development in the City of Loma Linda.

Cultural survey report for planned development in the City of Ontario. Prepared a Cultural Resource Survey Report and Paleontological Records Review for the West Haven Specific Plan Project, Subarea 6 (West of Haven) and Subarea 12 (West of Haven), in the City of Ontario.

Cultural survey for a planned development in the City of Big Bear. Performed a Phase 1 Cultural Resource Survey of a 246-Acre Parcel Set near Sawmill Canyon Road in the City of Big Bear.

Phase I Cultural Resources Survey Report for the DeGroot Property. Performed a Phase I Cultural Resources Survey on 44.23 Acres near Ramona and Merrill Avenues for a planned development in the City of Chino Hills.

Cultural survey for a planned development in the County of San Bernardino. Performed a Phase I Cultural Resources Assessment, with a Paleontological records review, Finton Associates Project, Fox Farm and McAllister Roads, Big Bear Lake, San Bernardino County.

Phase 1 Cultural Resource Survey for the Granite Equities Project, City of Loma Linda. Prepared a Cultural survey report for a planned development in the City of Loma Linda. Results were negative.

Testing of CA-SBR-11567H within the Empire Redevelopment Project in the City of Fontana, San Bernardino County. Performed a Section 106 Evaluation of identified project areas in the City of Fontana. Efforts included a Section 106 evaluation of specific properties.

Cultural Resources Section of the Iron Hills Residential Project Environmental Impact Report. Reviewed the cultural resource documents and EIR mitigation measures for this City of Colton project.

Cultural survey report for planned development in the City of Rancho Cucamonga. Prepared a CEQA-level Cultural Resource Assessment at the Fritz Property, Etiwanda Area, City of Rancho Cucamonga.

Schools

Cultural Survey Report of School Site for Planned Development in the City of Fontana. Prepared a Cultural Resource Survey Report and performed a Paleontological Records Review for the Chaffey School District #9 High School Project located west of San Sevane and north of Walnut Avenue in Fontana for planned school development.

Cultural Survey Report of School Site for Planned Development in the City of Rancho Cucamonga. Performed a Phase I Cultural Resources Assessment and Paleontological Records Review for a Chaffey School District Project located at East Avenue and the 210 Freeway Rancho Cucamonga, San Bernardino County prior to sale to a developer.

Cultural survey report, Phase 2 Historic Site Evaluations for a planned development in the County of San Bernardino. Performed a Phase 1 Cultural Resource Survey, Positive Results: Bloomington High School Facilities Upgrade, San Bernardino County.

Airport

Section 106 Study for Airport Cultural survey for a planned transmitter within the Ontario International Airport. Performed a Cultural Resource Records Search and Site Visit Results for the Proposed Ontario Airport TIS Transmitter Site, located near Parking Lot D and F of the Ontario International Airport.

Professional Affiliations

- Member, California Historical Society
- Member, National Trust for Historic Preservation

Appendix C: Regulatory Framework

REGULATORY FRAMEWORK

Government agencies, including federal, State, and local agencies, have developed laws and regulations designed to protect significant cultural resources that may be affected by projects regulated, funded, or undertaken by the agency. Federal and State laws that govern the preservation of historic and archaeological resources of national, State, regional, and local significance include the National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA), and the CEQA. In addition, laws specific to work conducted on federal lands includes the Archaeological Resources Protection Act (ARPA), the American Antiquities Act, and the Native American Graves Protection and Repatriation Act (NAGPRA).

The following federal or CEQA criteria were used to evaluate the significance of potential impacts on cultural resources for the proposed project. An impact would be considered significant if it would affect a resource eligible for listing to the NRHP, the CR, or if it is identified as a unique archaeological resource.

STATE-LEVEL EVALUATION PROCESSES

An archaeological site may be considered an historical resource if it is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military or cultural annals of California per PRC § 5020.1(j) or if it meets the criteria for listing on the CR per California Code of Regulations (CCR) at Title 14 CCR § 4850.

The most recent amendments to the CEQA guidelines direct lead agencies to evaluate first an archeological site to determine if it meets the criteria for listing in the CR. If an archeological site is an historical resource, in that it is listed or eligible for listing in the CR, potential adverse impacts to it must be considered per PRC §§ 21084.1 and 21083.2(l). If an archeological site is considered not to be an historical resource, but meets the definition of a “unique archeological resource” as defined in PRC § 21083.2, then it would be treated in accordance with the provisions of that section.

With reference to PRC § 21083.2, each site found within a project area will be evaluated to determine if it is a unique archaeological resource. A unique archaeological resource is described as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets one or more of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type

3. Is directly associated with a scientifically recognized important prehistoric or historic event or person

As used in this report, "non-unique archaeological resource" means an archaeological artifact, object, or site that does not meet the criteria for eligibility for listing on the CR, as noted in subdivision (g) of PRC § 21083.2. A non-unique archaeological resource requires no further consideration, other than simple recording of its components and features. Isolated artifacts are typically considered non-unique archaeological resources. Historic structures that have had their superstructures demolished or removed can be considered historic archaeological sites and are evaluated following the processes used for prehistoric sites. Finally, OHP recognizes an age threshold of 45 years. Cultural resources built less than 45 years ago may qualify for consideration, but only under the most extraordinary circumstances.

Title 14, CCR, Chapter 3 § 15064.5 is associated with determining the significance of impacts to archeological and historical resources. Here, the term historical resource includes the following:

4. A resource listed in, or determined eligible by the State Historical Resources Commission, for listing in the CR (PRC § 5024.1; Title 14 CCR, § 4850 et seq.).
5. A resource included in a local register of historical resources, as defined in PRC § 5020.1(k) or identified as significant in an historical resource survey meeting the PRC § 5024.1(g) requirements, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
6. Any object, building, structure, site, area, place, record, or manuscript, which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be historically significant if the resource meets the criteria for listing on the California Register of Historical Resources (PRC § 5024.1; Title 14 CCR § 4852) including the following:

    A. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
    B. Is associated with the lives of persons important in our past;
    C. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; and
    D. Has yielded, or may be likely to yield, information important in prehistory or history.

Typically, archaeological sites exhibiting significant features qualify for the CR under Criterion D because such features have information important to the prehistory of California. A lead agency may determine that a resource may be a historical resource as defined in PRC §§ 5020.1(j) or 5024.1 even if it is:

- Not listed in or determined to be eligible for listing in the CR
- Not included in a local register of historical resources pursuant to PRC § 5020.1(k)
- Identified in an historical resources survey per PRC §5024.1(g)

Threshold of Significance

If a project will have a significant impact on a cultural resource, several steps must be taken to determine if the cultural resource is a "unique archaeological resource" under CEQA. If analysis and/or testing determine that, the resource is a unique archaeological resource and therefore subject to mitigation prior to development, a threshold of significance should be developed. The threshold of significance is a point where the qualities of significance are defined and the resource is determined to be unique under CEQA. A significant impact is regarded as the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource will be reduced to a point that it no longer meets the significance criteria. Should analysis indicate that project development would destroy the unique elements of a resource; the resource must be mitigated for under CEQA regulations. The preferred form of mitigation is to preserve the resource in-place, in an undisturbed state. However, as that is not always possible or feasible, appropriate mitigation measures may include, but are not limited to the following:

1. Planning construction to avoid the resource;
2. Deeding conservation easements; and
3. Capping the site prior to construction.

If a resource is determined to be a "non-unique archaeological resource", no further consideration of the resource by the lead agency is necessary.

TRIBAL CONSULTATION

The following serves as an overview of the procedures and timeframes for the Tribal Consultation process. For a complete Tribal Consultation Guidelines, please refer to the State of California Office of Planning and Research web site.

Prior to the amendment or adoption of general or specific plans, local governments must notify the appropriate tribes of the opportunity to conduct consultation for the purpose of preserving or mitigating impacts to cultural places located on land within the local government's jurisdiction that is affected by the plan adoption or amendment. The tribal contacts for this list are maintained by the NAHC and are distinct from the Most Likely Descendent (MLD) list. It is suggested that local governments send written notice by certified mail with return receipt requested. The tribes have 90 days from the date they receive notification to request consultation. In addition, prior to adoption or amendment of a general or specific plan, local government must refer the proposed action to tribes on the NAHC list that have traditional lands located within the city or county's jurisdiction. Notice must be sent regardless of prior consultation. The referral must allow a 45-day comment period.

In brief, notices from government to the tribes should include:

- A clear statement of purpose
- A description of the proposed general or specific plan, the reason for the proposal, and the specific geographic areas affected
- Detailed maps to accompany the description
- Deadline date for the tribes to respond
- Government representative(s) contact information
- Contact information for project proponent/applicant, if applicable

The basic schedule for this process is:

- 30 days - time NAHC has to provide tribal contact information to the local government; this is recommended not mandatory.
- 90 days - time tribe has to respond indication whether or not they want to consult. Note: tribes can agree to a shorter timeframe. In addition, consultation does not begin until / unless requested by the tribe within 90 days of receiving notice of the opportunity to consult.
- 45 days - time local government has to refer proposed action, such as adoption or amendment to General Plan or Specific Plan, to agencies, including the tribes. Referral required even if there has been prior consultation. This opens the 45-day comment period.
- 10 days - time local government has to provide tribes of notice of public hearing.

Appendix D:
Site Photographs

View toward the southeastern section of the San Antonio Dam showing trail vicinity to left.

View of landscapes found south of Mountain Street with potential trail routes.

Typical view of Cucamonga Creek. No impacts to cultural resources are anticipated in this area.

View of proposed trail route along west bank of Cucamonga Creek. Most of the trail above San Antonio Heights looks like this.

Appendix D:
Jurisdictional Delineation

Preliminary Jurisdictional Determination
Proposed San Antonio Heights Trail
San Bernardino County, California

Mt. Baldy, CA., USGS 7.5-minute Topographic Quadrangle Map
Township 1 North, Range 8 West, Section 24, 25, 26
Township 1 North, Range 7 West, Section 19, 20, 29, 30

Prepared for:

San Bernardino County Land Use Services Department
Advanced Planning Division
385 N. Arrowhead Ave, First Floor
San Bernardino, California 92415-0182

Contact: Matt Slowik, MURP, MPA

Prepared by:

Paul Mead, Esq., Senior Regulatory Project Manager
Michael Brandman Associates
621 E. Carnegie Drive, Suite 100
San Bernardino, California 92408
909.884.2255

Contact: Frank Coyle, Project Manager

Surveys Conducted By: Dale Hameister
Surveys Conducted: April 30 and June 16, 2009

Report Date: November 3, 2009
Revised Report Date: August 24, 2010

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF EXHIBITS

SECTION 1: SUMMARY

Applicant Name:
San Bernardino County
Land Use Services Department
Advanced Planning Division
385 N. Arrowhead Ave, First Floor
San Bernardino, California 92415-0182
Contact: Matt Slowik, MURP, MPA

Agent Name:
Michael Brandman Associates (MBA)
621 E. Carnegie Drive, Suite 100
San Bernardino, CA 92408
Phone: 909.884.2255
Contact: Paul Mead, Senior Regulatory Project Manager; Email: pmead@brandman.com

1.1 - Introduction

At the request of San Bernardino County Land Use Services Department, Michael Brandman Associates (MBA) conducted a Preliminary Jurisdictional Determination (PJD) for the proposed San Antonio Trail System, which is located in San Bernardino County, California. The trail route is hereafter referred to as Project Site or Site.

Pursuant to United States Army Corp of Engineers (USACE), Regulatory Guidance Letter No. 08-02 (RGL 08-02) this preliminary jurisdictional determination examines whether there “may be” waters of the United States (U.S.) on the Project Site, and identifies all aquatic features on the site that could be affected by the proposed activity based on the information provided herein.

For purposes of processing future permit applications, computation of impacts, compensatory mitigation requirements and other resource protection measures, the Applicant understands that the PJD will treat all waters and wetlands that would be affected in any way by the permitted activity on the site as if they are jurisdictional waters of the U.S. These features will be treated as jurisdictional even though some of these features may in fact not be jurisdictional (See RGL 08-02 at 3).

Furthermore, in electing to process a PJD the Applicant has made an informed and voluntary decision that processing a preliminary jurisdictional determination is in their best interest.

1.2 - Project Description

The County of San Bernardino is proposing to establish five miles of public multi-use recreational trails along the northern boundary of the community of San Antonio Heights extending from the Cucamonga Channel Dam west to the San Antonio Channel at the Base of the San Gabriel Mountains. The proposed Project would generally run along the existing alignment of the San Antonio Creek Trail. The trail would range in width from approximately seven to fifteen feet wide. The project will require the construction of two staging areas, which will be strategically located along the trail route. The proposed multi-use trail will be used for equestrian activities, mountain bike riding, and hiking and will link with existing and/or proposed trail systems in the Claremont and Rancho Cucamonga.

Location

The Project site is generally located north of State Route 210 (SR-210), south of SR-138, and west of Interstate 15 (I-15) (see Exhibit 1). Situated in the far northwestern portion of the Chino Basin, the Project area is located between Cucamonga Creek and San Antonio Creek. The boundaries of the Project area can be found within the Mt. Baldy, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map, in Township 1 North, Range 8 West, Section 24, 25, 26 and Township 1 North, Range 7 West, Section 19, 20, 29, 30 (Exhibit 2). The Project area is linear and follows old paved and rarely used roads, existing trails and dirt roads used for access to various flood control facilities. The Project site is specifically located north of 22nd Street, east of the Los Angeles/San Bernardino border and west of Turquoise Avenue (see Exhibit 3). Private, County and Federal government lands are located in the Project area. The survey required examination of about 40 linear acres of ground.

Connectivity to Other Trails

As shown in Exhibit 3, the primary trail route is 5 miles long and exhibits a linking trail leading to Staging Area No. 1, a link to an alternative trail that crosses Cucamonga Creek about 1.15 miles north of the creek flood control dam, and a link to an alternative trail located generally south of the Dam at Rancho Cucamonga's Confluence Trail Park near Indigo Avenue.

The proposed trail will form a vital link between existing and proposed trails to the west and east of the project. Specifically, on the west end the project will connect to the planned Claremont Trail, which will terminate on the west bank of San Antonio Wash in the City of Claremont. On the east end, the project will connect to the Cucamonga Creek Trail, which is located along the eastern community boundary of San Antonio Heights in the City of Rancho Cucamonga, south of Cucamonga Dam. The east end of the trail will also cross the Cucamonga Channel approximately 1.2 miles north of Cucamonga Dam to facilitate connectivity to existing trails at the base of the Mountains (north east of the western terminus Almond Street).

Proposed Staging Areas

The proposed multi-use trail includes the construction of two potential staging locations near the east and center of the proposed trail. The staging areas would be used to park and unload bicycles, horses, and other equipment, and are directly linked to the proposed trail system. The staging areas will be approximately 5,000 square feet in size and will include parking for vehicles with trailers, secondary access to the primary trail, equestrian hitching posts, equestrian drinking troughs, wood benches, picnic tables, toilet facilities, and composting bins. Composed of packed earth or decomposed granite. No nighttime lighting is proposed.

Staging Area No. 1 will be located on the western side of Cucamonga Channel at the east end of W. 24th Street. Vehicular access to Staging Area No. 1 will be provided via W. 24th Street and will be configured to accommodate a limited number of vehicles using a controlled gate. The site entrance would be enlarged to accommodate an inbound travel lane and an outbound travel lane for vehicles using horse trailers. There is no lighting proposed for Staging Area No. 1. Small infrastructure hookups may be required for the drinking troughs and restroom facilities.

Staging Area No. 2 will be located approximately 75 yards south of the Arctic Dr. and W. 26th Street intersection, 0.25 mile northeast of the San Antonio Heights Community Church. Vehicular access to Staging Area No. 2 will be provided via Arctic Dr. and will be configured to accommodate a limited number of vehicles using a controlled gate. The site entrance will have an inbound and outbound travel lane for vehicles using horse trailers. There is no lighting proposed for Staging Area No. 2. Small infrastructure hookups may be required for the drinking troughs and restroom facilities.

A limited number of vehicular parking spots would be available for the public per the San Bernardino County Development Code regulations. Vehicular parking is not proposed on the roadways near the staging areas; however, the staging areas will be large enough to accommodate 10 vehicles with trailers. Security at the staging areas will be provided via a controlled gate at the entrance of the parking lot. Finally, The Regional Parks Division of the County Public Works Department would be responsible for maintenance related to the multiuse trails, including the removal of animal waste

Construction

To the maximum extent possible, the proposed project trail utilizes existing paths/trails, bridges and culverts. Much of the trail will be constructed on a prepared surface of crushed decomposed granite, which will allow water to permeate into the underlying ground without substantial erosion. Minor improvements may be implemented along the existing dirt paths chosen for trail construction where erosion has occurred as well as widening improvements in order to accommodate multiple uses of the trail. In addition, removal of large debris throughout the trail may be required by light construction equipment. There is no lighting proposed for the recreational trail system.

Alternative Alignments

In addition to the primary route, several alternative routes were also evaluated with the goal to select the most practicable route.

Three alternatives were considered. Typically, alternative routes were smaller trail segments linking greater, established components in the general east-west trail alignment. See Exhibit 2 and 3 for the locations of the proposed Alternatives. Alternative 1 provides for an alternative crossing of the southern portion of the Cucamonga Channel, and connectivity to the Cucamonga Creek Trail. Alternatives 2 and 3 provide for the trail crossing of Euclid Avenue, and provide alternative connectivity to the San Antonio Channel and proposed Claremont Trail.

A brief description of each trail alternative is provided as follows:

- Alternative 1: This trail segment would extend southeasterly from Staging Area #1 down the slop of the existing Cucamonga Creek Flood Control Basin, cross the Basin along the northern slope and toe, and then rise up the eastern edge of the Basin to a point at the intersection of Jennet Street and Turquoise Avenue in Rancho Cucamonga.

- Alternative 2: This trail segment would cross a new footbridge built between two high points on Euclid Avenue approximately 140 yards south-southwest of a water tank and 260 yards southeast of the eastern San Antonio Dam top access road. The bridge will take traffic over Euclid Avenue and onto a new path built on vacant ground that runs between the eastern end of Electric Avenue and the southern end of the new bridge.

- Alternative 3: This trail segment replaces the traffic crossing on Euclid Avenue by digging a pedestrian tunnel below North Mountain in the vicinity of an underground storm drain located near the planned-for traffic crossing. Upon exiting the tunnel along the south side of Euclid Avenue, a small trail will be carved into vegetated ground so as to link with the eastern end of Electric Avenue.

Presence of Waters of the United States

The project site contains sixteen features (drainages/basins), which may be subject to federal jurisdiction under the Clean Water Act (CWA). Within the surveyed area, it was determined that approximately 16,765 linear feet of CWA jurisdictional waters encompassing 22.07 acres may be present. No adjacent wetlands were determined to be present in the surveyed area.

Potential Impact to Waters of the United States (CWA Section 404/401)

The east-west project alignment of the proposed trail crosses a number of potential jurisdictional features. The selected primary alignment takes into consideration the avoidance and minimization goals of the CWA utilizing existing bridges, culvert crossings, or Arizona Crossings wherever possible to avoid or minimize significant impacts to jurisdictional resources. The proposed project will result in impacts (dredge/fill) of three drainage systems: (1) Drainage 1 (Cucamonga Channel/Creek), (2) Drainage 2, an outlet channel south of Cucamonga Dam, and (3) Drainage 3, a tributary to Cucamonga Channel/Creek.

Presence of California Department of Fish & Game Jurisdictional Waters

The project site contains sixteen features (drainages/basins), which may be subject to California Department of Fish & Game (CDFG) jurisdiction under sections 1600/1602 of the Fish & Game Code.

Within the surveyed area, it was determined that approximately 16,765 linear feet of CWA jurisdictional waters encompassing 22.07 acres may be present. No adjacent wetlands were determined to be present in the surveyed area.

Potential Impact to California Department of Fish & Game Jurisdictional Waters

The east-west project alignment of the proposed trail crosses a number of potential jurisdictional features. With respect to CDFG Jurisdiction, the proposed project will result in impacts (dredge/fill) of three drainage systems: (1) Drainage 1 (Cucamonga Channel/Creek), (2) Drainage 2, an outlet channel south of Cucamonga Dam, and (3) Drainage 3, a tributary to Cucamonga Channel/Creek.

1.3 - Jurisdictional Summary

USACE will assert jurisdiction over all waters, including adjacent wetlands, which maintain a significant nexus to downstream traditionally navigable waters. USACE jurisdiction was found to include 16 Drainage features encompassing 22.07 acres of non-wetland streambed within the survey area

The Santa Ana RWQCB has concurrent jurisdiction over waters of the U.S. but also asserts jurisdiction over isolated wetlands (See *Porter Cologne*, Appendix A). Because no isolated wetlands were determined to be present, RWQCB jurisdiction will be the same as USACE jurisdiction.

The CDFG will also assert jurisdiction over streambeds and associated riparian community/system, including adjacent wetlands. CDFG jurisdiction includes all lakes and streambeds regardless of downstream connectivity to navigable waters. CDFG jurisdiction was found to include 16 jurisdictional streams encompassing 41.42 acres within the survey area.

A complete description and summary of potential jurisdictional features is provided in section 4. A description of potential project impacts to these features is provide in section 5.

SECTION 2: JURISDICTIONAL METHODOLOGY

2.1 - Methodology Statement

This Jurisdictional Delineation was conducted in accordance with regulations set forth in 33 CFR part 328 and the USACE guidance documents referenced below:

- USACE Wetlands Research Program Technical Report Y-87-1 (on-line edition), *Wetlands Delineation Manual*, Environmental Laboratory, 1987 (Wetland Manual).
- USACE *Guidelines for Jurisdictional Determinations for Waters of the United States in the Arid Southwe*st, 2001 (Arid Southwest Guidelines).
- USACE *Minimum Standards for Acceptance of Preliminary Wetlands Delineations*, November 30, 2001 (Minimum Standards).
- USACE *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*, December 2006 (Arid West Supplement).
- USACE *Jurisdictional Determination Form Instructional Guidebook*, May 30, 2007 (JD Form Guidebook).
- USACE *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*, August 2008 (Delineation Manual).

2.2 - Pre-Survey Investigation

Prior to the field visit, a 200-scale (1 inch = 200 feet) aerial photograph of the Site was procured and compared with the Mt. Baldy, California, USGS 7.5-minute topographic quadrangle map to identify drainage features within the survey area as indicated from topographic changes or visible drainage patterns. The National Wetland Inventory was also reviewed to determine whether any wetland areas had been documented within the vicinity of the site. The United States Department of Agriculture (USDA) Soil Survey Map was reviewed to identify the soil series that occur on the Site.

2.3 - Field Investigation

A field investigation was performed by MBA Biologist/Regulatory Specialist, Dale Hameister on April 30 and June 16, 2009. Data was collected using a Trimble Geo XH Global Positioning System (GPS) with sub-foot accuracy, as well as mapping the drainage feature based on recent aerial photographs. Other materials used included a 30-meter tape measure, shovel, and Munsell color chart.

Soil pits were attempted within the Cucamonga Creek and the Riversidean Alluvial Fan Sage Scrub (RAFSS) area adjacent to San Antonio Channel. Both areas were too rocky to enable a soil pit to be dug. Other drainages were either concrete improved channels, or were surrounded by upland vegetation with no adjacent depressions or areas that might otherwise indicate the potential presence of USACE wetlands. As such no soil pits were dug.

The survey was conducted on foot. Potential jurisdictional features were systematically inspected to record existing conditions and to determine the jurisdictional limits. The site was carefully assessed for surface flow indicators (presence of hydrophytic vegetation, staining, cracked soil, ponding, etc). The apparent flow regimes and corresponding hydrogeomorphic features were subsequently identified. The lateral extent of USACE jurisdiction was measured at the OHWM. Where appropriate, multiple measurements were recorded at various representative locations along the length of the feature.

Wetland areas were assessed to the outer reach of the applicable (hydrophytic) vegetative community or (where vegetation was absent/disturbed) or where ponded features are present, to the natural topographical rim of the depressional feature (whichever was greater). Features previously indicated on aerial photographs (dark/saturated areas, associated riparian vegetation, etc.) were field verified during the site visit. Similarly, U.S. Department of Agriculture (USDA)/Natural Resources Conservation Service (NRCS) soils records for Riverside County were also field confirmed. Plant species for each vegetative community were identified and given an indicator status as prescribed in the *National List of Vascular Plant Species that Occur in Wetlands* (1996). All data collected was recorded on wetland data forms and evaluated using the 2006 USACE Arid West Regional Guidance.

CDFG jurisdiction was based on the presence of a bed and bank, and the presence of riparian vegetation and/or wildlife resources. The lateral extent of CDFG jurisdiction was measured from bank to bank at the top of the channel, or to the drip-line of the associated riparian vegetation where it extends beyond the bank of the channel. CDFG and USACE jurisdiction is considered equal within box concrete flood control facilities, which have no banks.

Width and length measurements were entered into Geographical Information System (GIS) Arcview software to identify the location and dimensions of jurisdictional areas. The Arcview application was then used to compute federal and State jurisdiction in acres. Acreage computations were verified using a 200-scale aerial photograph and field data.

SECTION 3: ENVIRONMENTAL SETTING

3.1 - Location of the Property

Approval of the proposed Project will result in the construction of approximately five miles of public multi-use recreational trails along the northern boundary of San Antonio Heights along with two staging areas located on the east end of 24th Street and in the center of the Project area on 27th Street. Several alternative construction parameters are included in this project description below. The Project site is generally located north of SR-210, south of SR-138, and west of I-15 (see Exhibit 1). Situated in the far northwestern portion of the Chino Basin, the Project area is located on County land between Cucamonga Creek and San Antonio Creek. The boundaries of the Project area can be found within the Mt. Baldy, California USGS 7.5-minute topographic quadrangle map, in Township 1 North, Range 8 West, Section 24, 25, 26 and Township 1 North, Range 7 West, Section 19, 20, 29, 30 (Exhibit 2). The Project area is linear and follows old paved and rarely used roads, existing trails and dirt roads used for access to various flood control facilities. The Project site is specifically located north of 22nd Street, east of the Los Angeles/San Bernardino border and west of Turquoise Avenue (see Exhibit 3). Private, County and Federal government lands are located in the Project area.

3.1.1 - Directions to the Project Site

From Downtown Los Angeles, take the Foothill Freeway (210) east to Euclid Avenue in Upland. Head north on Euclid Avenue 1.4 miles, turn left on Mesa Terrace and proceed 0.4 mile. Then turn left on N. Mountain Ave. There is a turnout on the right side of N. Mountain at the entrance to San Antonio Dam.

3.1.2 - Assessor Parcel Numbers (APNs)

The proposed trail route includes portions of the following Assessor's Parcel Numbers (APNs):

Table 1: APNs and Ownership

APN	Owner
100-304-107	San Bernardino County Flood Control District
100-303-108	San Bernardino County Flood Control District
104-309-102	Southern California Edison Company
100-313-102	San Bernardino County Flood Control District
100-305-118	San Bernardino County Flood Control District
100-313-101	San Bernardino County Flood Control District
100-347-211	City of Los Angeles

Table 1 (cont.): APNs and Ownership

APN	Owner
104-317-105	San Bernardino County Flood Control District
100-343-104	Claremont Venture Estate Corp
100-346-107	City of Los Angeles
020-012-424	United States of America (USACE)
100-346-203	City of Los Angeles
020-005-102	McGinnis, George and Diane TRS
100-301-108	San Bernardino County Flood Control District
020-012-301	United States of America (USACE)
020-012-456	United States of America (USACE)
020-012-448	United States of America (USACE)
104-311-105	San Bernardino County Flood Control District
100-301-110	San Bernardino County Flood Control District
020-012-450	United States of America (USACE)
104-309-103	San Bernardino County Flood Control District
100-320-108	San Bernardino County Flood Control District
020-010-108	United States of America (USACE)
100-329-122	City of Los Angeles
020-012-454	United States of America (USACE)
100-306-105	San Antonio Water Co
020-011-207	United States of America (USACE)
100-347-210	Laxpati, Jatin R
020-012-444	United States of America (USACE)
100-327-117	San Bernardino County Flood Control District
100-326-109	San Bernardino County Flood Control District
100-347-209	City of Los Angeles
104-344-102	Holliday Trucking Inc
100-346-108	San Antonio Water Co
100-346-104	City of Los Angeles
100-346-106	San Antonio Liquidation Trust
100-329-120	City of Los Angeles
100-305-115	San Bernardino County Flood Control District

Table 1 (cont.): APNs and Ownership

APN	Owner
020-011-106	United States of America (USACE)
020-006-132	Cucamonga County Water District
020-006-133	Cucamonga County Water District
020-011-204	United States of America (USACE)
104-317-103	San Bernardino County Flood Control District
020-011-206	United States of America (USACE)
100-305-109	San Bernardino County Flood Control District
100-303-106	San Bernardino County Flood Control District
100-334-130	San Bernardino County Flood Control District
100-305-122	City of Los Angeles
020-011-107	United States of America (USACE)
100-334-115	City of Los Angeles
020-012-445	United States of America (USACE)
020-005-168	Cucamonga County Water District
020-012-455	United States of America (USACE)
104-309-102	Southern California Edison Company
100-326-206	San Bernardino County Flood Control District
020-011-105	United States of America (USACE)
020-012-437	United States of America (USACE)
020-012-425	United States of America (USACE)
020-012-446	United States of America (USACE)
100-301-110	San Bernardino County Flood Control District
100-329-119	City of Los Angeles
100-305-111	San Bernardino County Flood Control District
100-346-204	Huhn, Betty J
104-311-101	San Bernardino County Flood Control District
100-326-100	
100-343-101	Claremont Venture Estate Corp
100-329-113	Garlinghouse, Susan
100-336-104	City of Los Angeles
100-304-105	San Bernardino County Flood Control District

Table 1 (cont.): APNs and Ownership

APN	Owner
100-302-106	San Bernardino County Flood Control District
100-343-108	San Antonio Water Co
100-312-129	City of Los Angeles
100-343-107	City of Los Angeles
100-346-201	United States of America (USACE)
104-309-104	San Bernardino County Flood Control District

3.2 - Land Uses

3.2.1 - Historic Land Uses

The Project vicinity of the trail alignment has been used historically for agricultural and water management purposes. The construction of the San Antonio Dam was completed in 1956 and the Cucamonga Dam was completed in 1980.

3.2.2 - Present Land Uses

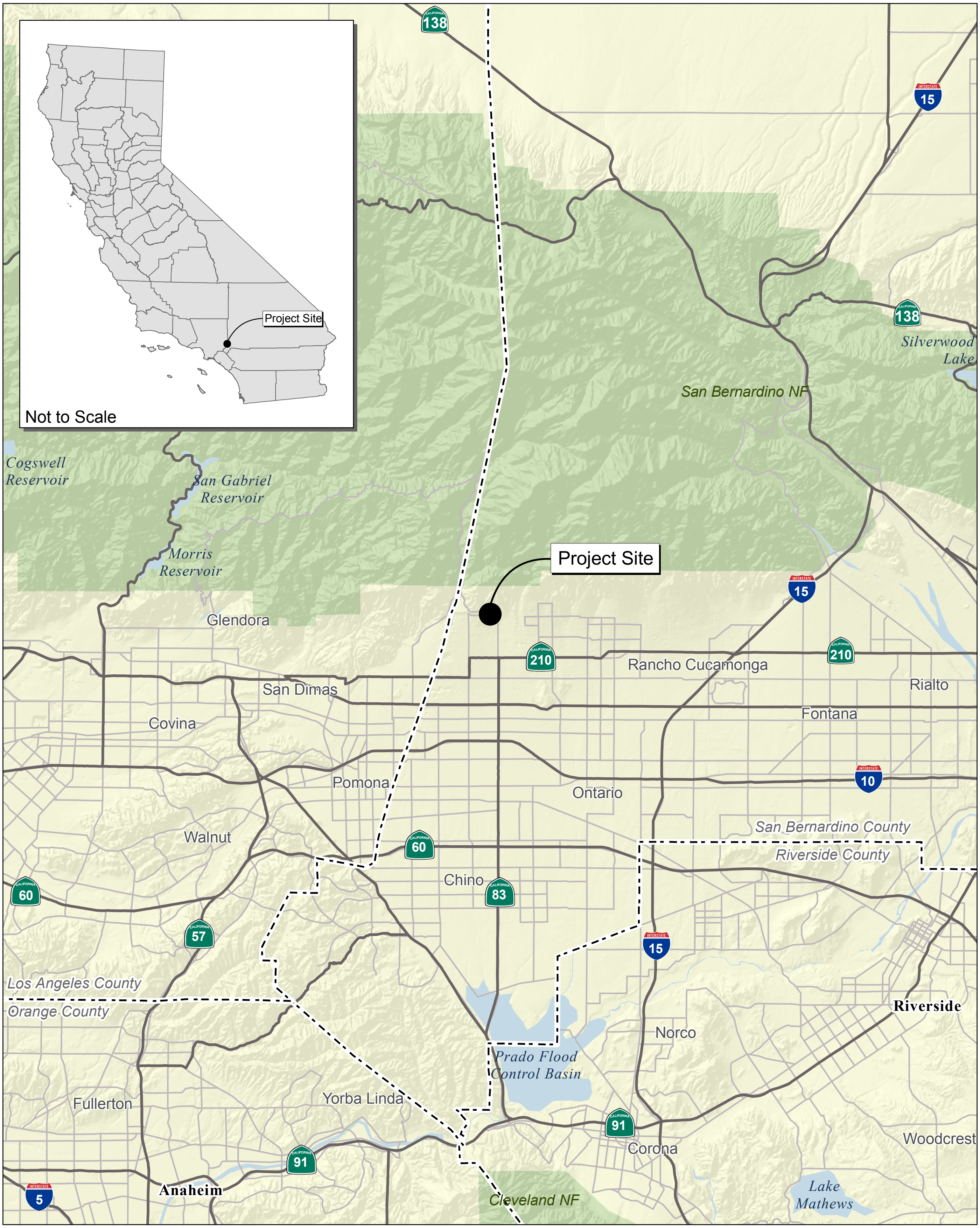
Current land uses along the Project area include residential, flood control, and water management.

3.2.3 - Activities Relating to Interstate or Foreign Commerce

The waters/wetland resources on the property are not used for aquatic based recreation or other use by interstate or foreign travelers. Onsite resources are not used for sale of fish or shellfish in interstate or foreign commerce. Similarly, the land is not currently used for industry, agriculture or other activities operating in interstate or foreign commerce. At present, no nexus to commerce is evident.

3.3 - Topography

The Project area is located within an area considered to be the upper end of the Chino Basin. The Project area generally slopes south and is situated between approximately 1800 and 2300 feet above sea level. The soils in the Project area are very cobbly and range from eroding alluvium to coarse riverwash. The soils in the Project area are entirely disturbed because of trail and road use, debris basin and Dam construction, blading and dumping. The trails exhibit recent alluvium in the creek channels and older alluvium on the benches between San Antonio Creek and Cucamonga Creek.



Source: Census 2000 Data, The CaSIL, MBA GIS 2009.

Michael Brandman Associates

NORTH

5 2.5 0 5 Miles

Exhibit 1
Regional Location Map

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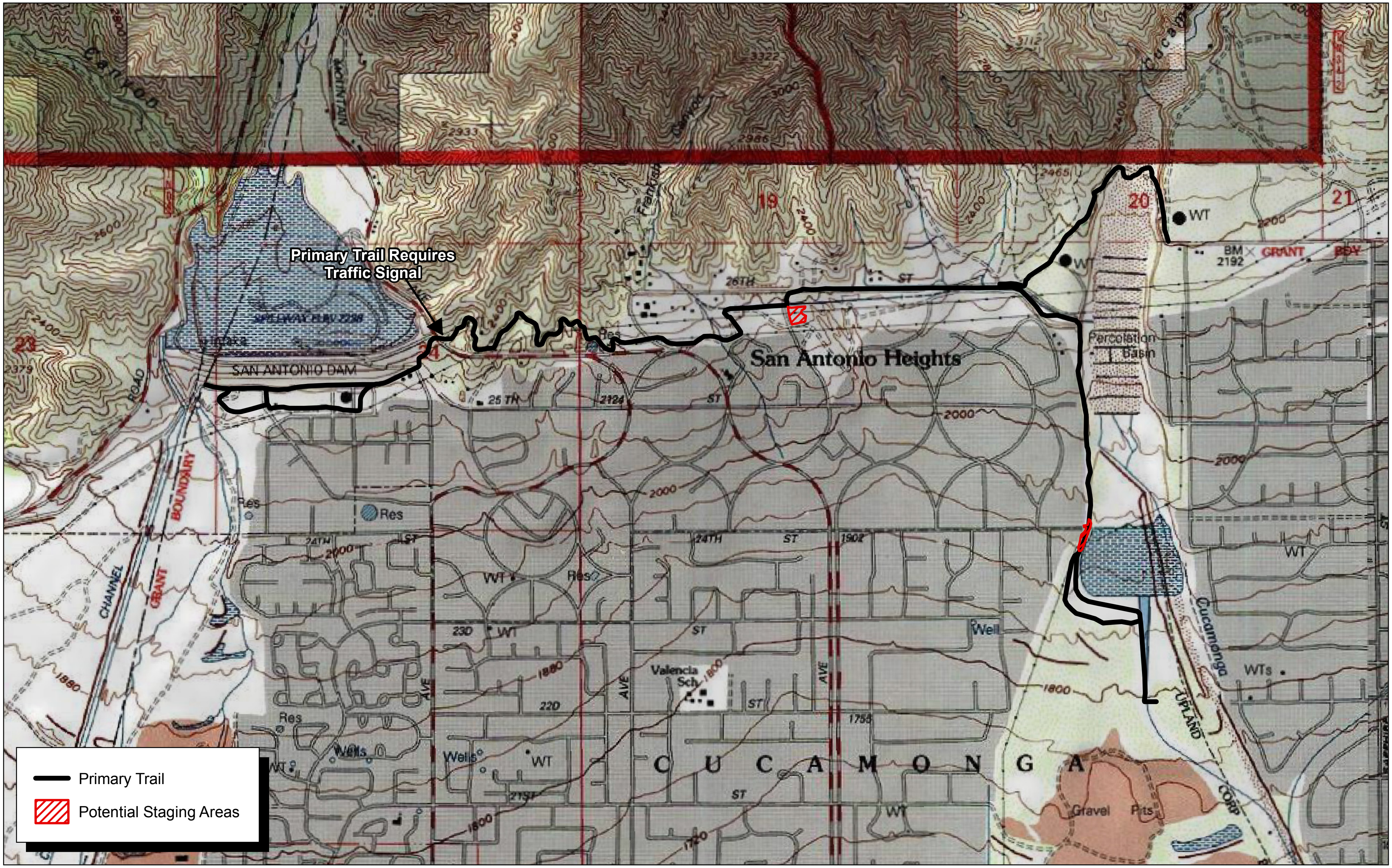
COUNTY OF SAN BERNARDINO • SAN ANTONIO HEIGHTS TRAIL
DELINEATION OF JURISDICTIONAL WATERS AND WETLANDS



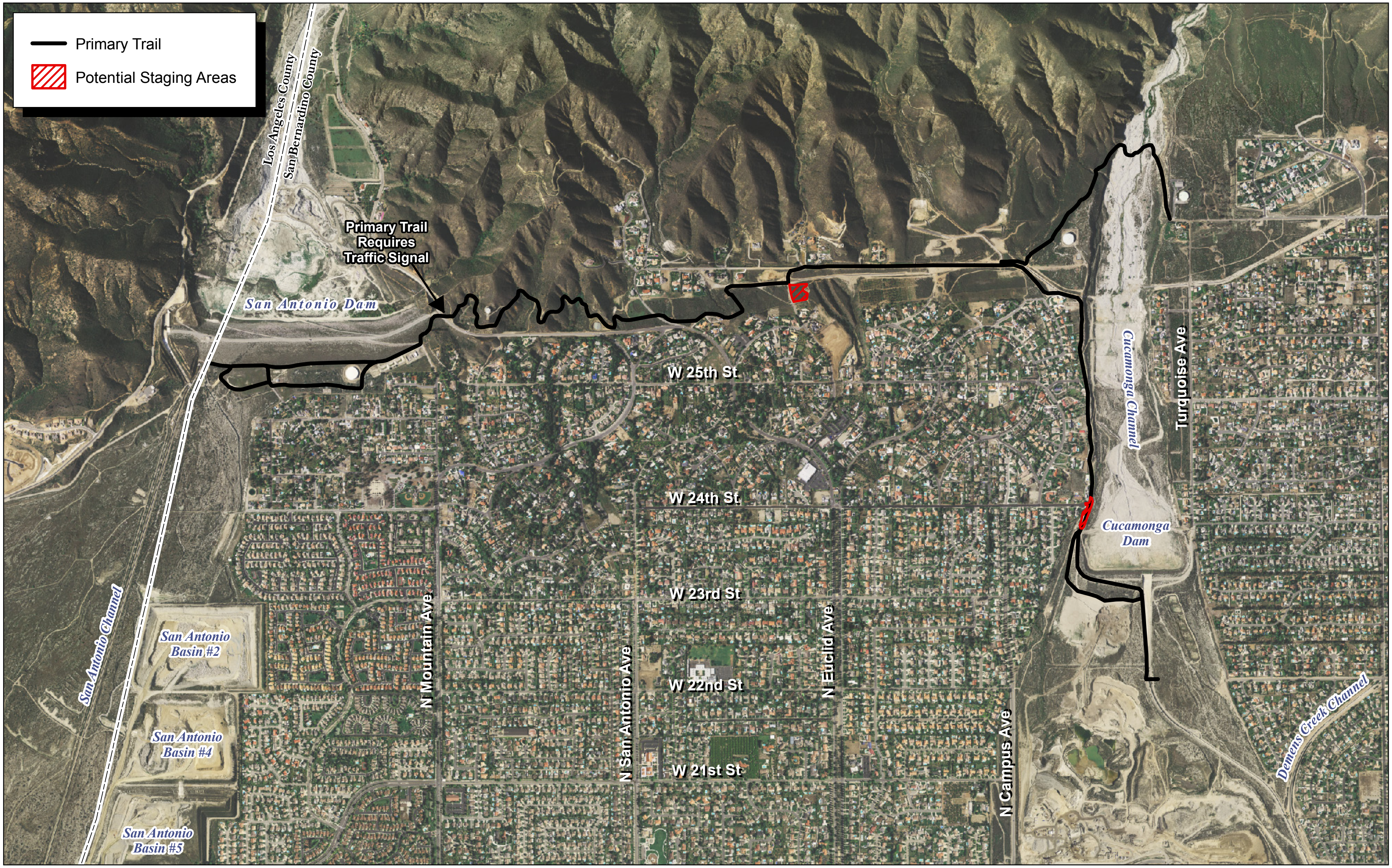
Source: TOPO! USGS Mt. Baldy (1995) 7.5' DRG.

Michael Brandman Associates

NORTH

2,000 1,000 0 2,000 Feet

Exhibit 2
Local Vicinity Map
Topographic Base



Source: San Bernardino County Aerials (2007), Census (2000).

Michael Brandman Associates

Exhibit 3
Local Vicinity Map
Aerial Base

3.4 - Hydrology

3.4.1 - Watershed Description

Based on topography and aerial photography, the primary on-site RPW (Drainage 1) drains an area of approximately 1,103 acres (See Appendix H, Drainage Area Exhibit, Webb Engineers). These drainage systems are within the Chino (Split) hydrologic sub-area (HSA, 801.21), Claremont Heights (Split) hydrologic sub-area (HSA, 481.23), Cucamonga hydrologic sub-area (HSA, 801.24), and Harrison hydrologic sub-area (HSA, 481.22) of the Middle Santa Ana hydrologic area (HA) of the Santa Ana River watershed, according to the Water Quality Control Plan, Santa Ana Basin (Basin Plan) (USGS cataloging unit 18070203).

Table 2: Water Shed Data - Size

Hydrologic Information	Description	Acres	Sq. Mi	% of Watershed
Hydrologic Unit (Cataloging Unit 18070203)	Santa Ana Watershed	1,076.024	1,681	NA
Hydrologic Area	Middle Santa Ana	358,476	560	NA
Hydrologic Sub-Area	Cucamonga 801.24	10,715	17	100.0
Drainage Area 1 (D1)	Cucamonga Creek/Channel	6,847	10.698	63.9
Drainage Area 2 (D2)	Cucamonga Dam Outlet	NA	NA	NA
Drainage Area 3 (D3)	Unnamed Tributary to Cucamonga Creek/Channel	37.65	0.059	0.351
Drainage Area 4 (D4)	San Antonio Heights Intercept (tributary to Cucamonga)	602	0.941	5.62
Drainage Area 5 (D5)	26th Street Channel (tributary to Cucamonga)	NA	NA	NA
Drainage Area 6 (D6)	Catchment (tributary to Cucamonga)	23.82	0.037	0.222
Drainage Area 7 (D7)	Catchment (tributary to Cucamonga)	73.24	0.114	0.684
Hydrologic Sub-Area	Chino (Split) 801.21	190.515	298	100.0
Drainage Area 8 (D8)	Unnamed Drainage	14.20	0.022	7.45
Drainage Area 9 (D9)	Unnamed Drainage	6.96	0.011	3.65
Drainage Area 10 (D10)	Unnamed Drainage	3.42	0.005	1.80
Drainage Area 11 (D11)	Unnamed Drainage	18.76	0.029	9.85
Drainage Area 12 (D12)	Unnamed Drainage	4.08	0.006	2.14
Drainage Area 13 (D13)	Unnamed Drainage	1.14	0.002	0.598

Table 2 (cont.): Water Shed Data - Size

Hydrologic Information	Description	Acres	Sq. Mi	% of Watershed
Drainage Area 14 (D14)	Unnamed Drainage	9.40	0.015	4.93
Hydrologic Sub-Area	Claremont Heights (Total) 481.23, 801.23	17,331	27.080	100.0
Drainage Area 15 (D15)	San Antonio Channel	17,331	27.080	100.0
Drainage Area 16 (D16)	San Antonio Channel/bypass	NA	NA	NA

Table 3: Water Shed Data - Distance

Project Waters (Drainage)	Distance to Prado Dam (Santa Ana River)(1)		Distance to TNW (Pacific Ocean)	
	River Miles	Aerial Miles	River Miles	Aerial Miles
Drainage 1 – (Cucamonga Channel)	13.97	13.4	51.17	39
Drainage 1 – (San Antonio Channel)	16.11	13.5	53.11	37.5

Table 4: Beneficial Uses

Beneficial Uses	Cucamonga Creek (Mountain Reach)	San Antonio Creek	Pacific Ocean
Municipal/Domestic Water Supply (MUN)	Yes	Yes	--
Agricultural Supply AGR)	--	Yes	--
Industrial Service Supply (IND)	Yes	Yes	Yes
Industrial Process Supply (PROC)	Yes	Yes	--
Groundwater Recharge (GWR)	Yes	Yes	--
Navigation (NAV)	--	--	Yes
Hydropower Generation (POW)	Yes	Yes	--
Water Contact Recreation (REC 1)	Yes	Yes	Yes
Non-Contact Water Recreation (REC 2)	Yes	Yes	Yes
Commercial and Sports fishing (COMM)	--	--	Yes
Warm Freshwater Habitat (WARM)	--	--	--
Limited Warm Freshwater Habitat (LWRM)	--	--	--
Cold Freshwater Habitat (COLD)	--	Yes	--

Table 4 (cont.): Beneficial Uses

Beneficial Uses	Cucamonga Creek (Mountain Reach)	San Antonio Creek	Pacific Ocean
Preservation of Biological Habitats of Special Significance (BIOL)	--	--	--
Wildlife Habitat (WILD)	Yes	Yes	Yes
Rare, Threatened or Endangered Species (RARE)	--	--	Yes
Spawning, Reproduction, and Development (SPWN)	Yes	--	Yes
Marine Habitat (MAR)	--	--	Yes
Shellfish Harvesting (SHEL)	--	--	Yes
Estuarine Habitat (EST)	--	--	--

3.4.2 - Flood Data

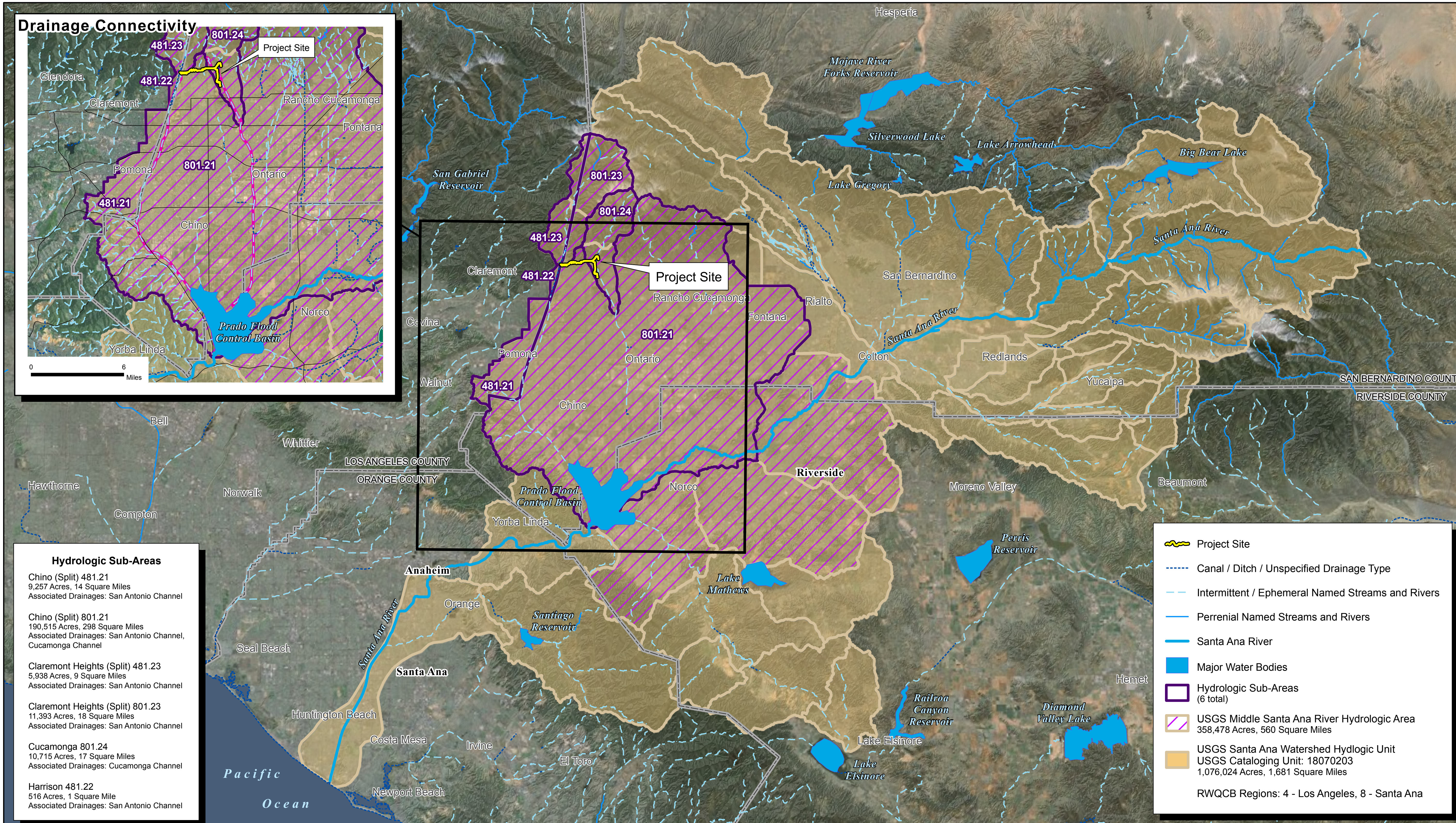
The Federal Emergency Management Agency (FEMA) has an assigned flood Zone classification for the Project area. The majority of the Project site is within FEMA zone "X". The "X" designation establishes that the annual probability of flooding is less than 0.2 percent (>500 year flood).

FEMA has provided a flood zone designation of "X500" within the center of the Project area. The "X500" designation establishes that the annual probability of flooding is 0.2 percent – 1 percent (≥100 year flood).

The area within Cucamonga Channel is designated as "A", areas having an annual probability of flooding of 1 percent or greater.

3.4.3 - Seasonal Climate Variation

WETS Data for the San Bernardino (CA7723) and Glendora West monitoring stations (CA3452), indicate the Project area is subject to both seasonal and annual variation in temperature and precipitation. The Glendora West data does not contain temperature data, but is closer and more similar in aspect and proximity to the San Gabriel Mountains to the Project area than the San Bernardino Station. Daily temperatures of the San Bernardino Station are at an average daily low in December (41.1ºF) and at an average high in August (95.7ºF). Soil taxonomy identifies a *thermic* soil temperature regime corresponding to a growing season from February to October (see Soils Taxonomy Data, Appendix H). Similarly, *Growing Season Dates* tables suggest a 50 percent probability that the growing season will last year round (365 Days 28ºF or higher)(WETS Station Data).



Source: ESRI World Imagery, ESRI (2008).

Michael Brandman Associates

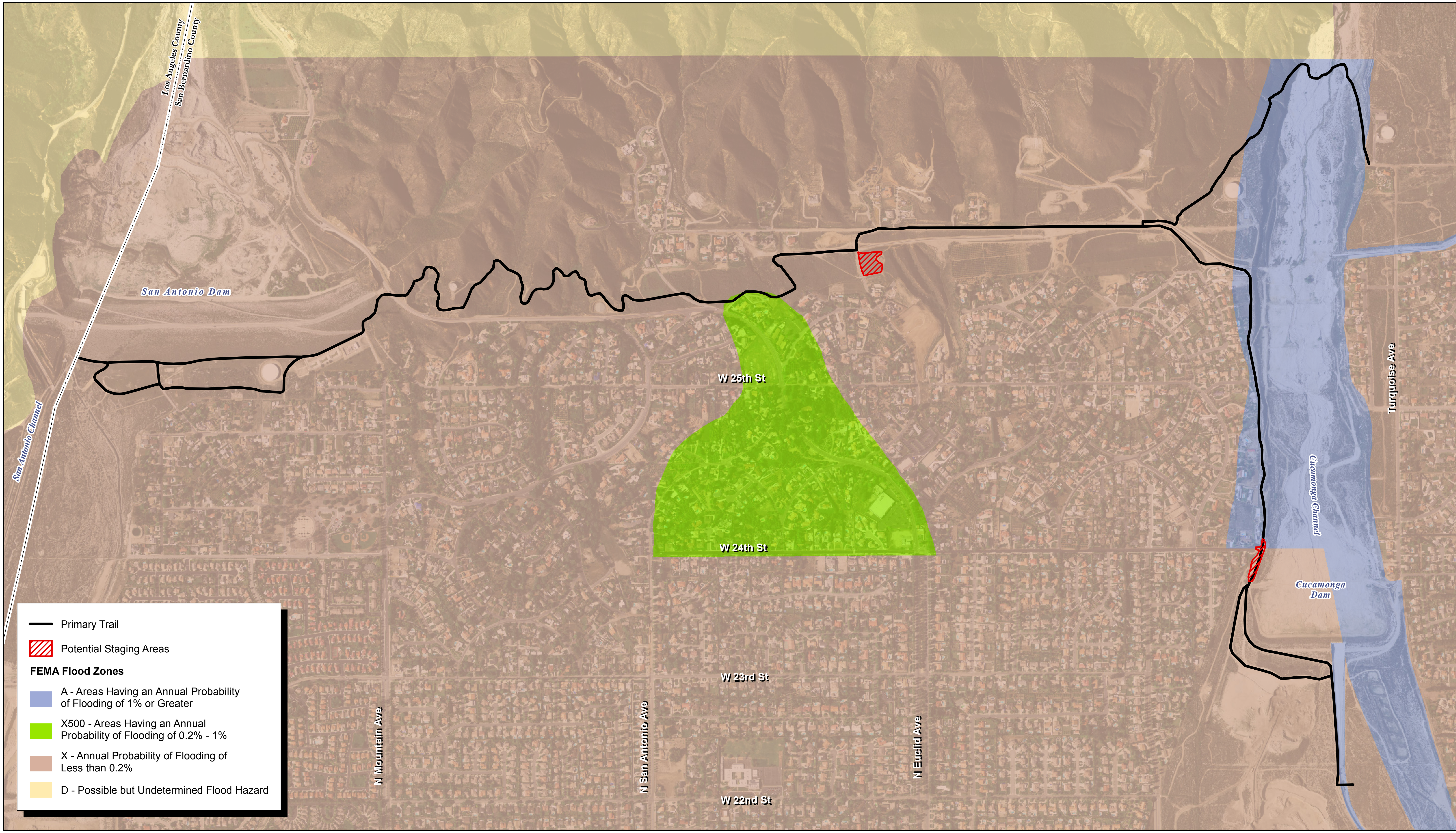
NORTH

6.5 3.25 0 6.5 Miles

Exhibit 4
Watershed / Drainage Map

00520123 • 06/2010 | 4_Watershed_Drainage.mxd

COUNTY OF SAN BERNARDINO • SAN ANTONIO HEIGHTS TRAIL
DELINEATION OF JURISDICTIONAL WATERS AND WETLANDS



Source: San Bernardino County Aerials (2007), ESRI (2008), FEMA NFHL Data (November 18, 2009).

Michael Brandman Associates

NORTH

1,000 500 0 1,000 Feet

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Exhibit 5
FEMA Flood Map

COUNTY OF SAN BERNARDINO • SAN ANTONIO HEIGHTS TRAIL
DELINEATION OF JURISDICTIONAL WATERS AND WETLANDS

Precipitation at the Glendora West Station is typically greatest in the winter months January through March, reaching peak average rainfall in February (5.26 inches). Average precipitation is lowest in July (0.04 inch). Snowfall is not typical in the area. Total average precipitation may vary greatly between drought and flood years. The WETS tables indicate average annual precipitation for the area is 22.36 inches, with 0.0 inches of snowfall. Precipitation within the Chino (Split) hydrologic sub-area (801.21) indicates annual precipitation within the watershed at 18.2 inches.

3.4.4 - Field Conditions at time of Field Investigation

During the April 30, 2009 survey, the weather was generally warm with slight cloud cover. No surface water was present within the OHWM of any of the drainages.

During the June 16, 2009 survey, the weather was generally warm with no cloud cover. No surface water was present within the OHWM of any of the drainages.

During the survey periods, the Palmer Drought Severity Index (PDSI) indicated severe drought conditions in the area, crop moisture index for the time period was at -2.43.

3.5 - Soils

The Project Site contains fifteen different soil series. A soil series is a group of soils with similar profiles. These profiles include major horizons with similar thickness, arrangement, and other important characteristics. The soils that occur on the Project Site include Hanford coarse sandy loam, Madera fine sandy loam, and eroded and Terrace escarpments (USDA Soil Survey, Western Riverside Area, California 1971) (Exhibit 6).

AbD - Soboba-Hanford families association, Cienaba-Rock Outcrop Complex, Trigo family-Lithic Xerorthents, warm complex, Hanford course sandy loam, Hanford course sandy loam, psamments and fluvents, frequently flooded, Romana sandy loam, Ramona sandy loam, Saugus sandy loam, Soboba gravelly loam sand, Soboba stony loamy sand, Tujunga gravelly loamy sand, riverwash and dam.

The Hanford series consist of somewhat excessively drained to excessively drained soils on alluvial fans. These soils developed in alluvium consisting mainly of granitic materials. In a typical profile of the Hanford series, the upper 18 inches consists of coarse sandy loam with stratified coarse sandy loam and loamy sand below.

The Soboba series consists of deep, excessively drained soils that formed in alluvium from predominantly granitic rock sources. Soboba soils are on alluvial fans and flood plains and have slopes of 0 to 30 percent.

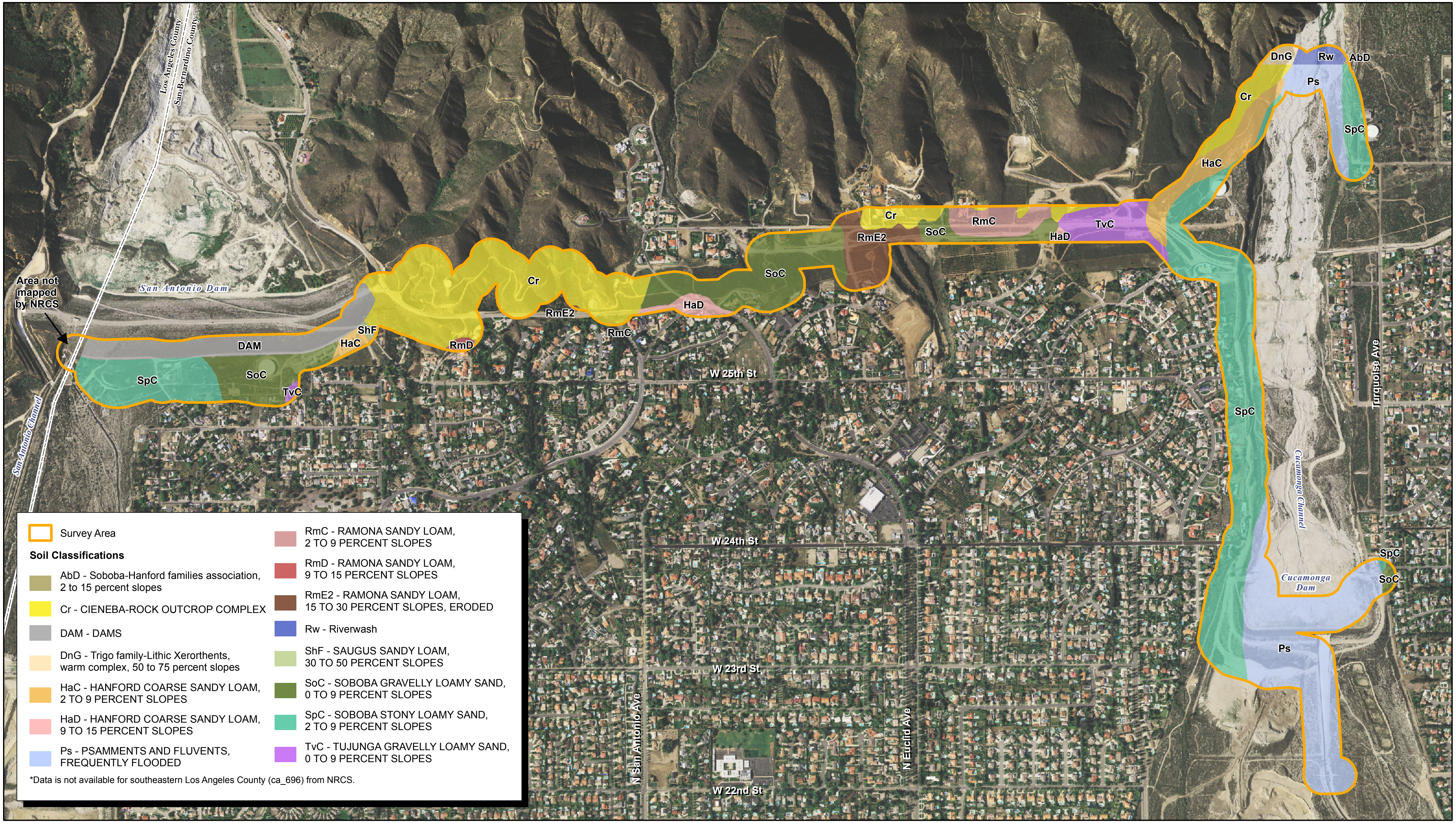
The Ramona series is a member of the fine-loamy, mixed, thermic family of Typic Haploxeralfs. Typically, Ramona soils have brown, slightly and medium acid, sandy loam and fine sandy loam A horizons, reddish brown and yellowish red, slightly acid, sandy clay loam B2t horizons, and strong brown, neutral, fine sandy loam C horizons.

The Saugus series consists of deep, well-drained soils that formed from weakly consolidated sediments. Saugus soils are on dissected terraces and foothills and have slopes of 9 to 50 percent.

The Tujunga series consists of very deep, somewhat excessively drained soils formed in alluvium weathered mostly from granitic sources. Tujunga soils are on alluvial fans and flood plains and have slopes of 0 to 9 percent.

Riverwash consists of long, narrow areas of sand, gravel, and stones along channels of the larger streams. Some areas are barren of vegetation and others support scattered cottonwoods, willows, and other trees and shrubs. Overflow and alteration by severe erosion and deposition are frequent.

Psamments and Fluvents are areas of loamy sand or sand texture that do not have developed horizons but layers representing the frequent times they have been flooded and sediments deposited. These soils are mapped in areas of Cucamonga Channel.



Source: San Bernardino County Aerials (2007), Census (2000) Data, USDA NRCS ca677 (2008) & ca777 (2009) Soils.

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Exhibit 6
USDA Soils Map

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COUNTY OF SAN BERNARDINO • SAN ANTONIO HEIGHTS TRAIL
DELINEATION OF JURISDICTIONAL WATERS AND WETLANDS

3.6 - Biological Resources

3.6.1 - Biological Resources Surveys and Reports

A habitat assessment was prepared for the Project site by MBA on June 30, 2009 (*Habitat Assessment Habitat Assessment Report Proposed San Antonio Heights Trail San Bernardino County, California*).

3.6.2 - Flora / Plant Communities

Species observed within these communities and within the features are listed below, including their corresponding wetland indicator status (Obligate (OBL) Facultative wet (FACW), Facultative (FAC) Facultative upland (FACU), Upland (UPL), or No Indicator (NI).

The majority of the trail and alternatives will be located on existing roads and trails. The vegetation described here includes the areas adjacent to the proposed trails and the areas that will be impacted by construction of trail connections and staging areas.

Coastal Sage Scrub

This community is dominated by laurel sumac (*Malosma laurina*), California buckwheat (*Eriogonum fasciculatum*), deer weed (Lotus scoparius), white sage (Salvia apiana), yerba santa (*Eriodictyon trichocalyx*) and black sage (*Salvia mellifera*). CSS is the dominant plant community along the trail route.

Riversidean Alluvial Fan Sage Scrub (RAFSS)

The CDFG lists RAFSS as rare and it is considered a sensitive plant community because it is often believed to be suitable habitat for a number of sensitive plant and wildlife species. RAFSS is an open plant community adapted to the harsh conditions of flooding. It grows on sandy, rocky alluvium deposited by streams that experience infrequent episodes of flooding. RAFSS is composed of an assortment of drought-deciduous sub-shrubs and large, evergreen, woody shrubs that are adapted to the periodic and intense episodes of flooding and erosion that occurs along alluvial fans. The RAFSS areas along the bottom of Cucamonga Channel and below San Antonio dam contain typical CSS species including laurel sumac, California buckwheat, and white sage as well as more typical RAFSS species including scalebroom (*Lepidospartum squamatum*) chaparral yucca (*Yucca whipplei*), yerba santa and deerweed. There are no anticipated impacts to RAFSS habitat as the trail through Cucamonga Channel will not be improved and the trail will be aligned with existing roads below San Antonio Dam.

Ruderal

Ruderal plant communities are typically associated with recently disturbed areas and are dominated by plant species that are quick to colonize disturbed lands. The disturbance may be natural (e.g., wildfires), or due to human influence - construction-related (e.g., road construction, building construction or mining), or agricultural (e.g., abandoned farming fields or abandoned irrigation ditches). Species observed in ruderal areas include short-pod mustard (*Hirschfeldia incana*), ripgut brome (*Bromus diandrus*), soft brome (*Bromus hordeaceus*), and wand mullein (*Verbascum virgatum*).

Disturbed

Areas mapped as disturbed include dirt roads, trails, and graded areas. The majority of the proposed trail and staging area 1 are proposed in areas that are currently disturbed.

Developed

Areas mapped as developed include residential development, infrastructure and buildings associated with water management, concrete channels, and existing paved roads.

Coastal Sage Scrub: (native species):

- Laurel sumac (*Malosma laurina*) (UPL);
- California buckwheat (*Eriogonum fasciculatum*) (UPL);
- deer weed (*Lotus scoparius*), (UPL);
- white sage (*Salvia apiana*) (UPL);
- black sage (*Salvia mellifera*) (UPL);
- yerba santa (*Eriodictyon trichocalyx*) (UPL)

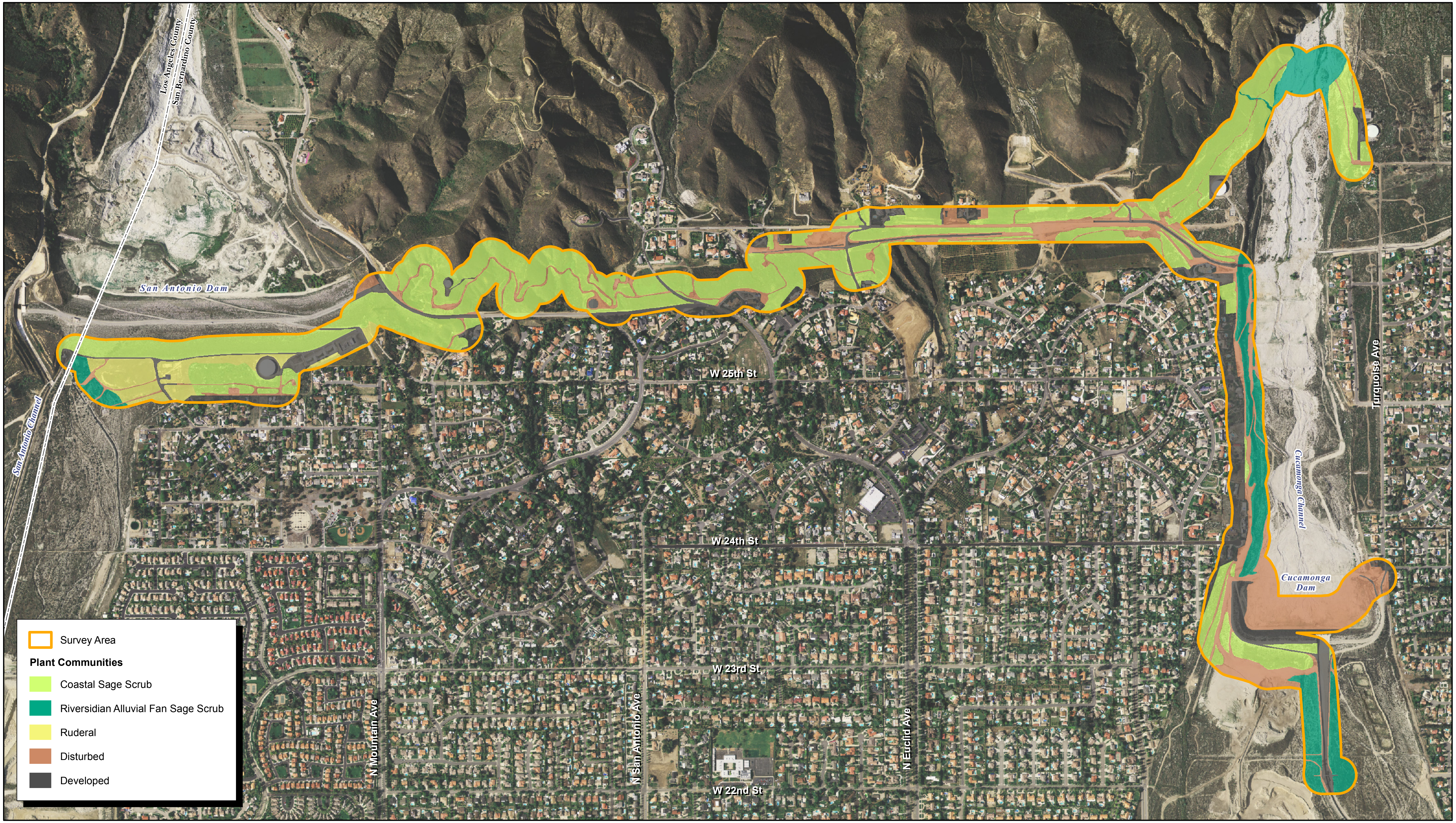
Ruderal:

- short-pod mustard (*Hirschfeldia incana*) (UPL);
- ripgut brome (*Bromus diandrus*) (UPL);
- soft brome (*Bromus hordeaceus*) (FACU);
- wild oats (*Avena fatua*) (UPL); and
- tobacco tree (*Nicotiana glauca*) (FAC).

RAFSS:

- scalebroom (*Lepidospartum squamatum*) (NI);
- chaparral yucca (*Yucca whipplei*) (UPL);
- mulefat (*Baccharis salicifolia*) (FACW); and
- yerba santa (*Eriodictyon trichocalyx*) (UPL)

A detailed list of plants and plant communities is provided in the HA for the Property. [1]



Source: San Bernardino County Aerials (2007), Census (2000) Data, MBA Field Survey (2009).

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Exhibit 7
Plant Communities Map

COUNTY OF SAN BERNARDINO • SAN ANTONIO HEIGHTS TRAIL
DELINEATION OF JURISDICTIONAL WATERS AND WETLANDS

3.6.3 - Fauna

The Project Site provides suitable habitat for and a variety of common wildlife. No sensitive species were observed.

A detailed list of fauna present and potential present on the Project site is provided in the HA for the Project.

3.6.4 - California Species of Concern

The Project Site provides suitable habitat for Coast horned lizard. No Coast horned lizards were observed.

3.7 - Listed Species / Critical Habitat

As part of the CWA Section 404 permitting program, Nationwide Permit General Condition 17 (GC 17) requires compliance with the Endangered Species Act (ESA). Pursuant to the ESA and GC 17 no activity is authorized under any Nationwide Permit (NWP) which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified (under the ESA), or which will destroy or adversely modify the critical habitat of such species. Similarly no activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless a Section 7 consultation addressing the effects of the proposed activity has been completed.

No federally or state endangered or threatened species are known to occur on the Project site. The Property is not within federally designated Critical Habitat.

3.8 - Historical Properties

An assessment of onsite historic properties is required by USACE in administering the Section 404 permitting program. According to General Condition No. 12 of the USACE Nationwide Permit Program, pursuant to the federal National Historic Preservation Act (NHPA), the presence of significant cultural resources must be determined prior to submittal of the Section 404 application.

3.9 - Coastal Zone Evaluation

The Project site is not within the coastal zone as defined by the California Coastal Act. As such, a Coastal Zone Management Act consistency determination is not required.

3.10 - Environmental Documentation

Pursuant to the California Environmental Quality Act (CEQA), an Initial Study will be prepared for the Property and proposed Project.

The Initial Study will evaluate the projects potential environmental effects/impacts (resulting in a determination to prepare either a Negative Declaration or EIR). Final CEQA documents are required before water quality certification (CWA Section 401) will be authorized. Similarly, a CDFG Section 1602 streambed alteration agreement will not be considered finalized until final CEQA documents have been issued.

3.11 - USACE District Considerations – Los Angeles District

None of the USACE Los Angeles District regional conditions applies to the subject property.

SECTION 4: DELINEATION OF POTENTIAL JURISDICTIONAL AREAS

The following section provides a detailed discussion of jurisdictional and non-jurisdictional areas on the property, including findings related to vegetative communities, topography, soils, hydrology, and wetlands for each of the geomorphic features.

4.1 - Summary of Jurisdictional Areas

With respect to the Project Site, the respective jurisdictions of USACE, RWQCB and CDFG are summarized in table form below.

4.1.1 - Potential USACE Jurisdictional Areas

Typically, USACE will assert jurisdiction over all waters, including adjacent wetlands, which maintain a significant nexus to downstream traditionally navigable waters. However, under terms of the RGL 08-02 all features that reasonably could be considered jurisdictional features will be treated as such for regulatory permitting purposes. In many cases assumption of federal jurisdiction serves to streamline the jurisdictional assessment and permitting process. Potential USACE jurisdiction was found to include 16 Drainage features encompassing 22.07 acres of non-wetland streambed within the survey area (See Table 5 below, and Exhibit 8).

Table 5: USACE Jurisdictional Evaluation – Within Surveyed Area

Hydrogeomorphic Feature	Description	Potential USACE Jurisdiction		Non-Jurisdictional Features acres (LF)
		Waters of U.S. acres (linear feet)	Adjacent Wetland Waters (acres)	
Drainage 1 (D1)	Cucamonga Creek/Channel	18.96 (4,389)	NA	NA
Drainage 2 (D2)	Cucamonga Dam Outlet	0.16 (637)	NA	NA
Drainage 3 (D3)	Unnamed Tributary to Cucamonga Creek/Channel	0.04 (464)	NA	NA
Drainage 4 (D4)	San Antonio Heights Intercept (tributary to Cucamonga)	1.35 (4,329)	NA	NA
Drainage 5 (D5)	26th Street Channel (tributary to Cucamonga)	0.38 (2,806)	NA	NA
Drainage 6 (D6)	Catchment (Tributary to Cucamonga)	0.09 (112)	NA	400
Drainage 7 (D7)	Catchment (Tributary to Cucamonga)	0.03 (67)	NA	NA
Drainage 8 (D8)	Unnamed Drainage (Chino Split)	0.04 (415)	NA	NA

Table 5 (cont.): USACE Jurisdictional Evaluation – Within Surveyed Area

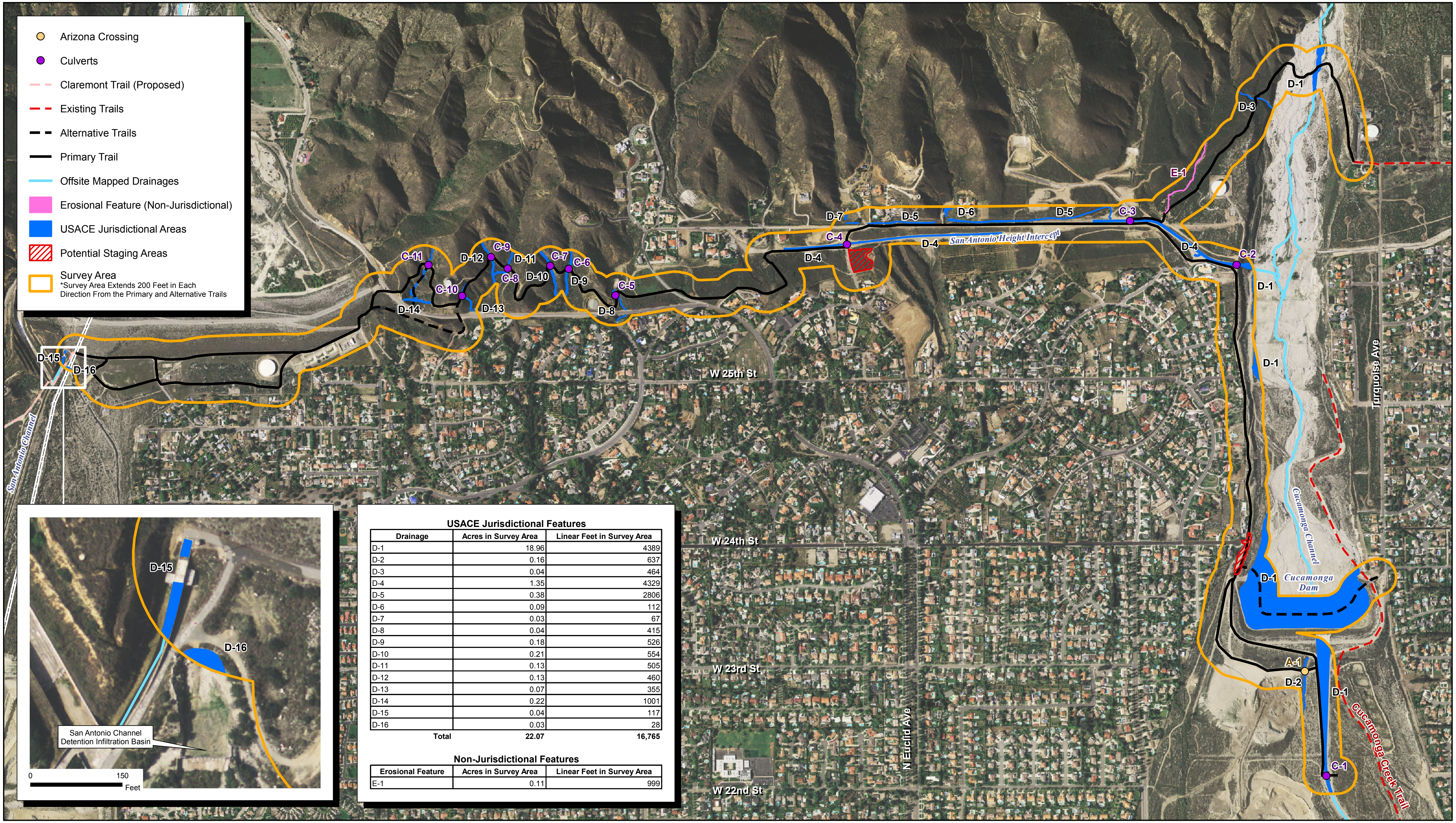
Hydrogeomorphic Feature	Description	Potential USACE Jurisdiction		Non-Jurisdictional Features acres (LF)
		Waters of U.S. acres (linear feet)	Adjacent Wetland Waters (acres)	
Drainage 9 (D9)	Unnamed Drainage (Chino Split)	0.18 (526)	NA	NA
Drainage 10 (D10)	Unnamed Drainage (Chino Split)	0.21 (554)	NA	NA
Drainage 11 (D11)	Unnamed Drainage (Chino Split)	0.13 (505)	NA	NA
Drainage 12 (D12)	Unnamed Drainage (Chino Split)	0.13 (460)	NA	NA
Drainage 13 (D13)	Unnamed Drainage (Chino Split)	0.07 (355)	NA	NA
Drainage 14 (D14)	Unnamed Drainage (Chino Split)	0.22 (1,001)	NA	NA
Drainage 15 (D15)	San Antonio Channel	0.04 (117)	NA	NA
Drainage 16 (D16)	San Antonio Channel/bypass	0.03 (28)	NA	NA
E1	Erosional Feature / No Connectivity	NA	NA	0.11 (999)
Total	**NA**	**22.07 (16,765)**	NA	0.11 (999)

4.1.2 - RWQCB Jurisdiction

The Santa Ana RWQCB has concurrent jurisdiction over waters of the U.S. but also asserts jurisdiction over isolated wetlands (See *Porter Cologne*, Appendix A). Because no isolated wetlands were determined to be present, RWQCB jurisdiction will be the same as USACE jurisdiction (See Table 5, above).

4.1.3 - CDFG Jurisdiction

The CDFG will also assert jurisdiction over streambeds and associated riparian community/system, including adjacent wetlands. CDFG jurisdiction includes all lakes and streambeds regardless of downstream connectivity to navigable waters. CDFG jurisdiction was found to include 16 jurisdictional streams encompassing 41.42 acres within the survey area (See Table 6, and Exhibit 9).



USACE Jurisdictional Features

Drainage	Acres in Survey Area	Linear Feet in Survey Area
D-1	18.96	4389
D-2	0.16	637
D-3	0.04	464
D-4	1.35	4329
D-5	0.38	2806
D-6	0.09	112
D-7	0.03	67
D-8	0.04	415
D-9	0.18	526
D-10	0.21	554
D-11	0.13	505
D-12	0.13	460
D-13	0.07	355
D-14	0.22	1001
D-15	0.04	117
D-16	0.03	28
Total	22.07	16,765

Non-Jurisdictional Features

Erosional Feature	Acres in Survey Area	Linear Feet in Survey Area
E-1	0.11	999

Source: San Bernardino County Aerials (2007), Census (2000) Data, MBA Field Survey (2010).

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NORTH

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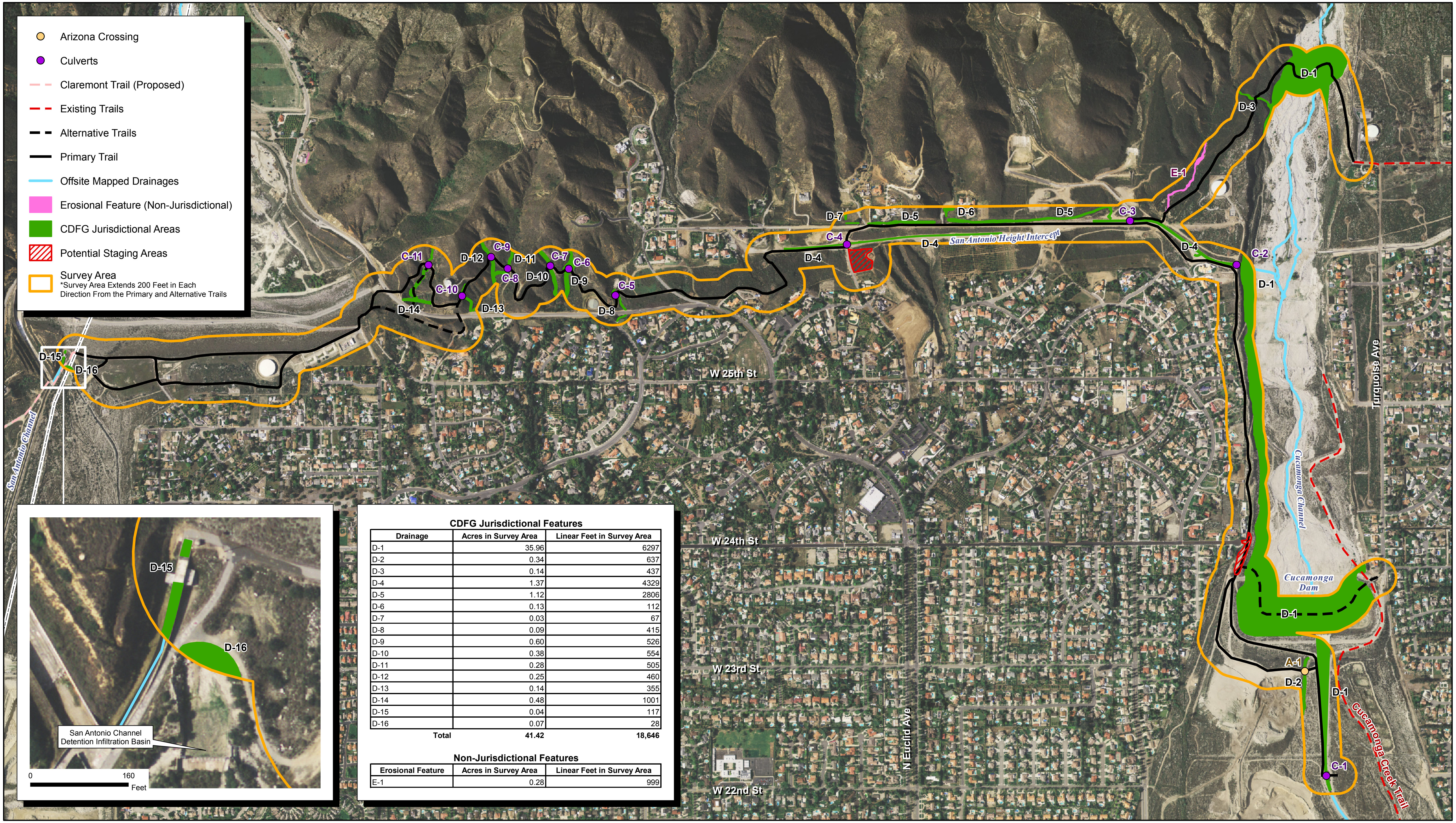
Exhibit 8

USACE Jurisdictional Areas

COUNTY OF SAN BERNARDINO • SAN ANTONIO HEIGHTS TRAIL
DELINEATION OF JURISDICTIONAL WATERS AND WETLANDS

Table 6: CDFG Jurisdictional Evaluation – Within Surveyed Area

Hydrogeomorphic Feature	Description	CDFG Jurisdiction		CDFG Jurisdiction (Including Riparian Areas)
		Streambed (acres)	Adjacent Riparian/Wetland (acres)	
Drainage 1 (D1)	Cucamonga Creek/Channel	35.96	NA	35.96
Drainage 2 (D2)	Cucamonga Dam Outlet	0.34	NA	0.34
Drainage 3 (D3)	Unnamed Tributary to Cucamonga Creek/Channel	0.14	NA	0.14
Drainage 4 (D4)	San Antonio Heights Intercept (tributary to Cucamonga)	1.37	NA	1.37
Drainage 5 (D5)	26th Street Channel (tributary to Cucamonga)	1.12	NA	1.12
Drainage 6 (D6)	Catchment (Tributary to Cucamonga)	0.13	NA	0.13
Drainage 7 (D7)	Catchment (Tributary to Cucamonga)	0.03	NA	0.03
Drainage 8 (D8)	Unnamed Drainage (Chino Split)	0.09	NA	0.09
Drainage 9 (D9)	Unnamed Drainage (Chino Split)	0.24	0.36	0.60
Drainage 10 (D10)	Unnamed Drainage (Chino Split)	0.38	NA	0.38
Drainage 11 (D11)	Unnamed Drainage (Chino Split)	0.28	NA	0.28
Drainage 12 (D12)	Unnamed Drainage (Chino Split)	0.25	NA	0.25
Drainage 13 (D13)	Unnamed Drainage (Chino Split)	0.14	NA	0.14
Drainage 14 (D14)	Unnamed Drainage (Chino Split)	0.48	NA	0.48
Drainage 15 (D15)	San Antonio Channel	0.04	NA	0.04
Drainage 16 (D16)	San Antonio Channel/bypass	0.07	NA	0.07
E1	Erosional Feature / No Connectivity	NA	NA	NA
Total	**NA**	**41.06**	**0.36**	**41.42**



CDFG Jurisdictional Features

Drainage	Acres in Survey Area	Linear Feet in Survey Area
D-1	35.96	6297
D-2	0.34	637
D-3	0.14	437
D-4	1.37	4329
D-5	1.12	2806
D-6	0.13	112
D-7	0.03	67
D-8	0.09	415
D-9	0.60	526
D-10	0.38	554
D-11	0.28	505
D-12	0.25	460
D-13	0.14	355
D-14	0.48	1001
D-15	0.04	117
D-16	0.07	28
Total	**41.42**	**18,646**

Non-Jurisdictional Features

Erosional Feature	Acres in Survey Area	Linear Feet in Survey Area
E-1	0.28	999

Source: San Bernardino County Aerials (2007), Census (2000) Data, MBA Field Survey (2010).

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NORTH

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Exhibit 9
CDFG Jurisdictional Areas

COUNTY OF SAN BERNARDINO • SAN ANTONIO HEIGHTS TRAIL
DELINEATION OF JURISDICTIONAL WATERS AND WETLANDS

4.2 - Rationale for Jurisdictional Determination

A detailed discussion of the rationale for supporting the jurisdictional determination for each type of geomorphic feature is detailed in the flowing section, however, because the this document construes a preliminary jurisdictional determination as set forth in Regulatory Guidance Letter 08-02 (RGL 0802), significant nexus discussion for non-relatively permanent waters (n-RPWs) has been omitted.

4.2.1 - Drainage 1 (Cucamonga Channel/Creek/Basin)

Cucamonga Creek/Channel is part of the Cucamonga hydrologic Sub-Area (801.24) and drains approximately 6,847 acres of the Mountains north of the site as well as additional hillside drainage areas located immediately to the west. As the Creek leaves the foothills, the Cucamonga Ravine becomes significantly wider and is strewn with boulders in the northern part. The boulders and rocks in the surveyed area create a riffle effect however the absence of interspersed deep pools preclude identification of the area as a riffle and pool complex. [2] The Creek then flows for approximately 1.2 miles, through groundwater recharge spreading grounds before reaching Cucamonga Dam. South of Cucamonga Dam, the Channel is a fixed-rectangular concrete lined flood control system which conveys flows to the Prado Flood Control Basin (potential Traditional Navigable Water), then to the Santa Ana River, and ultimately to the Pacific Ocean (TNW).

Hydrology within the drainage was observed over several months. Significant flows were observed as the creek enters the project site near the base of the mountains over several months, establishing the creek as a RPW. However, flows quickly dissipate in the rocky and sandy riverwash substrate and in the rapidly permeating spreading grounds located between the mountain base and the Cucamonga Dam.

Vegetation in the system also varies between the northern and southern parts. In the northern part, the channel supports scattered hydrophytes, including mulefat and willow. Near the Dam, the Cucamonga basin is maintained by the San Bernardino County Flood Control District (SBCFCD) and is mostly unvegetated, except for a variety of mostly upland species. South of the Dam, the main Cucamonga Channel is a concrete-lined rectangular system maintained solely for flood control purposes and exhibiting no discernable biological or aquatic resource value.

Measurement of the jurisdictional boundary also varied between north and south. In the northern part, though the rock-strewn ravine is substantially wider than the active channel, indicators suggest that the active flood plain does not extend to the maximum width of the ravine. The active flood plain was determined to be that area extending out horizontally from a point measuring twice the

[2] NOTE: Riffle and pool complexes are considered "special aquatic sites" by the USACE. AS set forth in EPA USACE Guideline, *Such streams are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. Pools are characterized by a slower stream velocity, a streaming flow, a smooth surface, and a finer substrate. Riffle and pool complexes are particularly valuable habitat for fish and wildlife*. EPA/USACE Guidelines Subpart E, Section 230.45.

depth of the discernable ordinary high water mark (OHWM). Because, flows within the Cucamonga system fluctuating based on seasonal variation in precipitation and snowmelt, USACE jurisdiction was determined to extend beyond the OHWM to the maximum extent of the active flood plain. In the southern part, USACE jurisdiction was determined to extend through the entire basin floor and up the basin slopes to the base of the outflow structures located near the southern part of the basin. South of the Dam, jurisdiction was determined extended to the vertical slope of the channelized system. No adjacent wetlands were determined to be present.

Because the Drainage (Cucamonga Creek/Basin/Channel) is an RPW with indirect connectivity to a downstream TNW (Prado Basin, Pacific Ocean), the feature is subject to Federal jurisdiction under the Clean Water Act (CWA). USACE Jurisdiction includes 18.96 acres (4,389 linear feet) of non-wetland waters of the U.S.

CDFG jurisdiction was measured to the top of bank or to the outer drip line of the riparian vegetative community (including where evident, adjacent wetlands). CDFG jurisdiction included 35.96 acres of jurisdictional streambed. No wetlands were present.

4.2.2 - Drainage 2 (Cucamonga Dam Outlet)

South of the Cucamonga Dam/Basin and west of the Cucamonga Channel is an outlet structure which supplies diversion water from the basin to an auxiliary spreading ground south of the dam via a small unnamed drainage channel (Drainage 2). Water enters the drainage from a large square outlet structure at the base of the Dam wall. No water was present during the survey, but a large number of dead tadpoles suggest that water is present in substantial quantity and for sufficient duration to support aquatic vertebrates.

Because the remains of aquatic vertebrates were found within the drainage, the drainage is assumed to be an RPW.

Aerial imagery suggest that diverted flows re-enter the Cucamonga Channel system approximately 0.94 river miles to the south, establishing requisite connectivity to downstream resources.

USACE Jurisdiction includes 0.16 acre (637 linear feet) of non-wetland waters of the U.S. No adjacent USACE criteria wetlands were present.

CDFG jurisdiction was measured to the top of bank or to the outer drip line of the riparian vegetative community (including where evident, adjacent wetlands). CDFG jurisdiction included 0.34 acre of jurisdictional streambed.

4.2.3 - Drainage 3 (Natural Tributary to Cucamonga Creek)

Drainage 3 is a small unnamed feature draining a 37.65-acre area on the west slopes of Cucamonga Creek. The drainage has a well-defined OHMW, with a sandy/rocky substructure that is mostly unvegetated. The vegetation is mixture of upland varieties dominated by mustard, rig-gut brome, and wild oats. The drainage flows in a southeasterly direction before entering Cucamonga Creek. The feature has indirect connectivity to downstream TNWs (Prado Basin, Pacific Ocean) via Cucamonga Channel.

USACE Jurisdiction includes 0.04 acre (464 linear feet) of non-wetland waters of the U.S. No adjacent USACE criteria wetlands were present.

CDFG jurisdiction was measured to the top of bank or to the outer drip line of the riparian vegetative community (including where evident, adjacent wetlands). CDFG jurisdiction included 0.14 acre of jurisdictional streambed. No wetlands were present.

4.2.4 - Drainage 4 (San Antonio Heights Intercept - Tributary to Cucamonga Channel)

The San Antonio Heights Intercepts conveys water from the steep slopes immediately north of the San Antonio Heights residential community, to the Cucamonga Creek spreading grounds in the west. Water is collected by a series of diversion structures north of west 26th street (including Drainage 5 and the diversions supplying Drainage 6 and Drainage 7). The intercept conveys runoff from a drainage area of approximately 602 acres.

The Intercept is a rectangular concrete flood control structure. No discernable aquatic resources are associated with the biological. Flows enter the Cucamonga spreading grounds via a steep-concrete fall, lined with rip-rap at its bottom for erosion control.

The feature has indirect connectivity to downstream TNWs (Prado Basin, Pacific Ocean) via Cucamonga Channel.

USACE Jurisdiction includes 1.35 acres (4,329 linear feet) of non-wetland waters of the U.S. No adjacent USACE criteria wetlands were present.

CDFG jurisdiction was measured to the top of bank or to the outer drip line of the riparian vegetative community (including where evident, adjacent wetlands). CDFG jurisdiction included 1.37 acres of jurisdictional streambed. No wetlands were present.

4.2.5 - Drainage 5 (26th Street Channel – Tributary to Cucamonga Channel)

Drainage 5 is an unnamed soft-bottomed feature which flows immediately north of 26th Street. Because most of the flows from the neighboring hills are intercepted by the San Antonio Heights Intercept and its system of auxiliary diversion catchments, Drainage 5 mostly serves as a secondary system catching excess flows (not caught by the diversion catchments) and while also draining 26th street and the residential properties north of 26th Street.

The drainage is an engineered system, containing mostly upland plants, including rip-gut brome, soft brome, wild oats, mustard and an assortment of ornamental varieties. No water was present during the survey period.

The drainage flows in an easterly direction connecting to the San Antonio Heights Intercept (D4) approximately 1,300 feet west of the D4 out-fall to the Cucamonga spreading grounds. The feature has indirect connectivity to downstream TNWs (Prado Basin, Pacific Ocean) via Cucamonga Channel.

USACE Jurisdiction includes 0.38 acres (2,806 linear feet) of non-wetland waters of the U.S. No adjacent USACE criteria wetlands were present.

CDFG jurisdiction was measured to the top of bank or to the outer drip line of the riparian vegetative community (including where evident, adjacent wetlands). CDFG jurisdiction included 1.12 acres of jurisdictional streambed. No wetlands were present.

4.2.6 - Drainage 6 & 7 (Cucamonga Channel/Creek/Basin)

Drainage 6 and 7 are two in a network of flood control catchments, which divert water from the foothills/mountains to the north into the San Antonio Heights Intercept (Drainage 4) just south of 26th Street. (Note: the catchments convey water underground, passing beneath Drainage 5, before entering Drainage 4). These flows are then conveyed to the Cucamonga Channel system, which has indirect connectivity to downstream TNWs (Prado Basin, Pacific Ocean). Drainage 6 drains an area of approximately 23.82 Acres. Drainage 7 drains an area of approximately 73.24 Acres. The onsite portions of the drainage(s) are concrete lined with no discernable resource value.

USACE Jurisdiction in Drainage 6 includes 0.09 acre (112 linear feet) of non-wetland waters of the U.S. No adjacent USACE criteria wetlands were present. USACE Jurisdiction in Drainage 7 includes 0.03 acre (67 linear feet) of non-wetland waters of the U.S. No adjacent USACE criteria wetlands were present. (NOTE: USACE jurisdiction does not include underground portions of the drainage system)

CDFG jurisdiction was measured to the top of bank or to the outer drip line of the riparian vegetative community (including where evident, adjacent wetlands). CDFG jurisdiction in 6 and 7 respectively includes 0.13 acre and 0.03 acre of jurisdictional streambed. No wetlands were present. (NOTE: CDFG jurisdiction does not include underground portions of the drainage system.)

4.2.7 - Drainage 8-14 (Tributaries to San Antonio Channel)

Several small drainage systems are located in the area north of Euclid Avenue, east of the San Antonio Dam Basin and west of Holly Drive/West Euclid Crescent. These drainages are all similar in characteristics, draining steep ravines supporting ephemeral flows, with well defined, incised OHWMs. During the survey, most drainage systems were vegetated with a dominance of upland varieties including by mustard, rig-gut brome, and wild oats. All the drainages were dry during the survey period except for Drainage 9, which also supported a dense population of fig trees (*Ficus sp.*)

All drainages appear to flow in a general south/southwesterly direction before entering a series of underground conveyance systems near North Mountain Drive. The drainages then continue in a southwesterly direction before entering the San Antonio Channel. All the drainages have indirect connectivity to downstream TNWs (Prado Basin, Pacific Ocean) via the San Antonio Channel.

USACE Jurisdiction for these features is summarized in table 5 (above). No adjacent USACE criteria wetlands were present.

CDFG jurisdiction was measured to the top of bank or to the outer drip line of the riparian vegetative community (including where evident, adjacent wetlands). CDFG jurisdiction is summarized in Table 6 above. No wetlands were present.

4.2.8 - Drainage 15 (San Antonio Channel)

The on-site portion of the San Antonio Dam is located south of the San Antonio Dam and has been converted to an engineered rectangular concrete structure maintained by the SBCFCD.

Hydrology to the San Antonio Channel is supplied from several sources. From the north, the channel is the primary outlet for the San Antonio Dam, which drains approximately 17,331 acres of foothill/mountains north of the dam (HSA: 481.23 and 801.23). South of the Dam, the San Antonio is supplied by adjacent drainage areas including flows from Drainages 8-14 (HSA 801.21, see discussion above).

From the San Antonio Dam the channel flows approximately 22 river miles to the Prado Flood Control Basin (potential Traditional Navigable Water), then to the Santa Ana River, and ultimately to the Pacific Ocean (TNW).

USACE Jurisdiction includes 0.04 acre (117 linear feet) of non-wetland waters of the U.S. No adjacent USACE criteria wetlands were present.

CDFG jurisdiction was measured to the top of bank or to the outer drip line of the riparian vegetative community (including where evident, adjacent wetlands). CDFG jurisdiction included 0.04 acre of jurisdictional streambed. No wetlands were present. (NOTE: Because of the vertical wall structure within the channel, the area (acre) of CDFG jurisdiction is equal to USACE jurisdiction.)

4.2.9 - Drainage 16 (San Antonio Channel - Bypass/Basin)

South of the San Antonio Dam is two outlet structures (pipes) where water appears to be released from the dam into a small shallow basin. Two collection weirs at the southern end of the basin water then direct flows into two channels which convey flows to a groundwater recharge areas which incorporates a series of berms/groins, channels and basins that collectively approximates the original flood plain of the San Antonio system prior to the construction of the flood control (channelized) conveyance. It is unknown whether the system ultimately reconnects to the San Antonio Channel down stream.

USACE Jurisdiction includes 0.03 acre (28 linear feet) of non-wetland waters of the U.S. No adjacent USACE criteria wetlands were present.

CDFG jurisdiction was measured to the top of bank or to the outer drip line of the riparian vegetative community (including where evident, adjacent wetlands). CDFG jurisdiction included 0.07 acre of jurisdictional streambed. No wetlands were present. (NOTE: Because of the vertical wall structure within the channel, the area (acre) of CDFG jurisdiction is equal to USACE jurisdiction.)

4.2.10 - Erosional Feature (E-1)

A small erosional (E-1) feature is present in the eastern portion of the surveyed area, located on the alluvial plateau on the western side above the Cucamonga Wash/Channel. The feature runs along the base of the foothills draining an area of approximately 24 acres. The feature is clearly visible using aerial imagery (Google Earth 2010), but field inspection revealed an inconsistent flow regime, lacking definable flow characteristics in many sections. The soil in the area is dominated by the Hanford series a coarse sandy loam with a sandy substrate, which is characterized as somewhat excessively drained to excessively drained soils on alluvial fans. The composition of the soil contributes to rapid percolation, which may explain the inconsistent flow regime given the small size of the drainage area.

The portions of the feature with definable bed/bank were vegetated with upland plant species including mustard, rig-gut brome, and wild oats, which were largely indistinguishable from the surrounding (upland) area. No discernable aquatic resources were evident, and the inconsistent flow regime minimizes the potential of the feature for terrestrial cover that might otherwise facilitate animal movement.

The on-site portion of the feature generally flows in a southwesterly direction along the base of the foothills away from the Cucamonga Wash, before turning due south along an existing chain-mesh fence line. The feature appears to dissipate entirely 110 feet north of East 26th Street and has no apparent surface connectivity to either the Cucamonga Channel (D1), the San Antonio Heights Intercept (D4), or the 26th Street canal (D5).

Because the feature has an inconsistent bed/bank, lacks connectivity to downstream jurisdictional resources and does not support aquatic resources, it will not be subject to either USACE or CDFG jurisdiction.

SECTION 5: SUMMARY OF POTENTIAL IMPACTS

The following is an analysis of the potential impacts to jurisdictional waters resulting from the proposed project. The analysis includes evaluation of impacts resulting from both the primary (selected) trail and the alternative route.

5.1 - Potential Impacts to Jurisdictional Features (Primary Alignment)

The proposed project will create a recreational trail extending east to west from Cucamonga Creek/Channel to the San Antonio Channel. To minimize potential impacts to jurisdictional waters and aquatic resources, the selected (primary) alignment utilizes existing crossing structures wherever possible. A summary of existing and proposed structures and an estimation of likely impacts are summarized in Table 7 below.

Table 7: Potential Impacts to Jurisdictional Features (Primary Alignment)

Hydrogeomorphic Feature	Description	Existing Structure (Map Ref.)	Proposed Improvement	Potential Impacts*		
				Linear Feet	Waters of U.S.	CDFG
Drainage 1 (D1)	Cucamonga Creek (North):	None	Arizona Crossing /Remove Boulders	20	0.040	0.386
	Cucamonga Channel:	Culvert/Bridge (C1)	None	None	None	None
Drainage 2 (D2)	Cucamonga Dam Outlet Channel:	Arizona Crossing (A1)	Culvert or Permeable Rock for Stabilization	20	0.006	0.013
Drainage 3 (D3)	Unnamed Tributary to Cucamonga Creek/Channel	None	Culvert or Permeable Rock for Stabilization	20	0.002	0.006
Drainage 4 (D4)	San Antonio Heights Intercept (tributary to Cucamonga)	Culvert/Bridge (C2,C3,C4)	None	None	None	None
Drainage 5 (D5)	26th Street Channel (tributary to Cucamonga)	NA**	None	None	None	None
Drainage 6 (D6)	Catchment (Tributary to Cucamonga)	NA**	None	None	None	None

Table 7 (cont.): Potential Impacts to Jurisdictional Features (Primary Alignment)

Hydrogeomorphic Feature	Description	Existing Structure (Map Ref.)	Proposed Improvement	Potential Impacts*		
				Linear Feet	Waters of U.S.	CDFG
Drainage 7 (D7)	Catchment (Tributary to Cucamonga)	NA**	None	None	None	None
Drainage 8 (D8)	Unnamed Drainage (Chino Split)	Culvert (C5)	None	None	None	None
Drainage 9 (D9)	Unnamed Drainage (Chino Split)	Culvert (C6)	None	None	None	None
Drainage 10 (D10)	Unnamed Drainage (Chino Split)	Culvert (C7)	None	None	None	None
Drainage 11 (D11)	Unnamed Drainage (Chino Split)	Culvert (C8)	None	None	None	None
Drainage 12 (D12)	Unnamed Drainage (Chino Split)	Culvert (C9)	None	None	None	None
Drainage 13 (D13)	Unnamed Drainage (Chino Split)	Culvert (C10)	None	None	None	None
Drainage 14 (D14)	Unnamed Drainage (Chino Split)	Culvert (C11)	None	None	None	None
Drainage 15 (D15)	San Antonio Channel	NA***	None	None	None	None
Drainage 16 (D16)	San Antonio Channel/bypass	NA***	None	None	None	None
Total	**NA**	**NA**	NA	**60**	0.048	0.405

* NOTE: Impacts Include Temporary and Permanent Impacts
** NOTE: Though trail is located on 26th Street, Drainage 5 is not crossed by proposed trail alignment. Similarly, Drainages 6 and 7 enter an underground conveyance beneath 26th Street before entering the San Antonio Intercept (D4).
*** NOTE: Proposed trail terminates immediately east of Drainage 15 (San Antonio Channel). Similarly, proposed trail does not cross or otherwise enter Drainage 16 (San Antonio Bypass Basin/Channels)

5.1.1 - Impacts to Drainage 1 (Cucamonga Channel/Creek/Basin)

To facilitate linkage between the proposed San Antonio Heights Trail and existing trails (Cucamonga Trail in the south and Almond Street in the north), the proposed project will make use of the existing culvert/bridge (C-1) over the Cucamonga Channel south of the Dam. This crossing is a hardened Rectangular culvert with horse fence already in place.

At the northern end of the Cucamonga Channel, the existing channel is bordered on both sides by a wide field of large boulders, which make current equestrian use treacherous. The proposed project will clear a 15 foot wide path through the boulder field and the creek linking the trail that currently extends into the Cucamonga ravine from Almond Street in the east to an existing foot trail which rises from the west side. Once the boulders are removed, the path will be stabilized with a permeable surface layer of crushed decomposed granite.

5.1.2 - Impacts to Drainage 2 (Cucamonga Dam Outlet)

An existing Arizona crossing is located on Drainage 2 approximately 140 feet south of the Cucamonga Dam Outlet structure. At the existing crossing earthen channel bank reveals some erosion. The crossing will be stabilized by either (1) placement of a small culvert (15' wide), or (2) Grading and placement of decomposed granite within the channel, banks and trail to prevent erosion.

5.1.3 - Impacts to Drainage 3 (Natural Tributary to Cucamonga Creek)

The trail through the northern portion of Cucamonga Creek (See section 5.1.1 above) connects to an existing foot path which rises in a southwesterly direction from the west side of the Cucamonga ravine. The trail is currently narrow and will need to be widened to facilitate safe foot and equestrian traffic. The path crosses Drainage 3, which descends steeply from the hills to the floor of the ravine. The existing path through the ravine will be widened and a small culvert will be placed in the drainage to prevent erosion and allow the drainage to be traversed safely.

The trail is a small unnamed feature draining a 37.65-acre area on the west slopes of Cucamonga Creek.

5.2 - Potential Impacts to Jurisdictional Features (Alternative Alignments)

Alternative alignments for the San Antonio Heights Trail were also analyzed. Ultimately these alignments were not considered to be practicable because they would result in greater impacts to waters of the U.S. (Drainage 1), or because of cost/logistics (Drainage 14). A Summary of the expected impacts to waters of the U.S. associated with the alternative alignments is summarized in Table 8 below.

Table 8: Potential Impacts to Jurisdictional Features (Alternative Alignment)

Hydrogeomorphic Feature	Description	Existing Structure (Map Ref.)	Proposed Improvement	Potential Impacts		
				Linear Feet	Waters of U.S.	CDFG
Drainage 1 (D1)	Cucamonga Basin (South):	None	Arizona Crossing /Remove Boulders	1,746	0.800	0.834
Drainage 14 (D14)	Unnamed Drainage	Culvert (C11)	Diversion of Drainage- Construction of Tunnel and new Culvert under N. Mountain Rd.	164	0.009	0.030
Total	**NA**	**NA**	NA	**1,930**	**0.809**	**0.864**

5.2.1 - Alternative 1 - Trail through Cucamonga Basin (Impacts to Drainage 1)

Alternative 1 provides a trail alignment which connects the east and west side of the southern portion of Cucamonga Channel through the Cucamonga Basin. The alternative alignment would pass through approximately 1,746 linear feet of Jurisdictional waters with a path approximately 20 feet wide. The trail would be surfaced with decomposed granite to create a more stable yet permeable surface. The Basin alignment would result in impacts of approximately 0.8 acre to waters of the U.S. and 0.834 to CDFG jurisdictional resources.

Because the alternative alignment would exceed the 0.5 acre upper threshold limit for the appropriate nationwide permit (NWP-42, Recreational Facilities), this alternative would require preparation of an individual permit with the USACE.

Because this alignment would generally not meet the avoidance and minimization objectives of the Clean Water Act, and was not the least environmentally damaging practicable alternative (LEDPA), it was not selected.

5.2.2 - Alternative 2 - Tunnel, Drainage Diversion (Impacts to Drainage 14)

This alignment would create a path down the ravine below Drainage 14, and then construct a tunnel under Euclid Avenue that would connect to the base of San Antonio Dam. The Project would require realignment of approximately 164 linear feet of jurisdictional streambed. The alternative alignment would result in 0.009 acres of impacts to waters of the U.S. and 0.030 acre of CDFG jurisdictional streambed.

Though the alternative has safety and traffic minimization benefits which are superior to the selected (primary) alignment, it was not considered practicable because of cost.

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Appendix A: Regulatory Compliance

REGULATORY COMPLIANCE

Regulatory permitting for dredge and fill activities involves a compliance framework requiring interaction with federal, state and local agencies, often involving a diverse number of statutes and regulations.

FEDERAL STATUTES AND REGULATIONS - USACE

Clean Water Act Section 404

Pursuant to Section 404 of the Clean Water Act, the USACE regulates the discharge of dredged or fill material into waters of the U.S. Regulated activities include but are not limited to, grading, placing of riprap for erosion control, pouring concrete, laying sod, and stockpiling excavated material. In general, any activity, which proposes to carry out an activity, which will temporarily or permanently affect areas delineated as waters of the US, including wetlands, typically requires prior authorization from the USACE, pursuant to Section 404 of the Clean Water Act (CWA). Successful applications will put forth projects with a valid purpose, which generally comply with the avoidance, minimization and mitigation ("no net loss") goals of the USACE.

Nationwide Permits v. Individual Permits

Nationwide permits (NWPs) are a type of general permit issued by the Chief of Engineers and are designed to expedite the regulatory process for those types of projects/activities expected to have minimal impacts on jurisdictional areas.

The nationwide permitting program is reauthorized every five years. The current NWP program became effective on March 19, 2007 and includes 49 different nationwide permit categories including "*Linear Transportation Projects*" (NWP 14), "*Residential Developments*" (NWP 29), "*Commercial and Institutional Developments*" (NWP 39) and "*Stormwater Management Facilities*" (NWP 43) among others. Each NWP establishes thresholds, which trigger the need for submitting a pre-construction notification (PCN) to the Corps and which set upper limits to accepted impacts based on the total acreage and/or linear feet of impacts, which result from the Project. Exceeding these limits will require processing an Individual Permit (IP), which may involve a significantly longer processing time.

Federal Jurisdiction over Waters and Wetlands

The USACE will assert jurisdiction over waters that are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. The definition of "Waters of the U.S.," are set forth in the Code of Federal Regulations (CFR) 328.3. The term "waters of the United States" means:

(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(2) All interstate waters including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes;

(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; and

(iii) Which are used or could be used for industrial purpose by industries in interstate commerce.

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs (a) (1)-(4) of this section;

(6) The territorial seas;

(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1)-(6) of this section. (Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not waters of the United States), and

(8) Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area’s status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the EPA.

Subsequent to the U.S. Supreme Court decision in *Rapanos, et al v. United States* (2006) the Environmental Protection Agency (EPA) and the USACE (the agencies) issued a joint memorandum (*Clean Water Act Jurisdiction Following Rapanos v. United States*, (June 5, 2007)), which integrates the *Rapanos* standards with the process presented in 33 CFR 328.3(a).

Pursuant to the memorandum, federal jurisdiction will be asserted over the following categories of water bodies:

- (TNWs): TNW, including territorial seas;
- Wetlands adjacent to TNWs;
- (RPWS): Non- navigable tributaries of TNWs with relatively permanent water flow that are flow directly or indirectly to TNWs. "Relatively permanent" means water flowing for at least three months of the year. (Usually, perennial streams and some intermittent streams); and
- Wetlands directly abutting RPWs that flow directly or indirectly into TNWs.

In addition, the agencies will assert jurisdiction over the following categories of water bodies only if, based on fact-specific analysis, the water body is determined to have a significant nexus with a TNW:

- (Non-RPWs): Non-navigable tributaries that do not have relatively permanent water flow that flow directly or indirectly into TNWs (Usually ephemeral and some intermittent streams);
- Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs; and
- Wetlands adjacent to, but not directly abutting RPWs that flow directly or indirectly into TNWs.

"A significant nexus exists if the tributary, in combination with <u>all</u> of its adjacent wetlands has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological integrity of a TNW."

The agencies will not assert jurisdiction over the following geomorphic features:

- "Swales or erosional features (e.g., gullies small washes characterized by low volume, infrequent or short duration flows)," and
- "Ditches (including roadsides ditches) excavated wholly in and draining only uplands that do not carry relatively permanent water flows."

The agencies now require that all determinations for non-navigable waters, isolated-waters and/or wetlands be evaluated by the USACE and EPA before making a final jurisdictional determination.

In the absence of wetlands the lateral extent of federal jurisdiction over non-tidal waters of the U.S. is defined by the ordinary high water mark (OHWM). The OHWM is defined in 33 CFR 328.3, as "*that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character* *of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas*."

In June 2001, the USACE South *Pacific* Division issued *Guidelines for Jurisdictional Delineations for Waters of the United States in the Arid Southwest*. The purpose of this document was to aid delineators in assessing the physical characteristics of dry land drainage systems in the Arid West. With respect to jurisdictional determinations, the factors for determining waters of the U.S include *evaluating* the flow regime geomorphic feature, and general indicators of flow. These methods are consistent with the criteria set forth in 328.3(a) and 328.3(e), but are also subject to guidance set forth in the *Rapanos* guidance, including "significant nexus determinations," as appropriate.

Subject to *Rapanos* limitations, Federal Jurisdiction will extend to "adjacent" wetlands. "Adjacent" means "bordering *contiguous* or neighboring." According to the USACE *Wetlands Delineation Manual*, *Technical Report*, (1987) three criteria must be satisfied to classify an area as a jurisdictional wetland:

1. A predominance of plant life that is adapted to life in wet conditions (hydrophytic vegetation);
2. Soils that saturate, flood, or pond long enough during the growing season to develop anaerobic conditions in the upper part (hydric soils); and
3. Permanent or periodic inundation or soils saturation, at least seasonally (wetland hydrology).

The USACE has established regional guidance to address specific regional variations in wetlands determinations. These regional guidance documents supplement the 1987 manual. The Interim Regional *Supplement* for the Arid West was published in December 2006. Similarly Draft guidance for Western Mountains, Valleys and Coast Regions" was published in April 2007. In performing its delineations, MBA applies this supplemental guidance as appropriate.

Resulting from the 2001 US Supreme Court in *Solid Waste Agency of North Cook County v. USACE* (SWANCC) case, federal jurisdiction will not reach wholly intra-state wetlands, which are not "adjacent" to a *jurisdictional* stream course. Similarly, as previously established, the *Rapanos* decision may further limit jurisdiction, on a case-specific basis, where a significant nexus determination is required.

Primary General Conditions (GC) of 404 Permits

GC # 4: Compliance with the Migratory Bird Treaty Act

The MBTA protects all common wild birds found in the US except the house sparrow, starling, feral pigeon, and resident game birds such as pheasant, grouse, quail, and wild turkey. Resident game birds are managed separately by each state. The MBTA makes it unlawful for anyone to kill, capture, collect, possess, buy, sell, trade, ship, import, or export any migratory bird including feathers, parts, nests, or eggs.

The primary responsibility for complying with the Migratory Bird Treaty Act (MBTA) is that of the project proponent (permittee) and is independent of Department of the Army permitting processes (404). It should be noted, however, that the nationwide permitting program (General Condition 4) does require that breeding areas for migratory birds in waters of the United States must be avoided to the maximum extent practicable.

GC # 17: Compliance with Federal Endangered Species Act

In administering the Section 404 permitting program, the USACE is required to abide by Section 7(a)(2) of the Federal Endangered Species Act (ESA), which requires federal agencies to consult with the United States Fish and Wildlife Service (USFWS) "to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat." As a result, the presence of federally listed species must be determined prior to submittal of the Section 404 application. In the nationwide permitting program compliance with the ESA is set forth in general condition (GC 17)

The USFWS *administers* the Federal Endangered Species Act. The ESA provides a process for listing species as either threatened or endangered, and methods of protecting listed species. The ESA defines as "endangered" any plant or animal species that is in danger of extinction throughout all or a significant portion of its known geographic range. A "threatened" species is a species that is likely to become *endangered*. A "proposed" species is one that has been officially proposed by the USFWS for addition to the federal threatened and endangered species list.

Section 9 of the ESA prohibits "take" of threatened or endangered species. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. Take can include disturbance to habitats used by a threatened or endangered species during any portion of its life history. The presence of any federally threatened or endangered species in a Project area generally imposes severe constraints on development, particularly if development would result in take of the species or its habitat. Under the regulations of the ESA, the USFWS may authorize take when it is incidental to, but not the purpose of, an otherwise lawful act.

GC # 18: Compliance with National Historic Preservation Act

In processing a Section 404 permit, the USACE is required to comply with section 106 of the National Historic Preservation Act (NHPA). Section 106 consultation is triggered when historic or archaeological *sites* are potentially affected by the proposed Project. In the nationwide permitting program compliance with the NHPA is set forth in general condition (GC 18). The USACE will initiate section 106 consultation with the appropriate state agency (SHPO in California) with federal oversite (ACHP). The process usually requires one month from the date the USACE triggers consultation with the state agency.

GC # 21: Compliance with Section 401 of the Clean Water Act

In connection with notification to the USACE under Section 404 of the Clean Water Act (CWA), pursuant to 33 *CFR* Part 330, a written request for Section 401 water quality certification must be submitted to the RWQCB to ensure that no degradation of water quality will result from the proposed Project. Subject to CWA section 401(a)(1), the Army Corps of Engineers cannot issue a section 404 dredge/fill permit until such time as a CWA section 401 Water Quality Certification (WQC) has been approved by the applicable RWQCB. In the nationwide permitting program, compliance with the Section 401 is set forth in general condition (GC 21).

In order to meet the requirements of the RWQCB for issuance of a 401-water quality certification, the project proponent must provide assurances that the Project will not adversely affect the water quality of receiving water bodies. A written request for 401 water quality certification must be prepared and submitted to the RWQCB for review. The request will include a detailed project description, a description of *proposed* impacts, identification and discussion of beneficial uses of affected receiving waters (as described within the appropriate Basin Plan), a water quality plan identifying project-specific Best Management practices (BMPs), discussion of other approvals and certifications being obtained, a conceptual restoration plan, and a completed notification form.

CEQA Compliance: Pursuant to Title 23, Section 3856(f) of the California Code of Regulations (CCR), the *Regional* Water Quality Control Board (RWQCB) may not issue a Clean Water Act (Section 401) Water Quality Certification (WQC) for a project before being provided with (and having had ample time to review) a copy of the final CEQA documentation prepared for the Project. Upon formal request for certification, water quality certification should be forthcoming within 90-120 days of completion of the CEQA process.

<u>**Fee Structure:**</u> Subject to California Code of Regulations (CCR), Title 23, §3833, a section 401 *application* must be accompanied by an initial deposit of not less than $500.00. If the initial deposit does not cover the agency's application review costs, the RWQCB may require an additional (one-time) amount using the calculus set forth in section 2200(e), Title 23, of the California Code of Regulations.

GC # 22: Compliance with the Coastal Zone Management Act

In administering the Section 404 permitting program, the USACE is required to abide by Section 307(c)(1) of the Coastal Zone Management Act (CZMA). This requirement is set forth in General Condition No. 22 of *the* NWP (2007) program and detailed in 33 CFR 330.4(d). This condition requires the USACE to provide a consistency determination and receive state agreement prior to the authorization of activities affecting land, water, or natural resources within the coastal zone.

The California "Coastal zone" means that land and water area within the State extending seaward to the state's outer limit of jurisdiction, including all offshore islands, and extending inland generally 1,000 yards from the mean high tide line of the sea. In significant coastal estuarine, habitat, and recreational areas it *extends* inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less, and in developed urban areas the zone generally extends inland less than 1,000 yards. The coastal zone does not include the area of jurisdiction of the San Francisco Bay Conservation and Development Commission, established pursuant to Title 7.2 (commencing with Section 66600) of the Government Code, nor any area contiguous thereto, *including* any river, stream, tributary, creek, or flood control or drainage channel flowing into such area.

STATE STATUES AND REGULATIONS – RWQCB

The State of California has concurrent jurisdiction with the Federal government over §401 Water Quality Certification over jurisdictional waters and wetlands of the United States. Where isolated waters and wetlands (not subject to federal jurisdiction) are involved, the State will exert independent jurisdiction via the Porter Cologne Water Quality Act.

Porter-Cologne Water Quality Act

Section 13260(a) of the California Water Code ("Water Code", or "Porter Cologne") requires that any person discharging waste or proposing to discharge waste within any region, other than to a community sewer system, which could affect the quality of the waters of the State, file a report of waste discharge (ROWD). The discharge of dredged or fill material may constitute a discharge of waste that could affect the quality of waters of the State (Defined in Water Code §13050(e)).

Typically, the State of California relies upon its authority under section 401 of the Federal Clean Water Act (CWA (33 U.S.C. §1341) to regulate discharges of dredged or fill material to California waters that are also within the jurisdiction of the United States Army Corps of Engineers (USACE). Given the water quality certification (WQC) process employed under section 401, waste discharge requirements under Porter Cologne are typically waived for those projects requiring a water quality certification. In 2001 the U.S. Supreme decision in *Sold Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* , 531 U.S. 159 (2001) ("*SWANCC*") invalidated the Army Corp's use of the "Migratory Bird Rule" to establish federal jurisdiction over isolated waters. Since 2001, the State of California has reasserted its authority under state law to assert jurisdiction over isolated waters for water quality purposes by requiring a ROWD.

Regulation of Isolated Waters

Dredging, filling, or excavation of "isolated" waters constitutes a discharge of waste to waters of the State, and prospective dischargers are required to submit a report of waste discharge to the RWQCB and comply with other requirements of the State Porter Cologne Water Quality Act (Water Code).

Scope of Regulation: With respect to isolated waters, discharges and/or dredging of wetlands, active channels or beds of waterbodies are regulated. Discharges to riparian or areas in proximity to a waterbody are regulated when such activity will directly or indirectly result a change to water quality. Such changes may include discharge of stormwater pollutants and runoff; change in the nature of vegetation that could affect water quality (e.g., affecting pollutant removal, stream shading or bank stability); or change to the hydrological or geomorphic characteristics of the waterbody.

Application of Regulation: Whenever the USACE issues a jurisdictional disclaimer (concurs with a finding of no federal jurisdiction), the respective RWQCB is notified of the disclaimer. Typically, the RWQCB will issue a letter notifying the project proponent that a ROWD must be filed. A ROWD must be submitted in one of two forms, depending on the anticipated impacts.

(1) General Waste Discharge Requirement (GWDR): The GWDR program is substantively set forth in SWRCB Water Quality Order No. 2004-0004-DWQ. GWDRs are generally prescribed for a category of discharges (either temporary or permanent) involving earth, rock, or similar solid materials if the discharge will not be greater than 0.2 acres and 400 linear feet (for fill or excavation) or 50 cubic yards (for dredging). The type of projects that may be covered under these General WDRs include land development, detention basins, disposal of dredged material, bank stabilization, revetment, channelization, and other similar projects. GWDRs do not apply to discharges that adversely impact, either directly or through habitat modification, any plants or animals identified as candidate, sensitive, or special status species in local or regional plans, or by the CDFG (including NCCPs), or USFWS (including HCPs). Similarly, GWDRs do not apply to discharges impacting significant historical, archaeological or paleontological resources.

Requirements: The GWDR typically requires submittal of the following items: (1) A Notice of Intent (NOI), (2) Any CEQA documents that have been prepared for the Project, (3) A fee pursuant to Title 23, section 2200 of the CCR, (4) A Mitigation Plan demonstrating that the discharger will sequentially avoid, minimize, and compensate for the adverse impacts to the affected water bodies, and beneficial uses (as set forth in the applicable Basin Plan), and (5) Any other relevant information requested by the SWRCB or RWQCB. A copy of the application must be submitted to both the applicable RWQCB and to the SWANC-ROWD, Water Quality Certification Unit in Sacramento.

Timing: Pursuant to the requirements of the California Permit Streamlining Act, RWQCB has 30 days to deem the application complete. Upon receipt of a complete submittal, the RWQCB has 45 days in which to issue a Notice of Applicability (NOA) (authorizing the activity) or a Notice of Exclusion (NOE) (denying authorization. The discharge activity is operationally authorized if no NOE is issued within the 45-day evaluation period, provided that the proposed activity is not a prohibited activity.

(2) Individual Waste Discharge Requirements (IWDR): Projects not qualifying for the GWDRs will need to satisfy individual waste discharge requirements, typically requiring submittal of 401 Water Quality Certification forms and supporting documentation as set forth by the respective RWQCB. Such submittals are subject to fees as set forth in California Code of Regulations Title 23

Section 2200(a)(2). Pursuant to the Water Code the project proponent is required to file with the appropriate Regional Water Quality Control Board (RWQCB) a Report of Waste Discharge describing the proposed discharge at least 140 days before it occurs (Water Code §§13260, 13264).

STATE STATUTES AND REGULATIONS - CDFG

Section 1600/1602 of the California Fish and Game Code

In the public interest of protection and conservation of fish and wildlife resources of the state (§1600), Fish and Game Code Section 1602 requires any person, state or local governmental agency, or public utility to notify the CDFG before beginning any activity that will do one or more of the following: (1) substantially obstruct or divert the natural flow of a river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake. CDFG's jurisdiction includes ephemeral, intermittent, and perennial watercourses, including dry washes, characterized by:

1 The presence of hydrophytic vegetation.
2. The location of definable bed and banks.
3. The presence of existing fish or wildlife resources.

Furthermore, CDFG jurisdiction is often extended to habitats adjacent to watercourses, such as oak woodlands in canyon bottoms or willow woodlands that function as part of the riparian system. Historic court cases have further extended CDFG jurisdiction to include watercourses that seemingly disappear, but re-emerge elsewhere. Under the CDFG definition, a watercourse need not exhibit evidence of an OHWM to be claimed as jurisdictional. However, CDFG does not regulate isolated wetlands; that is, those that are not associated with a river, stream, or lake.

CDFG Regulated Activities

The CDFG regulates activities that involve diversions, obstruction, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife resources. When a project requires such activities, a Section 1602 Streambed Alteration Notification will be prepared and submitted to the CDFG for review. The request will include a detailed project description, a description of proposed impacts, a conceptual mitigation plan, and completed notification forms. Typically, CDFG will be able to complete the agreement within 60-90 days of the completion of the CEQA process.

<u>CEQA Compliance</u>: It should be noted that CDFG must also comply with the California Environmental Quality Act (CEQA) (Pub. Resources Code, §21000, et seq.) before it may issue a *final* Lake or Streambed Alteration Agreement. Issuance of a final Lake or Streambed Alteration Agreement occurs after the Department receives a *draft* Lake or Streambed Alteration Agreement from the applicant and the Department signs it. In many instances, the Department will receive a signed draft Lake or Streambed Alteration Agreement from an applicant before the lead agency has fully complied with CEQA. In those instances, the Department must wait for the lead agency to fully comply with CEQA before it may sign the Draft Lake or Streambed Alteration Agreement, thereby making it final.

Fee Structure: Pursuant to California Code of Regulations (CCR), Title 14 §699.3, CDFG assesses a fee to cover the cost of reviewing §1602 applications. The fee calculus is based on the sum cost of the proposed activities within the streambed or riparian community.

Sensitive Plant and Wildlife Species

Sensitive species are native species that have been accorded special legal or management protection because of concern for their continued existence. There are several categories of protection at both federal and state levels, depending on the magnitude of threat to continued existence and existing knowledge of population levels.

California Endangered Species Act

The CDFG administers the California Endangered Species Act (CESA). The State of California considers an "endangered" species one whose prospects of survival and reproduction are in immediate jeopardy. A "threatened" species is one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the absence of special protection or management. A "rare" species is one present in such small numbers throughout its portion of its known geographic range that it may become endangered if its present environment worsens. The rare species designation applies to California native plants. State threatened and endangered species are fully protected against take, as defined above. The term "species of special concern" is an informal designation used by CDFG for some declining wildlife species that are not state candidates for listing. This designation does not provide legal protection under CESA, but signifies that these species are recognized as sensitive by CDFG.

California Native Plant Society

The CNPS is a California resource conservation organization that has developed and inventory of California's sensitive plant species (Tibor 2001). This inventory summarizes information on the distribution, rarity, and endangerment of California's vascular plants. The inventory is divided into four lists based on the rarity of the species. In addition, the CNPS provides an inventory of plant communities that are considered sensitive by the state and federal resource agencies, academic institutions, and various conservation groups. Determination of the level of sensitivity is based on the number and size of remaining occurrences as well as recognized threats.

Section 3503 and 3511 of the California Fish and Game Code

The CDFG administers the California Fish and Game Code. Code 3503 makes it illegal to destroy any birds' nest or any birds' eggs that are protected under the MBTA. Code 3503.5 further protects all birds in the orders *Falconiformes* and *Strigiformes* (birds of prey, such as hawks and owls) and their eggs and nests from any form of take. Section 3511 of the Code lists fully protected bird species, where the CDFG is unable to authorize the issuance of permits or licenses to take these species.

Appendix B: Jurisdictional Wetlands and Significant Nexus Determination

CRITERIA FOR WETLAND DETERMINATIONS

USACE

As defined in 33 CFR part 328.3(a)(7) and as established by current case law, the USACE will currently assert jurisdiction over wetlands adjacent to waters of the U.S., except for those wetlands adjacent to other wetlands.

The term "wetlands" means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support a prevalence or vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR part 328.3(b)).

Typically, the term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes, and the like are also adjacent (33 CFR part 328.3(c)). Similarly, the wetland must be adjacent to either a navigable in-fact water way or tributary thereof. Where "adjacency" cannot be established, the wetlands will be determined to be an "isolated" non-jurisdictional feature unless an independent nexus to interstate or foreign commerce can be established as per 33 CFR part 328.3(a)(3). (Also see SWANCC v. US, 2001).

Based on the standards established in *Rapanos v. U.S.*, the USACE will not assert jurisdiction over wetlands where: (1) the wetlands are adjacent to non-navigable tributaries that lack relatively permanent flows, or (2) wetlands are adjacent to but not abutting non-navigable tributaries with relatively permanent water, unless in both cases the relevant portion (reach) of the drainage, together with all of its wetlands, have a significant nexus to a TNW.

According to the USACE *Wetlands Delineation Manual, Technical Report* (1987), three criteria must be satisfied to classify an area as a jurisdictional wetland:

1. ***Hydrophytic Vegetation***: A predominance of plant life that is adapted to life in wet conditions (hydrophytic vegetation);
2. ***Hydric Soils***: Soils that saturate, flood, or pond long enough during the growing season to develop anaerobic conditions in the upper part (hydric soils), and
3. ***Wetland Hydrology***: Permanent or periodic inundation or soils saturation, at least seasonally (wetland hydrology).

The USACE has established regional guidance to address specific regional variations in wetlands determinations. These regional guidance documents supplement the 1987 manual The Interim Regional Supplement for the Arid West that was published in December 2006. Similarly, Draft guidance for Western Mountains, Valleys and Coast Regions" was published in April 2007. In performing its delineations, MBA applies this supplemental guidance as appropriate.

As established in both the USACE 87 Manual and the "Arid West" regional guidance, the following criteria apply.

Hydrophytic Vegetation

Hydrophytic vegetation is defined as plant life growing in water, soil, or substrate that is at least periodically deficient in oxygen because of excessive water content. The USFWS has published the *National List of Vascular Plant Species That Occur in Wetlands*, (1996 National Summary, hereafter NLVPS) and divided plants into 5 groups based on their "wetland indicator status:"

1. Obligate wetland plants (OBL) that occur almost always in wetlands under natural conditions;
2. Facultative wetland plants (FACW) that usually occur in wetlands but occasionally are found in upland areas;
3. Facultative plants (FAC) that are equally likely to occur in wetlands as well as upland;
4. Facultative upland plants (FACU) that usually occur in upland areas but occasionally are found in wetlands; and
5. Upland plants (UPL) that occur almost always in upland areas under natural conditions.

Plus (+) and minus (-) values, used in identifying indicator status in the NLVPS are not applied when evaluating plants in the arid west region. In the arid west, an area is deemed to have hydrophytic vegetation when either it: (1) passes the dominance test; (2) has a prevalence index ≤ 3; (3) morphological adaptations are present; or (4) the area is a "problem area." (See, *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual*: *Arid West Region*, December 2006.)

Dominance Test: An area has hydrophytic vegetation when, under normal circumstances, more than 50 percent of the composition of dominant plant species (using the 50/20 rule) from all strata are obligate wetland (OBL), facultative wetland (FACW) and/or facultative species (FAC). If the plant community passes the dominance test, then the vegetation is hydrophytic and no further vegetation analysis is required. If the plant community fails the dominance test, and indicators of hydric soil and/or wetland are absent then hydrophytic vegetation is absent unless the site meets requirements for a problematic wetland situation.

Prevalence Test: In areas failing the dominance test yet having indicators of hydric soil and wetland hydrology, the vegetation must be re-evaluated using the "prevalence index" (PI). The prevalence index takes into account all plant species in the community, not just a few dominants. The index is a weighted-average wetland indicator status of all plant species in the sampling plot, where each indicator status category is a given a numeric code (OBL =1, FACW =2, FAC = 3, FACU = 4, and UPL = 5) and weighting is by abundance (percent cover). The sum of the weighted indicator values are then divided by the sum of the percent cover values for each indicator type. Where the PI value is $\leq$3, the area is considered positive for hydrophytic vegetation. Generally, the index is a more comprehensive analysis of the hydrophytic status of the community than one based on just a few dominant species. The index is particularly useful: (1) in communities only one or two dominants; (2) in highly diverse communities where many species may be present at roughly equal coverage; and (3) when strata differ greatly in total plant cover. The prevalence index is used on sites where indicators of hydric soil and wetland hydrology are present but the vegetation initially fails the dominance test.

Morphological Adaptations: In areas failing both the dominance test and prevalence test, yet having indicators of hydric soil and wetland hydrology, hydrophytic vegetation will still be deemed present when the morphological adaptations are present. In the arid west, the most common morphological adaptations are adventitious roots and shallow root systems developed on or near the soil surface on FACU species. If more than 50 percent of the FACU species have morphological adaptations, then these species are classified as FAC species and the dominance test and/or prevalence index are recalculated. The vegetation is hydrophytic if either test is positive.

Hydric Soils

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. “Long enough” generally means 1 week during the growing season and soils that are saturated for this period usually support hydrophytic vegetation. The criteria for establishing the presence of hydric soils vary among different types of soils and between normal circumstances, disturbed areas, and problem areas. Due to their wetness during the growing season, hydric soils usually develop certain morphological properties that can be readily observed in the field. Prolonged anaerobic soil conditions typically lower the soil redox potential, causing a chemical reduction of some soil components, mainly iron oxides and manganese oxides. This reduction is typically reflected by the presence of iron or manganese concretions, gleying or mottling. Other field indicators of hydric soils include the presence of sulfidic material, an aquic or peraquic moisture regime, or a spodic horizon. (All organic soils, with the exception of Folists, are classified as hydric soils.)

Wetland Hydrology

Wetland hydrology is permanent or periodic inundation, or soil saturation for a significant period during the growing season. Numerous factors influence the wetness of an area, including precipitation, stratigraphy, topography, soil permeability, and plant cover. At certain times of the year in most wetlands, and in certain types of wetlands at most times, wetland hydrology is quite evident, since surface water or saturated soils may be observed. Yet, in many instances, especially along the uppermost boundary of wetlands, hydrology is not readily apparent. Despite this limitation, hydrologic indicators can be useful for confirming that a site with hydrophytic vegetation and hydric soils still exhibits wetland hydrology. While hydrologic indicators are sometimes diagnostic of the presence of wetlands, they are generally either operationally impracticable (e.g. in the case of recorded data) or technically inaccurate (e.g., in the case of some field indicators) for delineating wetland boundaries.

The following hydrologic indicators, while not necessarily indicative of hydrologic events during the growing season or in wetlands alone, do provide evidence that inundation or soil saturation has occurred at some time: visual observation of inundation, visual observation of soil saturation, oxidized channels (rhizospheres) associated with living roots and rhizomes, water marks, drift lines, waterborne sediment deposits, water-stained leaves, surface scoured areas, morphological plant adaptations, and hydric soil characteristics.

Problem Areas and Atypical Situations

In the arid west, some wetlands may periodically lack indicators of hydrophytic vegetation, hydric soils or wetland hydrology due to normal (natural) seasonal or annual variability. Similarly, indicators in some areas may be affected by atypical situations brought about by recent human activities or unusual natural events. The Arid West Regional Guidance sets forth a number of procedures to identify and analyze problems areas. Examples of problem areas and atypical situations may include:

Problematic Vegetation:

- *Temporal Shifts in Vegetation*: plant communities in playas, venal pools, seepas and springs change in response to seasonal climatic fluctuations. These changes may result from:
  - Seasonal shifts in plant communities between normal wet/dry season
  - *Drought Conditions* lasting more than one growing season.
- *Sparse and Patchy Vegetation*: A seasonal pond must have at least 5 percent plant cover to be considered vegetated. To be considered jurisdictional, unvegetated areas may be considered as other waters of the U.S. if they exhibit Ordinary High Water (OHW) indicators as set forth in 33 CFR 328.3
- *Riparian Areas*: Where there is high variability in wetland vegetation indicator status between the different strata. (Usually the tree strata has wetter indicator status than other strata.)
- *Areas Affected by Grazing*:
- *Managed Plant Communities*: horticulture, tilling/disking.
- *Areas Affected by Fires, Floods and Other Natural Disturbances*:

- *Vigor and Stress Response to Wetland Conditions*: horticulture is either robust or impeded by hydric soils, and/or wetland hydrology.

Problematic Hydric Soils:

- *Moderately to Very Strong Alkaline Soils*: Redox concentrations and depletions are not always evident in soils with pH of 7.9 or higher.
- *Volcanic Ash*: Soils of volcanic origin are high in silica content and low in redoximorphic minerals such as iron, manganese, and sulfur.
- *Vegetated Sand and Gravel Bars within Flood Plains*: Flood plains may lack hydric soil indicators because seasonal flooding deposits new layers of soil material or the deposited material may lack redoximorphic minerals.
- *Recently Developed Wetlands*: may include mitigation sites, wetland management areas, unintentionally produced wetlands (flood irrigation, leaking water pipes, etc).
- *Seasonally Ponded Soils*: depressional wetlands, usually with perched systems above a restrictive soil layer (hardpan or clay) where the saturation depth or saline conditions prohibit hydric soil indicators.
- *Soils with Relict or Induced hydric Soil Indicators*: in some areas redoximorphic features in hydric soils were formed in the recent or distant past when conditions were substantially wetter than at present. Hydric soil indicators may persist in low land areas which were historically flooded (such as in California's Central Valley) even though the area has been drained for agricultural purposes. Alternatively, hydric soils indicators in upland areas may have formed historically from flood irrigation or like agricultural activities, which no longer persist.

Problematic Wetland Hydrology:

- *Site Visits During the Dry Season*: Hydrophytic vegetation may be absent or diminished during the dry-season (when evapo-transpiration exceeds precipitation). When possible the site should be visited (or re-visited) during the normal wet season.
- *Periods with Below Normal Rainfall*: Rainfall in the 3-month period prior to the site visit should be compared to historical averages from the National Water and Climate Center (NRCS). Rainfall should be between the high and low 30 percent probability values.
- *Drought Years*: Areas subject to drought conditions particularly lasting several years may affect wetland hydrology indicators. The ***Palmer Drought Severity Index (PDSI)*** (known operationally as the *Palmer Drought Index (PDI)*) attempts to measure the duration and intensity of the long-term drought-inducing circulation patterns. Long-term drought is cumulative, so the intensity of drought during the current month is dependent on the current weather patterns plus the cumulative patterns of previous months. Since weather patterns can change almost literally overnight from a long-term drought pattern to a long-term wet pattern,

the PDSI (PDI) can respond fairly rapidly. PDSI values range between -6 and +6 with negative values indicating dry periods and positive values indicating wet periods:

- (-4 to -6) - Extreme Drought;
- (-3) - Severe Drought;
- (-2) - Moderate Drought; and
- (-1) - Mild Drought.

- *Years with Unusually Low Winter Snowpack*: the hydrology of areas with watersheds in adjacent mountain regions may be affected by annual variability in the liquid equivalent of the snow pack.
- *Reference Sites*: If indicators of hydric soil and hydrophytic vegetation are present on a site that lacks wetland hydrology indicators, the site may be considered to be a wetland if the landscape setting, topography, soils, and vegetation are substantially the same as those on nearby reference areas.
- *Hydrology Tools*: A collection of methods can be used to determine whether wetland hydrology is present on a potential wetland site that lacks indicators due to disturbances or other reasons (particularly in agricultural areas).
- *Long-term Hydrological Monitoring*: Areas may be monitored over long periods of time.

CALIFORNIA DEPARTMENT OF FISH & GAME:

The California Wildlife Protection Act as codified in the Fish & Game code defines "wetlands" as "*lands which may be covered periodically or permanently with shallow water and which include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, fens, and vernal pools*." (Fish & Game Code §2785(g))

SIGNIFICANT NEXUS DETERMINATION:

A significant nexus determination is required when the following water bodies are present:
(1) Non-navigable tributaries that do not have relatively permanent water flow that flow directly or indirectly into TNWs (usually ephemeral and some intermittent streams); (2) Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs; or (3) Wetlands adjacent to, but not directly abutting RPWs that flow directly or indirectly into TNWs.

The determination begins by first identifying the relative reach of the applicable tributary. With respect to "significant nexus determinations," the "relevant reach" will include all tributary waters of the same order. Typically this will include the tributary and all adjacent wetlands reaching down stream from the Project site to the confluence with the next tributary, and upstream to any a similar confluence.

To have a significant nexus a tributary and its adjacent wetlands must have more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. A significant nexus determination requires evaluation of hydrological and ecological factors, which may contribute to the maintenance of water quality, aquatic life, commerce, navigation, recreation, and public health in the TNW.

- Hydrological Factors:
  - Volume, duration, and frequency of flow: including consideration of certain characteristics of the tributary, including historic records of flow, flood predictions, gauge data and personal observations (OHWM, Shelving, water staining, sediment sorting and scouring);
  - Proximity to the TNW: If a tributary is too far from the TNW it's remoteness is more likely to make the impact on the TNW speculative;
  - Contextual hydrological factors: including (1) size of the watershed, (2) average annual rainfall, and (3) average annual snow pack, and
  - The presence of tributary or wetland within the flood plain: It should be noted, however that a significant nexus determination cannot be based solely on presence of the water body within or outside the flood plain.

- Ecological Factors:
  - The ability of the tributary and its adjacent wetlands (if any) to carry pollutants and flood waters to TNW;
  - The Ability of the tributary and its adjacent wetlands (if any) to provide aquatic habitat that supports biota of a TNW;
  - The ability of adjacent wetlands to trap and filter pollutants or store flood water, and
  - The ability to maintain water quality.

COASTAL ZONE

Jurisdictional assessments in the California coastal zone must also evaluate potential wetland areas using the criteria established in the California Coastal Act and set forth in the California Code of Regulations.

The California "Coastal zone" means that land and water area within the State extending seaward to the state's outer limit of jurisdiction, including all offshore islands, and extending inland generally 1,000 yards from the mean high tide line of the sea. In significant coastal estuarine, habitat, and recreational areas it extends inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less, and in developed urban areas the zone generally extends inland less than 1,000 yards. The coastal zone does not include the area of jurisdiction of the San Francisco Bay Conservation and Development Commission, established pursuant to Title 7.2 (commencing with Section 66600) of the Government Code, nor any area contiguous thereto, including any river, stream, tributary, creek, or flood control or drainage channel flowing into such area.

The California Coast Act section 30121 defines the term "wetland" as, "*Lands within the coastal zone which be covered periodically or permanently with shallow water and includes saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mud flats, and fens*."

The Coastal Act is administered in the State by the California Coastal Commission (CCC). Coastal Commission regulations (California Code of Regulations Title 14 (14CCR)) establish a "one parameter definition" that only requires evidence of a single parameter to establish wetland conditions:

> "*Wetland shall be defined as land where the water table is at near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentration of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some during each year and their location within, or adjacent to vegetated wetland or deepwater habitats*." (14 CCR 13577)

The Commission's one parameter definition is similar to the USFWS wetlands classification system, which states that wetlands must have one or more of the following three attributes: (1) at least periodically the land supports predominantly hydrophytes; (2) the substrate is predominantly un-drained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION JURISDICTION

Within the area of San Francisco Bay Conservation and Development Commission (BCDC) CCC jurisdictional criteria does not apply, however USACE wetland determination criteria will apply.

It is also noted that the primary State law governing the BCDC, the McAteer-Petris Act, does not define wetlands but does outline the BCDC's jurisdiction respective of wetlands.

> "*Managed wetlands consisting of all areas which have been diked off from the bay and have been maintained during the three years immediately preceding the effective date of the amendment of this section during the 1969 Regular Session of the Legislature as a duck hunting preserve, game refuge or for agriculture*." (Gov. Code §66610(b))

Appendix C:
Glossary of Terms

GLOSSARY OF TERMS

Term	Source	Page	Definition
Abutting	6	69	With respect to jurisdictional determinations, wetlands that are not separated from the tributary by an upland feature, such as a berm or dike, is "abutting."
Adjacent	7	N/A	The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are "adjacent wetlands."
Aerial Miles	6	53	With respect to jurisdictional determinations, "aerial miles" is the straight line (linear) distance between the water bodies in question.
Best Management Practices (BMPs)	4	11196	Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.
Clean Water Act (CWA) of 1972	NA	NA	Also known as the Federal Water Pollution Control Act (FWPCA) 33U.S.C.A §§1251 to 1387 (alternatively cited as §§101 – 607). The primary goal as defined in §1251(a) is "*to restore and maintain the chemical, physical, and biological integrity of the Nation's waters*." Jurisdiction to regulate "waters of the United States," vested under this Act include: §303 (Water Quality Standards and implementation Plans), §311 (Spill Program and *Oil Pollution Act*), §401 (State Water Quality Certification), §402 (National Pollutant Discharge Elimination System – NPDES), §404 (Permits for dredge or fill material).
Clean Water Act (CWA) §303	NA	NA	*Section 303 Water Quality Standards Program*: Under this program, State and authorized Indian Tribes establish water quality standards for navigable waters to "*protect the public health or welfare*" and "*enhance the quality of water,*" "*taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agriculture, industrial, and other purposes, and also taking into consideration their use and value for navigation*."
Clean Water Act (CWA) §311	NA	NA	*Section 311 Spill Program and the Oil Production Act (OPA)*: Under this program, the CWA addresses pollution from both oil and hazardous substance releases. Together with the Oil Pollution Act, it provides EPA and the U.S. Coast Guard with the authority to establish a program for preventing, preparing for, and responding to, spills that occur in navigable waters of the United States.
Clean Water Act (CWA) §401	NA	NA	*Section 401 State Water-Quality Certification*: Provides that no Federal permit or license for activities that might result in a discharge to navigable waters may be issued unless a CWA Section 401 water quality certification is obtained from or waived by States or authorized Tribes.

GLOSSARY OF TERMS

Term	Source	Page	Definition
Clean Water Act (CWA) §402	NA	NA	*Section 402 National Pollutant Discharge Elimination Program (NPDES)*: This program established a permitting system to regulate point source discharges of pollutants (other than dredged or fill material) into waters of the United States.
Clean Water Act (CWA) §404	NA	NA	*Section 404 Dredged and Fill Material Permit Program*: This program established a permitting system to regulate discharges of dredged or fill material into waters of the United States.
Compensatory Mitigation	4	11196	The restoration, establishment (creation), enhancement, or reservation of aquatic resources for the purpose of compensating for unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.
Currently Serviceable	4	11196	Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.
Discharge	4	11196	The term ”discharge’’ means any discharge of dredged or fill material and any activity that causes or results in such a discharge.
Enhancement	4	11196	The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.
Ephemeral Stream	4	11196	An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.
Establishment (Creation)	4	11196	The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.
Facultative Plants (FAC)	1	14	Plants with a similar likelihood (estimated probability of 33 percent to 67 percent) of occurring in both wetlands and non-wetlands.
Facultative Wetland Plants (FACW)	1	14	Plants that occur usually (estimated probability >67 percent to 99 percent) in wetlands, but also occur (estimated probability 1 percent to 33 percent) in non-wetlands.
Facultative Upland Plants (FACU)	1	14	Plants that occur sometimes (estimated probability 1 percent to <33 percent) in wetlands, but occur more often (estimated probability >67 percent to 99 percent) in non-wetlands.
High tide line	7	N/A	The term “high tide line” means the line of intersection of the land with the water’s surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore

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Term	Source	Page	Definition
			objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.
Historic Property	4	11196	Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization which meet the National Register criteria (36 CFR part 60).
Hydrological Units	8	1-3	As prescribed by the USGS, refers to the four levels of subdivisions, used for the collection and organization of hydrological data. The hierarchy of hydrological units include: (1) Regions (2) Subregions (3) Accounting Units, and (4) Cataloging Units. The identifying codes associated with these units are "hydrological unit codes."
Hydrological Units – "Regions"	8	3	The first level of USGS hydrological classification, which divides the Nation into 21 Major geographic areas. These geographic areas (hydrologic areas based on surface topography) contain either the drainage area of a major river, or the combined drainage areas of a series of rivers. Most of California is located within region "18". Notable exceptions include the Tahoe basin ("Great Basin Region 16") and the Colorado River ("Lower Colorado Region 15"). All smaller hydrological units with the region begin with the region number (18).
Hydrological Units – "Subregions"	8	3	The second level of USGS hydrological classification, divides the 21 regions into 222 subregions (nationally). A subregion includes the area drained by a river system a reach of a river and its tributaries in that reach, a closed basin(s), or a group of streams forming a coastal drainage area. Within Region 18, the state of California includes 10 sub-regions.
Hydrological Units – "Accounting Units"	8	3	The third level of USGS hydrological classification, subdivides many of the subregions in accounting units. These 352 hydrologic accounting units nest within, or are equivalent to, the subregions. The accounting units are used by the Geological Survey for designing and managing the National Water Data Network. Within Region 18, the state of California includes 16 Accounting Units.

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Term	Source	Page	Definition
Hydrological Units – "Cataloging Units"	8	3	The fourth level of USGS hydrological classification is the cataloging unit, the smallest element in the hierarcy of hydrologic units. A cataloging unit is a geographic area representing part of all of a surface drainage basin, a combination of drainage basins, or a distinct hydrological feature. There are 2,150 cataloging units in the United States. Within Region 18, the state of California includes 135 cataloging units.
Independent utility	4	11196	A test to determine what constitutes a single and complete project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the Project area. Portions of a multi-phase project that depend upon other phases of the Project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.
Intermittent stream	4	11196	An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.
Loss of Waters of the United States	4	11196	Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a water body, or change the use of a water body. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an Nationwide Permit (NWP); it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the linear feet of stream bed that is filled or excavated. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities eligible for exemptions under Section 404(f) of the Clean Water Act are not considered when calculating the loss of waters of the United States.
Non-tidal wetland	4	11196	A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. The definition of a wetland can be found at 33 CFR 328.3(b). Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

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Term	Source	Page	Definition
Obligate Wetland Plants (OBL)	1	14	Plants that occur almost always (estimated probability >99 percent) in wetlands under natural conditions, but which may also occur rarely (estimated probability <1 percent) in non-wetlands.
Obligate Upland Plants (UPL)	1	14	Plants that occur rarely (estimated probability <1 percent) in wetlands, but occur almost always (estimated probability >99 percent) in non-wetlands under natural conditions.
Open Water	4	11196	For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of standing or flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of ``open waters'' include rivers, streams, lakes, and ponds.
Ordinary High Water Mark	7	N/A	The term *"ordinary high water mark"* means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.
Ordinary High Water Mark	4	11196	An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas (see 33 CFR 328.3(e)).
Perennial Stream	4	11197	A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.
Practicable	4	11197	Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.
Pre-construction notification	4	11197	A request submitted by the project proponent to the USACE for confirmation that a particular activity is authorized by a NWP. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a NWP, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by a NWP.
Preservation	4	11197	The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This

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Term	Source	Page	Definition
			term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.
Re-establishment	4	11197	The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area.
Rehabilitation	4	11197	The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.
Relatively Permanent Water (RPW)	5,	5,69	In the context of CWA jurisdiction post-*Rapanos*, a water body is "relatively permanent" if it flows year round or its flow is continuous at least "seasonally," (e.g., typically 3 months). Wetlands adjacent to a "relatively permanent" tributary are also jurisdictional if those wetlands directly abut such a tributary.
Relevant Reach	6	40	With respect to "significant nexus determinations," the "relevant reach" will include all tributary waters of the same order. Typically this will include the tributary and all adjacent wetlands reaching down stream from the Project site to the confluence with the next tributary or upstream to a similar confluence.
Restoration	4	11197	The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.
Riffle and pool complex	4	11197	Riffle and pool complexes are special aquatic sites under the CWA Section 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. Pools are characterized by a slower stream velocity, a streaming flow, a smooth surface, and a finer substrate.
Riparian area	4	11197	Riparian areas are lands adjacent to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects water bodies with their adjacent uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain

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			local water quality. (See general condition 20, in the NWP.)
River Miles	6	53	The flowing distance between the water bodies in question. Typically not a straight line; rather, the measurement is based on how far the water will travel from water body A to water body B. For example, the water in a meandering tributary will flow further than water flowing in a channelized tributary provided the two water bodies are the same distance apart in the landscape.
Shellfish seeding	4	11197	The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.
Significant Nexus	5	40	In the context of CWA jurisdiction post-*Rapanos*, a water body is considered to have a "significant nexus" with a traditional navigable water if its flow characteristics and functions in combination with the ecological and hydrological functions performed by all wetlands adjacent to such a tributary, affect the chemical, physical, and biological integrity of a downstream traditional navigable water.
Single and complete project	4	11197	The term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete project must have independent utility (see definition). For linear projects, a "single and complete project" is all crossings of a single water of the United States (i.e., a single water body) at a specific location. For linear projects crossing a single water body several times at separate and distant locations, each crossing is considered a single and complete project. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate water bodies, and crossings of such features cannot be considered separately.
Stormwater management	4	11197	Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.
Stormwater management facilities	4	11197	Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.
Stream bed	4	11197	The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic

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Term	Source	Page	Definition
			particles that range in size from clay to boulders. Wetlands contiguous to the streambed, but outside of the ordinary high water marks, are not considered part of the streambed.
Stream channelization	4	11197	The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.
Stream Order	NA	NA	A method of numbering streams as part of a drainage basin network. The smallest unbranched mapped tributary is called first order, the stream receiving the tributary is called second order, and so on.
Structure	4	11197	An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.
Tidal waters	7	N/A	The term "tidal waters" means those waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by hydrologic, wind, or other effects.
Tidal wetland	7	N/A	A tidal wetland is a wetland (i.e., water of the United States) that is inundated by tidal waters. The definitions of a wetland and tidal waters can be found at 33 CFR 328.3(b) and 33 CFR 328.3(f), respectively. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channel-ward of the high tide line, which is defined at 33 CFR 328.3(d).
Traditional Navigable Waters (TNW)	6	68	A "traditional navigable water" includes all the "navigable waters of the United States," defines in 33 CFR §329, and by numerous decisions of the Federal courts, plus all other waters that are navigable-in-fact. Per 33 CFR §329: Navigable waters of the United States are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity. The USACE is currently drafting new regulations defining TNWs.
Tributary	6	69	A "tributary," as defined in the *Rapanos* guidance document, means a natural, man-altered, or man-made water body that

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Term	Source	Page	Definition
			carries directly or indirectly into a traditional navigable water. For the purposes of determining significant nexus with a traditional navigable water, a “tributary” is the entire reach of the stream that is of the same order (i.e., from the point of confluence, where two lower order streams meet to form the tributary, downstream to the point such tributary enters a higher order stream).
Upland Plants (UPL)	1	14	Plants that occur rarely (estimated probability <1 percent) in wetlands, but occur almost always (estimated probability >99 percent) in non-wetlands under natural conditions.
Vegetated shallows	4	11197	Vegetated shallows are special aquatic sites under the CWA Section 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as sea grasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.
Waterbody	4	11197	For purposes of the NWPs, a waterbody is a jurisdictional water of the United States that, during a year with normal patterns of precipitation, has water flowing or standing above ground to the extent that an ordinary high water mark (OHWM) or other indicators of jurisdiction can be determined, as well as any wetland area (see 33 CFR 328.3(b)). If a jurisdictional wetland is adjacent--meaning bordering, contiguous, or neighboring--to a jurisdictional waterbody displaying an OHWM or other indicators of jurisdiction, that waterbody and its adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of “waterbodies” include streams, rivers, lakes, ponds, and wetlands.
Waters of The United States	7	N/A	The term “waters of the United States” means: (1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; (2) All interstate waters including interstate wetlands; (3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters: (i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or (ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or (iii) Which are used or could be used for industrial purpose by industries in interstate commerce; (4) All impoundments of waters otherwise defined as waters of the United States under the definition; (5) Tributaries of waters identified in paragraphs (a)(1)-(4) of this section;

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			(6) The territorial seas; (7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section, (Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA [other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition] are not waters of the United States.) and (8) Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the EPA.
Wetlands	1,2,7	N/A	The term "wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. The criteria for determining wetlands is set forth in the USACE Wetlands Delineation Manual (1987) and relevant Regional Supplements (Arid West, December 2006)

Sources:

1. USACE *Wetlands Delineation Manual*, January 1987
2. USACE *Guidelines for Jurisdictional Determinations for Waters of the United States in the Arid Southwest*, June 2001
3. USACE *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*, December 2006
4. FEDERAL REGISTER: Department of Defense; Department of the Army, Corps of Engineers, *Re-issuance of Nationwide Permits; Notice*, March 12, 2007
5. EPA/USACE Joint Memorandum: *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States and Carabell v. United States,* (June 5, 2007)
6. USACE *Jurisdictional Delineation Form Instructional Guidebook*, May 30, 2007
7. Code of Federal Regulations (CFR): 33 CFR 328.3 *Definitions of Waters of the United States* and/or 33 CPR 329 *Definitions of Navigable Waters of the United States*.
8. USGS *Hydrologic Unit Maps, U.S. Geological Survey Water-Supply Paper 2294* (1994), by Paul R. Seaber, F. Paul Kapinos, and George L Knapp.

Appendix D:
Site Photographs

[1] DRAINAGE 1: (Facing north): Cucamonga Creek meanders through a broader ravine as it leaves the foothills and enters the Cucamonga ground water recharge area..

[2] DRAINAGE 1: (Facing south): Cucamonga Creek near the proposed trail crossing, A 20' path will be cleared through the boulder field to connect to the descending trail visible on the slope to the left.

Source: Michael Brandman Associates, 2007

Michael Brandman Associates

Appendix D
Site Photographs

[3] DRAINAGE 1: (Facing south): This photo was taken 100 feet north of the proposed crossing to more clearly show the connecting trail descending along the far (eastern) slope. As can be see, the trail is broad and well developed.

[4] DRAINAGE 1: (Facing southwest):.The trail ascending on the west slope of the Cucamonga ravine will need to be widened to safely accommodate equestrian and foot traffic.

Source: Michael Brandman Associates, 2007

[5] DRAINAGE 1: (Facing North): The Cucamonga Channel shown as it leaves the spillway at the dam. The existing asphalt path located on the left path will be part of the proposed trail.

[6] DRAINAGE 1: (Facing East): South of the Dam the proposed trail will make use of the existing culvert (C-1) to bridge the channel and connect to the Cucamonga Creek Trail to the east.

Source: Michael Brandman Associates, 2007

Michael Brandman Associates

Appendix D
Site Photographs

[7] DRAINAGE 1: (Facing East): Cucamonga Basin/Dam. The alternative southern alignment on the Cucamonga trail would have used the existing trail located near the base of the dam.

[8] DRAINAGE 2: (Facing north):.Drainage 2 originates as an outlet structure at the west-central base of the Cucamonga Dam. Drainage 2 conveys water to a recharge area located southwest of the dam. Dead and dying tadpoles were visible in the small evaporating pools near the structure.

Source: Michael Brandman Associates, 2007

[9] DRAINAGE 2: (Facing West): The trail would utilize an existing Arizona crossing over Drainage 2.

[10] DRAINAGE 2: (Facing South): The photograph reveals the rocky substrate of Drainage 2 as it continues south to the aforementioned recharge area.

Source: Michael Brandman Associates, 2007

[11] DRAINAGE 3: (Facing southwest): The characteristic rocky substrate of Drainage 3 at the point where the proposed trail will cross the drainage.

[12] DRAINAGE 4: (Facing west): San Antonio Heights Intercept is rectangular concrete structure through its entire length. The drainage receives flows from Drainage 5 and from the nearby foothill via a series of catchments including onsite portions of Drainage 6 and 7. The proposed trail will utilize the existing road immediately west of the channel.

Source: Michael Brandman Associates, 2007

Michael Brandman Associates

Appendix D
Site Photographs

[13] DRAINAGE 4: (Facing north): Existing Culvert/Bridge (C-2) over Drainage 4. Flows from the the San Antonio Inercept fall steeply (30-40 feet) the nflow due east through the ravine connecting to Cucamonga Creek Channel. The Trail will not cross the culvert.

[14] DRAINAGE 5: (Facing east): Drainage 5 located immediately north of 26th Street and flows west to east before connecting to the San Antonio Intercept (D-4).

Source: Michael Brandman Associates, 2007

Michael Brandman Associates

Appendix D
Site Photographs

[15] DRAINAGE 8: (Facing north): Drainage 8 is a small ephemeral feature which begins at the base of a rip-rap structure near the center of the proposed trail route.

[16] DRAINAGE 9: (Facing southwest): Indicative existing 24 inch pipe culvert (C-6) underneath the proposed trail.

Source: Michael Brandman Associates, 2007

Michael Brandman Associates

Appendix D
Site Photographs

[17] DRAINAGE 10: (Facing north): Drainage culvert (C-7) underneath the existing road which will be used for the trail. Road markers are visible in the far ground above the culvert.

[18] DRAINAGE 11: (Facing southwest): Large sized culvert (C-8) under the existing road. No improvements will be needed over much of the trail length.

Source: Michael Brandman Associates, 2007

Michael Brandman Associates

Appendix D
Site Photographs

[19] DRAINAGE 12: (Facing north): Typical view indicating the steep yet small size of the drainage area north of the proposed trail.

[20] DRAINAGE 12: (Facing south): View from the proposed trail path down to Mountain Road near the center of the photograph. Drainage 12 enters a culvert near the center of the photograph.

Source: Michael Brandman Associates, 2007

[21] DRAINAGE 13: (Facing northeast): Drainage 13 is a small road side ditch which drains the hill side slopes then enters a small culvert before flowing south towards Mountain Road.

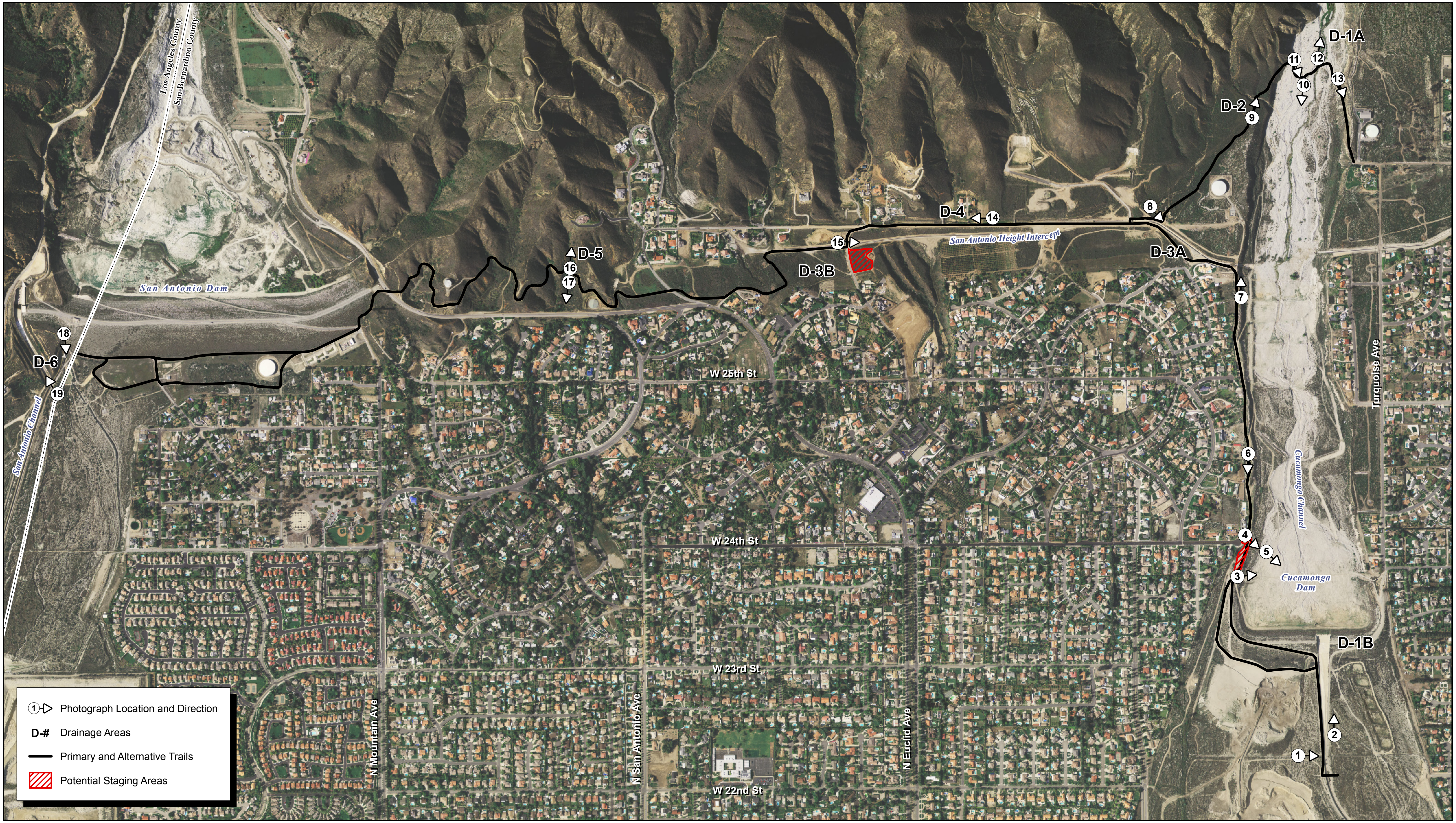
[22] DRAINAGE 15: (Facing north): The San Antonio Channel as it leaves the San Antonio Dam (Far-ground). The Channel is a concrete trapezoidal structure through most of its length.

Source: Michael Brandman Associates, 2007

[23] DRAINAGE 16: (Facing south):Two outlet structures (for-ground) divert water from the San Antonio Dam into this shallow basin which then guides water to toe distribution weirs located on each side of the spill way in the far-ground. The weirs convey water into channels and a recharge area which roughly approximates the abandoned natural flow course of San Antonio Creek.

[24] EROSIONAL FEATURE E-1: (Facing north): Though visible in aerial imagery, the feature is shallow in depth and the OHWM is inconsistent, frequently disappearing in the highly permeable sandy soil. The feature is too shallow to provide cover for animal movement had had not discernable aquatic resource value. The feature was assessed to be non-jurisdictional..

Source: Michael Brandman Associates, 2007



Source: San Bernardino County Aerials (2007) & MBA Field Survey (2009).

NORTH

1,000 500 0 1,000 Feet

Michael Brandman Associates

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Appendix D
Photograph Key

COUNTY OF SAN BERNARDINO • SAN ANTONIO HEIGHTS TRAIL
DELINEATION OF JURISDICTIONAL WATERS AND WETLANDS

Appendix E: Jurisdictional Determination Forms