Initial Study/Mitigated Negative Declaration
Appendices

City Trunk Line North Project

Los Angeles Department of Water and Power
Environmental Affairs
111 North Hope Street, Room 1044
Los Angeles, California 90012

January 2019

TECHNICAL APPENDICES
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APPENDIX A
Air Quality and Greenhouse Gas Impact Study

CITY TRUNK LINE NORTH REPLACEMENT PROJECT

AIR QUALITY AND GREENHOUSE GAS IMPACT STUDY

Prepared for

AECOM

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DECEMBER 2018

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1.0 SUMMARY OF FINDINGS

Terry A. Hayes Associates Inc. (TAHA) has completed an Air Quality and Greenhouse Gas (GHG) Emissions Impact Study for the Los Angeles Department of Water and Power (LADWP) City Trunk Line North Replacement Project (proposed project). The analyses assessed potential environmental impacts related to air pollutant and GHG emissions resulting from construction and operation of the proposed project. Emissions were evaluated for significance in accordance with applicable South Coast Air Quality Management District (SCAQMD) methodologies for individual development projects within the South Coast Air Basin (SCAB). A summary describing the conclusions of potential air quality impacts associated with implementation of the proposed project is provided in **Table 1-1**.

TABLE 1-1: SUMMARY OF IMPACT STATEMENTS

Impact Statement	Level of Significance	Applicable Mitigation Measures
AIR QUALITY		
Would the proposed project conflict with or obstruct implementation of the applicable air quality plan?	Less-Than-Significant Impact	None
Would the proposed project violate any air quality standard or contribute substantially to an existing or projected air quality violation?	Less-Than-Significant Impact	None
Would the proposed project 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)?	Less-Than-Significant Impact	None
Would the proposed project expose sensitive receptors to substantial pollutant concentrations?	Less-Than-Significant Impact	None
Would the proposed project create objectionable odors affecting a substantial number of people?	Less-Than-Significant Impact	None
GREENHOUSE GAS EMISSIONS		
Would the proposed project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less-Than-Significant Impact	None
Would the proposed project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Less-Than-Significant Impact	None

SOURCE: TAHA, 2018.

2.0 INTRODUCTION

2.1 PURPOSE OF REPORT

The purpose of this report is to evaluate the potential air quality and GHG impacts associated with the proposed project.

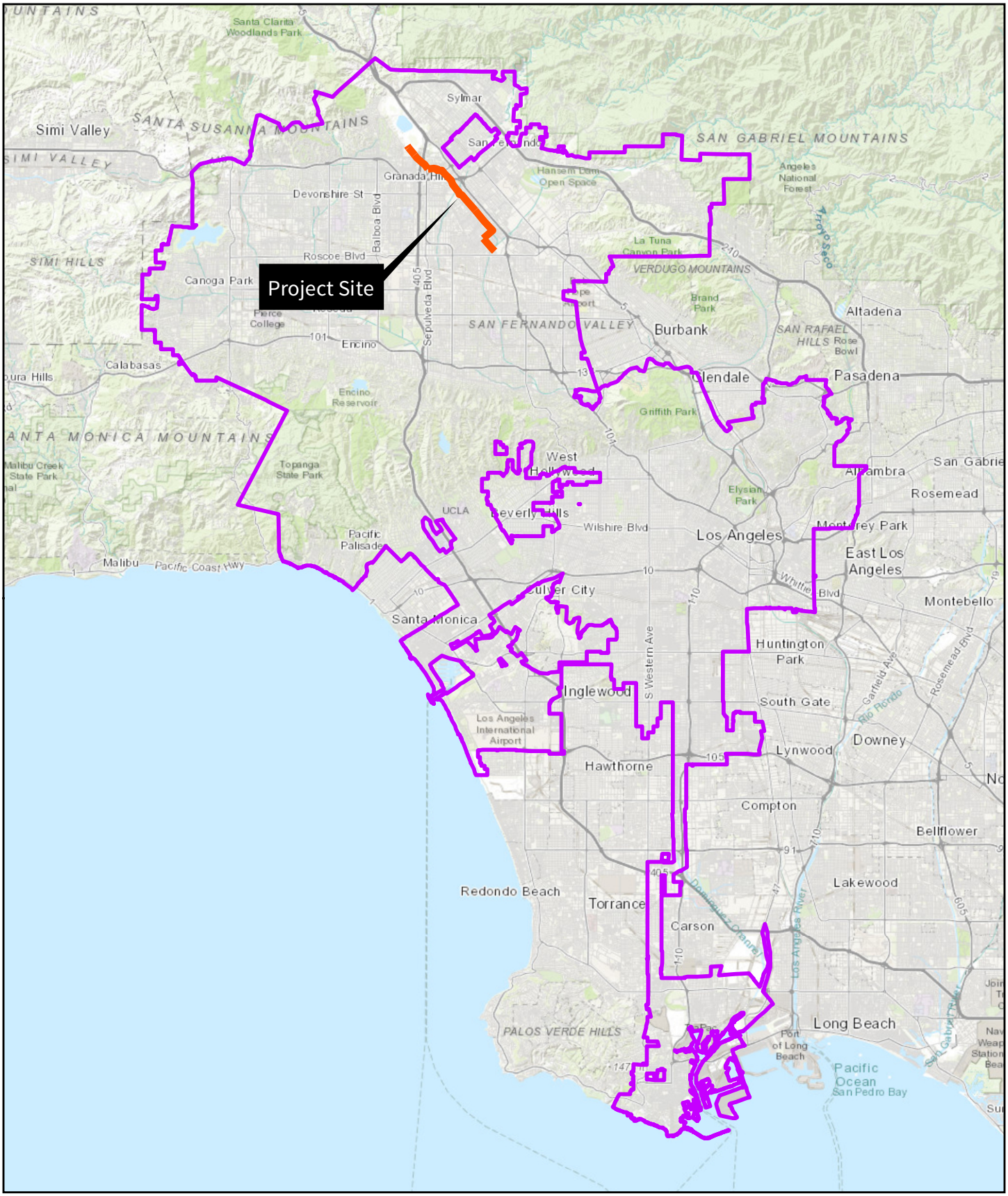
2.2 PROJECT DESCRIPTION

LADWP proposes to replace the northern extent of the existing Los Angeles City Trunk Line (LACTL) with approximately 33,000 linear feet of 54-inch-diameter trunk line (the City Trunk Line North [CTLN] Project, also referred to herein as the project or proposed project). The CTLN would originate at the LADWP Van Norman Complex in the Granada Hills community of Los Angeles and terminate adjacent to the LADWP Tujunga Spreading Grounds in Sun Valley community of Los Angeles, where it would connect to the existing City Trunk Line South (CTLS). The CTLN project is shown in **Figure 2-1** and will be constructed in two units as described below:

- Unit 1 would extend from the LADWP Van Norman Complex to the intersection of Arleta Avenue and Terra Bella Street, a distance of approximately 21,000 feet. Approximately 2,700 feet of Unit 1 would be located with public streets. Based on preliminary estimates, approximately 14,000 feet of Unit 1 would be installed using traditional open-trench construction, approximately 5,000 feet by slip-lining the new pipe within the existing LACTL, and a total of approximately 2,000 feet using a jack and bore method at several sites along the alignment. Regardless of the method of installation, earthquake resistant ductile iron pipe (ERDIP) would be employed. (See **Figure 2-2**).

- Unit 2 would extend from the intersection of Arleta Avenue and Terra Bella Street to the CTLS in Canterbury Avenue, just west of LADWP Tujunga Spreading Grounds, a distance of approximately 11,800 feet. The trunk line would not cross any active earthquake faults within Unit 2. Therefore, although pipe joints would be designed to withstand the applicable seismic loads, ERDIP is not required, and welded steel pipe would be utilized. All of Unit 2 would be located within public streets. Based on preliminary estimates, approximately 7,200 feet of Unit 2 would be installed using traditional open-trench construction, approximately 3,100 feet by slip-lining the new pipe within the existing LACTL, and a total of approximately 1,500 feet using a jack and bore method at several sites along the alignment. Construction on Unit 2 would be initiated before construction on Unit 1. (See **Figure 2-3**).

Construction on Unit 1 of the CTLN is anticipated to begin in early 2022 and end in late 2028 while construction on Unit 2 is anticipated to begin in late 2019 and end in mid-2026. As with Unit 1, only relatively limited portions of the proposed route would be actually under construction at any given time during this period. Because there would be an approximately four-year overlap in the construction schedules for Unit 1 and Unit 2, construction within each unit would occur concurrently during this period. However, the zones under construction within each unit at a given time would likely be widely separated. The total construction time for the CTLN project is estimated to be approximately nine years. Open-trench activity would typically progress at a rate of five days per pipe section. Slip-lining activity would typically take approximately two to three months per section. Pipe jacking activity would take on average approximately two months.



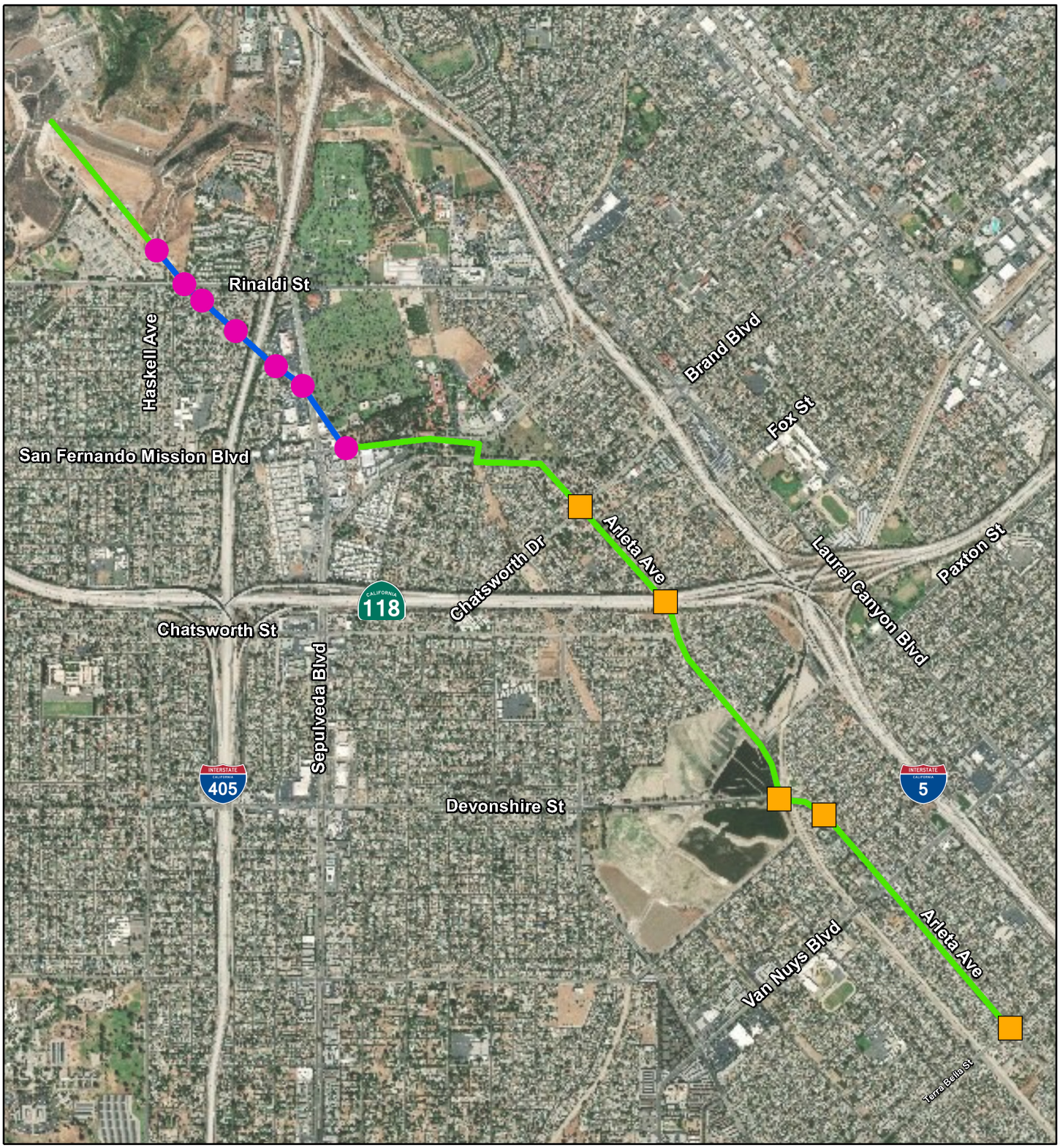
Source: TAHA, 2018.

LADWP City Trunk Line North Replacement
Air Quality & Greenhouse Gas Emissions Impact Study

TAHA 2018-010 CITY OF LOS ANGELES

FIGURE 2-1

PROJECT LOCATION



LEGEND:

Slip Lining Sites

Jack and Bore Sites

Slip Lining

Open Trench

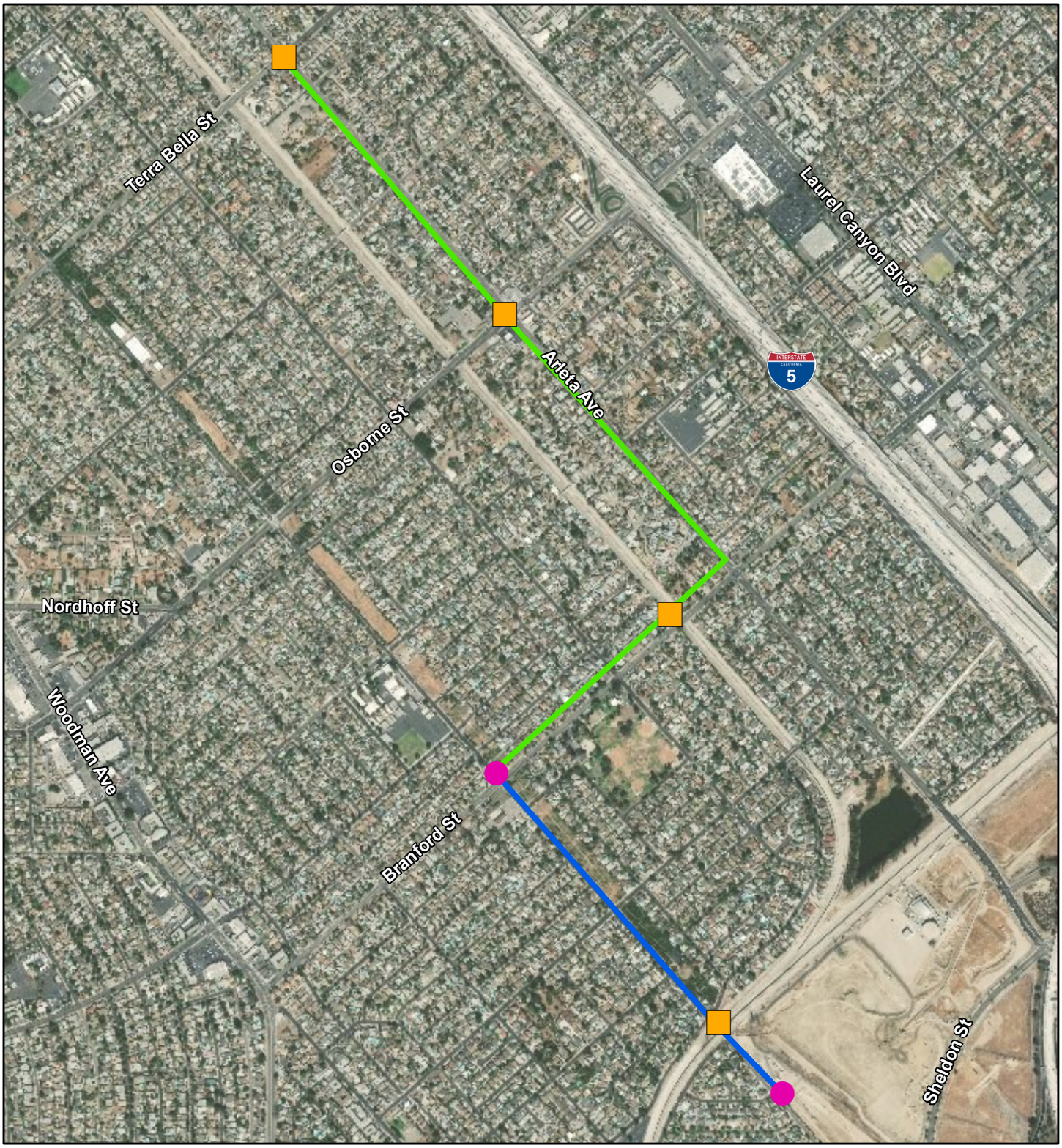
0 2,100 4,200 Feet

Source: AECOM, 2018; TAHA, 2018.

LADWP City Trunk Line North Replacement
Air Quality & Greenhouse Gas Emissions Impact Study

FIGURE 2-2

PROPOSED PROJECT – UNIT 1



LEGEND:

Slip Lining Sites

Jack and Bore Sites

Slip Lining

Open Trench

0 1,100 2,200 Feet

Source: AECOM, 2018; TAHA, 2018.

LADWP City Trunk Line North Replacement
Air Quality & Greenhouse Gas Emissions Impact Study

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CITY OF LOS ANGELES

FIGURE 2-3

PROPOSED PROJECT – UNIT 2

Regarding operations, the CTLN would remain pressurized at all times to supply water to the surrounding service area. Connections to various trunk lines would be opened as necessary to support the water transmission system. These functions would not require any additional supplies to the City's drinking water system. With the exception of minor appurtenant facilities that would be located above ground in the public right of way (such as utility cabinets), the CTLN would be located entirely underground and would not be visible. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. No additional permanent workforce would be required to operate the CTLN.

The following best management practices (BMPs) are relevant to air quality and GHG emissions and would be employed during construction of the proposed project, to help minimize or eliminate potential impacts to the environment. BMPs are distinguished from mitigation measures because they are: 1) existing practices or measures required by law, regulation, or policy; 2) ongoing, regularly occurring practices; and 3) not unique to the proposed project.

- The proposed project would implement Rule 403 dust control measures required by the SCAQMD, which would include the following:
    - Water shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.
    - The construction contractor shall utilize at least one of the following measures at each vehicle egress from the project site to a paved public road:
        a. Pave the surface extending at least 100 feet and at least 20 feet wide;
        b. Utilize a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages; or
        c. Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.
    - All haul trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
    - Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour (mph).
    - Ground cover in disturbed areas shall be replaced in a timely fashion when work is completed in the area.
    - A community liaison shall be identified concerning on-site construction activity including resolution of issues related to PM_{10} (particulate matter 10 microns in diameter or less) generation.
    - Non-toxic soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).
    - Traffic speeds on all unpaved roads shall be limited to 15 miles per hour or less.
    - Streets shall be swept at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, water sweepers with reclaimed water shall be used.
- Residences and businesses near the pipeline alignment would be notified prior to the start of construction (e.g., via flyers) of lane closures and parking restrictions in their vicinity. The notices would include a telephone number for comments or questions related to construction activities.
- The proposed project construction would incorporate source reduction techniques and recycling measures and maintain a recycling program to divert waste in accordance with the Citywide Construction and Demolition Debris Recycling Ordinance.

3.0 AIR QUALITY

This section examines the degree to which the proposed project may result in changes to air quality on regional and local scales. This section also describes the characteristics and effects of air pollutants, the applicable regulatory framework, the existing air quality conditions, and methodology and significance thresholds in the proposed project area. This section assesses the potential significance of air pollutant emissions associated with construction and operation of the proposed project. Emissions are quantified in terms of pounds (lbs/day) of pollutant emitted into the atmosphere on a daily basis. The concentration of a pollutant in ambient air is defined by the amount of air pollutant per volumetric unit of air, expressed in terms of parts-per-million (ppm) or micrograms per cubic meter ($\mu g/m^3$).

3.1 AIR POLLUTANT CHARACTERISTICS AND EFFECTS

Air quality is characterized by ambient air concentrations of seven specific pollutants identified by the United States Environmental Protection Agency (USEPA) to be of concern with respect to health and welfare of the general public. These specific pollutants, known as "criteria air pollutants," are pollutants for which the federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal ambient concentration criteria are known as the National Ambient Air Quality Standards (NAAQS), and the California ambient concentration criteria are referred to as the California Ambient Air Quality Standards (CAAQS). Federal criteria air pollutants include ground-level ozone (O_3), nitrogen oxides (NO_X), carbon monoxide (CO), sulfur oxides (SO_X), respirable particulate matter (PM_{10}), fine particulate matter 2.5 microns or less in diameter ($PM_{2.5}$), and lead (Pb). The following descriptions of each criteria air pollutant and their health effects are based on information provided by the SCAQMD.[1]

3.1.1 Federal Criteria Air Pollutants

Ozone (O_3). O_3, a colorless gas with a sharp odor, is a highly reactive form of oxygen. High O_3 concentrations exist naturally in the stratosphere. However, it is also formed in the atmosphere when volatile organic compounds (VOC) and nitrogen oxides (NO_X) react in the presence of ultraviolet sunlight (also known as smog). The primary sources of VOC and NO_X, the components of O_3, are automobile exhaust and industrial sources. Some mixing of stratospheric O_3 downward through the troposphere to the earth's surface does occur; however, the extent of O_3 transport is limited.

The propensity of O_3 for reacting with organic materials causes it to be damaging to living cells and cause health effects. O_3 enters the human body primarily through the respiratory tract and causes respiratory irritation and discomfort, makes breathing more difficult during exercise, and reduces the respiratory system's ability to remove inhaled particles and fight infection. Individuals exercising outdoors, children and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible subgroups for O_3 effects.

Nitrogen Dioxide (NO_2). NO_2 is a reddish-brown gas with a bleach-like odor. Nitric oxide (NO) is a colorless gas, formed from nitrogen (N_2) and oxygen (O_2) under conditions of high temperature and pressure which are generally present during combustion of fuels (e.g., motor vehicles); NO reacts rapidly with the oxygen in air to form NO_2. NO_2 is responsible for the brownish tinge of polluted air. The two gases, NO and NO_2, are referred to collectively as NO_X. In the presence of sunlight, atmospheric NO_2 reacts and splits to form a NO molecule and an oxygen atom. The oxygen atom can react further to form O_3, via a complex series of chemical reactions involving hydrocarbons.

[1] SCAQMD, *Final Program Environmental Impact Report for the 2016 AQMP*, June 2018.

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposures to NO_2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California (fewer or no stoves). In healthy subjects, increase in resistance to air flow and airway contraction is observed after short-term exposure to NO_2. Larger decreases in lung functions are observed in individuals with asthma and/or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups. More recent studies have found associations between NO_2 exposures and cardiopulmonary mortality, decreased lung function, respiratory symptoms and emergency room asthma visits.

Carbon Monoxide (CO). CO is a colorless, odorless, relatively inert gas. It is a trace constituent in the unpolluted troposphere and is produced by both natural processes and human activities. In remote areas far from human habitation, CO occurs in the atmosphere at an average background concentration of 0.04 ppm, primarily as a result of natural processes such as forest fires and the oxidation of methane. Global atmospheric mixing of CO from urban and industrial sources creates higher background concentrations (up to 0.20 ppm) near urban areas. The major source of CO in urban areas is incomplete combustion of carbon-containing fuels, mainly gasoline.

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

Sulfur Dioxide (SO_2). SO_2 is a colorless gas with a sharp odor. It reacts in air to form sulfuric acid, which contributes to acid precipitation, and sulfates, which are components of particulate matter. Main sources of SO_2 include coal and oil used in power plants and industries. Exposure of a few minutes to low levels of SO_2 can result in airway constriction in some asthmatics. All asthmatics are sensitive to the effects of SO_2. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, is observed after acute higher exposure to SO_2. In contrast, healthy individuals do not exhibit similar acute responses, even after exposure to higher concentrations of SO_2.

Particulate Matter (PM_{10} and $PM_{2.5}$). Particles small enough to be inhaled into the deepest parts of the lung are of great concern to public health. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood burning stoves and fireplaces; dust from construction, landfills and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Emissions of $PM_{2.5}$ result from fuel combustion (e.g., motor vehicles, power generation and industrial facilities), residential fireplaces and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as SO_2, NO_X, and VOC.

Respirable particles (PM_{10}) can accumulate in the respiratory system and aggravate health problems such as asthma, bronchitis and other lung diseases. Children, the elderly, exercising adults, and those suffering from asthma are especially vulnerable to adverse health effects of PM. A consistent correlation between elevated ambient fine particulate matter ($PM_{2.5}$) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and

various areas around the world. Studies have reported an association between long-term exposure to air pollution dominated by $PM_{2.5}$ and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in $PM_{2.5}$ concentration levels have also been related to hospital admissions for acute respiratory conditions, to school and kindergarten absences, to a decrease in respiratory function in normal children and to increased medication use in children and adults with asthma. Studies have also shown lung function growth in children is reduced with long-term exposure to PM. In addition to children, the elderly, and people with pre-existing respiratory and/or cardiovascular disease appear to be more susceptible to the effects of PM_{10} and $PM_{2.5}$.

Lead (Pb). Pb in the atmosphere is present as a mixture of a number of lead compounds. Leaded gasoline and lead smelters have been the main sources of lead emitted into the air. Due to the phasing out of leaded gasoline, there was a dramatic reduction in atmospheric Pb over the past three decades. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. In adults, increased Pb levels are associated with increased blood pressure. Pb poisoning can cause anemia, lethargy, seizures, and death. There is no evidence to suggest that there are direct effects of Pb on the respiratory system.

3.1.2 State Criteria Air Pollutants

The State of California has established CAAQS for the following pollutants in addition to those that are regulated under the NAAQS.

Visibility-Reducing Particles. Deterioration of visibility is one of the most obvious manifestations of air pollution and plays a major role in the public's perception of air quality. Visibility reduction from air pollution is often due to the presence of sulfur and NO_X, as well as PM.

Sulfates (X-SO_4^{2-}). X-SO_4^{2-} are chemical compounds which contain the sulfate ion (SO_4^{2-}) and are part of the mixture of solid materials that comprise PM_{10}. Most of SO_X in the atmosphere are produced by oxidation of SO_2. Oxidation of SO_2 yields sulfur trioxide, which reacts with water to form sulfuric acid, which contributes to acid deposition. The reaction of sulfuric acid with basic substances such as ammonia yields SO_4^{2-}, a component of PM_{10} and $PM_{2.5}$. Both mortality and morbidity effects have been observed with an increase in ambient SO_4^{2-} concentrations. However, studies to separate the effects of SO_4^{2-} from the effects of other pollutants have generally not been successful. Clinical studies of asthmatics exposed to sulfuric acid suggest that adolescent asthmatics are possibly a subgroup susceptible to acid aerosol exposure.

Hydrogen Sulfide (H_2S). H_2S is a colorless, flammable, poisonous compound having a characteristic rotten-egg odor. It is used as a reagent and as an intermediate in the preparation of other reduced sulfur compounds. It is also a by-product of the desulfurization processes in the oil and gas industries and rayon production, sewage treatment, and leather tanning. Geothermal power plants, petroleum production and refining, and sewer gas are specific sources of H_2S in California. High H_2S exposure has been documented as a cause of sudden death in the workplace.

Vinyl Chloride. Vinyl chloride is a colorless, flammable gas at ambient temperature and pressure. It is also highly toxic and is classified as a known carcinogen by the American Conference of Governmental Industrial Hygienists and the International Agency for Research on Cancer. At room temperature, vinyl chloride is a gas with a sickly-sweet odor that is easily condensed. However, it is stored at cooler temperatures as a liquid. Due to the hazardous nature of vinyl chloride to human health, there are no end products that use vinyl chloride in its monomer form. Vinyl chloride is a chemical intermediate, not a final product.

Vinyl chloride is an important industrial chemical chiefly used to produce polyvinyl chloride (PVC). The process involves vinyl chloride liquid fed to polymerization reactors where it is converted from a monomer to a polymer PVC. The final product of the polymerization process is PVC in either a flake or pellet form. From its flake or pellet form, PVC is sold to companies that heat and mold the PVC into end products such as PVC pipe and bottles. Vinyl chloride is not only used to make PVC products, but it is also a natural degradation product of chlorinated industrial solvents (e.g., perchloroethylene, trichloroethene, etc.). Vinyl chloride emissions are historically associated primarily with landfills and sites contaminated with chlorinated solvents.

3.1.3 Air Toxics

Air toxics are generally defined as those contaminants that are known or suspected to cause serious health problems, but do not have a corresponding ambient air quality standard. Air toxics are also defined as an air pollutant that may increase a person's risk of developing cancer and/or other serious health effects; however, the emission of a toxic chemical does not automatically create a health hazard. Air toxics include metals, other particles, gases absorbed by particles, and certain vapors from fuels and other sources. According to the 2006 California Almanac of Emissions and Air Quality, the majority of the estimated health risks from air toxics can be attributed to relatively few compounds, the most important being PM from the exhaust of diesel-fueled engines (diesel PM). Diesel PM differs from other air toxics in that it is a complex mixture of hundreds of substances rather than a single substance.

Acute exposure to diesel exhaust may cause irritation to the eyes, nose, throat and lungs, and some neurological effects, such as lightheadedness. Acute exposure may also elicit a cough or nausea, as well as exacerbate asthma. Chronic exposure to diesel PM in experimental animal inhalation studies has shown a range of dose-dependent lung inflammation and cellular changes in the lung and immunological effects. Based upon human and laboratory studies, there is considerable evidence that diesel PM is a likely carcinogen. Human epidemiological studies have demonstrated an association between diesel PM exposure and increased lung cancer rates in occupational settings.

3.2 REGULATORY FRAMEWORK

This portion of the air quality section provides brief discussions of the relevant regulations, policies, and programs that have been adopted by federal, state, and local agencies to protect air quality and public health.

Federal

The Clean Air Act (CAA) governs air quality at the national level and the USEPA is responsible for enforcing the regulations provided in the CAA. Under the CAA, the USEPA is authorized to establish NAAQS that set protective limits on concentrations of air pollutants in ambient air. Enforcement of the NAAQS is required under the 1977 CAA and subsequent amendments. As required by the CAA, NAAQS have been established for the seven criteria air pollutants: O_3, NO_2, CO, SO_2, PM_{10}, $PM_{2.5}$, and Pb. These pollutants are common byproducts of human activities and have been documented through scientific research to cause adverse health effects. The CAA grants the USEPA authority to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the NAAQS concentrations have been met on a regional scale relying upon air monitoring data from the most recent three-year period. The NAAQS are summarized in **Table 3-1**.

TABLE 3-1: AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS DESIGNATIONS

Pollutant	Averaging Period	California		Federal	
		Standards (CAAQS)	Attainment Status	Standards (NAAQS)	Attainment Status
Ozone (O_3)	1-Hour Average	0.09 ppm (180 µg/m^3)	Nonattainment	--	--
	8-Hour Average	0.070 ppm (137 µg/m^3)	Nonattainment	0.070 ppm (137 µg/m^3)	Pending – Nonattainment
Carbon Monoxide (CO)	1-Hour Average	20 ppm (23 mg/m^3)	Attainment	35.0 ppm (40 mg/m^3)	Attainment
	8-Hour Average	9.0 ppm (10 mg/m^3)	Attainment	9.0 ppm (10 mg/m^3)	Attainment
Nitrogen Dioxide (NO_2)	1-Hour Average	0.18 ppm (338 µg/m^3)	Attainment	0.10 ppm (188 µg/m^3)	Attainment
	Annual Arithmetic Mean	0.03 ppm (57 µg/m^3)	Attainment	0.053 ppm (100 µg/m^3)	Attainment
Sulfur Dioxide (SO_2)	1-Hour Average	0.25 ppm (655 µg/m^3)	Attainment	0.075 ppm (196 µg/m^3)	Pending – Attainment
	24-Hour Average	0.04 ppm (105 µg/m^3)	Attainment	0.14 ppm (365 µg/m^3)	Attainment
	Annual Arithmetic Mean	--	--	0.030 ppm (80 µg/m^3)	Attainment
Respirable Particulate Matter (PM_{10})	24-Hour Average	50 µg/m^3	Nonattainment	150 µg/m^3	Attainment (Maintenance)
	Annual Arithmetic Mean	20 µg/m^3	Nonattainment	--	--
Fine Particulate Matter ($PM_{2.5}$)	24-Hour Average	--	--	35 µg/m^3	Nonattainment
	Annual Arithmetic Mean	12 µg/m^3	Nonattainment	12.0 µg/m^3	Nonattainment
Lead (Pb)	30-day Average	1.5 µg/m^3	Attainment	--	--
	Calendar Quarter	--	--	1.5 µg/m^3	Unclassified/ Attainment
	Rolling 3-Month Average	--	--	0.15 µg/m^3	Unclassified/ Attainment
Sulfates	24-Hour Average	25 µg/m^3	Attainment	**No Federal Standards**	
Hydrogen Sulfide	1-Hour Average	0.03 ppm (42 µg/m^3)	Attainment		
Vinyl Chloride	24-Hour Average	0.01 ppm (26 µg/m^3)	Attainment		

CAAQS = California Ambient Air Quality Standard; NAAQS = National Ambient Air Quality Standard; ppm = parts per million; µg/m^3 = micrograms per cubic meter.

SOURCE: SCAQMD, *NAAQS and CAAQS Attainment Status for South Coast Air Basin*, February 2016.

On April 5, 2010, the USEPA revised the General Conformity Regulations (40 Code of Federal Regulations Parts 51 and 93.153). The revisions were intended to clarify, streamline, and improve conformity determination and review processes, and provide transition tools for making conformity determinations for new NAAQS standards.

State

Air quality in California is also governed by more stringent regulations under the California Clean Air Act (CCAA). The CCAA is administered by the California Air Resources Board (CARB) at the state level and by the air quality management districts at the regional and local levels. The CCAA

requires all areas of the state to achieve and maintain the CAAQS by the earliest feasible date, which is determined in the most recent SIP based on existing emissions and reasonably foreseeable control measures that will be implemented in the future. The CAAQS are also summarized in **Table 3-1**, which also presents the attainment status designations for the Los Angeles County portion of the SCAB. The CARB's statewide comprehensive air toxics program was established in the early 1980s. The Toxic Air Contaminant Identification and Control Act created California's program to reduce exposure to air toxics. Under the Toxic Air Contaminant Identification and Control Act, the CARB is required to prioritize the identification and control of air toxics emissions. In selecting substances for review, the CARB must consider criteria relating to the risk of harm to public health, such as amount or potential amount of emissions, manner of and exposure to usage of the substance in California, persistence in the atmosphere, and ambient concentrations in the community.

Regional

The 1977 Lewis Air Quality Management Act established the SCAQMD in order to coordinate air quality planning efforts throughout Southern California. The SCAQMD has jurisdiction over a total area of 10,743 square miles, consisting of the SCAB—which comprises 6,745 square miles including Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties—and the Riverside County portion of the Salton Sea and Mojave Desert Air Basins. The proposed project would be located in the neighborhood of Reseda, which is situated in the SCAB portion of Los Angeles County and is within the jurisdiction of the SCAQMD.

The SCAQMD is tasked with preparing regional programs and policies designed to improve air quality within the SCAB, which are assessed and published in the form of the Air Quality Management Plan (AQMP). The AQMP is updated every four years to evaluate the effectiveness of the adopted programs and policies and to forecast attainment dates for nonattainment pollutants to support the SIP based on measured regional air quality and anticipated implementation of new technologies and emissions reductions. The most recent publication is the 2016 AQMP, which is intended to serve as a regional blueprint for achieving the federal air quality standards and healthful air.

The 2016 AQMP represents a thorough analysis of existing and potential regulatory control options, and includes available, proven, and cost-effective strategies to pursue multiple goals in promoting reductions in GHG emissions and toxic risk, as well as efficiencies in energy use, transportation, and goods movement. The 2016 AQMP focuses on demonstrating NAAQS attainment dates for the 2008 8-hour O_3 standard, the 2012 annual $PM_{2.5}$ standard, and the 2006 24-hour $PM_{2.5}$ standard. The 2016 AQMP acknowledged that the most significant air quality challenge in the SCAB is the reduction of NO_X emissions sufficient to meet the upcoming ozone standard deadlines. The 2016 AQMP includes both stationary and mobile source strategies to ensure that rapidly approach attainment deadlines are met, that public health is protected to the maximum extent feasible, and that the region is not faced with burdensome sanctions if the NAAQS are not met by the established date.

The 2016 AQMP includes an element that is related to transportation and sustainable communities planning. Pursuant to California Health and Safety Code Section 40450, the Southern California Association of Governments (SCAG)—the Metropolitan Planning Organization (MPO) for Southern California—has the responsibility of preparing and approving the portions of the 2016 AQMP relating to regional demographic projections and integrated regional land use, housing, employment, and transportation programs, measures, and strategies. The analysis incorporated into the 2016 AQMP is based on the forecasts contained within the SCAG 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Land use strategies outlined in the 2016–2040 RTP/SCS that will contribute to regional air quality improvements include: focusing

new growth around transit/high quality transit areas (HQTAs), planning for growth around livable corridors, providing more options for short trips/neighborhood mobility areas, and supporting local sustainability planning.

The SCAQMD has also established various rules to manage and improve air quality in the SCAB. The project proponent shall comply with all applicable SCAQMD Rules and Regulations pertaining to construction activities, including, but not limited to:

- Rule 402 (Nuisance) states that a person should not emit 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.
- Rule 403 (Fugitive Dust) controls fugitive dust through various requirements including, but not limited to, applying water in sufficient quantities to prevent the generation of visible dust plumes, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site, limiting vehicle speeds on unpaved roads to 15 miles per hour, and maintaining effective cover over exposed areas. Rule 403 also prohibits the release of fugitive dust emissions from any active operation, open storage piles, or disturbed surface area beyond the property line of the emission source and prohibits particulate matter deposits on public roadways.

3.3 EXISTING ENVIRONMENTAL SETTING

3.3.1 Air Pollution Climatology

The project site is located within the SCAB, which is subject to some of the worst air pollution in the nation due to the immense magnitude of emissions sources and the combination of topography, low mean atmospheric mixing height, and abundant sunshine. Although the SCAB has a semiarid climate, air near the surface is generally moist because of the presence of a shallow marine layer. With very low average wind speeds, there is a limited capacity to disperse air contaminants horizontally. The mountains and hills surrounding the SCAB contribute to the variation of rainfall, temperature, and winds throughout the region.

During the spring and early summer, pollution produced during any one day is typically blown out of the SCAB through mountain passes or lifted by warm, vertical currents adjacent to mountain slopes. The vertical dispersion of air pollutants in the SCAB is limited by temperature inversions in the atmosphere close to the Earth's surface. The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are lowest. During periods of low inversions and low wind speeds, air pollutants become more concentrated in urbanized areas with pollution sources of greater magnitude.

3.3.2 Local Climate Conditions

The mountains and hills within the SCAB contribute to the variation of rainfall, temperature, and winds throughout the region. The nearest meteorological station that collects data describing local climate conditions in the proposed project area is the California State University, Northridge, which is situated approximately 4.5 miles west of the proposed project. The California State University, Northridge meteorological station continuously measures and records temperature and precipitation levels throughout the year. The annual average temperature in the proposed project

area is 65.8 degrees Fahrenheit (°F).[2] The project site and surrounding area experience a mean winter temperature of 57.3°F and a mean summer temperature of 75.5°F.[3] Within the project site and its vicinity, the average wind speed is approximately 6.1 miles per hour from the northwest.[4]

According to the California State University, Northridge meteorological station data, total precipitation in the proposed project area averages approximately 13.4 inches annually. Precipitation occurs mostly during the winter and relatively infrequently during the summer. Precipitation averages 2.5 inches during the winter, 0.8 inches during the spring, 0.9 inch during the fall, and less than 0.1 inch during the summer.[5]

3.3.3 Local Air Quality Conditions

Air quality within the SCAB region is characterized by concentrations of air pollutants measured at 40 monitoring stations located throughout the SCAQMD jurisdiction. The SCAB is divided geographically into 38 source receptors areas (SRAs), each of which contains an air quality monitoring station. The SRA boundaries were drawn based on the local emission inventories and surrounding topography. The proposed project is located in SRA 7 (East San Fernando Valley). The current active monitoring station that collects ambient air quality data in SRA 7 is the Reseda Monitoring Station located at 18330 Gault Street, Reseda.[6] From the past five years of collected data, O_3 and $PM_{2.5}$ pollutants have exceeded state and federal standards. PM_{10} pollutants are not monitored at this and there are no active stations within 10 miles of the project area which collects PM_{10} pollutants data. The Burbank monitoring station was the nearest monitoring station the project area which collected PM_{10} pollutant data but was closed in 2014. The Burbank monitoring station recorded PM_{10} data which exceeded only state standards from its last past five years of collected data.[7]

3.3.4 Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The CARB has identified the following groups who are most likely to experience adverse health effects due to exposure to air pollution: children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, land uses that constitute sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The project is located in an urban environment and many sensitive receptors are located near construction zones. The majority of the alignment is densely populated with residences. Additional receptors located within 500 feet of the trunk line include Vena Avenue Elementary School, Bishop Alemany High School, community facilities, parks, medical facilities, and religious institutions.

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2 Western Regional Climate Center, *Historical Climate Information*, https://wrcc.dri.edu, accessed on September 4, 2018.
3 *Ibid*.
4 SCAQMD, *Meteorological Data*, http://www.aqmd.gov/home/air-quality/air-quality-data-studies/meteorological-data/data-for-aermod, accessed on September 4, 2018.
5 Western Regional Climate Center, *Historical Climate Information*, https://wrcc.dri.edu, accessed on September 4, 2018.
6 CARB, *Quality Assurance Air Monitoring Site Information*, accessed on September 4, 2018.
7 CARB, Air Quality Data Statistics, *Top 4 Summary*, accessed on September 4, 2018.

3.4 METHODOLOGY AND SIGNIFICANCE THRESHOLDS

3.4.1 Methodology

Implementation of the proposed project will involve the construction and operation of a pocket park and underground parking structure. The air quality analysis conducted for the proposed project is consistent with the methods described in the SCAQMD *CEQA Air Quality Handbook* (1993 edition), as well as the updates to the *CEQA Air Quality Handbook*, as provided on the SCAQMD website. The SCAQMD recommends the use of the California Emissions Estimator Model (CalEEMod, version 2016.3.1) as a tool for quantifying emissions of air pollutants that will be generated by constructing and operating development projects under CEQA. The detailed CalEEMod output files disclosing estimated air pollutant emissions can be found in the **Appendix**.

The SCAQMD recommends that air pollutant emissions generated by construction activities be assessed for potentially significant air quality impacts at regional and local scales. Regional emissions include air pollutant emissions from all sources associated with construction activities, while localized emissions refer specifically to those emissions generated by sources on the project site. Maximum daily emissions were quantified for each construction activity based on the number and type of equipment required and daily hours of use, in addition to vehicle trips to and from the project site. The CalEEMod model provides regionally-specific default values for daily equipment usage rates and worker trip lengths, as well as emissions factors for heavy duty equipment and passenger vehicles that have been derived by the CARB through extensive air quality investigations and surveys.

Localized air pollutant emissions from construction activities were analyzed in accordance with the SCAQMD Localized Significance Threshold (LST) methodology. The LST methodology was devised to prevent small-scale hot spot concentrations of air pollutants from exceeding ambient air quality standards at nearby sensitive receptors. The project site is located in the East San Fernando Valley SRA, which is identified as SRA 7 within the SCAQMD jurisdiction.

The LST methodology document contains SRA-specific values for maximum allowable on-site emissions (i.e., construction equipment and fugitive dust) during construction based on locally monitored air quality, the size of maximum daily disturbed area, and the proximity of sensitive receptors. Maximum on-site emissions resulting from construction activities were quantified and assessed against the applicable LST values for a one-acre project site having sensitive receptors within 80 feet (approximately 25 meters) of the project site boundary in SRA 7; the applicable LST values are shown in **Table 3-2** below.

3.4.2 CEQA Significance Thresholds

In accordance with Appendix G of the CEQA Guidelines, the proposed project would have a significant impact on the environment related to air quality if it 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 non-attainment 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.

The SCAQMD published a *CEQA Air Quality Handbook* to guide air quality assessments for CEQA projects within its jurisdiction. SCAQMD methodologies recommend that air pollutant emissions be analyzed in both regional and local contexts. Regional emissions refer to all emissions that would be associated with construction and operation of a project, while localized emissions refer to only those emissions that would be produced by sources located on the project site. To assist in the assessment of air pollutant emissions under impact criteria a), b), and c) above, the SCAQMD established maximum daily threshold values for air pollutant emissions from CEQA projects within the SCAB. The mass daily thresholds were derived using regional emissions modeling techniques to prevent the occurrence of air quality violations that would obstruct implementation of the regional AQMP and hinder efforts to improve regional air quality.

Table 3-2 presents the SCAQMD mass daily air quality significance thresholds for regional and localized emissions of regulated pollutants resulting from construction activities.[8] The localized air quality significance thresholds are specific to SRA 7 for a one-acre construction site with sensitive receptors within 80 feet (approximately 25 meters) and were obtained from the SCAQMD LST guidance document.[9,10] The LST values were derived from regionally-specific modeling of pollutant emissions and are designed to prevent localized pollutant concentrations from exceeding applicable ambient air quality standards near construction sites. Also presented in **Table 3-2** are the operational mass daily thresholds applicable within the SCAQMD jurisdiction.

TABLE 3-2: SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS – MASS DAILY EMISSIONS

Pollutant	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
CONSTRUCTION						
Regional Threshold (lb/day)	75	100	550	150	150	55
Localized Threshold (lb/day)	--	80	498	--	4	3
OPERATION						
Regional Threshold (lb/day)	55	55	550	150	150	55

Note: LST values selected for 1-acre daily disturbance based on equipment inventory and 25-meter receptor distance in SRA 7.
SOURCE: SCAQMD, 2015.

3.4.3 NEPA Impact Criteria

The NEPA determination of adverse effects is based on the local standards. The same methodology was used to determine the CEQA level of significance.

3.5 ENVIRONMENTAL IMPACTS

3.5.1 Would the proposed project conflict with or obstruct implementation of the applicable air quality plan?

Impact Analysis

The following analysis addresses the consistency with applicable SCAQMD and SCAG policies, including the SCAQMD's 2016 AQMP and growth projections within the SCAG 2016–2040 RTP/SCS. In accordance with the procedures established in the SCAQMD's CEQA Air Quality

[8] SCAQMD, *SCAQMD Air Quality Significance Thresholds – Mass Daily Thresholds*, March 2015.
[9] SCAQMD, *Final Localized Significance Threshold Methodology Appendix C Mass Rate Lookup Tables*, October 21, 2009.
[10] SCAQMD, *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds*, 2008.

Handbook, the following criteria are required to be addressed in order to determine the consistency with applicable SCAQMD and SCAG policies:

- Would the proposed project result in any of the following?
  - An increase in the frequency or severity of existing air quality violations; or
  - Cause or contribute to new air quality violations; or
  - Delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.
- Would the proposed project exceed the assumptions utilized in preparing the AQMP?
  - Is the proposed project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based;
  - Does the proposed project include air quality mitigation measures; or
  - To what extent is proposed project development consistent with the AQMP land use policies?

With respect to the first criterion, as discussed below, localized pollutant concentrations have been analyzed for the proposed project. SO_2 emissions, assessed as SO_X within the SCAQMD thresholds, would be negligible during construction and long-term operations, and, therefore, would not have the potential to cause or affect a violation of the SO_2 ambient air quality standard. Since VOCs are not a criteria pollutant, there is no ambient standard or localized threshold for VOCs. Due to the role VOCs play in ozone formation, it is classified as a precursor pollutant, and only a regional emissions threshold has been established.

Localized emissions were analyzed in order to: (1) ascertain potential effects on localized concentrations; and (2) determine if there is a potential for such emissions to cause or affect a violation of the ambient air quality standards. As demonstrated in the analysis below (see **Tables 3-3** and **3-4**), localized emissions would not exceed the SCAQMD-recommended localized thresholds.

With respect to the determination of consistency with AQMP growth assumptions, the projections in the AQMP for achieving air quality goals are based on assumptions in SCAG's 2016–2040 RTP/SCS regarding population, housing, and growth trends. Determining whether or not a project exceeds the assumptions reflected in the AQMP involves the evaluation of three criteria: (1) consistency with applicable population, housing, and employment growth projections; (2) project mitigation measures; and (3) appropriate incorporation of AQMP land use planning strategies. The following discussion provides an analysis with respect to each of these three criteria.

- Is the proposed project consistent with the population, housing, and employment growth projections upon which AQMP forecasted emission levels are based?

The subterranean trunk line has no potential to conflict with regional population, housing, and employment growth projections.

- Does the proposed project implement feasible air quality mitigation measures?

The proposed project would comply with all applicable regulatory standards (e.g., SCAQMD Rules 402 and 403) as required by the SCAQMD. As demonstrated in this analysis, the proposed project would not result in significant air quality impacts and no mitigation measures are required to reduce emissions. As such, the proposed project meets this AQMP consistency criterion.

TABLE 3-3: DAILY CONSTRUCTION EMISSIONS – YEAR 2019

	Daily Emissions (Pounds Per Day)					
Method	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
OPEN TRENCH						
On-Site Emissions	1.1	11.0	10.1	<0.1	0.8	0.6
Off-Site Emissions	0.6	17.0	4.8	<0.1	1.3	0.4
Total	***1.7***	***28.0***	***14.9***	***<0.1***	***2.1***	***1.0***
JACK AND BORE						
On-Site Emissions	1.1	12.1	9.0	<0.1	0.8	0.6
Off-Site Emissions	0.1	1.7	0.9	<0.1	0.2	0.1
Total	***1.2***	***13.8***	***9.9***	***<0.1***	***1.0***	***0.7***
SLIP LINING						
On-Site Emissions	1.3	13.2	8.6	<0.1	0.8	0.6
Off-Site Emissions	0.1	1.7	0.9	<0.1	0.2	0.1
Total	***13.2***	***14.9***	***9.4***	***<0.1***	***1.0***	***0.7***
REGIONAL ANALYSIS						
Maximum Regional Daily Emissions /a/	**17.8**	**84.7**	**49.1**	**<0.1**	**6.2**	**3.4**
Regional Significance Threshold	75	100	550	150	150	55
Exceed Regional Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
LOCALIZED ANALYSIS						
Maximum Localized Daily Emissions /b/	**--**	**22.0**	**20.2**	**--**	**1.6**	**1.2**
Localized Significance Threshold	--	80	498	--	4	3
Exceed Localized Threshold?	**--**	**No**	**No**	**--**	**No**	**No**

/a/ Maximum regional emissions would be generated by overlapping activities from two open trench crews, one jack and bore crew, and one slip lining crew.
/b/ Maximum localized emissions would be generated by two adjacent open trench crews.
Note: Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2018.

TABLE 3-4: DAILY CONSTRUCTION EMISSIONS – YEAR 2022

	Daily Emissions (Pounds Per Day)					
Method	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
OPEN TRENCH						
On-Site Emissions	0.8	7.8	9.7	<0.1	0.6	0.4
Off-Site Emissions	0.5	13.7	4.2	<0.1	1.2	0.4
Total	***1.3***	***21.5***	***13.9***	***<0.1***	***1.8***	***0.8***
JACK AND BORE						
On-Site Emissions	0.9	8.4	8.7	<0.1	0.6	0.4
Off-Site Emissions	0.1	1.4	0.7	<0.1	0.2	0.1
Total	***1.0***	***9.8***	***9.4***	***<0.1***	***0.8***	***0.5***
SLIP LINING						
On-Site Emissions	0.9	9.2	8.2	<0.1	0.6	0.4
Off-Site Emissions	0.1	0.4	0.7	<0.1	0.2	0.1
Total	***1.0***	***9.6***	***8.9***	***<0.1***	***0.8***	***0.5***
REGIONAL ANALYSIS						
Maximum Regional Daily Emissions /a/	**4.6**	**62.4**	**46.1**	**<0.1**	**5.2**	**2.6**
Regional Significance Threshold	75	100	550	150	150	55
Exceed Regional Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
LOCALIZED ANALYSIS						
Maximum Localized Daily Emissions /b/	**--**	**15.6**	**19.4**	**--**	**1.2**	**0.8**
Localized Significance Threshold	--	80	498	--	4	3
Exceed Localized Threshold?	**--**	**No**	**No**	**--**	**No**	**No**

/a/ Maximum regional emissions would be generated by overlapping activities from two open trench crews, one jack and bore crew, and one slip lining crew.
/b/ Maximum localized emissions would be generated by two adjacent open trench crews.
Note: Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2018.

- To what extent is proposed project development consistent with the land use policies set forth by the City of Los Angeles?

The subterranean trunk line has no potential to interfere with land use policies.

Implementation of the proposed project would not interfere with air pollution control measures listed in the 2016 AQMP and would not conflict with the goals of the General Plan Air Quality Element.

3.5.2 Would the proposed project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Impact Analysis

Construction. Construction of the proposed project would have a potentially significant air quality impact under this criterion if maximum daily emissions of any regulated pollutant exceeded the applicable SCAQMD air quality significance thresholds presented in **Table 3-2**. Daily emissions of regulated pollutants were quantified following the methodology described in Section 3.4.1 for each phase of construction activity. The estimate of fugitive dust emissions account for Rule 403 compliance. Examples of Rule 403 compliance include: a) All exposed areas will be frequently watered to reduce the generation of dust, and b) Vehicle speed of construction vehicles/equipment in exposed areas (i.e., unpaved access) shall be reduced to reduce the generation of dust.

The proposed project would implement three construction methods. They include open trench, jack and bore, and slip lining. Refer to the Project Description for a detailed discussion of the three construction methods. The active construction areas along the alignment would be relatively small and the amount of equipment that could operate in one day would be limited by the size of the active construction zone. It has reasonably been assumed that each construction method would have three pieces of heavy-duty equipment continuously operating each day and one generator. Maximum daily truck trips include 20 haul trucks during for open trench, 20 concrete trucks for open trench, four haul/delivery trucks for jack and bore, and four haul/delivery trucks for slip lining. Open trench would require up to 20 worker trips per day and jack and bore and slip lining would each require up to ten worker trips per day. It is anticipated that up to two open trench crews and one crew each for jack and bore and slip lining could simultaneously operate along the alignment.

The emissions analysis includes Unit 1 activities in 2019 and the initiation of Unit 2 activities in 2022. Unit 1 activities would overlap with Unit 2 activities. However, similar to Unit 1 activities, it is not anticipated that there would be more than four construction crews active at one time. Those crews include two open trench crews and one crew each for jack and bore and slip lining. \

Tables 3-3 and **3-4** compare maximum daily emissions in 2019 and 2022 to the applicable SCAQMD air quality significance thresholds. Maximum daily emissions of air pollutants that would be generated by proposed project construction activities would not exceed any applicable regional or localized threshold values. Impacts would be less than significant, and no mitigation is required.

Operation*.* Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. No additional permanent workforce would be required to operate the CTLN. There is no potential for the proposed project to permanently increase air pollutant concentrations. Therefore, this impact would be less than significant, and no mitigation is required.

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

Impact Analysis

Construction. The SCAB is designated as nonattainment of the CAAQS and NAAQS for O_3, PM_{10}, and $PM_{2.5}$. Therefore, there is an ongoing regional cumulative impact associated with these air pollutants. Taking into account the existing environmental conditions, the SCAQMD propagated guidance that an individual project can emit allowable quantities of these pollutants on a regional scale without significantly contributing to the cumulative impacts. As discussed above and shown in **Tables 3-3** and **3-4**, air pollutant emissions associated with construction of the proposed project would not exceed any applicable SCAQMD air quality thresholds of significance. Despite the region being in nonattainment of the ambient air quality standards for O_3, PM_{10}, and $PM_{2.5}$, the SCAQMD does not consider individual project emissions of lesser magnitude than the mass daily thresholds to be cumulatively considerable. The proposed project would not result in a cumulatively considerable net increase of nonattainment pollutants. Therefore, this impact would be less than significant, and no mitigation is required.

Operation. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. No additional permanent workforce would be required to operate the CTLN. There is no potential for the proposed project to contribute to a cumulative impact. Therefore, this impact would be less than significant, and no mitigation is required.

3.5.4 Would the proposed project expose sensitive receptors to substantial pollutant concentrations?

Impact Analysis

Construction. The SCAQMD devised its LST values to prevent the occurrence of localized hot spots of criteria pollutant concentrations at sensitive receptor locations surrounding the project site. The LST values were determined using emissions modeling based on ambient air quality measured throughout the SCAB. If maximum daily emissions remain below the LST values during construction activities, it is highly unlikely that air pollutant concentrations in ambient air would reach substantial levels sufficient to create public health concerns for sensitive receptors. As shown in **Tables 3-3** and **3-4**, maximum daily emissions of criteria pollutants and O_3 precursors from sources located on the project site would not exceed any applicable LST values. Therefore, construction of the proposed project would not result in exposure of sensitive receptors to substantial concentrations of criteria pollutants.

With regards to emissions of air toxics, carcinogenic risks, and non-carcinogenic hazards, the use of heavy duty construction equipment and haul trucks during construction activities would release diesel PM to the atmosphere through exhaust emissions. Diesel PM is a known carcinogen, and extended exposure to elevated concentrations of diesel PM can increase excess cancer risks in individuals. However, carcinogenic risks are typically assessed over timescales of several years to decades, as the carcinogenic dose response is cumulative in nature. Short term exposures to diesel PM would have to involve extremely high concentrations in order to exceed the SCAQMD Air Quality Significance Threshold of 10 excess cancers per million.

The total construction time for the CTLN project is estimated to be approximately nine years. However, only relatively limited portions of the proposed route be would actually be under construction at any given time as activities would move typically move rapidly along the alignment. In addition, installation activities would be spread over 21,000 feet for Unit 1 and 11,800 feet for Unit 2. The exposure duration at any one location would be over days or weeks, not years. Construction activity would not occur with enough intensity and duration to significantly increase health risk. In addition, the proposed project would be subject to the regulations and laws relating to toxic air contaminants at the regional, State, and federal level that would protect sensitive receptors from substantial concentrations. Therefore, this impact would be less than significant, and no mitigation is required.

Operation. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. No additional permanent workforce would be required to operate the CTLN. There is no potential for community exposure to air pollutants. Therefore, this impact would be less than significant, and no mitigation is required.

3.5.5 Would the proposed project create objectionable odors affecting a substantial number of people?

Impact Analysis

Construction. A significant impact would occur if construction or operation of the proposed project would result in the creation of nuisance odors that would be noxious to a substantial number of people. Potential sources that may produce objectionable odors during construction activities include equipment exhaust and paving activities. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site and would be temporary in nature and would not persist beyond the termination of construction activities. The proposed project would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. In addition, as construction-related emissions dissipate away from the construction area, the odors associated with these emissions would also decrease and would be quickly diluted. Therefore, this impact would be less than significant, and no mitigation is required.

Operation. The CTLN would be connected to several existing trunk lines to provide redundant pathways for water supply. The subterranean trunk line would not result in surface odors. Therefore, this impact would be less than significant, and no mitigation is required.

3.7 NEPA ANALYSIS

The NEPA determination of adverse air quality effects is based on the local standards. The same methodology was used to determine the CEQA level of significance. As discussed above, the proposed project would not result in adverse effects and no mitigation is required.

Federal regulations also require a General Conformity assessment. General Conformity ensures that the actions taken by federal agencies do not interfere with a state's plans to attain and maintain national standards for air quality. Established under Section 176(c)(4) of the CAA, the General Conformity rule plays an important role in helping states and tribes improve air quality in those areas that do not meet the NAAQS. Pursuant to Section 176(c) of the CAA (40 United States Code 7506(c)), the proposed project would occur in a nonattainment area and pollutant emissions generated by the federal action associated with the proposed project would equal or exceed a specified annual *de minimis* emission rate, a General Conformity Determination must be performed by the lead federal agency to ensure that it conforms with the CAA before the federal action can be approved.

It is anticipated that active construction would involve 1,060 days of open trench activities, 117 days of jack and bore activities, and 203 days of slip lining activities. The annual emissions analysis for General Conformity assumed emissions associated with up to 200 days of open trench activities per year, 50 days of jack and bore activities per year, and 50 days of slip lining activities per year. It has reasonably been assumed that each construction method would have three pieces of heavy-duty equipment continuously operating each day and one generator. Maximum daily truck trips include 20 haul trucks during for open trench, 20 concrete trucks for open trench, four haul/delivery trucks for jack and bore, and four haul/delivery trucks for slip lining. Open trench would require up to 20 worker trips per day and jack and bore and slip lining would each require up to ten worker trips per day. Annual emissions are presented for 2019, which according to the CalEEMod approved by CARB, is the project year with the highest equipment and vehicle emission rates. **Table 3-5** demonstrates that project emissions would be below the *de minimis* thresholds for pollutants for which SCAB is designated as a nonattainment or maintenance area. A General Conformity determination is not necessary, and no further action is required.

TABLE 3-5: GENERAL CONFORMITY *DE MINIMIS* ANALYSIS

Pollutant	Federal Status	Nonattainment Rates	Thresholds of Significance for SCAB (Tons/Year)	Estimated Construction Emissions (Tons/Year)	Estimated New Operation Emissions (Tons/Year)
Nitrogen Dioxide:	Maintenance	None	--	--	--
NO_X			100	3.5	0.0
Ozone (O_3):	Nonattainment	Extreme	--	--	--
NO_X			10	3.5	0.0
VOC			10	0.24	0.0
Carbon Monoxide (CO)	Maintenance	Serious	100	2.0	0.0
Lead (Pb)	Nonattainment	None	25	0.0	0.0
Particulate Matter ($PM_{2.5}$):	Nonattainment	Serious	--	--	--
$PM_{2.5}$ (Directly Emitted)			70	0.14	0.0
SO_X			70	0.0	0.0
NO_X			70	3.5	0.0
VOC			70	0.24	0.0
Particulate Matter (PM_{10})	Maintenance	Serious	100	0.26	0.0
Sulfur Dioxide (SO_2)	Attainment	Not Applicable	Not Applicable	0.0	0.0

SOURCE: TAHA, 2018.

4.0 GREENHOUSE GAS

The purpose of this section is to discuss describe how the proposed project would affect regional GHG emissions. GHG emissions refer to airborne pollutants that are generally believed to affect global climate conditions. These pollutants have the effect of trapping heat in the atmosphere, thereby altering weather patterns and climatic conditions.

4.1 POLLUTANTS AND EFFECTS

GHG emissions refer to a group of emissions that are generally believed to affect global climate conditions. The greenhouse effect compares the Earth and the atmosphere surrounding it to a greenhouse with glass panes. The glass panes in a greenhouse let heat from sunlight in and reduce the amount of heat that escapes. GHGs, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), keep the average surface temperature of the Earth close to 60°F. Without the natural greenhouse effect, the Earth's surface would be about 61°F cooler.[11]

In addition to CO_2, CH_4, and N_2O, GHGs include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), black carbon (black carbon is the most strongly light-absorbing component of particulate matter emitted from burning fuels such as coal, diesel, and biomass), and water vapor. CO_2 is the most abundant pollutant that contributes to climate change through fossil fuel combustion. The other GHGs are less abundant but have higher global warming potential than CO_2. To account for this higher potential, emissions of other GHGs are frequently expressed in the equivalent of CO_2, denoted as CO_2e. CO_2e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. **Table 4-1** shows various GWP.

TABLE 4-1: GLOBAL WARMING POTENTIAL FOR VARIOUS GREENHOUSE GASES

Pollutant	Lifetime (Years)	Global Warming Potential (20-Year)	Global Warming Potential (100-Year)
Carbon Dioxide (CO_2)	--	1	1
Methane (CH_4)	12	21	25
Nitrous Oxide (N_2O)	114	310	298
Nitrogen Trifluoride	740	Unknown	17,200
Sulfur Hexafluoride (SF_6)	3,200	23,900	22,800
Perfluorocarbons (PFCs)	2,600-50,000	6,500-9,200	7,390-12,200
Hydrofluorocarbons (HFCs)	1-270	140-11,700	124-14,800

SOURCE: CARB, *Global Warming Potentials*, https://www.arb.ca.gov/cc/inventory/background/gwp.htm, accessed on September 5, 2018.

4.2 REGULATORY FRAMEWORK

In response to growing scientific and political concern with global climate change, a series of federal and state laws have been adopted to reduce GHG emissions. The following provides a brief summary of GHG regulations and policies. This is a not a n exhaustive list of all regulations and policies.

[11] California Environmental Protection Agency Climate Action Team, *Climate Action Report to Governor Schwarzenegger and the California Legislator*, March 2006.

Federal

- ***Massachusetts vs. Environmental Protection Agency, 127 S. Ct. 1438 (2007)*** - A supreme court ruling that CO_2 and other GHGs are pollutants under the CAA.

- **Energy Independence and Security Act** - This act set a Renewable Fuel Standard of 36 billion gallons of biofuel usage by 2022, increases Corporate Average Fuel Economy Standards of setting 35 miles per gallon of cars and light trucks by 2020 and sets new standards for lighting and residential and commercial appliance equipment.

- **National Fuel Efficiency Policy and Fuel Economy Standards** - This 2009 policy was designed to increase fuel economy by more than five percent by 2016 starting with model year 2012 cars and trucks.

- **Heavy-Duty Vehicle Program** – This 2011 program established the first fuel efficiency requirements for medium- and heavy-duty vehicles beginning with model year 2014.

State

- **Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24 of the California Code of Regulations)** – Title 24 standards contain energy and water efficiency requirements (and indoor air quality requirements) for newly constructed buildings, additions to existing buildings, and alterations to existing buildings.

- **California Green Building Code** - Also referred to as CalGreen, lays out minimum requirements for newly constructed buildings in California, which will reduce GHG emissions through improved efficiency and process improvements.

- **Senate Bill 1078 (SB 1078), Senate Bill 107 (SB 107), and Executive Order (E.O.) S-14-08 (Renewables Portfolio Standard)** - Signed on September 12, 2002, SB 1078 required California to generate 20 percent of its electricity from renewable energy by 2017. SB 107, signed on September 26, 2006 changed the due date for this goal from 2017 to 2010, which was achieved by the state. On November 17, 2008, E.O. S-14-08, which established a Renewables Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020.

- **Executive Order (E.O.) S-3-05** - E.O. S-3-05 set the following GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.

- **Assembly Bill 32** - The California Global Warming Solutions Act of 2006, also known as Assembly Bill 32, was signed into law. Assembly Bill 32 focuses on reducing GHG emissions in California and requires the CARB to adopt rules and regulations that would achieve GHG emissions equivalent to Statewide levels in 1990 by 2020. The 2020 target reductions were estimated to be 174 million metric tons of CO_2e. In November 2017 CARB adopted the final 2017 Scoping Plan: The Strategy for Achieving California's 2030 GHG target (2017 Scoping Plan). The 2017 Scoping Plan incorporates, coordinates, and leverages many existing and ongoing efforts and identifies new policies and actions to accomplish the State's climate goals.

- **Senate Bill 375 (SB 375)** - Provides a means for achieving Assembly Bill 32 goals through the reduction in emissions by cars and light trucks. SB 375 requires Regional Transportation Plans (RTPs) prepared by Metropolitan Planning Organizations (MPOs) to include Sustainable Communities Strategies (SCSs).

- **Senate Bill 743 (SB 743)** - Encourages land use and transportation planning decisions and investments that reduce vehicle miles traveled (VMT), which contribute to GHG emissions, as required by Assembly Bill 32.

- **Executive Order (E.O) B-30-15** - This policy set a goal to reduce GHG emissions 40 percent below their 1990 levels by 2030. The E.O. establishes GHG emissions reduction targets to reduce emissions to 80 percent below 1990 levels by 2050 and sets an interim target of emissions reductions for 2030 as being necessary to guide regulatory policy and investments in California and put California on the most cost-effective path for long-term emissions reductions.

- **Senate Bill 32 (SB 32)** – This bill required a commitment to reducing statewide GHG emissions by 2020 to 1990 levels and by 2030 to 40 percent less than 1990 levels.

Regional

- **Southern California Association of Governments (SCAG) 2016–2040 Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS)** - SCAG is the MPO for the six-county region that includes Los Angeles, Orange, Riverside, Ventura, San Bernardino and Imperial counties. The 2016-2040 RTP/SCS includes commitments to reduce emissions from transportation sources to comply with SB 375. Goals and policies included in the 2016-2040 RTP/SCS to reduce air pollution consist of adding density in proximity to transit stations, mixed-use development and encouraging active transportation (i.e., non-motorized transportation such as bicycling).

Local

- **GreenLA Climate Action Plan** - The City of Los Angeles has issued guidance promoting sustainable development to reduce GHG emissions citywide in the form of a Climate Action Plan. The objective of GreenLA is to reduce GHG emissions 35 percent below 1990 levels by 2030.

- **ClimateLA** - In order to provide detailed information on action items discussed in GreenLA, the City published an implementation document titled ClimateLA. ClimateLA presents the existing GHG inventory for the City, describes enforceable GHG reduction requirements, provides mechanisms to monitor and evaluate progress, and includes mechanisms that allow the plan to be revised in order to meet targets. By 2030, the plan aims to reduce GHG emissions by 35 percent from 1990 levels which were estimated to be approximately 54.1 million metric tons.

- **Sustainable City pLAn** - The pLAn is a roadmap to reducing GHG emissions by 45 percent by 2025, 60 percent by 2035, and 80 percent by 2050, all against a 1990 baseline.

- **Green Building Program** - The purpose of the City's Green Building Program is to reduce the use of natural resources, create healthier living environments and minimize the negative impacts of development on local, regional, and global ecosystems. The program consists of a Standard of Sustainability and Standard of Sustainable Excellence.

- **Los Angeles Green Building Code** - The Green Building Code is applicable to new buildings and alterations with building valuations over $200,000 (residential and non-residential). The Green Building Code is based on CalGreen and developed to reduce energy use, water use, and waste.

- **Existing Buildings Energy and Water Efficiency Ordinance** - This Ordinance is designed to facilitate the comparison of buildings' energy and water consumption, and reduce building operating costs, leading to reduced GHG emissions.

4.3 EXISTING ENVIRONMENTAL SETTING

GHGs are the result of both natural and human-influenced activities. Volcanic activity, forest fires, decomposition, industrial processes, landfills, consumption of fossil fuels for power generation, transportation, heating, and cooling are the primary sources of GHG emissions. Without human activity, the Earth would maintain an approximate, but varied, balance between the emission of GHGs into the atmosphere and the storage of GHG in oceans and terrestrial ecosystems. Increased combustion of fossil fuels (e.g., gasoline, diesel, coal, etc.) has contributed to a rapid increase in atmospheric levels of GHGs over the last 150 years.

Table 4-2 shows GHG emissions from 2006 to 2016 in California. California's GHG emissions have followed a declining trend since 2007. In 2016, emissions from routine emitting activities statewide were 12 million metric tons of CO_2e ($MMTCO_2e$) lower than 2015 levels, representing an overall decrease of 12 percent since 2006. Of note, between October 23, 2015 and February 18, 2016, an exceptional natural gas leak event occurred at the Aliso Canyon natural gas storage facility that resulted in unexpected GHG emissions of considerable magnitude. The exceptional incident released approximately 109,000 metric tons of CH_4, which equated to approximately 1.96 $MMTCO_2e$ of unanticipated emissions in 2015 and an additional 0.52 $MMTCO_2e$ in 2016. According to the CARB, these emissions will be mitigated in the future through projects funded by the Southern California Gas Company based on legal settlement and are presented alongside but tracked separately from routine inventory emissions.[12,13]

TABLE 4-2: CALIFORNIA GREENHOUSE GAS EMISSIONS INVENTORY TREND

Sector	CO_2e Emissions (Million Metric Tons)									
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Transportation	189	178	170	165	162	161	161	162	166	169
Industrial	90	91	88	92	91	9	94	94	92	90
Electric Power	114	120	101	90	88	95	90	88	84	69
Commercial and Residential	43	44	44	45	46	43	44	37	38	39
Agriculture	36	36	34	34	35	36	35	36	34	34
High Global Warming Potential	11	12	12	14	15	16	17	18	19	20
Recycling and Waste	8	8	8	8	8	8	8	8	9	9
Emissions Total	**490**	**487**	**457**	**448**	**443**	**450**	**448**	**444**	**441**	**429**

SOURCE: CARB, *California Greenhouse Gas Emission Inventory - 2018 Edition*, July 11, 2018.

4.4 METHODOLOGY AND SIGNIFICANCE THRESHOLDS

4.4.1 Methodology

GHG emissions that will be generated by the proposed project were estimated using CalEEMod, as recommended by the SCAQMD. Similar to the air quality analysis, the GHG analysis focused on construction emissions. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. No additional permanent workforce would be required to operate the CTLN. There is no potential for new operational GHG emissions. Sources of GHG emissions during project construction would include heavy-duty off-road diesel equipment and vehicular travel to and from the project site. Refer to the air quality analysis for additional construction details. In accordance with SCAQMD methodology, the total amount of GHG emissions that would be generated by construction of the proposed project was amortized over a 30-year operational period to represent long-term impacts.

[12] CARB, *California Greenhouse Gas Inventory for 2000-2015 – Trends of Emissions and Other Indicators*, June 2017.
[13] CARB, *Determination of Total Methane Emissions from the Aliso Canyon Natural Gas Leak Incident*, October 2016.

4.4.2 CEQA Significance Criteria

In accordance with Appendix G of the CEQA Guidelines, the proposed project would have a significant impact related to GHG if it would:

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

The CEQA Guidelines require lead agencies to adopt GHG thresholds of significance. When adopting these thresholds, the amended Guideline allows lead agencies to consider thresholds of significance adopted or recommended by other public agencies, or recommended by experts, provided that the thresholds are supported by substantial evidence, and/or to develop their own significance threshold. Neither the City nor the SCAQMD has officially adopted a quantitative threshold value for determining the significance of GHG emissions that will be generated by projects under CEQA. The SCAQMD published the *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold* in October 2008.[14] The document evaluated the analyses of the California Air Pollution Control Officers Associations (CAPCOA) White Paper as they applied to emissions of GHGs within the SCAQMD jurisdiction.

The SCAQMD convened a GHG CEQA Significance Threshold Stakeholder Working Group beginning in April of 2008 to examine alternatives for establishing quantitative GHG thresholds. A tiered screening methodology was outlined in the minutes of the final Working Group meeting on September 28, 2010.[15] Tier I consisted of determining whether the project qualified for an applicable categorical exemption under CEQA. A vast majority of projects do not qualify for such an exemption, and the GHG analysis would progress to Tier II. The Tier II screening would be based upon examining the project's consistency with a GHG reduction plan, typically included in a local general plan. The GHG reduction plan would comprise compliance with Assembly Bill 32 reduction goals, preparation of emissions estimates agreed upon by either CARB or the SCAQMD and compiled in a GHG emission inventory tracking system, and a process to monitor progress in achieving reduction targets and enforcement of corrective actions if Assembly Bill 32 goals were not met. In the absence of a local GHG reduction plan, or in the event that the project did not incorporate GHG reduction design features, the Working Group suggested moving on to a Tier III screening threshold based on annual mass emissions of carbon dioxide equivalents.

Under the Tier III methodology, the Working Group proposed a 10,000 $MTCO_2e$ per year threshold for industrial projects and a 3,000 $MTCO_2e$ annual threshold for commercial and residential projects, including mixed-use. On December 5, 2008, the SCAQMD adopted the 10,000 $MTCO_2e$ for industrial projects where the SCAQMD is the lead agency. These industrial projects are typically project such as refineries and power plants or related to rule making activities. The proposed trunk line is not an industrial project as it relates to the 10,000 $MTCO_2e$ per year threshold. The Working Group proposed to extend this threshold for use by all lead agencies within the SCAQMD jurisdiction. The 3,000 $MTCO_2e$ annual threshold value for commercial and residential projects was selected based on a regional capture rate of 90 percent of all proposed CEQA projects in the SCAQMD jurisdiction, consistent with the methodology employed by the CAPCOA White Paper. At the Tier III analysis level,

[14] SCAQMD, *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold*, October 2008.

[15] SCAQMD, *Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #15*, September 28, 2010, http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf?sfvrsn=2, accessed on September 5, 2018.

a project's GHG emissions would be less than significant if they remained below 3,000 $MTCO_2e$ on an annual basis.

The final proposed methodology, Tier V, relates to mitigation and CEQA offsets outlined in the CEQA Guidelines. Tier V would be utilized only if a project did not satisfy one of the previously outlined criteria for demonstrating less than significant impacts from GHG emissions.

Based on the available threshold concepts recommended by expert agencies, the assessment herein analyses operational emissions against SCAQMD's draft 3,000 MTCO2e bright-line threshold level. Per SCAQMD, projects below this bright-line significance criteria have a minimal contribution to cumulative global emissions and are considered to have less-than significant impacts.

4.5 ENVIRONMENTAL IMPACTS

4.5-1 Would the proposed project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Impact Analysis

Construction emissions were estimated using the same methodology as previously discussed in Air Quality. However, unlike the air quality analysis of daily emissions, the GHG analysis includes emissions for the entire construction process. It is anticipated that active construction would involve 1,060 days of open trench activities, 117 days of jack and bore activities, and 203 days of slip lining activities. CalEEMod has higher emission rates for equipment and trucks in 2019 than 2022 partially due to the slow turnover of the countywide construction fleet. Because a detailed schedule is not available at this time in the planning process, the analysis conservatively assumes that all GHG emissions would be generated in 2019. **Table 4-3** presents the estimated emissions of GHGs that would be released to the atmosphere on an annual basis. Construction of the proposed project would produce approximately 3,454 $MTCO_2e$, or 115 $MTCO_2e$ annually over a 30-year period. This mass rate is substantially below the most applicable quantitative draft interim threshold of 3,000 $MTCO_2e$ per year as recommended by the SCAQMD. Therefore, implementation of the proposed project will result in a less-than-significant impact related to GHG emissions.

TABLE 4-3: ESTIMATED ANNUAL GREENHOUSE GAS EMISSIONS

Method	Annual GHG Emissions ($MTCO_2e$ per Year)
Open Trench	3,097
Jack and Bore	141
Slip Lining	216
Total Emissions	3,454
Amortized Annual Emissions	**115**
SCAQMD Draft Interim Significance Threshold	**3,000**
Exceed Threshold?	No

/a/ Based on SCAQMD guidance, the emissions summary also includes construction emissions amortized over a 30-year span.
SOURCE: TAHA, 2018.

Mitigation Measure

Impacts will be less-than-significant, and no mitigation measures are required.

4.5-2 Would the proposed project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

Impact Analysis

There is no potential for the trunk line to conflict with GHG reduction plans. The original LACTL was installed in 1914 to serve the City of Los Angeles with water delivered by the Los Angeles Aqueduct to the Lower San Fernando Reservoir (later renamed the Lower Van Norman Reservoir), located in what is now the Van Norman Complex. The portion of the LACTL that would be replaced by the CTLN is a 72-inch-diameter riveted steel pipeline, which, at over 100 years in age, has severely corroded. Since 2000, it has experienced numerous leaks and ruptures, including a major collapse of approximately 400 feet of the pipeline within the LADWP Van Norman Complex. This northern portion of the LACTL is reaching the end of its service life and must be replaced to avoid further leaks and ruptures and the associated loss of service and potential damage. Replacing the LACTL with the 54-inch-diameter CTLN (rather than a 36-inch-diameter mainline that would be required for local distribution purposes) would provide trunk line system redundancy and resilience to help maintain service resulting from potential damage to one or more trunk lines during seismic events.

As previously discussed, the proposed project would not permanently increase emissions. GHG emissions are regionally cumulative in nature and it is highly unlikely construction of any individual project would generate GHG emissions of sufficient quantity to conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Standard construction procedures would be undertaken in accordance with SCAQMD and California Air Resources Board regulations applicable to heavy duty construction equipment and diesel haul trucks. Adhering to requirements pertinent to construction equipment maintenance and inspections and emissions standards, as well as diesel fleet requirements including idling time restrictions and maintenance, would ensure that construction of the proposed project would not conflict with GHG emissions reductions efforts.

Mitigation Measure

Impacts would be less-than-significant, and no mitigation measures are required.

4.7 NEPA ANALYSIS

USEPA has not issued explicit guidance or methods to conduct GHG analysis. Because there have been requirements set forth in California legislation and executive orders on climate change, the issue is addressed in the CEQA analysis may be used to inform the NEPA determination for the proposed project.

5.0 REFERENCES

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Western Regional Climate Center, *Local Climate Data Summaries*, http://www.wrrc.dri.edu.

APPENDIX

Air Quality Calculations

City Trunk Line North - 2019 Construction - Los Angeles-South Coast County, Summer

City Trunk Line North - 2019 Construction

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.50	21,780.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2020
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Updated based on project details.

Construction Phase - Updated based on project details.

Off-road Equipment - Updated based on project details.

Off-road Equipment - Updated based on project details.

Off-road Equipment - Updated based on project details.

Trips and VMT - Updated based on project details.

Grading - Updated based on project details.

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 Compliance

Table Name	Column Name	Default Value	New Value
tblGrading	MaterialExported	0.00	120.00
tblGrading	MaterialExported	0.00	12.00
tblGrading	MaterialExported	0.00	12.00
tblGrading	MaterialImported	0.00	120.00
tblGrading	MaterialImported	0.00	12.00
tblGrading	MaterialImported	0.00	12.00
tblLandUse	LandUseSquareFeet	0.00	21,780.00
tblLandUse	LotAcreage	0.00	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Jack and Bore
tblOffRoadEquipment	PhaseName		Open Trench
tblOffRoadEquipment	PhaseName		Jack and Bore
tblOffRoadEquipment	PhaseName		Slip Lining
tblOffRoadEquipment	PhaseName		Open Trench
tblOffRoadEquipment	PhaseName		Open Trench
tblOffRoadEquipment	PhaseName		Jack and Bore
tblOffRoadEquipment	PhaseName		Slip Lining
tblOffRoadEquipment	PhaseName		Slip Lining
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00

tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	4.3867	56.7072	34.2030	0.1121	3.2169	1.9212	5.1381	0.6138	1.8250	2.4388	0.0000	11,464.6800	11,464.6800	1.6527	0.0000	11,505.9978
Maximum	**4.3867**	**56.7072**	**34.2030**	**0.1121**	**3.2169**	**1.9212**	**5.1381**	**0.6138**	**1.8250**	**2.4388**	**0.0000**	**11,464.6800**	**11,464.6800**	**1.6527**	**0.0000**	**11,505.9978**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	4.3867	56.7072	34.2030	0.1121	2.2267	1.9212	4.1479	0.5060	1.8250	2.3310	0.0000	11,464.6800	11,464.6800	1.6527	0.0000	11,505.9978
Maximum	**4.3867**	**56.7072**	**34.2030**	**0.1121**	**2.2267**	**1.9212**	**4.1479**	**0.5060**	**1.8250**	**2.3310**	**0.0000**	**11,464.6800**	**11,464.6800**	**1.6527**	**0.0000**	**11,505.9978**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**30.78**	**0.00**	**19.27**	**17.56**	**0.00**	**4.42**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Open Trench	Site Preparation	12/16/2019	12/16/2019	5	1	Open Trench
2	Jack and Bore	Site Preparation	12/16/2019	12/16/2019	5	1	Jack and Bore
3	Slip Lining	Site Preparation	12/16/2019	12/16/2019	5	1	Slip Lining

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Open Trench	Cranes	1	3.00	231	0.29
Open Trench	Excavators	1	8.00	158	0.38
Open Trench	Generator Sets	1	8.00	84	0.74
Open Trench	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Jack and Bore	Bore/Drill Rigs	1	8.00	221	0.50
Jack and Bore	Cranes	1	3.00	231	0.29
Jack and Bore	Generator Sets	1	8.00	84	0.74
Jack and Bore	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Slip Lining	Cranes	1	3.00	231	0.29
Slip Lining	Generator Sets	1	8.00	84	0.74

Slip Lining	Rubber Tired Loaders	1	8.00	203	0.36
Slip Lining	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Open Trench	4	20.00	40.00	40.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore	4	10.00	4.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Slip Lining	4	10.00	4.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Open Trench - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5574	0.0000	0.5574	0.0614	0.0000	0.0614			0.0000			0.0000
Off-Road	1.1266	11.0498	10.1489	0.0170		0.6067	0.6067		0.5762	0.5762		1,655.9060	1,655.9060	0.3663		1,665.0624
Total	**1.1266**	**11.0498**	**10.1489**	**0.0170**	**0.5574**	**0.6067**	**1.1641**	**0.0614**	**0.5762**	**0.6376**		**1,655.9060**	**1,655.9060**	**0.3663**		**1,665.0624**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3759	12.2513	2.6121	0.0320	0.6994	0.0450	0.7443	0.1917	0.0430	0.2347		3,458.0470	3,458.0470	0.2382		3,464.0008
Vendor	0.1662	4.6292	1.2283	0.0105	0.2561	0.0295	0.2856	0.0737	0.0282	0.1020		1,115.2585	1,115.2585	0.0715		1,117.0452
Worker	0.0999	0.0734	0.9643	2.4400e-003	0.2236	1.9300e-003	0.2255	0.0593	1.7800e-003	0.0611		242.5906	242.5906	8.3300e-003		242.7989
Total	**0.6420**	**16.9539**	**4.8048**	**0.0449**	**1.1790**	**0.0764**	**1.2554**	**0.3247**	**0.0730**	**0.3977**		**4,815.8961**	**4,815.8961**	**0.3180**		**4,823.8449**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2174	0.0000	0.2174	0.0239	0.0000	0.0239			0.0000			0.0000
Off-Road	1.1266	11.0498	10.1489	0.0170		0.6067	0.6067		0.5762	0.5762	0.0000	1,655.9060	1,655.9060	0.3663		1,665.0624
Total	**1.1266**	**11.0498**	**10.1489**	**0.0170**	**0.2174**	**0.6067**	**0.8241**	**0.0239**	**0.5762**	**0.6002**	**0.0000**	**1,655.9060**	**1,655.9060**	**0.3663**		**1,665.0624**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3759	12.2513	2.6121	0.0320	0.6994	0.0450	0.7443	0.1917	0.0430	0.2347		3,458.0470	3,458.0470	0.2382		3,464.0008

Vendor	0.1662	4.6292	1.2283	0.0105	0.2561	0.0295	0.2856	0.0737	0.0282	0.1020		1,115.2585	1,115.2585	0.0715		1,117.0452
Worker	0.0999	0.0734	0.9643	2.4400e-003	0.2236	1.9300e-003	0.2255	0.0593	1.7800e-003	0.0611		242.5906	242.5906	8.3300e-003		242.7989
Total	**0.6420**	**16.9539**	**4.8048**	**0.0449**	**1.1790**	**0.0764**	**1.2554**	**0.3247**	**0.0730**	**0.3977**		**4,815.8961**	**4,815.8961**	**0.3180**		**4,823.8449**

3.3 Jack and Bore - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5330	0.0000	0.5330	0.0577	0.0000	0.0577			0.0000			0.0000
Off-Road	1.1452	12.0597	8.9526	0.0212		0.5821	0.5821		0.5536	0.5536		2,072.0403	2,072.0403	0.4979		2,084.4883
Total	**1.1452**	**12.0597**	**8.9526**	**0.0212**	**0.5330**	**0.5821**	**1.1150**	**0.0577**	**0.5536**	**0.6112**		**2,072.0403**	**2,072.0403**	**0.4979**		**2,084.4883**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0376	1.2251	0.2612	3.2000e-003	0.0699	4.5000e-003	0.0744	0.0192	4.3000e-003	0.0235		345.8047	345.8047	0.0238		346.4001
Vendor	0.0166	0.4629	0.1228	1.0500e-003	0.0256	2.9500e-003	0.0286	7.3700e-003	2.8200e-003	0.0102		111.5259	111.5259	7.1500e-003		111.7045
Worker	0.0500	0.0367	0.4822	1.2200e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		121.2953	121.2953	4.1700e-003		121.3995
Total	**0.1042**	**1.7248**	**0.8662**	**5.4700e-003**	**0.2073**	**8.4100e-003**	**0.2157**	**0.0562**	**8.0100e-003**	**0.0642**		**578.6258**	**578.6258**	**0.0351**		**579.5041**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2079	0.0000	0.2079	0.0225	0.0000	0.0225			0.0000			0.0000
Off-Road	1.1452	12.0597	8.9526	0.0212		0.5821	0.5821		0.5536	0.5536	0.0000	2,072.0403	2,072.0403	0.4979		2,084.4883
Total	**1.1452**	**12.0597**	**8.9526**	**0.0212**	**0.2079**	**0.5821**	**0.7899**	**0.0225**	**0.5536**	**0.5761**	**0.0000**	**2,072.0403**	**2,072.0403**	**0.4979**		**2,084.4883**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0376	1.2251	0.2612	3.2000e-003	0.0699	4.5000e-003	0.0744	0.0192	4.3000e-003	0.0235		345.8047	345.8047	0.0238		346.4001
Vendor	0.0166	0.4629	0.1228	1.0500e-003	0.0256	2.9500e-003	0.0286	7.3700e-003	2.8200e-003	0.0102		111.5259	111.5259	7.1500e-003		111.7045
Worker	0.0500	0.0367	0.4822	1.2200e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		121.2953	121.2953	4.1700e-003		121.3995
Total	**0.1042**	**1.7248**	**0.8662**	**5.4700e-003**	**0.2073**	**8.4100e-003**	**0.2157**	**0.0562**	**8.0100e-003**	**0.0642**		**578.6258**	**578.6258**	**0.0351**		**579.5041**

3.4 Slip Lining - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5330	0.0000	0.5330	0.0577	0.0000	0.0577			0.0000			0.0000
Off-Road	1.2646	13.1942	8.5644	0.0181		0.6392	0.6392		0.6061	0.6061		1,763.5860	1,763.5860	0.4003		1,773.5941
Total	**1.2646**	**13.1942**	**8.5644**	**0.0181**	**0.5330**	**0.6392**	**1.1722**	**0.0577**	**0.6061**	**0.6638**		**1,763.5860**	**1,763.5860**	**0.4003**		**1,773.5941**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0376	1.2251	0.2612	3.2000e-003	0.0699	4.5000e-003	0.0744	0.0192	4.3000e-003	0.0235		345.8047	345.8047	0.0238		346.4001
Vendor	0.0166	0.4629	0.1228	1.0500e-003	0.0256	2.9500e-003	0.0286	7.3700e-003	2.8200e-003	0.0102		111.5259	111.5259	7.1500e-003		111.7045
Worker	0.0500	0.0367	0.4822	1.2200e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		121.2953	121.2953	4.1700e-003		121.3995
Total	**0.1042**	**1.7248**	**0.8662**	**5.4700e-003**	**0.2073**	**8.4100e-003**	**0.2157**	**0.0562**	**8.0100e-003**	**0.0642**		**578.6258**	**578.6258**	**0.0351**		**579.5041**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2079	0.0000	0.2079	0.0225	0.0000	0.0225			0.0000			0.0000

Off-Road	1.2646	13.1942	8.5644	0.0181		0.6392	0.6392		0.6061	0.6061	0.0000	1,763.5860	1,763.5860	0.4003		1,773.5941
Total	**1.2646**	**13.1942**	**8.5644**	**0.0181**	**0.2079**	**0.6392**	**0.8471**	**0.0225**	**0.6061**	**0.6286**	**0.0000**	**1,763.5860**	**1,763.5860**	**0.4003**		**1,773.5941**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0376	1.2251	0.2612	3.2000e-003	0.0699	4.5000e-003	0.0744	0.0192	4.3000e-003	0.0235		345.8047	345.8047	0.0238		346.4001
Vendor	0.0166	0.4629	0.1228	1.0500e-003	0.0256	2.9500e-003	0.0286	7.3700e-003	2.8200e-003	0.0102		111.5259	111.5259	7.1500e-003		111.7045
Worker	0.0500	0.0367	0.4822	1.2200e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		121.2953	121.2953	4.1700e-003		121.3995
Total	**0.1042**	**1.7248**	**0.8662**	**5.4700e-003**	**0.2073**	**8.4100e-003**	**0.2157**	**0.0562**	**8.0100e-003**	**0.0642**		**578.6258**	**578.6258**	**0.0351**		**579.5041**

City Trunk Line North - 2022 Construction - Los Angeles-South Coast County, Summer

City Trunk Line North - 2022 Construction

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.50	21,780.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2022
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Updated based on project details.

Construction Phase - Updated based on project details.

Off-road Equipment - Updated based on project details.

Off-road Equipment - Updated based on project details.

Off-road Equipment - Updated based on project details.

Trips and VMT - Updated based on project details.

Grading - Updated based on project details.

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 Compliance

Table Name	Column Name	Default Value	New Value
tblGrading	MaterialExported	0.00	120.00
tblGrading	MaterialExported	0.00	12.00
tblGrading	MaterialExported	0.00	12.00
tblGrading	MaterialImported	0.00	120.00
tblGrading	MaterialImported	0.00	12.00
tblGrading	MaterialImported	0.00	12.00
tblLandUse	LandUseSquareFeet	0.00	21,780.00
tblLandUse	LotAcreage	0.00	0.50
tblOffRoadEquipment	HorsePower	84.00	81.00
tblOffRoadEquipment	LoadFactor	0.74	0.73
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Jack and Bore
tblOffRoadEquipment	PhaseName		Open Trench
tblOffRoadEquipment	PhaseName		Jack and Bore
tblOffRoadEquipment	PhaseName		Slip Lining
tblOffRoadEquipment	PhaseName		Open Trench
tblOffRoadEquipment	PhaseName		Open Trench
tblOffRoadEquipment	PhaseName		Jack and Bore
tblOffRoadEquipment	PhaseName		Slip Lining
tblOffRoadEquipment	PhaseName		Slip Lining
tblTripsAndVMT	HaulingTripNumber	0.00	40.00

tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.2839	41.9439	32.1463	0.1097	3.2171	1.2057	4.4227	0.6138	1.1455	1.7593	0.0000	11,152.6802	11,152.6802	1.5948	0.0000	11,192.5504
Maximum	**3.2839**	**41.9439**	**32.1463**	**0.1097**	**3.2171**	**1.2057**	**4.4227**	**0.6138**	**1.1455**	**1.7593**	**0.0000**	**11,152.6802**	**11,152.6802**	**1.5948**	**0.0000**	**11,192.5504**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.2839	41.9439	32.1463	0.1097	2.2269	1.2057	3.4325	0.5060	1.1455	1.6515	0.0000	11,152.6802	11,152.6802	1.5948	0.0000	11,192.5504

Maximum	**3.2839**	**41.9439**	**32.1463**	**0.1097**	**2.2269**	**1.2057**	**3.4325**	**0.5060**	**1.1455**	**1.6515**	**0.0000**	**11,152.6802**	**11,152.6802**	**1.5948**	**0.0000**	**11,192.5504**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**30.78**	**0.00**	**22.39**	**17.56**	**0.00**	**6.13**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Open Trench	Site Preparation	1/3/2022	1/3/2022	5	1	Open Trench
2	Jack and Bore	Site Preparation	1/3/2022	1/3/2022	5	1	Jack and Bore
3	Slip Lining	Site Preparation	1/3/2022	1/3/2022	5	1	Slip Lining

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Open Trench	Cranes	1	3.00	231	0.29
Open Trench	Excavators	1	8.00	158	0.38
Open Trench	Generator Sets	1	8.00	81	0.73
Open Trench	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Jack and Bore	Bore/Drill Rigs	1	8.00	221	0.50
Jack and Bore	Cranes	1	3.00	231	0.29

Jack and Bore	Generator Sets	1	8.00	84	0.74
Jack and Bore	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Slip Lining	Cranes	1	3.00	231	0.29
Slip Lining	Generator Sets	1	8.00	84	0.74
Slip Lining	Rubber Tired Loaders	1	8.00	203	0.36
Slip Lining	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Open Trench	4	20.00	40.00	40.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore	4	10.00	4.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Slip Lining	4	10.00	4.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Open Trench - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5574	0.0000	0.5574	0.0614	0.0000	0.0614			0.0000			0.0000
Off-Road	0.8209	7.8072	9.6995	0.0167		0.3809	0.3809		0.3616	0.3616		1,603.4802	1,603.4802	0.3551		1,612.3571
Total	**0.8209**	**7.8072**	**9.6995**	**0.0167**	**0.5574**	**0.3809**	**0.9383**	**0.0614**	**0.3616**	**0.4230**		**1,603.4802**	**1,603.4802**	**0.3551**		**1,612.3571**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3174	9.9675	2.4902	0.0308	0.6995	0.0286	0.7281	0.1917	0.0274	0.2191		3,345.7399	3,345.7399	0.2263		3,351.3980
Vendor	0.1141	3.6932	0.9606	0.0102	0.2561	6.9400e-003	0.2630	0.0737	6.6400e-003	0.0804		1,089.9436	1,089.9436	0.0626		1,091.5072
Worker	0.0803	0.0532	0.7432	2.2100e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		219.7425	219.7425	6.0600e-003		219.8941
Total	**0.5118**	**13.7139**	**4.1941**	**0.0432**	**1.1791**	**0.0373**	**1.2164**	**0.3248**	**0.0356**	**0.3604**		**4,655.4259**	**4,655.4259**	**0.2949**		**4,662.7993**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2174	0.0000	0.2174	0.0239	0.0000	0.0239			0.0000			0.0000
Off-Road	0.8209	7.8072	9.6995	0.0167		0.3809	0.3809		0.3616	0.3616	0.0000	1,603.4802	1,603.4802	0.3551		1,612.3571
Total	**0.8209**	**7.8072**	**9.6995**	**0.0167**	**0.2174**	**0.3809**	**0.5983**	**0.0239**	**0.3616**	**0.3856**	**0.0000**	**1,603.4802**	**1,603.4802**	**0.3551**		**1,612.3571**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.3174	9.9675	2.4902	0.0308	0.6995	0.0286	0.7281	0.1917	0.0274	0.2191		3,345.7399	3,345.7399	0.2263		3,351.3980
Vendor	0.1141	3.6932	0.9606	0.0102	0.2561	6.9400e-003	0.2630	0.0737	6.6400e-003	0.0804		1,089.9436	1,089.9436	0.0626		1,091.5072
Worker	0.0803	0.0532	0.7432	2.2100e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		219.7425	219.7425	6.0600e-003		219.8941
Total	**0.5118**	**13.7139**	**4.1941**	**0.0432**	**1.1791**	**0.0373**	**1.2164**	**0.3248**	**0.0356**	**0.3604**		**4,655.4259**	**4,655.4259**	**0.2949**		**4,662.7993**

3.3 Jack and Bore - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5330	0.0000	0.5330	0.0577	0.0000	0.0577			0.0000			0.0000
Off-Road	0.8587	8.4394	8.6647	0.0213		0.3749	0.3749		0.3567	0.3567		2,047.3957	2,047.3957	0.4903		2,059.6524
Total	**0.8587**	**8.4394**	**8.6647**	**0.0213**	**0.5330**	**0.3749**	**0.9079**	**0.0577**	**0.3567**	**0.4144**		**2,047.3957**	**2,047.3957**	**0.4903**		**2,059.6524**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0317	0.9968	0.2490	3.0800e-003	0.0699	2.8600e-003	0.0728	0.0192	2.7400e-003	0.0219		334.5740	334.5740	0.0226		335.1398
Vendor	0.0114	0.3693	0.0961	1.0200e-003	0.0256	6.9000e-004	0.0263	7.3700e-003	6.6000e-004	8.0400e-003		108.9944	108.9944	6.2500e-003		109.1507

Worker	0.0402	0.0266	0.3716	1.1000e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305		109.8712	109.8712	3.0300e-003		109.9470
Total	**0.0833**	**1.3927**	**0.7167**	**5.2000e-003**	**0.2073**	**4.4200e-003**	**0.2118**	**0.0562**	**4.2100e-003**	**0.0604**		**553.4396**	**553.4396**	**0.0319**		**554.2376**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2079	0.0000	0.2079	0.0225	0.0000	0.0225			0.0000			0.0000
Off-Road	0.8587	8.4394	8.6647	0.0213		0.3749	0.3749		0.3567	0.3567	0.0000	2,047.3957	2,047.3957	0.4903		2,059.6524
Total	**0.8587**	**8.4394**	**8.6647**	**0.0213**	**0.2079**	**0.3749**	**0.5828**	**0.0225**	**0.3567**	**0.3792**	**0.0000**	**2,047.3957**	**2,047.3957**	**0.4903**		**2,059.6524**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0317	0.9968	0.2490	3.0800e-003	0.0699	2.8600e-003	0.0728	0.0192	2.7400e-003	0.0219		334.5740	334.5740	0.0226		335.1398
Vendor	0.0114	0.3693	0.0961	1.0200e-003	0.0256	6.9000e-004	0.0263	7.3700e-003	6.6000e-004	8.0400e-003		108.9944	108.9944	6.2500e-003		109.1507
Worker	0.0402	0.0266	0.3716	1.1000e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305		109.8712	109.8712	3.0300e-003		109.9470
Total	**0.0833**	**1.3927**	**0.7167**	**5.2000e-003**	**0.2073**	**4.4200e-003**	**0.2118**	**0.0562**	**4.2100e-003**	**0.0604**		**553.4396**	**553.4396**	**0.0319**		**554.2376**

3.4 Slip Lining - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5330	0.0000	0.5330	0.0577	0.0000	0.0577			0.0000			0.0000
Off-Road	0.9259	9.1980	8.1547	0.0181		0.4036	0.4036		0.3831	0.3831		1,739.4992	1,739.4992	0.3907		1,749.2664
Total	**0.9259**	**9.1980**	**8.1547**	**0.0181**	**0.5330**	**0.4036**	**0.9366**	**0.0577**	**0.3831**	**0.4408**		**1,739.4992**	**1,739.4992**	**0.3907**		**1,749.2664**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0317	0.9968	0.2490	3.0800e-003	0.0699	2.8600e-003	0.0728	0.0192	2.7400e-003	0.0219		334.5740	334.5740	0.0226		335.1398
Vendor	0.0114	0.3693	0.0961	1.0200e-003	0.0256	6.9000e-004	0.0263	7.3700e-003	6.6000e-004	8.0400e-003		108.9944	108.9944	6.2500e-003		109.1507
Worker	0.0402	0.0266	0.3716	1.1000e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305		109.8712	109.8712	3.0300e-003		109.9470
Total	**0.0833**	**1.3927**	**0.7167**	**5.2000e-003**	**0.2073**	**4.4200e-003**	**0.2118**	**0.0562**	**4.2100e-003**	**0.0604**		**553.4396**	**553.4396**	**0.0319**		**554.2376**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.2079	0.0000	0.2079	0.0225	0.0000	0.0225			0.0000			0.0000
Off-Road	0.9259	9.1980	8.1547	0.0181		0.4036	0.4036		0.3831	0.3831	0.0000	1,739.4992	1,739.4992	0.3907		1,749.2664
Total	**0.9259**	**9.1980**	**8.1547**	**0.0181**	**0.2079**	**0.4036**	**0.6115**	**0.0225**	**0.3831**	**0.4056**	**0.0000**	**1,739.4992**	**1,739.4992**	**0.3907**		**1,749.2664**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0317	0.9968	0.2490	3.0800e-003	0.0699	2.8600e-003	0.0728	0.0192	2.7400e-003	0.0219		334.5740	334.5740	0.0226		335.1398
Vendor	0.0114	0.3693	0.0961	1.0200e-003	0.0256	6.9000e-004	0.0263	7.3700e-003	6.6000e-004	8.0400e-003		108.9944	108.9944	6.2500e-003		109.1507
Worker	0.0402	0.0266	0.3716	1.1000e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305		109.8712	109.8712	3.0300e-003		109.9470
Total	**0.0833**	**1.3927**	**0.7167**	**5.2000e-003**	**0.2073**	**4.4200e-003**	**0.2118**	**0.0562**	**4.2100e-003**	**0.0604**		**553.4396**	**553.4396**	**0.0319**		**554.2376**

City Trunk Line North - 2019 Construction - Los Angeles-South Coast County, Annual

City Trunk Line North - 2019 Construction

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.50	21,780.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2020
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Updated based on project details.

Construction Phase - Updated based on project details.

Off-road Equipment - Updated based on project details.

Off-road Equipment - Updated based on project details.

Off-road Equipment - Updated based on project details.

Trips and VMT - Updated based on project details.

Grading - Updated based on project details.

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 Compliance

Table Name	Column Name	Default Value	New Value
tblGrading	MaterialExported	0.00	120.00
tblGrading	MaterialExported	0.00	12.00
tblGrading	MaterialExported	0.00	12.00
tblGrading	MaterialImported	0.00	120.00
tblGrading	MaterialImported	0.00	12.00
tblGrading	MaterialImported	0.00	12.00
tblLandUse	LandUseSquareFeet	0.00	21,780.00
tblLandUse	LotAcreage	0.00	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Jack and Bore
tblOffRoadEquipment	PhaseName		Open Trench
tblOffRoadEquipment	PhaseName		Jack and Bore
tblOffRoadEquipment	PhaseName		Slip Lining
tblOffRoadEquipment	PhaseName		Open Trench
tblOffRoadEquipment	PhaseName		Open Trench
tblOffRoadEquipment	PhaseName		Jack and Bore
tblOffRoadEquipment	PhaseName		Slip Lining
tblOffRoadEquipment	PhaseName		Slip Lining
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00

tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	2.2000e-003	0.0287	0.0171	6.0000e-005	1.5900e-003	9.6000e-004	2.5600e-003	3.0000e-004	9.1000e-004	1.2200e-003	0.0000	5.1706	5.1706	7.5000e-004	0.0000	5.1894
Maximum	**2.2000e-003**	**0.0287**	**0.0171**	**6.0000e-005**	**1.5900e-003**	**9.6000e-004**	**2.5600e-003**	**3.0000e-004**	**9.1000e-004**	**1.2200e-003**	**0.0000**	**5.1706**	**5.1706**	**7.5000e-004**	**0.0000**	**5.1894**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	2.2000e-003	0.0287	0.0171	6.0000e-005	1.1000e-003	9.6000e-004	2.0600e-003	2.5000e-004	9.1000e-004	1.1600e-003	0.0000	5.1706	5.1706	7.5000e-004	0.0000	5.1894
Maximum	**2.2000e-003**	**0.0287**	**0.0171**	**6.0000e-005**	**1.1000e-003**	**9.6000e-004**	**2.0600e-003**	**2.5000e-004**	**9.1000e-004**	**1.1600e-003**	**0.0000**	**5.1706**	**5.1706**	**7.5000e-004**	**0.0000**	**5.1894**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	30.82	0.00	19.53	16.67	0.00	4.92	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Open Trench	Site Preparation	12/16/2019	12/16/2019	5	1	Open Trench
2	Jack and Bore	Site Preparation	12/16/2019	12/16/2019	5	1	Jack and Bore
3	Slip Lining	Site Preparation	12/16/2019	12/16/2019	5	1	Slip Lining

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Open Trench	Cranes	1	3.00	231	0.29
Open Trench	Excavators	1	8.00	158	0.38
Open Trench	Generator Sets	1	8.00	84	0.74
Open Trench	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Jack and Bore	Bore/Drill Rigs	1	8.00	221	0.50
Jack and Bore	Cranes	1	3.00	231	0.29
Jack and Bore	Generator Sets	1	8.00	84	0.74
Jack and Bore	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Slip Lining	Cranes	1	3.00	231	0.29
Slip Lining	Generator Sets	1	8.00	84	0.74
Slip Lining	Rubber Tired Loaders	1	8.00	203	0.36
Slip Lining	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Open Trench	4	20.00	40.00	40.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore	4	10.00	4.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Slip Lining	4	10.00	4.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Open Trench - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.8000e-004	0.0000	2.8000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.6000e-004	5.5200e-003	5.0700e-003	1.0000e-005		3.0000e-004	3.0000e-004		2.9000e-004	2.9000e-004	0.0000	0.7511	0.7511	1.7000e-004	0.0000	0.7553
Total	**5.6000e-004**	**5.5200e-003**	**5.0700e-003**	**1.0000e-005**	**2.8000e-004**	**3.0000e-004**	**5.8000e-004**	**3.0000e-005**	**2.9000e-004**	**3.2000e-004**	**0.0000**	**0.7511**	**0.7511**	**1.7000e-004**	**0.0000**	**0.7553**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9000e-004	6.3300e-003	1.3400e-003	2.0000e-005	3.4000e-004	2.0000e-005	3.7000e-004	9.0000e-005	2.0000e-005	1.2000e-004	0.0000	1.5574	1.5574	1.1000e-004	0.0000	1.5601
Vendor	8.0000e-005	2.3600e-003	6.5000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5001	0.5001	3.0000e-005	0.0000	0.5010
Worker	5.0000e-005	4.0000e-005	4.5000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1053	0.1053	0.0000	0.0000	0.1054
Total	**3.2000e-004**	**8.7300e-003**	**2.4400e-003**	**3.0000e-005**	**5.8000e-004**	**3.0000e-005**	**6.2000e-004**	**1.6000e-004**	**3.0000e-005**	**2.0000e-004**	**0.0000**	**2.1628**	**2.1628**	**1.4000e-004**	**0.0000**	**2.1665**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1000e-004	0.0000	1.1000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.6000e-004	5.5200e-003	5.0700e-003	1.0000e-005		3.0000e-004	3.0000e-004		2.9000e-004	2.9000e-004	0.0000	0.7511	0.7511	1.7000e-004	0.0000	0.7553
Total	**5.6000e-004**	**5.5200e-003**	**5.0700e-003**	**1.0000e-005**	**1.1000e-004**	**3.0000e-004**	**4.1000e-004**	**1.0000e-005**	**2.9000e-004**	**3.0000e-004**	**0.0000**	**0.7511**	**0.7511**	**1.7000e-004**	**0.0000**	**0.7553**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	1.9000e-004	6.3300e-003	1.3400e-003	2.0000e-005	3.4000e-004	2.0000e-005	3.7000e-004	9.0000e-005	2.0000e-005	1.2000e-004	0.0000	1.5574	1.5574	1.1000e-004	0.0000	1.5601
Vendor	8.0000e-005	2.3600e-003	6.5000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5001	0.5001	3.0000e-005	0.0000	0.5010
Worker	5.0000e-005	4.0000e-005	4.5000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1053	0.1053	0.0000	0.0000	0.1054
Total	**3.2000e-004**	**8.7300e-003**	**2.4400e-003**	**3.0000e-005**	**5.8000e-004**	**3.0000e-005**	**6.2000e-004**	**1.6000e-004**	**3.0000e-005**	**2.0000e-004**	**0.0000**	**2.1628**	**2.1628**	**1.4000e-004**	**0.0000**	**2.1665**

3.3 Jack and Bore - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.7000e-004	6.0300e-003	4.4800e-003	1.0000e-005		2.9000e-004	2.9000e-004		2.8000e-004	2.8000e-004	0.0000	0.9399	0.9399	2.3000e-004	0.0000	0.9455
Total	**5.7000e-004**	**6.0300e-003**	**4.4800e-003**	**1.0000e-005**	**2.7000e-004**	**2.9000e-004**	**5.6000e-004**	**3.0000e-005**	**2.8000e-004**	**3.1000e-004**	**0.0000**	**0.9399**	**0.9399**	**2.3000e-004**	**0.0000**	**0.9455**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	6.3000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1557	0.1557	1.0000e-005	0.0000	0.1560
Vendor	1.0000e-005	2.4000e-004	6.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0500	0.0500	0.0000	0.0000	0.0501
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0527	0.0527	0.0000	0.0000	0.0527

Total	**6.0000e-005**	**8.9000e-004**	**4.2000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.2584**	**0.2584**	**1.0000e-005**	**0.0000**	**0.2588**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0000e-004	0.0000	1.0000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.7000e-004	6.0300e-003	4.4800e-003	1.0000e-005		2.9000e-004	2.9000e-004		2.8000e-004	2.8000e-004	0.0000	0.9399	0.9399	2.3000e-004	0.0000	0.9455
Total	**5.7000e-004**	**6.0300e-003**	**4.4800e-003**	**1.0000e-005**	**1.0000e-004**	**2.9000e-004**	**3.9000e-004**	**1.0000e-005**	**2.8000e-004**	**2.9000e-004**	**0.0000**	**0.9399**	**0.9399**	**2.3000e-004**	**0.0000**	**0.9455**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	6.3000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1557	0.1557	1.0000e-005	0.0000	0.1560
Vendor	1.0000e-005	2.4000e-004	6.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0500	0.0500	0.0000	0.0000	0.0501
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0527	0.0527	0.0000	0.0000	0.0527
Total	**6.0000e-005**	**8.9000e-004**	**4.2000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.2584**	**0.2584**	**1.0000e-005**	**0.0000**	**0.2588**

3.4 Slip Lining - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.3000e-004	6.6000e-003	4.2800e-003	1.0000e-005		3.2000e-004	3.2000e-004		3.0000e-004	3.0000e-004	0.0000	0.8000	0.8000	1.8000e-004	0.0000	0.8045
Total	**6.3000e-004**	**6.6000e-003**	**4.2800e-003**	**1.0000e-005**	**2.7000e-004**	**3.2000e-004**	**5.9000e-004**	**3.0000e-005**	**3.0000e-004**	**3.3000e-004**	**0.0000**	**0.8000**	**0.8000**	**1.8000e-004**	**0.0000**	**0.8045**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	6.3000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1557	0.1557	1.0000e-005	0.0000	0.1560
Vendor	1.0000e-005	2.4000e-004	6.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0500	0.0500	0.0000	0.0000	0.0501
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0527	0.0527	0.0000	0.0000	0.0527
Total	**6.0000e-005**	**8.9000e-004**	**4.2000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.2584**	**0.2584**	**1.0000e-005**	**0.0000**	**0.2588**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Fugitive Dust					1.0000e-004	0.0000	1.0000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.3000e-004	6.6000e-003	4.2800e-003	1.0000e-005		3.2000e-004	3.2000e-004		3.0000e-004	3.0000e-004	0.0000	0.8000	0.8000	1.8000e-004	0.0000	0.8045
Total	**6.3000e-004**	**6.6000e-003**	**4.2800e-003**	**1.0000e-005**	**1.0000e-004**	**3.2000e-004**	**4.2000e-004**	**1.0000e-005**	**3.0000e-004**	**3.1000e-004**	**0.0000**	**0.8000**	**0.8000**	**1.8000e-004**	**0.0000**	**0.8045**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	6.3000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1557	0.1557	1.0000e-005	0.0000	0.1560
Vendor	1.0000e-005	2.4000e-004	6.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0500	0.0500	0.0000	0.0000	0.0501
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0527	0.0527	0.0000	0.0000	0.0527
Total	**6.0000e-005**	**8.9000e-004**	**4.2000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.2584**	**0.2584**	**1.0000e-005**	**0.0000**	**0.2588**

City Trunk Line North - 2022 Construction - Los Angeles-South Coast County, Annual

City Trunk Line North - 2022 Construction

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.50	21,780.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2022
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Updated based on project details.

Construction Phase - Updated based on project details.

Off-road Equipment - Updated based on project details.

Off-road Equipment - Updated based on project details.

Off-road Equipment - Updated based on project details.

Trips and VMT - Updated based on project details.

Grading - Updated based on project details.

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 Compliance

Table Name	Column Name	Default Value	New Value
tblGrading	MaterialExported	0.00	120.00
tblGrading	MaterialExported	0.00	12.00
tblGrading	MaterialExported	0.00	12.00
tblGrading	MaterialImported	0.00	120.00
tblGrading	MaterialImported	0.00	12.00
tblGrading	MaterialImported	0.00	12.00
tblLandUse	LandUseSquareFeet	0.00	21,780.00
tblLandUse	LotAcreage	0.00	0.50
tblOffRoadEquipment	HorsePower	84.00	81.00
tblOffRoadEquipment	LoadFactor	0.74	0.73
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Jack and Bore
tblOffRoadEquipment	PhaseName		Open Trench
tblOffRoadEquipment	PhaseName		Jack and Bore
tblOffRoadEquipment	PhaseName		Slip Lining
tblOffRoadEquipment	PhaseName		Open Trench
tblOffRoadEquipment	PhaseName		Open Trench
tblOffRoadEquipment	PhaseName		Jack and Bore
tblOffRoadEquipment	PhaseName		Slip Lining
tblOffRoadEquipment	PhaseName		Slip Lining
tblTripsAndVMT	HaulingTripNumber	0.00	40.00

tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	1.6500e-003	0.0212	0.0161	5.0000e-005	1.5900e-003	6.0000e-004	2.2000e-003	3.0000e-004	5.7000e-004	8.8000e-004	0.0000	5.0300	5.0300	7.3000e-004	0.0000	5.0482
Maximum	**1.6500e-003**	**0.0212**	**0.0161**	**5.0000e-005**	**1.5900e-003**	**6.0000e-004**	**2.2000e-003**	**3.0000e-004**	**5.7000e-004**	**8.8000e-004**	**0.0000**	**5.0300**	**5.0300**	**7.3000e-004**	**0.0000**	**5.0482**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	1.6500e-003	0.0212	0.0161	5.0000e-005	1.1000e-003	6.0000e-004	1.7000e-003	2.5000e-004	5.7000e-004	8.2000e-004	0.0000	5.0300	5.0300	7.3000e-004	0.0000	5.0482
Maximum	**1.6500e-003**	**0.0212**	**0.0161**	**5.0000e-005**	**1.1000e-003**	**6.0000e-004**	**1.7000e-003**	**2.5000e-004**	**5.7000e-004**	**8.2000e-004**	**0.0000**	**5.0300**	**5.0300**	**7.3000e-004**	**0.0000**	**5.0482**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**30.82**	**0.00**	**22.73**	**16.67**	**0.00**	**6.82**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-3-2022**	**4-2-2022**	0.0162	0.0162
		Highest	0.0162	0.0162

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Open Trench	Site Preparation	1/3/2022	1/3/2022	5	1	Open Trench
2	Jack and Bore	Site Preparation	1/3/2022	1/3/2022	5	1	Jack and Bore
3	Slip Lining	Site Preparation	1/3/2022	1/3/2022	5	1	Slip Lining

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Open Trench	Cranes	1	3.00	231	0.29
Open Trench	Excavators	1	8.00	158	0.38
Open Trench	Generator Sets	1	8.00	81	0.73
Open Trench	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Jack and Bore	Bore/Drill Rigs	1	8.00	221	0.50

Jack and Bore	Cranes	1	3.00	231	0.29
Jack and Bore	Generator Sets	1	8.00	84	0.74
Jack and Bore	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Slip Lining	Cranes	1	3.00	231	0.29
Slip Lining	Generator Sets	1	8.00	84	0.74
Slip Lining	Rubber Tired Loaders	1	8.00	203	0.36
Slip Lining	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Open Trench	4	20.00	40.00	40.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore	4	10.00	4.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Slip Lining	4	10.00	4.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Open Trench - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.8000e-004	0.0000	2.8000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1000e-004	3.9000e-003	4.8500e-003	1.0000e-005		1.9000e-004	1.9000e-004		1.8000e-004	1.8000e-004	0.0000	0.7273	0.7273	1.6000e-004	0.0000	0.7314
Total	**4.1000e-004**	**3.9000e-003**	**4.8500e-003**	**1.0000e-005**	**2.8000e-004**	**1.9000e-004**	**4.7000e-004**	**3.0000e-005**	**1.8000e-004**	**2.1000e-004**	**0.0000**	**0.7273**	**0.7273**	**1.6000e-004**	**0.0000**	**0.7314**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6000e-004	5.1400e-003	1.2800e-003	2.0000e-005	3.4000e-004	1.0000e-005	3.6000e-004	9.0000e-005	1.0000e-005	1.1000e-004	0.0000	1.5065	1.5065	1.0000e-004	0.0000	1.5091
Vendor	6.0000e-005	1.8800e-003	5.1000e-004	1.0000e-005	1.3000e-004	0.0000	1.3000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.4887	0.4887	3.0000e-005	0.0000	0.4894
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0954	0.0954	0.0000	0.0000	0.0955
Total	**2.6000e-004**	**7.0500e-003**	**2.1400e-003**	**3.0000e-005**	**5.8000e-004**	**1.0000e-005**	**6.0000e-004**	**1.6000e-004**	**1.0000e-005**	**1.8000e-004**	**0.0000**	**2.0905**	**2.0905**	**1.3000e-004**	**0.0000**	**2.0939**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1000e-004	0.0000	1.1000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1000e-004	3.9000e-003	4.8500e-003	1.0000e-005		1.9000e-004	1.9000e-004		1.8000e-004	1.8000e-004	0.0000	0.7273	0.7273	1.6000e-004	0.0000	0.7314
Total	**4.1000e-004**	**3.9000e-003**	**4.8500e-003**	**1.0000e-005**	**1.1000e-004**	**1.9000e-004**	**3.0000e-004**	**1.0000e-005**	**1.8000e-004**	**1.9000e-004**	**0.0000**	**0.7273**	**0.7273**	**1.6000e-004**	**0.0000**	**0.7314**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	1.6000e-004	5.1400e-003	1.2800e-003	2.0000e-005	3.4000e-004	1.0000e-005	3.6000e-004	9.0000e-005	1.0000e-005	1.1000e-004	0.0000	1.5065	1.5065	1.0000e-004	0.0000	1.5091
Vendor	6.0000e-005	1.8800e-003	5.1000e-004	1.0000e-005	1.3000e-004	0.0000	1.3000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.4887	0.4887	3.0000e-005	0.0000	0.4894
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0954	0.0954	0.0000	0.0000	0.0955
Total	**2.6000e-004**	**7.0500e-003**	**2.1400e-003**	**3.0000e-005**	**5.8000e-004**	**1.0000e-005**	**6.0000e-004**	**1.6000e-004**	**1.0000e-005**	**1.8000e-004**	**0.0000**	**2.0905**	**2.0905**	**1.3000e-004**	**0.0000**	**2.0939**

3.3 Jack and Bore - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.3000e-004	4.2200e-003	4.3300e-003	1.0000e-005		1.9000e-004	1.9000e-004		1.8000e-004	1.8000e-004	0.0000	0.9287	0.9287	2.2000e-004	0.0000	0.9342
Total	**4.3000e-004**	**4.2200e-003**	**4.3300e-003**	**1.0000e-005**	**2.7000e-004**	**1.9000e-004**	**4.6000e-004**	**3.0000e-005**	**1.8000e-004**	**2.1000e-004**	**0.0000**	**0.9287**	**0.9287**	**2.2000e-004**	**0.0000**	**0.9342**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	5.1000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1507	0.1507	1.0000e-005	0.0000	0.1509
Vendor	1.0000e-005	1.9000e-004	5.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0489	0.0489	0.0000	0.0000	0.0489
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0477	0.0477	0.0000	0.0000	0.0477

Total	**5.0000e-005**	**7.2000e-004**	**3.5000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.2472**	**0.2472**	**1.0000e-005**	**0.0000**	**0.2476**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0000e-004	0.0000	1.0000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.3000e-004	4.2200e-003	4.3300e-003	1.0000e-005		1.9000e-004	1.9000e-004		1.8000e-004	1.8000e-004	0.0000	0.9287	0.9287	2.2000e-004	0.0000	0.9342
Total	**4.3000e-004**	**4.2200e-003**	**4.3300e-003**	**1.0000e-005**	**1.0000e-004**	**1.9000e-004**	**2.9000e-004**	**1.0000e-005**	**1.8000e-004**	**1.9000e-004**	**0.0000**	**0.9287**	**0.9287**	**2.2000e-004**	**0.0000**	**0.9342**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	5.1000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1507	0.1507	1.0000e-005	0.0000	0.1509
Vendor	1.0000e-005	1.9000e-004	5.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0489	0.0489	0.0000	0.0000	0.0489
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0477	0.0477	0.0000	0.0000	0.0477
Total	**5.0000e-005**	**7.2000e-004**	**3.5000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.2472**	**0.2472**	**1.0000e-005**	**0.0000**	**0.2476**

3.4 Slip Lining - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6000e-004	4.6000e-003	4.0800e-003	1.0000e-005		2.0000e-004	2.0000e-004		1.9000e-004	1.9000e-004	0.0000	0.7890	0.7890	1.8000e-004	0.0000	0.7935
Total	**4.6000e-004**	**4.6000e-003**	**4.0800e-003**	**1.0000e-005**	**2.7000e-004**	**2.0000e-004**	**4.7000e-004**	**3.0000e-005**	**1.9000e-004**	**2.2000e-004**	**0.0000**	**0.7890**	**0.7890**	**1.8000e-004**	**0.0000**	**0.7935**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	5.1000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1507	0.1507	1.0000e-005	0.0000	0.1509
Vendor	1.0000e-005	1.9000e-004	5.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0489	0.0489	0.0000	0.0000	0.0489
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0477	0.0477	0.0000	0.0000	0.0477
Total	**5.0000e-005**	**7.2000e-004**	**3.5000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.2472**	**0.2472**	**1.0000e-005**	**0.0000**	**0.2476**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Fugitive Dust					1.0000e-004	0.0000	1.0000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6000e-004	4.6000e-003	4.0800e-003	1.0000e-005		2.0000e-004	2.0000e-004		1.9000e-004	1.9000e-004	0.0000	0.7890	0.7890	1.8000e-004	0.0000	0.7935
Total	**4.6000e-004**	**4.6000e-003**	**4.0800e-003**	**1.0000e-005**	**1.0000e-004**	**2.0000e-004**	**3.0000e-004**	**1.0000e-005**	**1.9000e-004**	**2.0000e-004**	**0.0000**	**0.7890**	**0.7890**	**1.8000e-004**	**0.0000**	**0.7935**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	5.1000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1507	0.1507	1.0000e-005	0.0000	0.1509
Vendor	1.0000e-005	1.9000e-004	5.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0489	0.0489	0.0000	0.0000	0.0489
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0477	0.0477	0.0000	0.0000	0.0477
Total	**5.0000e-005**	**7.2000e-004**	**3.5000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.2472**	**0.2472**	**1.0000e-005**	**0.0000**	**0.2476**

General Conformity Analysis

Daily Emissions - 2019 (Day)					
Phase	**VOC**	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Open Trench	**1.7**	**14.9**	**28**	**2.1**	**1**
Jack and Bore	**1.2**	**9.9**	**13.8**	**1**	**0.7**
Slip Lining	**1.4**	**9.4**	**14.9**	**1**	**0.7**

Annual Emissions - 2019 (Tons)					
Phase	**VOC**	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Open Trench (200 Days)	**0.17**	**1.49**	**2.8**	**0.21**	**0.1**
Jack and Bore (50 Days)	**0.03**	**0.2475**	**0.345**	**0.025**	**0.0175**
Slip Lining (50 days)	**0.035**	**0.235**	**0.3725**	**0.025**	**0.0175**
Total Annual	**0.235**	**1.9725**	**3.5175**	**0.26**	**0.135**

APPENDIX B
Biological Resources Memorandum

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December 17, 2018

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Subject: City Trunk Line North Project, Biological Resources Memorandum

1. INTRODUCTION

The Los Angeles Department of Water and Power (LADWP) proposes to replace the remaining in-service section of the Los Angeles City Trunk Line (LACTL) with approximately 33,000 linear feet of 54-inch-diameter trunk line (the City Trunk Line North [CTLN] Project, referred to herein as the project). The new trunk line would originate at the LADWP Van Norman Complex in Sylmar and terminate adjacent to the Tujunga Spreading Grounds in Sun Valley.

AECOM was retained by LADWP to prepare a biological resource assessment of the City Trunk Line North Project in support of the California Environmental Quality Act (CEQA). In addition, LADWP is currently pursuing funding through the State Water Resources Control Board (SWRCB) Clean Water State Revolving Fund (SRF) for the project. Per requirements of the SRF Environmental Package application, a biological resources assessment prepared in support of the project is required. Therefore, this memorandum has been prepared in accordance with CEQA and the requirements of the SRF application.

This memo summarizes the results of a site survey conducted by AECOM to document existing biological conditions within the project site. This report includes the methods used to assess existing biological resources, the results of vegetation, wildlife, and habitat evaluation, the list of potential special-status species evaluated, and mitigation measures identified to minimize and avoid potential impacts to biological resources.

2. PROJECT DESCRIPTION

2.1 Project Location

The project would be located in the northeastern portion of the City of Los Angeles (City) (see Figures 1 and 2, Attachment A). The new trunk line would originate at the LADWP Van Norman Complex in Sylmar and terminate adjacent to the Tujunga Spreading Grounds in Sun Valley. The trunk line alignment generally extends north from Tujunga Spreading Grounds along Canterbury Avenue until Branford Street. At Branford Street, the trunk line alignment would be realigned east to Arleta Avenue and then continue north to Brand Boulevard. The trunk line would then be routed west along Brand Boulevard and San Fernando Mission Boulevard to Stranwood Avenue, continuing northwest on Stranwood Avenue into the LADWP-owned Van Norman Complex property.

2.2 Project Objectives

The objectives of the project are to: 1) replace the existing LACTCL from the Van Norman Complex to the connection with City Trunk Line South (CTLS) Unit 1; and 2) increase reliability and resiliency to the Los Angeles Reservoir service area.

2.3 Construction Scenario

As previously discussed, the proposed CTLN would follow the alignment of the existing LACTL at its northern and southern ends, but it would be realigned to the east, primarily in Arleta Avenue, for the majority of its length.

The CTLN would be built in two units based on the type of pipe material employed. Unit 1 would extend from the Van Norman Complex to Terra Bella Street, a distance of approximately 21,000 feet. The proposed trunk line would cross several active earthquake faults within Unit 1. Therefore, it has been determined that earthquake resistant ductile iron pipe (ERDIP) should be utilized to provide system resiliency during seismic events. Approximately 2,700 feet of Unit 1 would be located within the Van Norman Complex, and the balance would be located within public streets.

Based on preliminary estimates, approximately 14,000 feet of Unit 1 would be installed using traditional open-trench construction. The open-trench method involves the cutting of the road pavement and the excavation of a trench to the depth of the pipeline for the length of the installation. Approximately 5,000 feet of Unit 1 would be installed by slip-lining the new pipe within the existing LACTL. The slip-lining method would involve the excavation of launching and receiving pits at generally widely separated locations, depending on the straightness of the alignment, with no disturbance of the road surface between the pits.
In addition to the open-trench and slip-lining installation, a total of approximately 2,000 feet of the trunk line in Unit 1 would be installed using a jack and bore method at several sites along the alignment. Jack and bore involves installing the pipeline at greater depths from a launching pit to a receiving pit to avoid surface disturbance and minimize impacts at certain locations, including large road intersections, freeway underpasses, major substructure crossings, and channel crossings.

Unit 2 of the CTLN would extend from Terra Bella Street to the CTLS in Canterbury Avenue, just west of Tujunga Spreading Grounds, a distance of approximately 11,800 feet. The trunk line would not cross any active earthquake faults within Unit 2. Therefore, although pipe joints would be designed to withstand the applicable seismic loads, ERDIP is not required, and welded steel pipe would be utilized. All of Unit 2 would be located within public streets. Based on preliminary estimates, about 7,200 feet of Unit 2 would be installed using traditional open-trench construction, and about 3,100 feet would be installed by slip-lining the new pipe within the existing LACTL. In addition, a total of approximately 1,500 feet of the trunk line would be installed using a jack and bore method at several sites along the alignment.

2.4 Construction Procedures

Typical equipment utilized for the trunk line installation would include excavators, front loaders, lattice boom crawler cranes, dump trucks, and concrete trucks (for soil-cement slurry backfill of the trenches). Truck trips would be required for the hauling of excavated material and the delivery of construction equipment and materials, including pipe sections

and appurtenances, such as valves, meters, gages, and maintenance holes. The number of construction personnel at a given location would be a maximum of about 20, depending on the nature of the work being performed.

The installation of the CTLN would require the establishment of temporary work areas that would occupy traffic lanes, which, depending on the width of the roadway, would result in partial or complete street closures in the segment under construction. For open-trench construction in wider streets (i.e., four-lane thoroughfares approximately 60 feet or more in width), work areas may be 1,000 feet or more in length to allow for the continuous installation of the pipeline in longer spans. However, two-way traffic would be maintained throughout construction.

For open-trench construction in narrower streets (i.e., two-lane thoroughfares approximately 40 feet or less in width), the complete closure of the road would be necessary. However, work would be completed in smaller segments of several hundred feet to maintain as much access as possible at a given time along the roads, at intersections, and to driveways along the alignment. When practical, portions of the roadway under construction may also be reopened during non-work hours by removing barriers and placing steel plates over open trenches.

For slip-lining construction, which is anticipated to occur only in narrower road sections, traffic lanes between launching and receiving pits would remain open, but complete street closures may be required in the area where the pits are located.

Unit 1 and Unit 2 of the CTLN would be constructed as separate phases, with some overlap in the schedules of the phases. The construction of Unit 2 is anticipated to begin in late 2019 and be completed in late 2025, and the construction of Unit 1 is anticipated to begin in early 2022 and be completed in late 2028. The total construction time for the CTLN project is estimated to be approximately 9 years.

2.5 Best Management Practices

The following best management practices (BMPs) would be employed during construction of the project, to help minimize or eliminate potential impacts to the environment.

The proposed project would implement Rule 403 dust control measures required by the South Coast Air Quality Management District (SCAQMD), which would include the following:

- Water shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.
- The construction contractor shall utilize at least one of the following measures at each vehicle egress from the project site to a paved public road:
    a. Install a pad consisting of washed gravel maintained in clean condition to a depth of at least six inches and extending at least 30 feet wide and at least 50 feet long;
    b. Pave the surface extending at least 100 feet and at least 20 feet wide;
    c. Utilize a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages; or
    d. Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.

  - All haul trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
  - Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour (mph).
  - Ground cover in disturbed areas shall be replaced in a timely fashion when work is completed in the area.
  - A community liaison shall be identified concerning on-site construction activity including resolution of issues related to PM_{10} (particulate matter 10 microns in diameter or less) generation.
  - Non-toxic soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).
  - Traffic speeds on all unpaved roads shall be limited to 15 mph or less.
  - Streets shall be swept at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, water sweepers with reclaimed water shall be used.

- The construction contractor shall develop and implement an erosion control plan and Storm Water Pollution Prevention Plan (SWPPP) for construction activities. Erosion control and grading plans may include, but would not be limited to, the following:

  - Minimizing the extent of disturbed areas and duration of exposure;
  - Stabilizing and protecting disturbed areas;
  - Keeping runoff velocities low; and
  - Retaining sediment within the construction area.

  Construction erosion control BMPs may include the following:

  - Temporary desilting basins;
  - Silt fences;
  - Gravel bag barriers;
  - Temporary soil stabilization with mattresses and mulching;
  - Temporary drainage inlet protection; and
  - Diversion dikes and interceptor swales.

- The proposed project shall comply with the Regional Water Quality Control Board's (RWQCB) National Pollution Discharge Elimination System (NPDES) permit requirements.

- Residences and businesses near the pipeline alignment would be notified prior to the start of construction (e.g., via flyers) of lane closures and parking restrictions in their vicinity. The notices would include a telephone number for comments or questions related to construction activities.

- The proposed project construction would incorporate source reduction techniques and recycling measures and maintain a recycling program to divert waste in accordance with the Citywide Construction and Demolition Debris Recycling Ordinance.

- LADWP would coordinate with all applicable agencies regarding construction schedules and worksite traffic control and detour plans, including but not limited to LADOT, the City of Los Angeles Department of Public Works, Bureau of Engineering, the City of Los Angeles Fire Department, and the City of Los Angeles Police Department.

3. METHODS FOR ASSESSING BIOLOGICAL RESOURCES

A search of relevant regional databases for special-status biological resources in the vicinity of the project area was conducted prior to conducting a field survey. The project's terminus in the Van Norman Complex occurs in the southwest corner of the U.S. Geological Survey's San Fernando, California quadrangle, with the CTLN running southeast and terminating near the Tujunga Spreading Grounds, occurring in the northeast corner of the Van Nuys quadrangle. A search of the San Fernando and Van Nuys quadrangles was made of the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) and of the California Native Plant Society's (CNPS) on-line Inventory of Rare and Endangered Plants of California. Additionally, the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) (USFWS 2018) database was queried for special-status species, sensitive natural communities, and protected areas known from the project vicinity. Initial database queries were completed prior to the field survey. Databases were again queried during the preparation of this report to determine if any additional special-status resources are identified. Results of the most recent database reviews are included in Attachment B.

The project area evaluated for biological resources included the pipeline, which is almost entirely aligned within public streets, plus a 500-foot survey buffer around the alignment, combined the Biological Survey Area (BSA) or area of potential effect (APE) (Figure 2). A buffer around the project alignment was evaluated in order to capture potential indirect effects to biological resources from implementation of the project. Indirect effects could include elevated noise and dust levels, soil compaction, and increased human activity within the BSA. A 500-foot survey buffer is standard for capturing potential indirect impacts from a project on biological resources. It is anticipated that indirect impacts beyond 500 feet would be diffuse and would not significantly impact biological resources.

Prior to conducting a field survey, aerial imagery of the BSA was reviewed for the presence of areas that could potentially support special-status biological resources. Since most of the BSA is developed by hardscape features (i.e. roadways and buildings), the desktop review focused on identifying any significant green or otherwise open spaces. On June 15, 2018, a field survey of the BSA was conducted by AECOM biologist Art Popp to document existing biological resources that occur or have the potential to occur within and adjacent to the BSA, and to evaluate the potential for special-status plant and wildlife species to occur within the BSA. Binoculars were utilized to scan for evidence of wildlife activity in the BSA. The entire project alignment was surveyed, with a focus on assessing areas identified during the desktop review to support vegetation other than typical ornamental landscaping associated with residential and commercial developments. Seasonal, species-specific botanical and wildlife surveys were not conducted as part of this evaluation; however, based on the survey conducted and an assessment of conditions in the project area, it is apparent that special-status plant and wildlife species are not expected in the urbanized area the project occurs in.

4. EXISTING CONDITIONS

The project is primarily aligned along City streets and spans the communities of Slymar, Mission Hills, Arleta, and Sun Valley in the San Fernando Valley region of the City. The entire BSA is urbanized or has otherwise been previously disturbed, primarily by residential development, with areas of commercial development, parkland, and water management infrastructure (e.g. Pacoima and Tujunga channels and spreading grounds, Van Norman

Complex). At the northwestern terminus of the project, inside the Van Norman Complex, the CTLN is aligned adjacent to an interior roadway and transects land that has been previously disturbed by water management activities. Elevation along the project ranges from approximately 1,120 feet above mean sea level (amsl) in the Van Norman Complex, to 820 feet at the Tugunga Spreading Grounds.

4.1 Vegetation Communities and Plants

Vegetation communities are assemblages of plant species that commonly coexist. The classification of vegetation communities is based on the life form of the dominant species within that community and the associated species. No native plant communities occur within or adjacent to the project. Native and non-native ornamental species common on City and residential properties occur along the project alignment and adjacent to it. A few areas in the BSA along the alignment contain City parks or other miscellaneous areas where vegetation is more prevalent. Vegetation in these areas; however, is also primarily composed of ornamental species, or non-native weedy species that have colonized ruderal areas.

One stretch of the alignment, on Brand Street between Noble and Arleta Avenues, includes a center median with trees and shrubs. Olive (*Olea* sp.), pine (*Pinus* sp.), London plane (*Platanus* sp.), Mexican fan palm (*Washingtonia robusta*), and coast live oak (*Quercus agrifolia*) trees, with some non-native shrubs, and areas of bare ground are present in the median. This is the only area where vegetation occurs within the project alignment.

No special-status plant species were observed during the survey.

4.2 Wildlife

Wildlife species observed during the field survey of the project and surrounding areas included species that are common in and adapted to urban environments. American crow (*Corvus brachyrhynchos*), mourning dove (*Zenaida macroura*), rock dove (*Columba livia*), Northern mockingbird (*Mimus polyglottos*), house sparrow (*Passer domesticus*), song sparrow (*Melospiza melodia*), black phoebe (*Sayornis nigricans*), yellow-rumped warbler (*Setophaga coronate*), red-tailed hawk (*Buteo jamaicensis*), and western gull (*Larus occidentalis*) were observed in the BSA. Eastern fox squirrel (Sciurus carolinensis), brush rabbit (*Sylvilagus bachmani*), and western fence lizard (*Sceloporus occidentalis*) were also observed.

No special-status wildlife species were observed during the survey.

4.3 Wildlife Corridor

In an urban context, a wildlife migration corridor can be defined as a linear landscape feature of sufficient width and buffer to allow animal movement between two comparatively undisturbed habitat fragments, or between a habitat fragment and some vital resource that encourages population growth and diversity. Habitat fragments are isolated patches of habitat separated by otherwise foreign or inhospitable areas, such as urban tracts or highways. Two types of wildlife migration corridors seen in urban settings are regional corridors, defined as those linking two or more large areas of natural open space, and local corridors, defined as those allowing resident wildlife to access critical resources (food, cover, and water) in a smaller area that might otherwise be isolated by urban development.

The project is aligned through a completely urbanized area of the San Fernando Valley. The BSA does not occur within or intersect a recognized/established regional wildlife corridor; however, the proposed alignment intersects the Pacoima Diversion Channel at two locations, and Tujunga Wash at one location. These channels may provide opportunities for localized wildlife movement and both reach north into undeveloped areas of the Angeles National Forest (ANF), potentially providing a corridor from the urbanized San Fernando Valley into green/open space areas in the ANF that may provide more suitable opportunities for wildlife. However, fencing along the channels restricts wildlife access and the concrete-encased nature of the channels provide little cover, resting, foraging, or nesting opportunities for wildlife, limiting the suitability of these channels to serve as significant wildlife corridors.

Ornamental trees within and adjacent to the project provide some opportunities for cover, resting, foraging, and nesting to localized bird populations; however, they do not provide functions as a significant wildlife movement corridor.

5. SPECIAL-STATUS SPECIES

5.1 Special-Status Plant Species

Special-status plant species include those listed as Endangered, Threatened, Rare or those species proposed for listing by the US Fish and Wildlife Service (USFWS) under the federal Endangered Species Act (FESA), those listed by CDFW under the California Endangered Species Act (CESA), and the CNPS.[1,2,3] The CNPS inventory is sanctioned by the CDFW and essentially serves as the list of candidate plant species for state listing. CNPS's California Rare Plant Ranks (CRPR) 1B and 2 species are considered eligible for state listing as endangered or threatened.

A total of 22 plant species were identified from the CNDDB[4] and CNPS[5] database searches, and from a search of IPaC[6] for the Project area, to have historically been recorded from the San Fernando and Van Nuys quadrangles, including eight federal and/or state-listed species, marsh sandwort (Arenaria paludicola), Braunton's milk-vetch (*Astragalus brauntonii*), Nevin's barberry (*Berberis nevinii*), San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*), and slender-horned spineflower (*Dodecahema leptoceras*), spreading navarretia (*Navarretia fossalis*), California Orcutt grass (*Orcuttia californica*) and Gambel's watercress (*Rorippa gambellii*). The 22 special-status plant species identified during the most recent database reviews, their status, and habitat requirements are provided in Table A, Attachment C.

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1 Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (Title 50 Code of Federal Regulations [CFR] 17.12 [listed plants], Title 50 CFR 17.11 [listed animals] and includes notices in the Federal Register for proposed species).

2 Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (Title 14 California Code of Regulations 670.5).

3 Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code Section 1900 *et seq*.).

4 California Department of Fish and Wildlife. *California Natural Diversity Data Base (CNDDB).* Full condensed report for the San Fernando and Van Nuys quadrangles. Generated September 6, 2018.

5 California Native Plant Society, Rare Plant Program. 2018. Inventory of Rare and Endangered Plants (online edition, v8-02). Available at: http://www.rareplants.cnps.org/. Accessed August 29, 2018.

6 Information for Planning and Consultation. 2018. U.S. Fish and Wildlife Service. Available at: https://ecos.fws.gov/ipac/.

The BSA coincides with the CNNDB records of two special-status plant species. However; these records, one of San Fernando Valley spineflower, a federal candidate for listing and state-listed as endangered, and one of mesa horkelia (*Horkelia cuneate* var. *puberula*), a plant with a CNPS CRPR of 1B.1 ([1B] a plant rare, threatened, or endangered in California and elsewhere, [X.1] seriously threatened in California), are from 1922 and 1929, respectively. Currently, the BSA does not provide natural habitats potentially suitable for special-status plants. Records of special-status plant species identified during database reviews are primarily from relatively undisturbed habitats in the ANF, occurring in the northern portion of the San Fernando quadrangle.

No USFWS-designated critical habitat for any special-status plant species coincides with the project.

5.2 Special-Status Wildlife Species

Special-status wildlife species include those listed by USFWS under FESA and by CDFW under CESA. USFWS and CDFW officially list species as either threatened, endangered, or as candidates for listing. Additional species receive federal protection under the Bald Eagle Protection Act (e.g., bald eagle, golden eagle), the Migratory Bird Treaty Act (MBTA), and state protection under CEQA Section 15380(d).

All birds, except European starlings, English house sparrows, rock doves (pigeons), and non-migratory game birds such as quail, pheasant, and grouse are protected under the MBTA. However, non-migratory game birds are protected under California Fish and Game Code (CFGC) Section 3503. Many other species are considered by CDFW to be California Species of Special Concern (SSC) and others are on a CDFW Watch List (WL). The CNDDB tracks species within California for which there is conservation concern, including many that are not formally listed, and assigns them a CNDDB Rank.[7] Although CDFW SSC and WL species and species that are tracked by the CNDDB but not formally listed are afforded no official legal status, they may receive special consideration during the environmental review process. CDFW further classifies some species as "Fully Protected" (FP), indicating that the species may not be taken or possessed except for scientific purposes, under special permit from CDFW. Additionally, CFGC Sections 3503, 3505, and 3800 prohibit the take, destruction, or possession of any bird, nest, or egg of any bird except English house sparrows and European starlings unless authorization is obtained from CDFW.

A total of 23 wildlife species were identified from the CNDDB[8] search of the San Fernando and Van Nuys quadrangles and from a search of IPaC[9] for the project vicinity, including eleven federal and/or State-listed wildlife species, Swainson's hawk (*Buteo swainsoni*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), southwestern willow flycatcher (*Empidonax traillii extimus*), California condor (*Gymnogyps californianus*), coastal California gnatcatcher (*Polioptila californica californica*), least Bell's vireo (*Vireo bellii pusillus*), California red-legged frog (*Rana draytonii*), southern mountain yellow-legged frog

[7] California Department of Fish and Wildlife. 2018. California Natural Diversity Database (CNDDB). Special Animals List. August.

[8] California Department of Fish and Wildlife. *California Natural Diversity Data Base (CNDDB).* Full condensed report for the San Fernando and Van Nuys quadrangles. Generated September 6, 2018.

[9] Information for Planning and Consultation. 2018. U.S. Fish and Wildlife Service. Available at: https://ecos.fws.gov/ipac/. Accessed August 23, 2018.

(*R. muscosa*), Santa Ana sucker (*Catostomus santaanae*), Riverside fairy shrimp (*Streptocephalus woottoni*), and vernal pool fairy shrimp (*Branchinecta lynchi*). The 23 special-status wildlife species identified during the most recent database reviews, their status, and habitat requirements are provided in Table B, Attachment C.

No CNDDB records of special-status wildlife coincide with the BSA. A record of coastal California gnatcatcher, federally-listed as endangered and a CDFW SSC, and one of least Bell's vireo, federally and state-listed as threatened, are known from a few hundred feet of the BSA inside the Van Norman complex. Both of these species were detected in 2004 during surveys of habitats east of the terminus of the CTLN. The BSA; however, does not provide habitat potentially suitable for these two, or any other special-status wildlife. Most records of special-status wildlife species in the CNDDB are from relatively undisturbed habitats in the Angeles National Forest, occurring in the northern portion of the San Fernando quadrangle.

No USFWS-designated critical habitat for any special-status wildlife species coincides with the project.

6. SENSITIVE NATURAL COMMUNITIES

Sensitive natural communities are those that are designated as rare in the region by the CNDDB, support special-status plant or wildlife species, or receive regulatory protection (i.e., Section 404 of the Clean Water Act (CWA) and/or Sections 1600 et seq. of the CFGC). Rare communities are given the highest inventory priority.[10,11] Based on a review of the CNDDB,[12] five sensitive vegetative communities have been recorded within the San Fernando and Van Nuys quadrangles, including California Walnut Woodland, Riversidian Alluvial Fan Sage Scrub, Southern Coast Live Oak Riparian Forest, Southern Cottonwood and Willow Riparian Forest, and Southern Sycamore Alder Riparian Woodland. These communities are generally documented in the CNDDB two miles plus to the north and northeast of the project, in the northern portion of the San Fernando quadrangle.

No sensitive natural communities occur within the project and surrounding areas. Vegetation in the project area consists of ornamental trees and shrubs that are common in urban environments. However, aquatic communities (i.e. wetlands or other waters) under regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE), CDFW, and the Regional Water Quality Control Board (RWQCB) do coincide with the BSA, in the form of the Pacoima Diversion Channel and Tujunga Wash, which within the BSA, occur as concrete-encased channels.

7. APPLICABLE REGULATIONS

7.1 Federal Regulations and Standards

[10] Holland, R., *Preliminary Descriptions of the Terrestrial Natural Communities of California*. California Department of Fish and Game, The Resources Agency. 156 pp. 1986.

[11] California Department of Fish and Wildlife, 2010. List of California Terrestrial Natural Communities Recognized by the Natural Diversity Data Base. Natural Heritage Division. The Resources Agency. September.

[12] California Department of Fish and Wildlife. *California Natural Diversity Data Base (CNDDB).* Full condensed report for the San Fernando and Van Nuys quadrangles. Generated September 6, 2018.

Federal Endangered Species Act (ESA)

Enacted in 1973, the federal ESA provides for the conservation of threatened and endangered species and their ecosystems (United States Code [U.S.C.] Title 16, Chapter 35, Sections 1531–1544). The ESA prohibits the "take" of threatened and endangered species except under certain circumstances and only with authorization from USFWS through a permit under Section 4(d), 7 or 10(a) of the ESA. "Take" under the ESA is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

Formal consultation under the ESA would be required if the project had the potential to affect a federally-listed species that has been detected within or adjacent to the BSA. No federally-listed species were detected during the field survey and suitable habitats for such species do not occur in the BSA, or the species' known distribution does not coincide with the BSA. Therefore, formal consultation is not anticipated.

Migratory Bird Treaty Act

Congress passed the MBTA in 1918 to prohibit the kill or transport of native migratory birds, or any part, nest, or egg of any such bird unless allowed by another regulation adopted in accordance with the MBTA (U.S.C. Title 16, Chapter 7, Subchapter II, Sections 703–712). The prohibition applies to birds included in the respective international conventions between the United States and Great Britain, the United States and Mexico, the United States and Japan, and the United States and Russia.

No permit is issued under the MBTA; however, the project would remain in compliance with the MBTA by conducting pre-construction nesting bird surveys, and, if needed, providing a qualified biologist to monitor active nests occurring in the BSA to ensure construction does not affect species protected under the MBTA.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (the Eagle Act) amended in 1962, was originally implemented for the protection of bald eagles. In 1962, Congress amended the Eagle Act to also cover golden eagles, a move that was partially an attempt to strengthen protection of bald eagles, since the latter were often killed by people mistaking them for golden eagles. This act makes it illegal to import, export, take (which includes molest or disturb), sell, purchase, or barter any bald eagle or golden eagle or part thereof.

Bald and golden eagles are not known from the project area and habitat in the BSA is not suitable for these species. As a result, the project would not be expected to take bald or golden eagle.

Clean Water Act

Under Section 404 of the CWA, the USACE regulates the discharge of dredged or fill material into jurisdictional waters of the U.S., which include those waters listed in 33 CFR 328.3 (Definitions) (U.S.C. Title 33, Chapter 26, Sections 101–607). Section 401 of the CWA requires a water quality certification from the state for all permits issued by USACE under Section 404 of the CWA. RWQCB is the state agency in charge of issuing a CWA Section 401 water quality certification or waiver.

The project intersects the Pacoima Diversion Channel at two locations and Tujunga Wash at one location; however, the project would jack and bore the CTLN beneath these channels and no project work would occur in the channels and they would not be impacted. As a result, a permit from the USACE authorizing impacts to these channels is not anticipated.

Magnuson-Stevens Fishery Conservation and Management Act

Under the purview of the National Oceanic and Atmospheric Association's National Marine Fisheries Service (NMFS), amendments in 1996 to the Magnuson-Stevens Fishery Conservation and Management Act set forth a number of mandates for NMFS, Regional Fishery Management Councils, and federal action agencies to identify and protect important marine and anadromous fish habitat. The Councils, with assistance from NMFS, are required to delineate Essential Fish Habitat (EFH) in fishery management plans for all managed species. EFH is defined to include "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include historic areas if appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (from the 1997 Interim Final Rule [62 Fed. Reg. 66551, Section 600.10 Definitions]).

The BSA is located within the urbanized San Fernando Valley region of the City and does not include EFH, nor is it connected to any EFH.

Protection of Wetlands – Executive Order Numbers 11990 and 12608

Under this Executive Order (EO) issued May 24, 1977 and amended by EO 12608, Federal agencies must provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands (42 CFR 26961; 3 CFR 1977 Comp., p. 121). Each agency, to the extent permitted by law, must avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds: there is no practical alternative to such construction; the proposed action includes all practical measures to minimize harm to wetlands that may result from such use. In making this finding, the head of the agency may take into account economic, environmental and other pertinent factors. Each agency must also provide opportunity for early public review of any plans or proposals for new construction in wetlands.[13]

Wetlands, as defined below under this EO, do not occur within the BSA and as a result would not be affected by the project.

> "…areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps,

[13] FedCenter.gov. 2017. Executive Order 11990. Protection of Wetlands. Available at: https://www.fedcenter.gov/Bookmarks/index.cfm?id=585

marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds."

Wild and Scenic Rivers Act

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection.

An online review of designated Wild and Scenic Rivers[14] was conducted and it was determined that the BSA is not located within the watershed of a wild and scenic river.

Coastal Zone Management Act

The U.S. Congress recognized the importance of meeting the challenge of continued growth in the coastal zone by passing the Coastal Zone Management Act in 1972 (Public Law 109-58; 16 U.S.C. 1451 et seq.). This act, administered by NOAA, provides for the management of the nation's coastal resources, including the Great Lakes. The goal is to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."

The BSA is located within the urbanized San Fernando Valley region of the City and is not located in the City's Coastal Zone or the State Coastal Zone.

7.2 State Regulations and Standards

California Fish and Game Code

CFGC regulates the taking or possession of birds, mammals, fish, amphibians, and reptiles, as well as impacts to natural resources such as wetlands and waters of the state. It includes the California Endangered Species Act (CESA) (Sections 2050–2115) and Lake and Streambed Alteration Agreement (LSAA) regulations (Section 1600 et seq.).

Wildlife "take" is defined by CDFW as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Protection extends to the animals, dead or alive, and all their body parts. Section 2081 of CESA allows CDFW to issue an incidental take permit for state-listed threatened or endangered species, should the proposed project have the potential to "take" a state-listed species that has been detected within or adjacent to the project. Certain criteria are required under CESA prior to the issuance of such a permit, including the requirement that impacts of the take are minimized and fully mitigated.

No state-listed species were detected during the field survey and suitable habitats for such species do not occur in the BSA, or the species' known distribution does not coincide with the BSA. As a result, a permit under Section 2081 is not anticipated for the project.

[14] National Wild and Scenic Rivers System. 2018. Wild and Scenic Rivers. Explore Designated Rivers. Available at: https://www.rivers.gov/map.php.

The Pacoima Diversion Channel and Tujunga Wash constitute potentially-regulated waters under the jurisdiction of CDFW; however, the project would jack and bore the CTLN beneath these channels and no project work would occur in the channels and they would not be impacted. As a result, coordination with CDFW and the issuance of an LSAA is not anticipated for this project.

Porter-Cologne Water Quality Control Act

Under Section 13000 et seq., of the Porter-Cologne Act, RWQCB is the agency that regulates discharges of waste and fill material within any region that could affect a water of the state (California Water Code [CWC] 13260[a]), (including wetlands and isolated waters) as defined by CWC Section 13050(e).

The Pacoima Diversion Channel and Tujunga Wash constitute potentially-regulated waters of the state under the jurisdiction of the RWQCB; however, the project would jack and bore the CTLN beneath these channels and no project work would occur in the channels and they would not be impacted. As a result, coordination with the RWQCB and the issuance of a permit under Porter-Cologne is not anticipated for the project.

California Environmental Quality Act[15]

CEQA requires that biological resources be considered when assessing the environmental impacts resulting from proposed actions. CEQA does not specifically define what constitutes an "adverse effect" on a biological resource. Instead, lead agencies are charged with determining what specifically should be considered an impact. This report has been prepared for project compliance with CEQA.

7.3 Local Regulations and Standards

Significant Ecological Area Program

Los Angeles County first began to inventory biotic resources and identify important areas of biological diversity in the 1970s. Today, the primary mechanism used by the County to conserve biological diversity is a planning overlay called Significant Ecological Areas (SEAs) designated in the County's General Plan Conservation/Open Space Element. SEAs are ecologically important land and water systems that support valuable habitat for plants and animals, often integral to the preservation of rare, threatened, or endangered species and the conservation of biological diversity in Los Angeles County. While SEAs are not preserves, they are areas where Los Angeles County deems it important to facilitate a balance between development and resource conservation.

Together, the General Plan overlays and a SEA conditional use permit (CUP) process are referred to as the SEA Program. The SEA Program, through goals and policies of the General Plan and the SEA ordinance (Title 22 Zoning Regulations, Section 22.56.215) help guide development within SEAs. The SEA ordinance establishes the permitting, design standards, and review process for development within SEAs, and permits are reviewed by the SEATAC. Development activities in the SEAs are reviewed closely in order to conserve

[15] PRC Section 21000 et seq. and the State CEQA Guidelines, California Code of Regulations, Section 15000 et seq.

water and biological resources such as streams, oak woodlands, and threatened or endangered species and their habitat.

The BSA lies approximately 1.3 miles from the Tujunga Dam-Hansen Dam SEA. The project is not anticipated to affect resources within this SEA, and as a result the SEA program would not be applicable to the proposed project.

City of Los Angeles Protected Tree Ordinance

In response to the City's declining oak tree population, the City enacted an oak tree protection ordinance in 1982. To further slow the decline of native trees, the City amended the two City Municipal Code sections pertaining to oak trees in April 2006 to include southern California black walnut (*Juglans californica*), western sycamore (*Platanus racemosa*), and California bay (*Umbellularia californica*) (Section 17.02 of City Municipal Code). Additionally, trees must be four inches or greater in diameter at 4.5 feet above ground (DBH) to be considered protected.The Board of Public Works must issue a permit before any alterations to protected trees are made that could cause them to be damaged, relocated or removed. Pruning also requires a permit and must comply with the pruning standards set forth by the Western Chapter of the International Society of Arboriculture.

Two coast live oak trees were documented within the project alignment, occurring in the center median of Brand Boulevard, between Noble and Arleta Avenues. One of these trees is of sufficient size to be categorized as "protected" under the ordinance, the other is a small specimen that does not meet the definition of a "protected" tree. Should the coast live oak in the center median require removal, or if it is determined that any other protected tree along the project alignment requires removal or trimming, LADWP would comply with provisions of this ordinance.

8. IMPACTS ON BIOLOGICAL RESOURCES

Biological resources may be either directly or indirectly impacted by a project. Direct and indirect impacts may be either permanent or temporary in nature. These impact categories are defined below.

- **Direct**: Any alteration, physical disturbance, or destruction of biological resources that would result from project-related activities is considered a direct impact. Examples include clearing vegetation, encroaching into wetlands or a stream, and the loss of individual species and/or their habitats.

- **Indirect**: As a result of project-related activities, biological resources may also be affected in a manner that is ancillary to physical impacts. Examples include elevated noise and dust levels, soil compaction, increased human activity, decreased water quality, and the introduction of invasive wildlife (domestic cats and dogs) and plants.

- **Permanent**: All impacts that result in the long-term or irreversible removal of biological resources are considered permanent. Examples include constructing a building or permanent road on an area containing biological resources.

- **Temporary**: Any impacts considered to have reversible effects on biological resources can be viewed as temporary. Examples include the generation of fugitive

dust during construction; or removing vegetation for the preparation of stream bank stabilization activities, and either allowing the natural vegetation to recolonize or actively revegetating the impact area. Surface disturbance that removes vegetation and disturbs the soil is considered a long-term temporary impact because of slow natural recovery in arid ecosystems.

8.1 Construction

The anticipated impacts of proposed Project construction on biological resources are described below.

8.1.1 Vegetation

Implementation of the proposed project could result in the removal of trees and other vegetation in the center median along the project's alignment on Brand Boulevard. The removal and replacement of these ornamental trees do not constitute a significant direct impact.

Indirect impacts to vegetation during project construction could include the accumulation of fugitive dust, and the colonization of nonnative, invasive plant species. Other indirect impacts could include an increase in the amount of compacted or modified surfaces that, if not controlled, could increase the potential for surface runoff, increased erosion, and sediment deposition beyond the project's footprint. Although indirect impacts to ornamental trees would not constitute a significant impact, with implementation of standard construction practices related to fugitive dust (e.g. implementation of Rule 403 measures required by the South Coast Air Quality Management District [SCAQMD]) and erosion control (e.g., implementation of a Storm Water Pollution Prevention Plant), the potential for indirect impacts to any vegetation would be further reduced below the level of significance

8.1.2 Special Status Plant Species

Individual special-status plant species could be damaged or destroyed from crushing or trampling during construction activities; however, no federal or State-listed plant species were identified during the field survey, and special-status plants are not expect to occur in the BSA due to a lack of potentially suitable habitat. Since no special-status plants were observed during the field survey and the BSA is not suitable for them, none are expected to occur within the BSA. As a result, significant direct effects on special-status plants are not anticipated.

Indirect impacts to special-status plant species occurring outside the Project site could result from construction-related habitat loss and modification of sensitive natural communities related to dust, noise, stormwater runoff, and through the potential spread of noxious and invasive plant species into these communities. Such impacts would be considered significant; however, suitable habitat for special-status plants is not present in the urbanized environment surrounding the project, and by implementing standard construction practices related to fugitive dust and erosion control, the potential for indirect impacts to special-status plants would be further reduced. As a result, indirect impacts to special-status plants are not anticipated.

8.1.3 Sensitive Natural Communities

Implementation of the proposed project would not result in direct or indirect impacts to any sensitive natural communities. As presented in Section 6, no sensitive natural communities occur within the BSA. However, aquatic communities (i.e. wetlands or other waters) under regulatory jurisdiction of USACE, CDFW, and the RWQCB coincide with the BSA, in the form of the Pacoima Diversion Channel and Tujunga Wash. The CTLN would be installed via the jack and bore method beneath these channels, and as a result, no work would occur in the channels and they would not be impacted. As a result, significant impacts to sensitive natural communities would not occur.

8.1.4 Wildlife

Elements of project construction could potentially affect common wildlife. Tree removal and ground disturbance activities could result in the mortality of individual wildlife species, and species with limited mobility or that occupy burrows within the construction zone could be crushed during proposed project activities. Additionally, short-term indirect effects on wildlife, primarily urban bird species (discussed further below), would occur due to noise disturbances, increased human activity, and vibrations caused by heavy equipment. Although wildlife mortality is unlikely and not considered significant, direct and indirect impacts to common wildlife would be avoided and minimized by implementing and adhering to standard construction measures related to fugitive dust, erosion control, and noise (e.g., properly maintained equipment). As a result, significant impacts to wildlife are not anticipated

Ornamental trees in the BSA provide potentially suitable nesting habitat for urban bird species. As a result, birds protected by the MBTA and by CFGC have the potential to nest in the BSA. By avoiding vegetation removal during the nesting bird season or by implementing preconstruction surveys for nesting birds and providing a qualified biological monitor should nesting birds be present, direct impacts of vegetation removal on nesting birds or their associated habitat would be less than significant.

Indirect impacts to nesting birds within the BSA could occur during construction as a result of noise, dust, increased human presence, and vibrations resulting from construction activities. Such disturbances could result in increased nestling mortality due to nest abandonment or decreased feeding frequency. Therefore, indicted impacts would be considered significant. However, by implementing standard construction measures related to fugitive dust, erosion control, and noise, and by conducting pre-construction surveys and providing qualified biological monitors as necessary, indirect impacts to nesting birds protected under the MBTA and by CFGC would be reduced to less than significant

8.1.5 Special Status Wildlife Species

Individual special-status wildlife species could be directly and indirectly affected during construction in the same manner as described above; however, no federal or State-listed wildlife species have been identified in the BSA and potentially suitable habitat for such species is absent from the BSA. As a result, direct and indirect impacts to special-status wildlife would not occur. However, by implementing standard construction measures related to fugitive dust, erosion control, and noise, and conducting pre-construction surveys and providing a qualified biological monitor when necessary to comply with provisions of the

MBTA and CFGC, the potential for indirect impacts to special-status wildlife would be further reduced to a level below significance.

8.1.6 Wildlife Movement Corridor

The BSA does not serve as a regional wildlife corridor and as a result, direct impacts to a regional wildlife movement corridor would not occur. However, as previously presented, the Pacoima Diversion Channel and Tujunga Wash could provide opportunities for local wildlife movement. Since no work would occur in the channel and no night work is proposed, project construction activities are not anticipated to impact the channels' potential to facilitate wildlife movement in the channels. As a result, impacts to a wildlife movement corridor are not anticipated.

8.2 Operation

Significant impacts to vegetation, special-status plant species, and sensitive natural communities during operations and routine maintenance of the project are not anticipated. Only ornamental vegetation occurs ion the BSA and special-status plants are not expected to occur in the BSA due to a lack of suitable habitat. As a result, significant impacts to vegetation, special-status plants, and sensitive natural communities during operations and routine maintenance of the CTLN are not anticipated.

Impacts to wildlife, special-status wildlife species, and wildlife movement would be limited. Activities would be conducted within previously disturbed and developed surfaces containing only ornamental vegetation, and would generally not change conditions from those present prior to and after project construction. As a result, operation and maintenance activities are not anticipated to significantly affect wildlife, special-status wildlife species, and wildlife movement.

9. AVOIDANCE, MINIMIZATION, AND STANDARD CONSTRUCTION MEASURES

With the potential for nesting birds protected under the MBTA and CFGC to occur in ornamental trees within the BSA, implementation of pre-construction surveys and providing a qualified biological monitor if nesting birds are present, would ensure potential impacts to nesting birds during the bird breeding season (February 15 through September 1) are avoided. Additionally the implementation of standard construction measures related to fugitive dust, erosion control, and noise would further reduce indirect impacts to a level below significance.

10. CONCLUSIONS

Based on the analysis presented above regarding anticipated effects of the proposed project, significant impacts to nesting birds protected under the MBTA and by CFGC could occur. However, by conducting pre-construction survey and subsequent biological monitoring efforts as described above, and by implement standard construction measures related to fugitive dust, erosion control, and noise, significant impacts to biological resources would be further reduced to a level below significance.

Should you have any questions or comments regarding this memo, or if additional information is required, please feel free to contact me.

Sincerely,

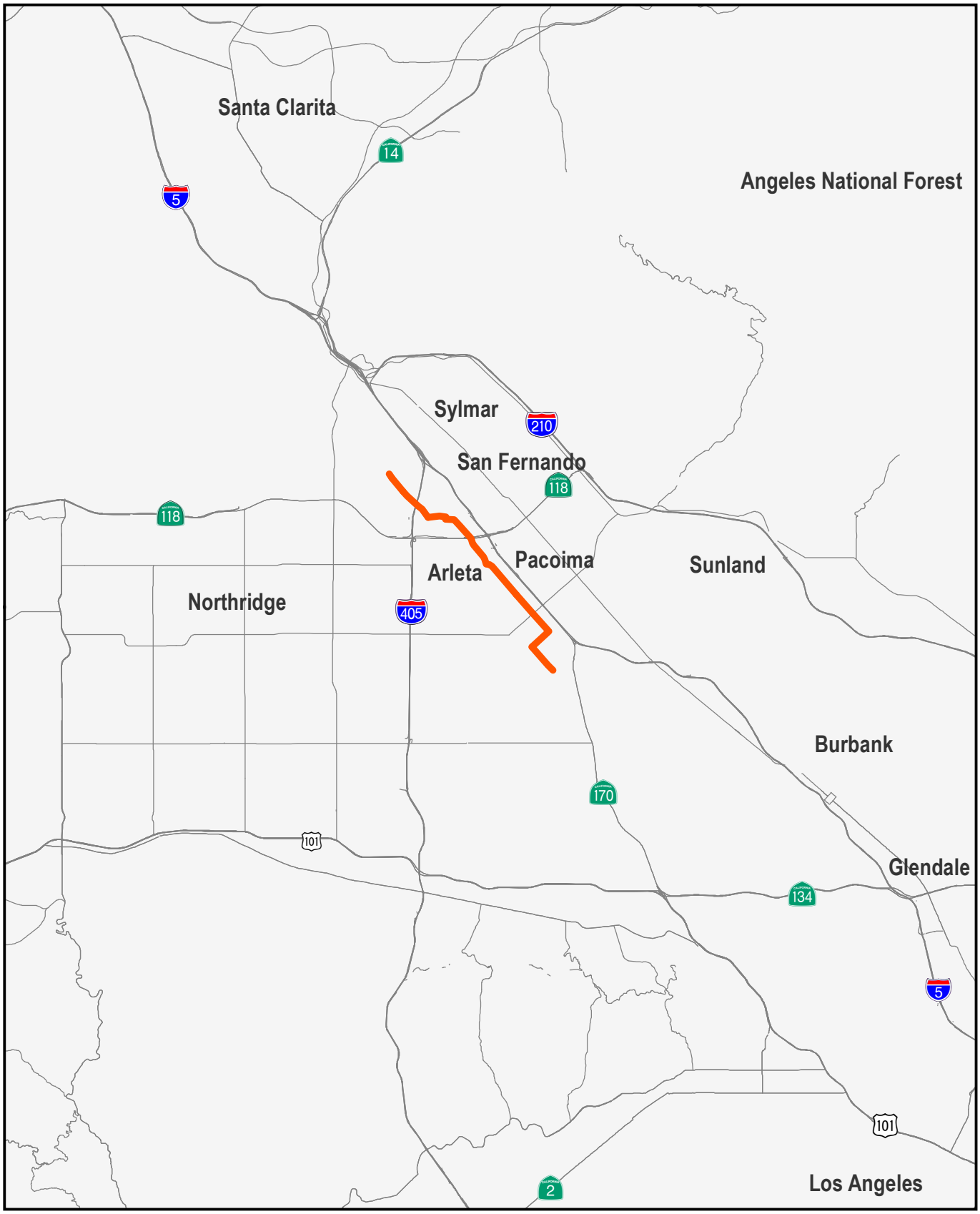
Arthur Popp
Biologist

Enc:

Attachment A: Project Figures
Attachment B: Database Search Results
Attachment C: Special-Status Plant and Wildlife Species and Natural Communities Tables

ATTACHMENT A

FIGURES



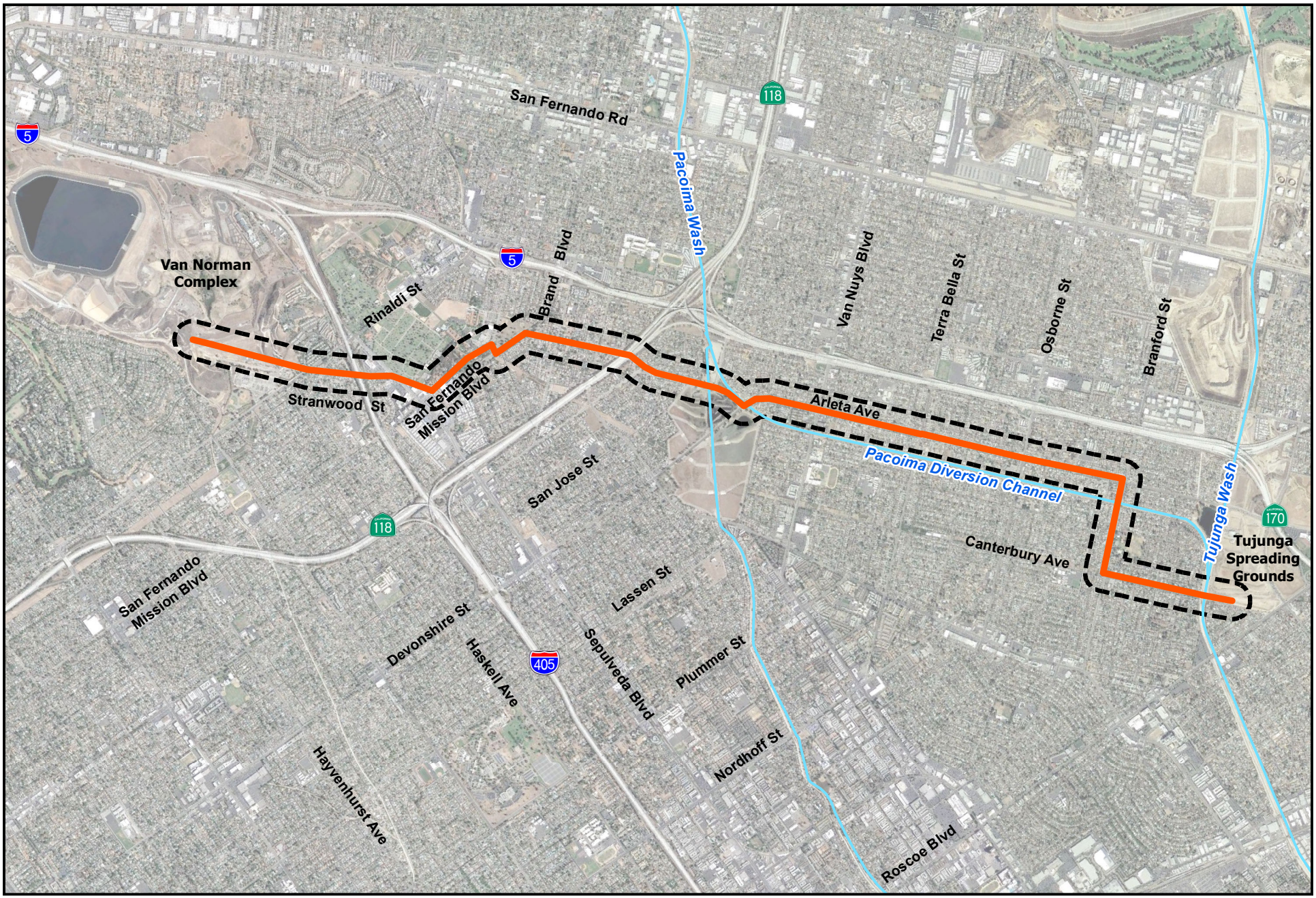
Source: Esri 2018; Created by: AECOM, 2018.

0 2 4 Miles

Proposed City Trunk Line North

Figure 1

Regional Map



Source: Esri 2018; Created by: AECOM, 2018.

Proposed City Trunk Line North

Biological Survey Area

0 0.5 1 Miles

Figure 2

Proposed Project

ATTACHMENT B

DATABASE SEARCH RESULTS

California Natural Diversity Data Base (CNDDB)
California Native Plant Society (CNPS)
Information for Planning and Conservation (IPaC)

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (San Fernando (3411834) OR Van Nuys (3411824))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aspidoscelis tigris stejnegeri coastal whiptail	ARACJ02143	None	None	G5T5	S3	SSC
Berberis nevinii Nevin's barberry	PDBER060A0	Endangered	Endangered	G1	S1	1B.1
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
California Walnut Woodland California Walnut Woodland	CTT71210CA	None	None	G2	S2.1	
Calochortus clavatus var. gracilis slender mariposa-lily	PMLIL0D096	None	None	G4T2T3	S2S3	1B.2
Calochortus plummerae Plummer's mariposa-lily	PMLIL0D150	None	None	G4	S4	4.2
Catostomus santaanae Santa Ana sucker	AFCJC02190	Threatened	None	G1	S1	
Chorizanthe parryi var. fernandina San Fernando Valley spineflower	PDPGN040J1	Proposed Threatened	Endangered	G2T1	S1	1B.1
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Dodecahema leptoceras slender-horned spineflower	PDPGN0V010	Endangered	Endangered	G1	S1	1B.1
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Gila orcuttii arroyo chub	AFCJB13120	None	None	G2	S2	SSC
Harpagonella palmeri Palmer's grapplinghook	PDBOR0H010	None	None	G4	S3	4.2
Horkelia cuneata var. puberula mesa horkelia	PDROS0W045	None	None	G4T1	S1	1B.1
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lepidium virginicum var. robinsonii Robinson's pepper-grass	PDBRA1M114	None	None	G5T3	S3	4.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Malacothamnus davidsonii Davidson's bush-mallow	PDMAL0Q040	None	None	G2	S2	1B.2
Orcuttia californica California Orcutt grass	PMPOA4G010	Endangered	Endangered	G1	S1	1B.1
Perognathus longimembris brevinasus Los Angeles pocket mouse	AMAFD01041	None	None	G5T1T2	S1S2	SSC
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Polioptila californica californica coastal California gnatcatcher	ABPBJ08081	Threatened	None	G4G5T2Q	S2	SSC
Rana muscosa southern mountain yellow-legged frog	AAABH01330	Endangered	Endangered	G1	S1	WL
Rhinichthys osculus ssp. 3 Santa Ana speckled dace	AFCJB3705K	None	None	G5T1	S1	SSC
Riversidian Alluvial Fan Sage Scrub Riversidian Alluvial Fan Sage Scrub	CTT32720CA	None	None	G1	S1.1	
Southern Coast Live Oak Riparian Forest Southern Coast Live Oak Riparian Forest	CTT61310CA	None	None	G4	S4	
Southern Cottonwood Willow Riparian Forest Southern Cottonwood Willow Riparian Forest	CTT61330CA	None	None	G3	S3.2	
Southern Sycamore Alder Riparian Woodland Southern Sycamore Alder Riparian Woodland	CTT62400CA	None	None	G4	S4	
Spea hammondii western spadefoot	AAABF02020	None	None	G3	S3	SSC
Symphyotrichum greatae Greata's aster	PDASTE80U0	None	None	G2	S2	1B.3
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	

Record Count: 34

California Native Plant Society Inventory Results

Query Critiera: San Fernando and Van Nuys Quadrangles

Scientific Name	Common Name	California Rare Plant Rank	State Listing (CDFW)	Federal Listing (USFWS)
Astragalus brauntonii	Braunton's milk-vetch	1B.1	None	Endangered
Berberis nevinii	Nevin's barberry	1B.1	Endangered	Endangered
Calochortus catalinae	Catalina mariposa lily	4.2	None	None
Calochortus plummerae	Plummer's mariposa lily	4.2	None	None
Calystegia peirsonii	Peirson's morning-glory	4.2	None	None
Canbya candida	white pygmy-poppy	4.2	None	None
Centromadia parryi ssp. australis	southern tarplant	1B.1	None	None
Chorizanthe parryi var. *fernandina*	San Fernando Valley spineflower	1B.1	Endangered	Candidate
Dodecahema leptoceras	slender-horned spineflower	1B.1	Endangered	Endangered
Horkelia cuneata var. *puberula*	mesa horkelia	1B.1	None	None
Juglans californica	Southern California black walnut	4.2	None	None
Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	4.3	None	None
Lilium humboldtii ssp. *ocellatum*	ocellated Humboldt lily	4.2	None	None
Malacothamnus davidsonii	Davidson's bush-mallow	1B.2	None	None
Phacelia hubbyi	Hubby's phacelia	4.2	None	None
Symphyotrichum greatae	Greata's aster	1B.3	None	None

California Native Plant Society, Rare Plant Program. 2018. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society, Sacramento, CA Website http://www.rareplants.cnps.org [accessed 29 August 2018]

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Los Angeles County, California

Local offices

Carlsbad Fish And Wildlife Office

(760) 431-9440
(760) 431-5901

2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385

http://www.fws.gov/carlsbad/

Ventura Fish And Wildlife Office

(805) 644-1766
(805) 644-3958

2493 Portola Road, Suite B
Ventura, CA 93003-7726

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS

California Condor Gymnogyps californianus — Endangered
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/8193

Coastal California Gnatcatcher Polioptila californica californica — Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/8178

Least Bell's Vireo Vireo bellii pusillus — Endangered
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/5945

Southwestern Willow Flycatcher Empidonax traillii extimus — Endangered
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/6749

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Santa Ana Sucker Catostomus santaanae There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3785	Threatened

Crustaceans

NAME	STATUS
Riverside Fairy Shrimp Streptocephalus woottoni There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8148	Endangered

Vernal Pool Fairy Shrimp Branchinecta lynchi — Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/498

Flowering Plants

NAME	STATUS
Braunton's Milk-vetch Astragalus brauntonii There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5674	Endangered
California Orcutt Grass Orcuttia californica No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4923	Endangered
Gambel's Watercress Rorippa gambellii No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4201	Endangered
Marsh Sandwort Arenaria paludicola No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2229	Endangered
Nevin's Barberry Berberis nevinii There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8025	Endangered
Slender-horned Spineflower Dodecahema leptoceras No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4007	Endangered
Spreading Navarretia Navarretia fossalis There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/1334	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE.

"BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Allen's Hummingbird Selasphorus sasin — Breeds Feb 1 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9637

Bald Eagle Haliaeetus leucocephalus — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

Black Skimmer Rynchops niger — Breeds May 20 to Sep 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5234

Burrowing Owl Athene cunicularia — Breeds Mar 15 to Aug 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9737

California Thrasher Toxostoma redivivum — Breeds Jan 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Clark's Grebe Aechmophorus clarkii — Breeds Jan 1 to Dec 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Costa's Hummingbird Calypte costae — Breeds Jan 15 to Jun 10
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9470

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Lewis's Woodpecker Melanerpes lewis — Breeds Apr 20 to Sep 30
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9408

Long-billed Curlew Numenius americanus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5511

Marbled Godwit Limosa fedoa — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Rufous Hummingbird selasphorus rufus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Song Sparrow Melospiza melodia — Breeds Feb 20 to Sep 5
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Spotted Towhee Pipilo maculatus clementae — Breeds Apr 15 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/4243

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Whimbrel Numenius phaeopus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9483

Willet Tringa semipalmata — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

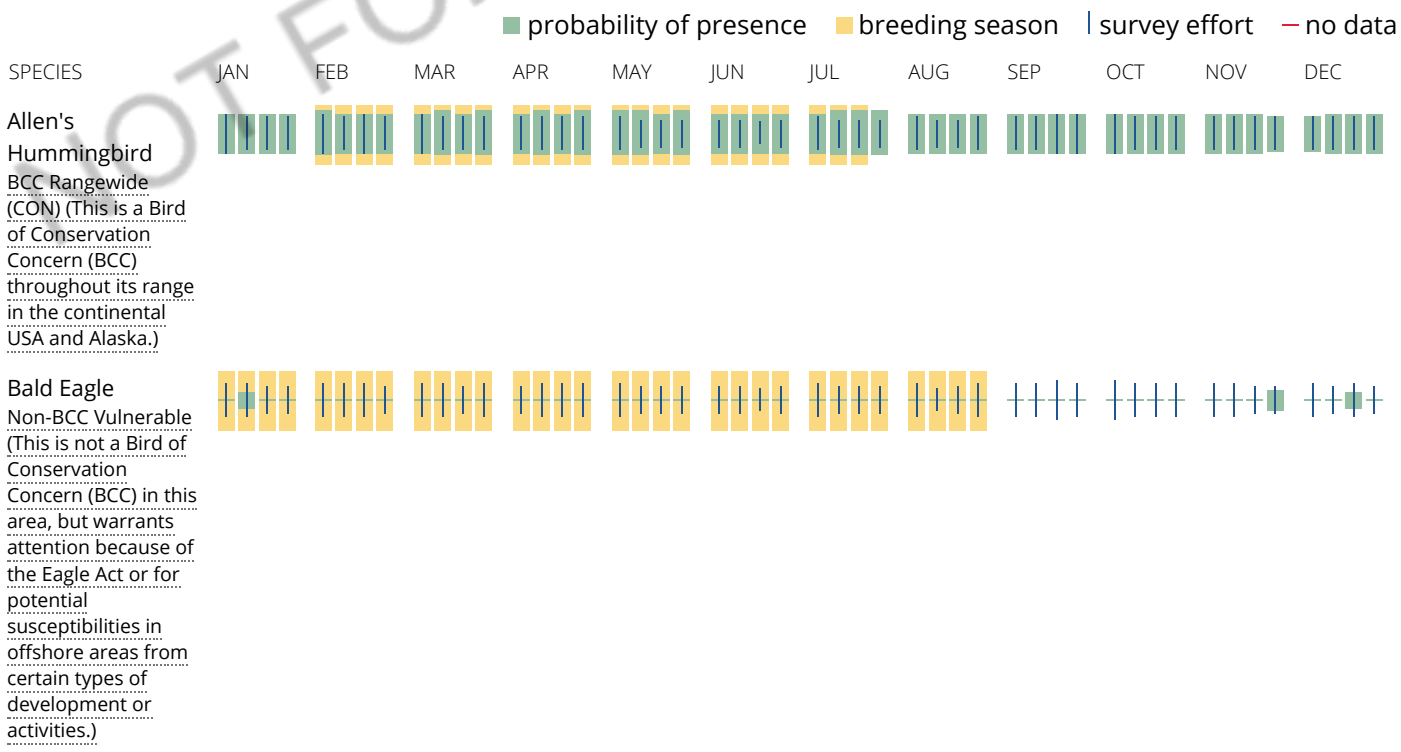
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

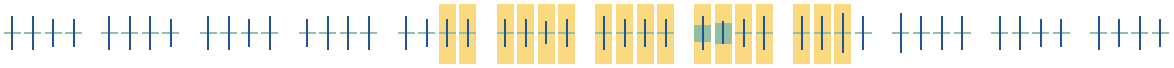
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

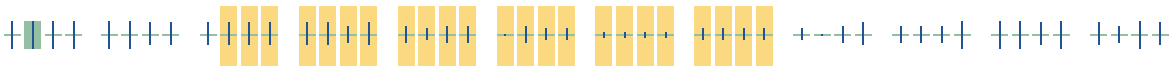
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



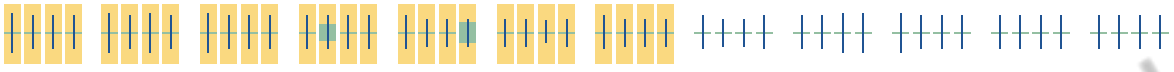
Black Skimmer
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



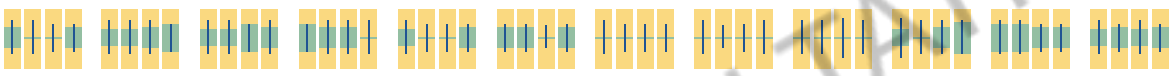
Burrowing Owl
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



California Thrasher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



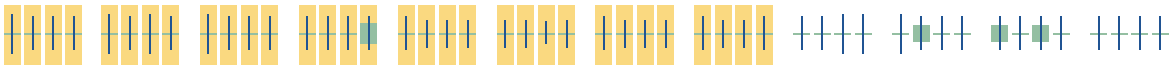
Clark's Grebe
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Common Yellowthroat
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Costa's Hummingbird
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Golden Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Lawrence's Goldfinch
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Lewis's Woodpecker
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Long-billed Curlew
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Marbled Godwit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Nuttall's Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Oak Titmouse
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Rufous Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Short-billed Dowitcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Song Sparrow
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Spotted Towhee
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Tricolored Blackbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Whimbrel
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Willet
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Wrentit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to

occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER FORESTED/SHRUB WETLAND

PFOAx

RIVERINE

R4SBCr
R4SBAr

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

ATTACHMENT C

Table A. Special-Status Plant Species and Natural Vegetation Communities
Table B. Special-Status Wildlife Species

Table A
SPECIAL-STATUS PLANT SPECIES
AND NATURAL VEGETATION COMMUNITIES[1]

Common Name ***Scientific Name***[2]	**Status**[3]	**General Habitat Description**[4]
marsh sandwort *Arenaria paludicola*	Federal: FE State: SE CRPR: 1B.1	Sandy openings in freshwater or brackish marshes and swamps. Occurs between 3-170 meters (10-560 feet). Blooms May-August.
Braunton's milk- vetch *Astragalus brauntonii*	Federal: FE State: None CRPR: 1B.1	Closed-cone coniferous forest, chaparral, coastal scrub, and valley and foothill grassland. Prefers recent burns or disturbed areas, in stiff gravelly clay soils overlying granite or limestone. Occurs between 4-640 meters (13-2,100 feet). Blooms January-August.
Nevin's barberry *Berberis nevinii*	Federal: FE Statae: SE CRPR: 1B.1	Chaparral, cismontane woodland, coastal scrub, riparian scrub. Occurs at 70-825 meters (230 to 2,700 feet). Blooms (Feb) March-June.
Catalina mariposa-lily *Calochortus catalinae*	Federal: None State: None CRPR: 4.2	Chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland. Occurs between 15-700 meters (50-2,300 feet). Blooms February-June.
slender mariposa-lily *Calochortus clavatus* var. *gracilis*	Federal: None State: None CRPR: 4.2	Coastal bluff scrub, chaparral, coastal praire, and lower montane coniferous forest. Occurs between 10-120 meters (35-395 feet). Blooms June-July.
Plummer's mariposa-lily *Calochortus plummerae*	Federal: None State: None CRPR: 4.2	Granitic, rocky sites in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley and foothill grassland. Occurs between 100-1,700 meters (330-5,575 feet). Blooms May-July.
Peirson's morning-glory *Calystegia peirsonii*	Federal: None State: None CRPR: 4.2	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest. Often in disturbed areas or along roadsides or in grassy open areas, at 30-1,500 meters (100-4,920 feet). Blooms April- June.
white pygmy-poppy *Canbya candida*	Federal: None State: None CRPR 4.2	Prefers gravelly, sandy, granitic soils in Joshua tree woodland, Mojavean desert scrub and pinyon-juniper woodland, at 600-1,460 meters (1,970-4,790 feet). Blooms March-June.
southern tarplant *Centromadia parryi* ssp. *australis*	Federal: None State: None CRPR: 1B.1	Marshes and swamps (margins), valley and foothill grassland. Often in disturbed sites near the coast at marsh edges; also in alkaline soils sometimes with saltgrass. Occurs between 0–480 meters (0-1,570 feet). Blooms May–November.
San Fernando Valley spineflower *Chorizanthe parryi var. fernandina*	Federal: FC State: SE CRPR: 1B.1	Coastal scrub (sandy), valley and foothill grasslands. Occurs between 150-1,220 meters (500-4,000 feet). Blooms April-July.
slender-horned spineflower *Dodecahema leptoceras*	Federal: FE State: SE CRPR: 1B.1	Sandy chaparral, cismontane woodland, and alluvial fan coastal scrub. Occurs between 200-760 meters (890–2,510 feet). Blooms April–June.

Common Name ***Scientific Name*[2]**	**Status[3]**	**General Habitat Description[4]**
Palmer's grapplinghook *Harpogonella palmeri*	Federal: None State: None CRPR: 4.2	Chaparral, coastal scrub, and valley and foothill grassland. Occurs between 19-955 meters (65-3,135 feet). Blooms from March- May.
mesa horkelia *Horkelia cuneata* ssp. *puperula*	Federal: None State: None CRPR: 1B.1	Prefers sandy or gravelly sites in chaparral, cismontane woodland, and coastal scrub. Occurs between 70-810 meters (230-2,660 feet). Blooms February-September.
southern California black walnut *Juglans californica*	Federal: None State: None CRPR: 4.2	Prefers alluvial sites in chaparral, cismontane woodlands, coastal scrub, and riparian woodland. Occurs between 50-900 meters (160-2,950 feet). Blooms March-August.
Robinson's pepper-grass *Lepidium virginicum* var. *robinsonii*	Federal: None State: None CRPR: 4.3	Chaparral and coastal scrub. Occurs between 1-885 meters (3-2,900 feet). Blooms January-July.
ocellated Humboldt lily *Lilium humboldtii spp. ocellatum*	Federal: None State: None CRPR: 4.2	Openings. Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland. Occurs between 30-1,800 meters (100-6,000 feet). Blooms March-July (August).
Davidson's bush-mallow *Malacothamnus davidsonii*	Federal: None State: None CRPR: 1B.2	Chaparral, cismontane woodland, coastal scrub, and riparian woodland. Occurs between 185-855 meters (610-2,800 feet). Blooms June-January.
spreading navarretia *Navarretia fossalis*	Federal: FT State: CRPR:	Associated with vernal pools, chenopod scrub, marshes and swamps, playas. Occurs on San Diego hardpan and San Diego claypan vernal pools at 30-655 feet (100-2,150 feet). Blooms April-June.
California orcutt grass *Orcuttia californica*	Federal: FE State: CRPR:	Vernal pools. Occurs between 15-660 meters (50-2,170 feet). Blooms April-August.
Hubby's phacelia *Phacelia hubbyi*	Federal: None State: None CRPR: 4.2	Gravelly, rocky, talus sites in chaparral, coastal scrub, and valley and foothill grassland. Occurs between 0-1,000 meters (0-3,280 feet). Blooms April-July.
Gambel's watercress *Rorippa gambellii*	Federal: FE State: ST CRPR: 1B.1	Prefers freshwater or brackish marshes and swamps. Occurs between 5-330 meters (15-1,080 feet). Blooms April-October.
Greata's aster *Symphyotrichum greatae*	Federal: None State: None CRPR: 1B.3	Mesic sites in broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and riparian woodland. Occurs between 300-2,010 meters (980-6,590 feet). Blooms June-October.
California Walnut Woodland	CNDDB	
Riversidean Alluvial Fan Sage Scrub	CNDDB	
Southern Coast Live Oak Riparian Forest	CNDDB	
Southern Cottonwood Willow Riparian Forest	CNDDB	
Southern Sycamore Alder Riparian Woodland	CNDDB	

[1] Special-status plant species and natural vegetation communities known from the CNDDB and CNPS to occur on the San Fernando and Van Nuys quadrangles.

[2] Nomenclature for special-status plants conforms to California Native Plant Society (CNPS).

[3] Sensitivity Status Codes

Federal	**FT** - Federally Threatened under the Federal Endangered Species Act
	FE - Federally Endangered under the Federal Endangered Species Act
	FC – A Federal Candidate for listing under the Federal Endangered Species Act
State	**ST** - State Threatened under the California Endangered Species Act
	SE - State Endangered under the California Endangered Species Act
CRPR	California Rare Plant Rank (CRPR)
	1A: Plants presumed extinct in California
	1B: Plants rare, threatened, or endangered in California and elsewhere
	2: Plants rare, threatened, or endangered in California, but more common elsewhere
	3: Plants more information is needed for
	4: Plants of limited distribution – a watch list
	0.1: Seriously threatened in California
	0.2: Fairly endangered in California
	0.3: Not very endangered in California
	California Department of Fish and Wildlife (CDFW)
CNDDB	Tracked by CDFW in the CNDDB

[4] General Habitat Descriptions from CNPS.

TABLE B. SPECIAL-STATUS WILDLIFE SPECIES[1]

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Invertebrates		
Crotch bumble bee *Bombus crotchii*	Federal: None State: None Other: CNDDB	Occurs at relatively warm and dry sites, including the inner Coast Range of California and the margins of the Mojave Desert.
vernal pool fairy shrimp *Branchinecta lynchi*	Federal: FT State: None	Occur primarily in vernal pools, seasonal wetlands that fill with water during fall and winter rains and dry up in spring and summer. The majority of pools in any vernal pool complex are not inhabited by the species at any one time. Different pools within or between complexes may provide habitat for the fairy shrimp in alternative years, as climatic conditions vary.
Riverside fairy shrimp *Streptocephalus woottoni*	Federal: FE State: None	Lives in vernal pools of at least 30 centimeters in depth, from January through March. Found in Riverside and San Diego counties. Also found in northern Baja California.
Amphibians		
California red-legged frog *Rana draytonii*	Federal: FT State: None Other: SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development and must have access to aestivation habitat. Endemic to California and Baja California, at elevations ranging from sea level to 1,524 meters (5,000 feet). Has a distinct aquatic and upland habitat requirement which includes; pools of slow moving streams, perennial or ephemeral ponds and upland sheltering habitats.
southern mountain yellow-legged frog *Rana muscosa*	Federal: FE State: SE Other: WL	Found in the southern Sierra Nevada mountains in lakes, ponds, and streams. Requires breeding habitat that does not dry out year round.
western spadefoot *Spea hammondii*	Federal: None State: None Other: SSC	Grassland, oak woodland, coastal sage scrub, and chaparral vegetation in washes, floodplains, alluvial fans, playas, and alkali flats.
Reptiles		
coastal whiptail *Aspidoscelis tigris stejnegeri*	Federal: None State: None Other: SSC	Coastal sage scrub, chaparral, riparian areas, woodlands, and rocky areas.
western pond turtle *Emys marmorata*	Federal: None State: None Other: SSC	Uncommon to common in suitable aquatic habitat throughout California, west of the Sierra-Cascade crest and absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries. Inhabits permanent or nearly permanent bodies of water in many habitat types, below 6,000 feet (1,830 meters). This species requires basking sites such as partially submerged logs, vegetation mats, or open mud banks. Also needs suitable nesting sites.
coast horned lizard *Phrynosoma blainvillii*	Federal: None State: None Other: SSC	Inhabits coastal sage scrub and chaparral in arid and semiarid climates. Prefers friable, rocky, or shallow sandy soils.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Fish		
Santa Ana sucker *Catostomus santaanae*	Federal: FT State: None	Permanent streams and rivers, with depths from a few centimeters to over a meter. Water must be cool with variable flows. Substrates of gravel, rubble and boulders are preferred for foraging and required for breeding.
arroyo chub *Gila orcuttii*	Federal: None State: None Other: SSC	Required habitat includes slow-moving or backwater sections of warm to cool (10 to 24°C) streams with mud or sand substrates. Depths of streams are typically greater than 41 centimeters (16 inches).
Santa Ana speckled dace *Rhinichthys osculus spp*. 3	Federal: None State: None Other: SSC	Small springs or streams to large rivers and dep lakes. Prefer clear, well oxygenated water, with movement due to currents or waves. Deep cover and overhead protection are also preferred.
Birds		
Swainson's hawk *Buteo swainsoni*	Federal: None State: ST	Typical habitat is open desert, grassland, or cropland containing scattered, large trees or small groves. Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Forages in adjacent grasslands or suitable grain or alfalfa fields, or livestock pastures.
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	Federal: FT State: SE	Breeds in low to moderate elevation native forests lining the rivers and streams of western United States. Prefers cottonwood-willow forests. Migrate to wintering grounds in South America.
southwestern willow flycatcher *Empidonax traillii extimus*	Federal: FE State: SE	Riparian woodlands in southern California. Nests in extensive thickets of low, dense willows on edge of wet meadows, ponds, or backwaters, between 2,000 and 8,000 feet (610-2,440 meters). Dense willow thickets are required for nesting and roosting. Low, exposed branches are used for singing posts/hunting perches.
California condor *Gymnogyps californianus*	Federal: FE State: SE Other: FP	Aerial, cliff, grassland/herbaceous, savanna, shrubland/chaparral, conifer woodland, hardwood woodland, mixed woodlands, standing snag/hollow tree. Usual habitat is mountainous country at low and moderate elevations, especially rocky and brushy areas with cliffs available for nest sites, with foraging habitat encompassing grasslands, oak savannas, mountain plateaus, ridges, and canyons. Condors often roost in snags or tall open-branched trees near important foraging grounds.
coastal California gnatcatcher *Polioptila californica californica*	Federal: FT State: None Other: SSC	Obligate, permanent resident of coastal sage scrub below 2.500 feet (760 meters) in southern California. Inhabits low, coastal sage scrub in arid washes, on mesas and slopes.
least Bell's vireo *Vireo bellii pusillus*	Federal: FE State: SE	Summer resident of southern California in low riparian habitat in vicinity of water or in dry river bottoms, below 2,000 feet (610 meters).

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Mammals		
pallid bat *Antrozous palidus*	Federal: None State: None Other: SSC, WBWG-H	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rock areas for roosting. Roosts must protect bats from high temperatures; very sensitive to disturbance of roosting sites.
Townsend's big-eared bat *Corynorhinus townsendii*	Federal: None State: None Other: SSC, WBWG-H	Lives in a variety of communities, including coastal conifer and broad-leafed forests, oak and conifer woodlands, arid grasslands and deserts, and high-elevation forests and meadows. Throughout most of its geographic range, it is most common in mesic sites. Habitat must include appropriate roosting, maternity, and hibernacula sites, such as caves and cave-like formations, free from disturbances by humans.
silver-haired bat *Lasionycteris noctivagans*	Federal: None State: None Other: CNDDB, WBWG-M	Common, but erratic in abundance. During spring and fall migrations the silver-haired bat may be found anywhere in California. Primarily a coastal and montane forest dweller feeding over streams, ponds, and open brushy areas. Roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes and rarely under rocks. Needs drinking water.
hoary bat *Lasiurus cinereus*	Federal: None State: None Other: CNDDB, WBWG-M	May be found at any location in California. Winters along the coast and in southern California, breeding inland and north of the winter range. During migration, may be found at locations far from the normal range. Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees, feeds primarily on moths; requires water.
Los Angeles pocket mouse *Perognathus longimembris brevinasus*	Federal: None State: None Other: SSC	Lower elevation grasslands and coastal sage communities in and around the Los Angeles Basin; open ground with fine sandy soils; may not dig extensive burrows, instead may be found hiding under weeds and dead leaves.

[1] Special-status species known from the CNDDB to occur on the Van Nuys and Burbank quadrangles.

[2] Nomenclature for special-status wildlife conforms to CNDDB.

[3] Sensitivity Status Codes

Federal **FT** - Federally Threatened under Federal Endangered Species Act (FESA)
FE - Federally Endangered under FESA

State **ST** - State Threatened under California Endangered Species Act (CESA)
SE - State Endangered under CESA
SC – State Candidate for listing under CESA

Other **SSC** – Designated as a Species of Special Concern by CDFW
WL – Designated as a Watch List species by CDFW
CNDDB - Tracked by CDFW in the California Natural Diversity Data Base or considered locally sensitive

WBWG-H - Designated by the Western Bat Working Group (WBWG 2017) as High Priority - species that are imperiled or are at high risk of imperilment

WBWG-M - Designated by the WBWG (2017) as Medium Priority – a level of concern that should warrant closer evaluation, more research, and conservation actions of both species and possible threats.

[4] General Habitat Descriptions from CNDDB.

APPENDIX C

Phase I Archaeological and Paleontological Assessment

LOS ANGELES CITY TRUNK LINE NORTH PROJECT
PHASE I ARCHAEOLOGICAL AND PALEONTOLOGICAL ASSESSMENT
LOS ANGELES COUNTY, CALIFORNIA

Prepared for:
Los Angeles Department of Water and Power
Environmental Affairs
111 North Hope Street, Room 1044
Los Angeles, California 90012

Prepared by:
AECOM
300 South Grand Avenue, 8th Floor
Los Angeles, California 90071

Authors:
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December 2018

Acres: Approximately 52 acres U.S.G.S. 7.5' Quadrangles: San Fernando, Van Nuys

Keywords: San Fernando Valley, Mission San Fernando, Lopez Station, Van Norman Dam Complex, Strathern Avenue, City Trunk Line, San Fernando Siphon, Water Conveyance Systems

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EXECUTIVE SUMMARY

AECOM was retained by the Los Angeles Department of Water and Power (LADWP) to conduct a Phase I paleontological and cultural resources assessment for the Los Angeles City Trunk Line (CTLN) North Project. The objectives of the project are to (1) replace the existing, aging LACTL from the Van Norman Complex to the connection with City Trunk Line South Unit 1; and (2) increase reliability and resiliency to the Los Angeles Reservoir service area.

This document seeks to identify potential impacts to cultural resources in compliance with provisions of the California Environmental Quality Act (CEQA). This project may also receive federal funding from the Environmental Protection Agency through the Clean Water State Revolving Fund of the State Water Resources Control Board. Therefore, under the additional provisions of CEQA-Plus, potential impacts to cultural resources were also evaluated in accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA) (16 U.S. Code Section 470f) and its implementing regulations (36 Code of Federal Regulations [CFR] Part 800). This project will have no adverse effect on historic properties pursuant to Section 106 of the NHPA and its implementing regulations (36 CFR 800.4).

A records search in connection with this project was conducted in September 2015 at the South Central Coastal Information Center housed at California State University, Fullerton. The records search revealed that approximately 50 percent of the project area has been subject to previous cultural resources study. No cultural resources have been documented within the project area. However, the project area does pass by the San Fernando Mission and passes between the extant mission buildings and recorded mission activity areas.

LADWP is conducting government-to-government consultation in compliance with Assembly Bill 52 and other applicable laws. At the request of LADWP, the Native American Heritage Commission conducted a Sacred Lands File search of the project area, with negative results. One tribe contacted by LADWP requested to be informed if archaeological resources are encountered during excavations.

A field survey was conducted as part of this assessment to identify the presence of any cultural resources in the project area. The field survey resulted in the identification of one cultural resource, an above-ground segment of the existing San Fernando Siphon of the City Trunk Line. The resource does not appear eligible for either the National Register of Historic Places or California Register of Historical Resources. Thus, the project will not impact known cultural resources.

The project is located entirely in Quaternary alluvium, and therefore appears to have a low sensitivity for paleontological resources. If paleontological deposits are encountered during excavation, LADWP should contact a qualified paleontologist to evaluate and determine appropriate treatment for the resource in accordance with PRC Section 21083.2(i).

The lack of surface evidence of archaeological materials does not preclude the possibility that subsurface archaeological materials may exist. The presence of alluvium may mean that any

surface evidence of archaeological materials has been buried and could be encountered during excavation. Based on the results of this assessment, the project area is culturally sensitive for prehistoric and/or historic archaeological resources and tribal cultural resources. In particular, both historic and Native American archaeological materials may exist at the northwest end of the project area, including on the Van Norman Reservoir Complex property, along the old stagecoach road that is now Stranwood Avenue, and in the vicinity of Mission San Fernando.

The following recommendations are intended to reduce impacts to unanticipated archaeological resources. Because the potential to encounter archaeological resources exists for this project, a cultural resources monitoring and mitigation plan (CRMMP) should be prepared for the project. Archaeological and Native American monitoring should be conducted during ground-disturbing activities as specified in the CRMMP. The monitors will have the authority to redirect construction equipment in the event potential resources are encountered. If resources are encountered, work in the vicinity of the discovery will halt until appropriate treatment or further investigation of the resource is determined by a qualified archaeologist in accordance with the provisions of CEQA Guidelines Section 15064.5.

If any Native American cultural material is encountered within the project area, consultation with interested Native American parties should be conducted to apprise them of any such findings and solicit any comments they may have regarding appropriate treatment and disposition of the resources. In consultation with interested tribes, LADWP should evaluate whether the resources constitute tribal cultural resources.

In addition, it is recommended that the construction personnel and supervisory staff be given training on possible cultural resources that may be present in the area in order to establish an understanding of what to look for during ground-disturbing activities.

If human remains are discovered, work in the immediate vicinity of the discovery will be suspended and the Los Angeles County Coroner contacted. If the remains are deemed Native American in origin, the Coroner will contact the NAHC and identify a Most Likely Descendant pursuant to Public Resources Code Section 5097.98 and California Code of Regulations Section 15064.5. Work may be resumed at the landowner's discretion but will only commence after consultation and treatment have been concluded. Work may continue on other parts of the project while consultation and treatment are conducted. Any archaeological materials recovered should be prepared for and curated at an approved facility.

INTRODUCTION

This document reports a Phase I paleontological and cultural resources assessment conducted in connection with the Los Angeles City Trunk Line North (CTLN) Project (project). The Los Angeles Department of Water and Power (LADWP) proposes to replace the remaining in-service section of the Los Angeles City Trunk Line (LACTL) with approximately 33,000 linear feet of 54-inch-diameter trunk line. The new trunk line would originate at the LADWP Van Norman Complex in Sylmar and terminate adjacent to the Tujunga Spreading Grounds in Sun Valley.

This document was prepared in support of a Draft Environmental Impact Report in accordance with the California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq., and the State CEQA Guidelines, California Code of Regulations (CCR) Section 15000 et seq. Under the additional requirements of CEQA-Plus, it is also prepared in accordance with Section 106 of the National Historic Preservation Act (NHPA) (16 U.S. Code Section 470f) and its implementing regulations (36 Code of Federal Regulations [CFR] Part 800).

REPORT ORGANIZATION

This report is organized following the *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* guidelines, Department of Parks and Recreation (DPR), Office of Historic Preservation, State of California, 1990. These guidelines provide a standardized format and suggested report content, scaled to the size of the project. This report first includes a project description including project location and setting. Next, the environmental and cultural settings of the project area are presented. This is followed by the archival research methods and results, as well as a description of the Sacred Lands File (SLF) search and discussion of the results, including the Native American Contact Program. Then survey methodology and results are described. The final section summarizes the results of the cultural resources investigation and provides recommendations and conclusions for project mitigation.

PROJECT PERSONNEL

AECOM personnel involved in the cultural resources assessment are as follows: Marc Beherec, Ph.D. RPA, served as report author, conducted archival research, and performed the archaeological survey; Christy Dolan, M.A., RPA, performed senior review; Alec Stevenson, M.A., provided geographic information system support. Resumes of key personnel are included in Appendix A.

PROJECT DESCRIPTION

PROPOSED UNDERTAKING

The objectives of the project are to (1) replace the existing LACTL from the Van Norman Complex to the connection with City Trunk Line South (CTLS) Unit 1; and (2) increase reliability and resiliency to the Los Angeles Reservoir service area.

The original LACTL was installed in 1914 to serve the City of Los Angeles with water delivered to Van Norman Reservoir by the Los Angeles Aqueduct. It originally traversed the San Fernando Valley from Sylmar to the Santa Monica Mountains, where it entered the north portal of the Franklin Reservoir Tunnel. The southern portion of the LACTL, from Tujunga Spreading Grounds to the Franklin Tunnel, was replaced under the CTLS Project, which was completed in 2012. The proposed CTLN would follow the alignment of the existing LACTL at its northern and southern ends, but it would be realigned to the east, primarily in Arleta Avenue, for the majority of its length (Figures 1 and 2).

The CTLN would be built in two units based on the type of pipe material employed. Unit 1 would extend from the Van Norman Complex to Terra Bella Street, a distance of approximately 21,000 feet (Figure 3). The proposed trunk line would cross several active earthquake faults within Unit 1. Therefore, it has been determined that earthquake resistant ductile iron pipe (ERDIP) should be utilized to provide system resiliency during seismic events. Approximately 2,700 feet of Unit 1 would be located within the Van Norman Complex, and the balance would be located within public streets.

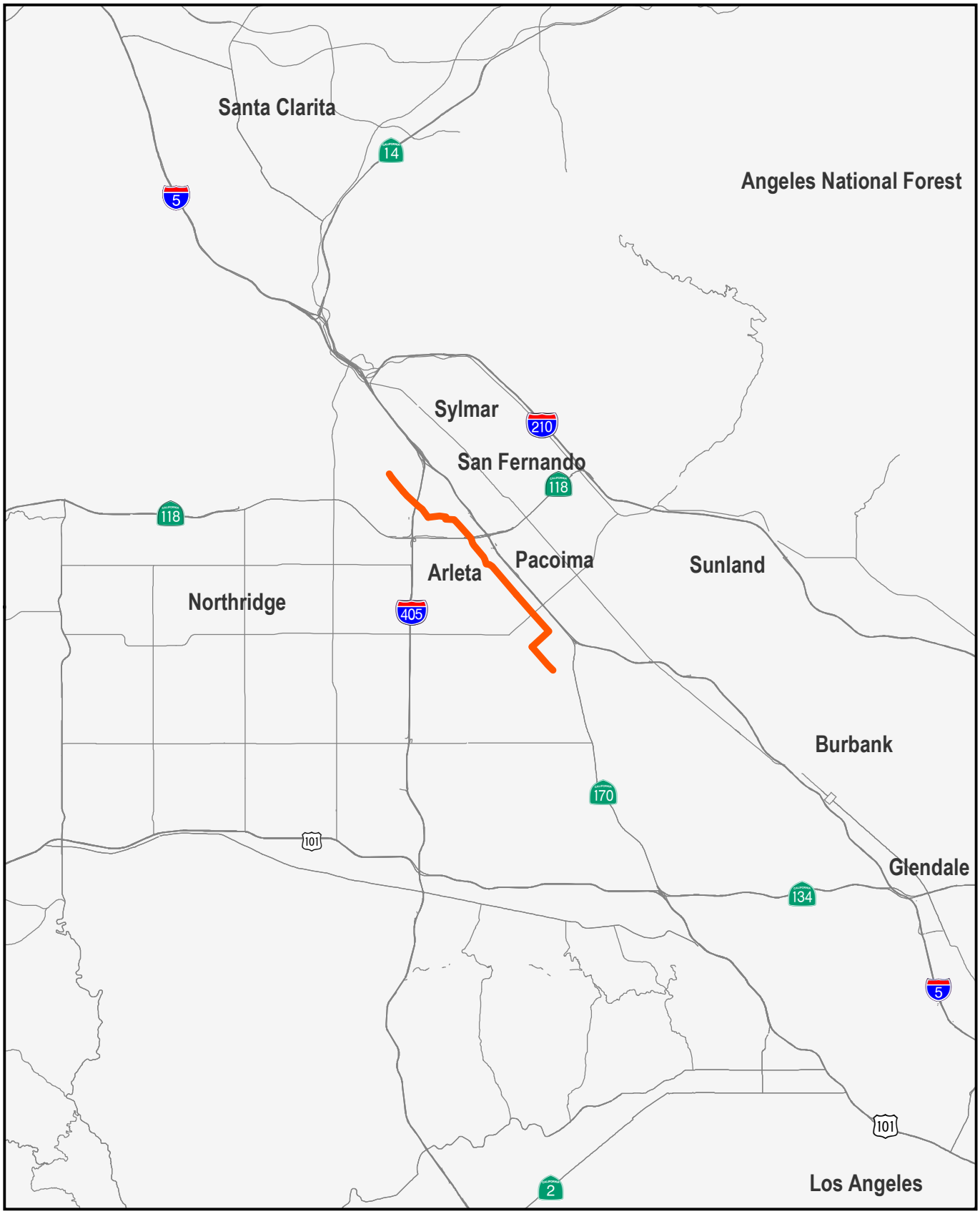
Based on preliminary estimates, approximately 14,000 feet of Unit 1 would be installed using traditional open-trench construction. The open-trench method involves the cutting of the road pavement and the excavation of a trench to the depth of the pipeline for the length of the installation. Approximately 5,000 feet of Unit 1 would be installed by slip-lining the new pipe within the existing LACTL. The slip-lining method would involve the excavation of launching and receiving pits at generally widely separated locations, depending on the straightness of the alignment, with no disturbance of the road surface between the pits.

In addition to the open-trench and slip-lining installation, a total of approximately 2,000 feet of the trunk line in Unit 1 would be installed using a jack and bore method at several sites along the alignment. Jack and bore involves installing the pipeline at greater depths from a launching pit to a receiving pit to avoid surface disturbance and minimize impacts at certain locations, including large road intersections, freeway underpasses, major substructure crossings, and channel crossings.

Unit 2 of the CTLN would extend from Terra Bella Street to the CTLS in Canterbury Avenue, just west of Tujunga Spreading Grounds, a distance of approximately 11,800 feet (Figure 4). The trunk line would not cross any active earthquake faults within Unit 2. Therefore, although pipe joints would be designed to withstand the applicable seismic loads, ERDIP is not required, and welded steel pipe would be utilized. All of Unit 2 would be located within public streets. Based

on preliminary estimates, about 7,200 feet of Unit 2 would be installed using traditional open-trench construction, and about 3,100 feet would be installed by slip-lining the new pipe within the existing LACTL. In addition, a total of approximately 1,500 feet of the trunk line would be installed using a jack and bore method at several sites along the alignment.

The vertical APE of the project is defined by the maximum depth of excavation for the project. For both the pipeline itself and the slip line pits, the maximum depth of excavations up to 20 feet. For the jacking pits, the maximum depth of excavation is 25 feet or greater, depending on local conditions (Figure 3).



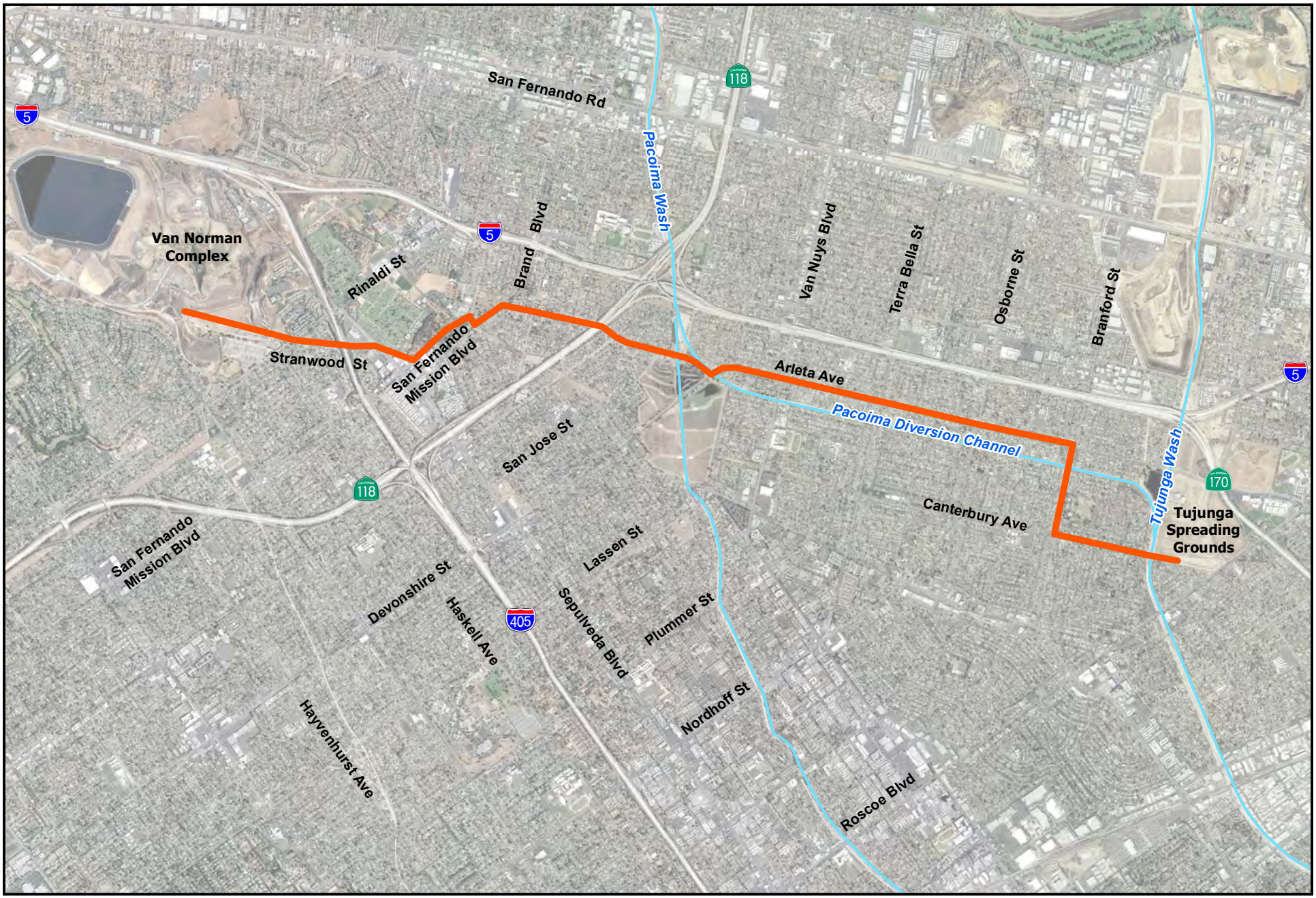
Source: Esri 2018; Created by: AECOM, 2018.

0 2 4 Miles

Proposed City Trunk Line North

Figure 1

Regional Map



Source: Esri 2018; Created by: AECOM, 2018.

Proposed City Trunk Line North

0 0.5 1 Miles

Figure 2

Proposed Project

Source: Esri 2018; Created by: AECOM, 2018.

Proposed Jacking
Proposed Slip Line Pit
Proposed City Trunk Line North - Slip Line Pipe
Proposed City Trunk Line North - 54" Pipe - Open Trench

0 0.5 1 Miles

Figure 3

Proposed Unit 1 of CTLN

Source: Esri 2018; Created by: AECOM, 2018.

Proposed Jacking
Proposed Slip Line Pit
Proposed City Trunk Line North - Slip Line Pipe
Proposed City Trunk Line North - 54" Pipe - Open Trench

0 1,500 3,000 Feet

Figure 4

Proposed Unit 2 of CTLN

SETTING

ENVIRONMENTAL SETTING

The project is located within the San Fernando Valley of the Los Angeles Basin. The Central Transverse Ranges Province forms an east-west–trending northern backdrop, while the northwest-oriented Peninsular Ranges Province bounds to the south. The Los Angeles Reservoir is nestled at the foot of San Fernando Pass, which straddles the San Gabriel Mountains to the northeast and Santa Susana Mountains to the north. The generally Mediterranean climate is characterized as mild, with warm, nearly rainless summers and mild winters with only occasional storms.

The project area is within the floodplain of the Los Angeles River and its tributaries. The River begins in the Simi Hills and Santa Susana Mountains. Historically, it and its tributaries, including the Tujunga Wash and Pacoima Wash, meandered through the San Fernando Valley. The surface sediment in the project area consists of gravels and alluvium deposited by major and minor tributaries to the Los Angeles River, including Pacoima Wash and Tujunga Wash (Dibblee and Ehrenspeck 1991).

The San Fernando Valley is within a valley floor with elevations ranging from 500 feet above sea level in the southeast to 1,000 feet above sea level in the west. Natural vegetation communities within the vicinity of the project consist mostly of willow woodland, mulefat scrub, and coastal sage scrub. Also present are areas of disturbed and non-native vegetation including park, ruderal, and pond that can be characterized as primarily park/ruderal habitat. Landscaping consists of ornamental tree plantings and maintained grass lawns, as well as areas composed of ornamental trees with an understory of ruderal species. Ruderal grassland occurs in disturbed areas where vegetation consists mainly of early successional native herbaceous plants. Black mustard (*Brassica nigra*) and wild radish (*Ralphanus sativus*) are common in this habitat as are several nonnative grasses, including ripgut brome (*Bromus diandrus*) and foxtail chess (*Bromus rubens*). Fauna historically found in the area include black-tailed jackrabbit (*Lepus californicus*), coyote (*Canis latrans*), and numerous rodents such as Botta's pocket gopher (*Thomomys bottae*) and pocket mice (*Perognathus* spp.). Red-tailed hawks (*Buteo jamaicensis*) were commonly found, as were western scrub jays (*Alphelocoma californica*), mourning doves (*Zenaida macroura*), and California quail (*Callipepla californica*).

CULTURAL SETTING

As a framework for discussing the types of cultural resources that might be encountered in the vicinity of the project, the following section summarizes our current understanding of major prehistoric and historic developments in and around Los Angeles and the San Fernando Valley. This is followed by a more focused discussion of the history of the project area itself.

Prehistoric Overview

The earliest occupation of southern California may be associated with the peoples who first colonized North America in the terminal Pleistocene/earliest Holocene. The material culture associated with these peoples is characterized by fluted bifaces. Among southern California's fluted bifaces is a fluted obsidian point found at CA-SDI-2506. That point was shaped from obsidian from the Casa Diablo source in Mono County, but was found in a stratified deposit beside what may be an ancient lake bed in Lost Valley, in the mountains of eastern San Diego County (Kline and Kline 2007). Other fluted bifaces have been reported at other locations in Santa Barbara and San Diego Counties (Rondeau 2009). Closest to the project area, the Farpoint Site near Malibu (CA-LAN-451) has yielded a fluted point, and its excavator argues the point is a Clovis point and that the site should be associated with the Clovis culture (Stickel 2008). Clovis is the earliest universally recognized material culture in North America, and dates to approximately 11,500 radiocarbon years before present (B.P.).

While people are known to have inhabited southern California beginning at least 13,000 B.P. (Arnold et al. 2004), the first evidence of human occupation in the Los Angeles area dates to at least 9000 B.P. and is associated with a period known as the Millingstone Cultural Horizon (Wallace 1955; Warren 1968). Millingstone populations established permanent settlements that were located primarily on the coast and in the vicinity of estuaries, lagoons, lakes, streams, and marshes where a variety of resources, including seeds, fish, shellfish, small mammals, and birds, were exploited. Early Millingstone occupations are typically identified by the presence of handstones (manos) and millingstones (metates), while those Millingstone occupations dating later than 5000 B.P. contain a mortar and pestle complex as well, signifying the exploitation of acorns in the region.

Although many aspects of Millingstone culture persisted, by 3500 B.P., a number of socioeconomic changes occurred (Erlandson 1994; Wallace 1955; Warren 1968). These changes are associated with the period known as the Intermediate Horizon (Wallace 1955). Increasing population size necessitated the intensification of existing terrestrial and marine resources (Erlandson 1994). This was accomplished in part through use of new technological innovations such as the circular shell fishhook on the coast, and in inland areas, use of the mortar and pestle to process an important new vegetal food staple, acorns; and the dart and atlatal resulting in a more diverse hunting capability. Evidence for shifts in settlement patterns has been noted as well at a variety of locations at this time and is seen by many researchers as reflecting increasingly territorial and sedentary populations. The Intermediate Horizon marks a period in which specialization in labor emerged, trading networks became an increasingly important means by which both utilitarian and non-utilitarian materials were acquired, and travel routes were extended.

The Late Prehistoric period, spanning from approximately 1500 years B.P. to the Spanish mission era, is the period associated with the florescence of contemporary Native American groups. The northern San Fernando Valley was the northernmost extent of the territory occupied by people whom the Spanish referred to as the Fernadeno, whose name was derived from nearby Mission San Fernando. The Fernadeno spoke one of four regional Uto-Aztecan dialects of Gabrielino, a Cupan language in the Takic family, and were culturally identical to the

Gabrielino. The Tataviam and Chumash, of the Hokan Chumashan language family, lived to the north and west of this territory, respectively, and it is likely that the territorial boundaries between these linguistically distinct groups fluctuated in prehistoric times (Bean and Smith 1978; Shipley 1978).

Occupying the southern Channel Islands and adjacent mainland areas of Los Angeles and Orange Counties, the Gabrielino are reported to have been second only to their Chumash neighbors in terms of population size, regional influence, and degree of sedentism (Bean and Smith 1978). The Gabrielino are estimated to have numbered around 5,000 in the pre-contact period (Kroeber 1925). Maps produced by early explorers indicate the existence of at least 40 Gabrielino villages, but as many as 100 may have existed prior to contact with Europeans (Bean and Smith 1978; McCawley 1996; Reid 1939[1852]).

Prehistoric subsistence consisted of hunting, fishing, and gathering. Small terrestrial game was hunted with deadfalls and rabbit drives, and by burning undergrowth, while larger game such as deer were hunted using bows and arrows. Fish were taken by hook and line, nets, traps, spears, and poison (Bean and Smith 1978; Reid 1939[1852]). The primary plant resources were the acorn, gathered in the fall and processed with mortars and pestles, and various seeds that were harvested in late spring and summer and ground with manos and metates. The seeds included chia and other sages, various grasses, and islay or holly leafed-cherry (Reid 1939[1852]). Seeds and nuts were pulverized in stone and wood mortars, ground on stone metates, and stored in stone bowls (Plate 1).

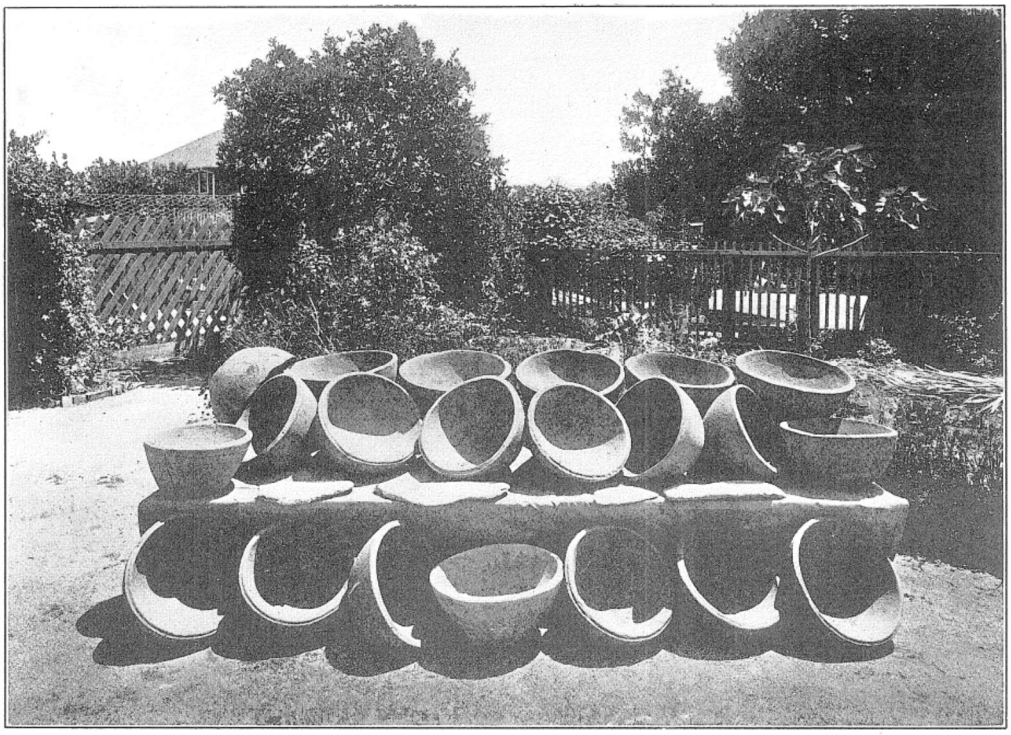


Plate 1: Stone Bowl Cache Found at CA-LAN-0160 in the San Fernando Valley (Rust 1906: Plate XL).

Historic Overview

Spanish explorers made brief visits to Gabrielino territory in both 1542 and 1602, and on both occasions the two groups exchanged trade items (McCawley 1996). Sustained contact with Europeans did not commence until the onset of the Spanish Period, which began in 1769 when Gaspar de Portola and a small Spanish contingent began their exploratory journey along the California coast from San Diego to Monterey. Mission San Fernado Rey de Espana, the seventeenth of the 21 Franciscan missions in Alta California, was founded on September 8, 1797, and completed less than a year later. Its location was chosen as a stopping point between Mission San Gabriel and Mission San Buenaventura (Engelhardt 1927).

More importantly, Mission San Fernando was founded in a location already populously inhabited. Several villages are documented near Mission San Fernando. The most populous was the village of Pasheeknga or Passenga. Another place documented in Mission San Fernando registers was Pakooynga, which probably lent its name to modern Pacoima. Mission registers state that ‘Achooykomenga was located on the place where the mission was founded. And Native American informants told anthropologist J.P. Harrington that a village named Shikwaanga existed in the meadow above the mission, near where the Lopez Station would later be established (McCawley 1996:38–39).

Mission San Fernando prospered by selling cattle hides and tallow and various fruit crops to the nearby Pueblo of Los Angeles (Wright 1992). Agriculture was made possible in the relatively dry area through the construction of a stone masonry dam in 1808, bringing water from the mountains to mission vineyards by way of a 1.3-mile-long aqueduct, completed in 1811.

Gabrielino villages are reported by early explorers to have been most abundant along the dominant rivers of the Los Angeles Basin, including the Los Angeles, San Gabriel, and Santa Ana Rivers. Ten important villages were located within the San Fernando Valley, and the most populous of these was Pasheeknga, located near where the Mission was established. In addition, according to mission baptismal records, a rancho called ‘Achooykomenga was at the site where the mission was founded. Other northern San Fernando Valley communities included Tohuunga and Muuhonga. Tohuunga was likely located near the mouth of Little Tujunga Canyon, while according to Gabrielino informant Jose Zalvidea, Muuhonga was located “about two and a half miles from San Fernando, farther up the canyon from San Fernando” (McCawley 1996:40). Mission records also list a community or settlement called Pakooynga, which probably lends its name to the modern community of Pacoima. One of J. P. Harrington’s informants claimed the name Pakooynga means “The Entrance” (McCawley 1996:38–39). Other sources claim the name Pacoima means “Rushing Waters” (e.g. Meagher 1955; Pacoima Chamber of Commerce n.d.).

By the early 1800s, the majority of the surviving Gabrielino population had entered the mission system. Mission life offered the Indians security in a time when their traditional trade and political alliances were failing and epidemics and subsistence instabilities were increasing (Jackson 1999). This lifestyle change also brought with it significant negative consequences for Gabrielino health and cultural integrity.

Alta California became a state, with its capital at Monterey, when Mexico won its independence from Spain in 1821. The authority of the California missions gradually declined, culminating with their secularization in 1834. Although the Mexican government directed that each mission's lands, livestock, and equipment be divided among its converts, the majority of these holdings quickly fell into non-Indigenous hands. Mission buildings were abandoned and quickly fell into decay. If mission life was difficult for Native Americans, secularization was typically worse. After two generations of dependence on the missions, they were suddenly disenfranchised. After secularization, "nearly all of the Gabrielinos went north while those of San Diego, San Luis, and San Juan overran this county, filling the Angeles and surrounding ranchos with more servants than were required" (Reid 1977 [1851]:104). Upon his 1852 visit to Los Angeles, John Russel Barlett wrote, "I saw more Indians about this place than in any part of California I had yet visited. They were chiefly mission Indians, i.e., those who had been connected with the missions and had derived their support from them until the suppression of those establishments. … They have no means of obtaining a living, as their lands are taken from them, and the missions for which they labored and which provided after a sort for many thousands of them, are abolished" (as cited in Sugranes 1909:77).

The first party of U.S. immigrants arrived in Los Angeles in 1841, although surreptitious commerce had previously been conducted between Mexican California and residents of the United States and its territories. Included in this first wave of immigrants were William Workman and John Rowland, who soon became influential landowners. As the possibility of a takeover of California by the United States loomed large, the Mexican government increased the number of land grants in an effort to keep the land in the hands of upper-class Californios like the Domínguez, Lugo, and Sepúlveda families (Wilkman and Wilkman 2006:14–17). Governor Pío Pico and his predecessors made more than 600 rancho grants between 1833 and 1846, putting most of the state's lands into private ownership for the first time (Gumprecht 1999). Alta California Governor Pio Pico sold the San Fernando Valley to Eulogio de Celis for $14,000 around this time. Having been established as a pueblo, property within Los Angeles could not be dispersed by the governor, and this task instead fell under the city council's jurisdiction (Robinson 1979).

The United States took control of California after the Mexican–American War of 1846, and seized Monterey, San Francisco, San Diego, and Los Angeles (then the state capital) with little resistance. Local unrest soon bubbled to the surface, and Los Angeles slipped from U.S. control in 1847. Hostilities officially ended with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the United States agreed to pay Mexico $15 million for the conquered territory, which included California, Nevada, and Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming. The conquered territory represented nearly half of Mexico's pre-1846 holdings. California joined the United States in 1850 as the 31st state (Wilkman and Wilkman 2006:15).

The discovery of gold in northern California led to an enormous influx of American citizens in the 1850s and 1860s, and these settlers rapidly displaced the old rancho families. In 1873, the U.S. government confirmed legal title to old Rancho ex-Mission San Fernando at 116,858.43 acres, the largest private land parcel in California. The Southern Pacific Railroad extended its line from San Francisco to Los Angeles in 1876, passing through the San Fernando Valley thanks to a new tunnel through Newhall Pass. Newcomers continued to pour into Los Angeles

and the population nearly doubled between 1870 and 1880. The completion of the second transcontinental line, the Santa Fe, took place in 1886 causing a fare war that drove fares to an unprecedented low. More settlers continued to head west and the demand for real estate skyrocketed. The city's population rose from 11,000 in 1880 to 50,000 by 1890 (Meyer 1981:45).

At the dawn of the 20th century, the pace of development within the Los Angeles Basin was stifled due to a limited water supply. Under the direction of city engineer William Mulholland, the Los Angeles Bureau of Water Works and Supply constructed the 238-mile-long Los Angeles Aqueduct. This five-year project, completed in 1913, employed the labor of over 5000 men and brought millions of gallons of water into the San Fernando (now Van Norman) Reservoir. During the first three decades of the 20th century, more than two million people moved to Los Angeles County, transforming it from a largely agricultural region into a major metropolitan area (Gumprecht 1999).

The beginning of the 20th century saw the florescence of a uniquely suburban metropolis, where a vast network of residential communities overshadowed city centers, where the single-family home was valued over the high-rise, and where private space took precedence over public space (Hawthorne 2006). This landscape demanded an innovative transportation solution, and Los Angeles embraced automobiles and freeways like no other city had. The first homemade car puttered down city streets in 1897. Seven years later, the first grand theft auto was reported by Los Angeles Police (Wilkman and Wilkman 2006:50). Inexpensive automobiles gained popularity in the 1920s, soon creating tremendous congestion in the centers of cities and necessitating alternate transportation routes. The Arroyo Seco Parkway, connecting Los Angeles to Pasadena, was among the earliest "express auto highways" in the United States, opening in December 1940 (Balzar 2006). Dozens of freeways were constructed in the post-World War II years, radically altering the character of Los Angeles by simultaneously dividing local neighborhoods and connecting outlying communities.

During the first three decades of the 20th century, more than two million people moved to Los Angeles County, transforming it from a largely agricultural region into a major metropolitan area. By 1945, Los Angeles had undertaken 95 annexations, expanding from a 28-square-mile agrarian pueblo into a densely populated city covering more than 450 square miles (Robinson 1979:245).

History of the Project Area

San Fernando Valley

Mission San Fernando Rey de Espana was founded by Fermín Francisco de Lasuén, Junipero Serra's successor as leader of the Alta California missions, in 1797. The mission was established between San Gabriel Mission and San Buenaventura Mission, at a site adjacent to the project area. The placement of Mission San Fernando, and missions in Alta California in general, was far from incidental since Franciscans carefully selected spaces with ample room for agriculture, access to water, and nearby sizeable Native American populations (Gentilcore 1961), which were needed in order to first erect the mission and second, to maintain an eventual mission system.

Under the direction of Father Francisco Dumetz and Father Juan Cortés, Native Americans built an adobe church, a storeroom, a weaving room, and a granary within one year of the mission's founding. Larger churches to accommodate the increasing numbers of Native Americans were built in 1800 and 1806 (MacMillan 1996). Native Americans produced shoes and saddles from the extensive mission cattle. Rawhides were also used in the architectural construction of the mission as they were used to hold boards together. Native Americans also produced cloth, brick, tile, soap, olive oil, and wine. The Mission also had a blacksmith shop where Natives fashioned iron tools and plows (MacMillan 1996). The new work schedules at Mission San Fernando undoubtedly contrasted to how time was perceived and made use of by the Gabrielinos and Chumash before Spanish contact. MacMillan (1996) notes that many Native Americans at Mission San Fernando rebelled by refusing to work or by working slow. It was also common for Native Americans to flee from the missions.

The San Fernando Valley mission life was not immediately affected in 1822 when New Spain gained its independence from Spain. In 1822, there were 1,001 indigenous individuals living within the mission. Native Americans continued agricultural work and cultivated wheat, barley, corn, beans, and peas. They also tended to their fruit trees, cattle, horses, and sheep, and vineyards (Robinson 1942). In 1834, though, the desecularization mission of post-Independence Mexico reached the San Fernando Mission (Robinson 1942). Secularization brought about a progressive deterioration at Mission San Fernando. Annual losses in farming were recorded and the indigenous population also increasingly drifted away from the mission center (Robinson 1942, 1963). With the decline of mission life, the physical mission itself, the symbol of centrality, also dissolved. Indians disbanded and mission celebrations broke down.

The new republic was characterized by chaotic rule. In Alta California, the disorder was witnessed in the dozen governors that ruled in the 26 years following independence and in the several uprisings that took place. Two of these rebellions took place near the Cahuenga Pass (Link 1991). In 1831, Jose Carillo and Abel Stearns battled the governor, Manuel Victoria, near the pass. Soon after the skirmish, Victoria resigned. In 1845, then Governor Manuel Micheltorena was met by a band of 284 rebels led by Juan Bautista Alvarado and Jose Castro. Peace was negotiated and again, a governor resigned from office. Micheltorena was followed by Pio Pico, the last governor under Mexican rule (Link 1991).

Amid the rebellions, gold was discovered in 1842, north of the ex-Mission San Fernando in Placerita Canyon. The discovery of gold prompted the migration of many prospectors who worked the canyon for several years and yielded six to eight thousand dollars each year (Robinson 1942).

The Mexican-American war was yet another circumstance that added to the San Fernando Valley's early 19th century turmoil. In 1846, the Mexican government authorized Pio Pico to take any steps necessary to protect Alta California from American invasion. Consequently, Pico sold the greater part of what was referred to as "Rancho Ex-Mission de San Fernando" in 1846 for $14,000. More than 116,000 acres were sold to a native of Spain, Eulogio de Celis. With the exception of Rancho Encino, Rancho El Escorpion, and a few hundred acres around the mission, de Celis purchased almost the entire valley. This sale effectively marked the valley's transition to

private ownership. In addition to payment, de Celis agreed to tend to the aging Native Americans on his newly acquired land and their respective agricultural autonomy.

The Mexican-American War terminated in Alta California with the Treaty of Cahuenga. The agreement was signed in the San Fernando Valley on January 13, 1847. Andres Pico and John C. Fremont, along with five men from each side, signed the treaty.

In 1852, de Celis filed a claim with the Board of Land Commission, a board specifically created by Congress to investigate Spanish and Mexican land titles in their newly acquired territories. The divergent Mexican and American legal as well as social practices often clashed in these investigations. These proceedings were also stagnant processes. For example, although de Celis' proprietary rights were validated by the Board after his appeal (Link 1991), it was not until 1873 that the United States District Court upheld the Board's findings (Robinson 1942).

De Celis, though, returned to Spain in 1853. His lessee (and later part owner), Andres Pico, remained at Rancho Ex-Mission of San Fernando and occupied the former mission buildings. In 1862, Andres Pico transferred his interests in the San Fernando Rancho to his brother, Pio. On July 2, 1869, Pio Pico once again sold the land. This time, however, the sale excluded certain areas such as 1,000 acres near the mission. Pico in turn used the money to build a hotel in Los Angeles that stands today, the Pico House. The sale was made to the San Fernando Farm Homestead Association, which was headed by Isaac Lankershim and I.N. Van Nuys. The Association fought the heirs of Eulogio de Celis in court and, in 1871, the District Court granted the Association full title to the southern portion of the valley. Under the administration of Lankershim and Van Nuys, the southern portion of the valley focused on wheat farming.

Meanwhile, efforts were made to link the valley to the outside world. In the early 1860s, Geronimo and Catalina Lopez established a stage stop in the hills northwest of Mission San Fernando. (Catalina's father was Don Pedro Lopez, at one time mayordomo of Mission San Fernando.) The Lopez Station became an important community gathering spot as well as a waystation for travelers. The valley's first English-language school was established there and, in 1869, the location became the valley's first post office.

The valley's northern portion was purchased by George K. Porter and Charles Maclay from Eulogio de Celis' son in 1874. Also in 1874, Maclay registered the City of San Fernando with the County Recorder in Los Angeles. He presented a map depicting streets, blocks, and several thousand 25-foot lots. The Southern Pacific Railroad extended from Los Angeles to the new city and essentially helped colonize it; in 1876, the San Fernando Tunnel connected Los Angeles through the valley to the north. The Southern Pacific offered passengers from Los Angeles to San Fernando half-rate if they traveled with the intention to purchase lands (Keffer 1934; Robinson 1942).

The novelty of a new city created a tourist attraction. Having a leisurely lunch at the old mission (Robinson 1942) likely aided in constructing a tourist attraction as feelings of charm, fantasy, and exoticism were created by the aged mission (Plate 2). Affective qualities were also likely drawn from the new city's comparison to the clamor of Los Angeles. San Fernando, its mission and its quiet and calm, represented a time and space gone by.

Plate 2: San Fernando Mission Convento Building, Circa 1900 (Oviatt Digital Collection). Horses and Wagons Stopped on Today's San Fernando Mission Boulevard.

However, the San Fernando Valley was not simply a romanticized, remote oasis. In addition to having Los Angeles readily accessible in 1874 through the Southern Pacific Railroad line, in just two short years the San Fernando Valley was connected to San Francisco. With Chinese men as the primary labor, the San Fernando Tunnel was completed in a near 16-month construction feat by 1876 (Robinson 1942, 1963).

In addition, the valley experienced a real estate boom in 1887 and 1888 and its immense fertile lands lured residents and developers. The Lankershim Ranch Land and Water Company purchased the east 1,200 acres of the southern half of the Rancho Ex-Mission of San Fernando from the Los Angeles Farm and Milling Company (formerly known as the San Fernando Homestead Association mentioned above). These acres were subdivided by the company in 10 to 40-acre parcels that sold for $5 to $150 each. In the northern half of the valley, land was also purchased for subdivision, and once again the San Fernando Valley was packaged and sold on the real estate market as a fertile agriculture endeavor. This agronomic promise was also a reality, however. The wheat producing business that was pioneered by Lankershim and Van Nuys in the early 1870s had become a production machine by the late 1800s. Flour milling was supplemented to wheat farming; in 1888, 510,000 bushels of wheat were produced and milled by the Los Angeles Farm and Milling Company (Robinson 1942).

Meanwhile, the mission remained an important tourist attraction. Beginning in 1904, a series of roads representing the route connecting the California Missions was designated El Camino Real.

In 1906, cast metal bells were set out along the route, one of them outside Mission San Fernando. The California Department of Transportation (Caltrans) is now guardian of the bells and has replaced many lost or damaged bells with new ones cast from the original 1906 mold (Masters 2013).

Leslie C. Brand, who organized the San Fernando Mission Land Company in 1904, developed much of the northern San Fernando Valley (Robinson 1942). Brand and his associates laid out Brand Boulevard. Although the lands south of Mission San Fernando would not be developed as a subdivision until the 1940s and 1950s, Brand foresightedly donated the land immediately south of the mission for the creation of a park in the 1920s. The park preserved one mission fountain, which stands across Mission San Fernando Boulevard from the main entrance to the mission's convent building. Brand had another, larger mission fountain moved into the new park land from property he retained. A garden, modeled on the "sacred garden" at Mission Santa Barbara, was laid out, with its short axis pointing toward the in situ mission fountain and the main entrance to the mission convent building (Woodward 1936).

Another critical moment in the valley's history came in 1913 when the irrigation plan proposed by Los Angeles mayor, Fred Eaton, and Los Angeles water department engineer, William Mulholland, took its material form. The Los Angeles Aqueduct brought water from the Owens Valley in the High Sierra to Los Angeles. The construction of the aqueduct, and President Theodore Roosevelt's prohibition of selling Owens Valley water outside the City of Los Angeles, led to the annexation of most of the San Fernando Valley into the City of Los Angeles (Kahrl 2013). To take advantage of the water supply for the dry farming area, most of the various valley communities agreed to be annexed by Los Angeles at different times from 1915 through 1923 (Robinson 1963). Because of the prosperity the aqueduct brought to the San Fernando Valley, Pacoima was briefly renamed Mulholland (Pacoima Chamber of Commerce n.d.).

To complete the aqueduct system, the former Lopez Station was demolished to build the San Fernando Reservoir, which marked the end of the aqueduct and the beginning of the city water system. (This reservoir was later renamed for Bureau of Water Works and Supply Chief Engineer Harvey Arthur Van Norman.) To bring water from the end of the aqueduct system to the City of Los Angeles, the same engineers who constructed the aqueduct designed and constructed the City Trunk Line.

The first segment of the City Trunk Line was the San Fernando Siphon. This segment, measured 63,327 feet (almost 12 miles), and stretched from the Lower San Fernando Reservoir across the San Fernando Valley to the City of Los Angeles' water supply outlet. It required 8,260 tons of steel to complete. At the time of its construction, Burt A. Heinly, Mulholland's secretary, claimed in the pages of *Engineering and Contracting*, "This siphon … comprises the most difficult and expensive part of the City Trunk Line … and is a noteworthy example of pipe line construction and design" (Heinly 1915:392).

Two camps were established, each of 225 men, to build the siphon. One camp was located at the siphon intake and the other midway along the siphon's length. The steel was taken to railroad sidings where it was unloaded and then hauled by four-mule teams to its required location. It arrived as finished steel plate, and was assembled by three-man teams of riveters. The pipe was

assembled in segments ranging from 62 inches to 72 inches in diameter, and was riveted in double or triple rivets. The pipe was buried along most of the length of the siphon. The plates were riveted together into four-ring segments, 24 feet long, on the sides of the excavated trench. They were then hoisted into the trench with a derrick and put on a wheel and track system to maneuver it into position (Plate 3). In the trench, another crew bolted the new segment to the segment already in place. For a distance of 1,608 below the dam (including in the north end of the project area), the pipe was mounted on concrete piers measuring 7 feet long and 1.5 feet wide and ranging from 1 foot to 15 feet above the ground surface. A total of 68 concrete piers were constructed and were placed approximately every 24 feet (Heinly 1914, 1915).

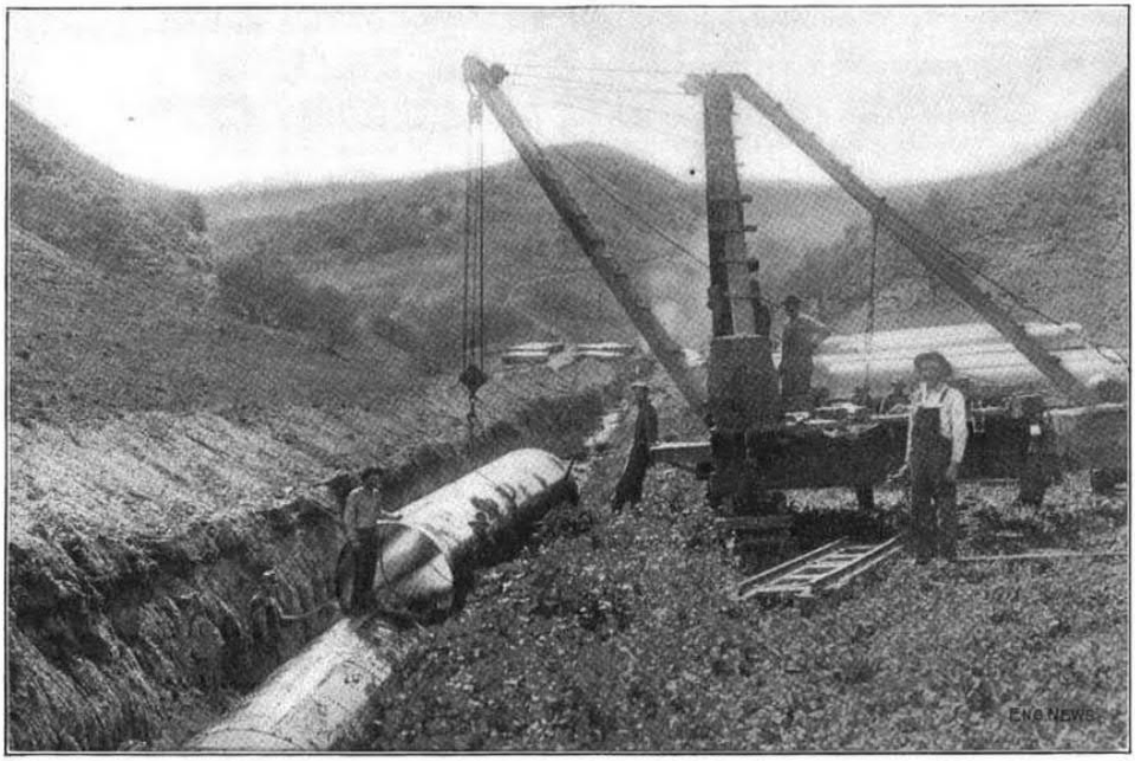


Plate 3: Constructing the San Fernando Siphon of the City Trunk Line (Heinly 1914:1147).

ARCHIVAL RESEARCH AND CONTACT PROGRAM

The cultural resources investigation for this project involved archival research, including cultural resources records search, a search of Sacred Lands File, and other background research.

ARCHIVAL RESEARCH

Archival research for this project was originally conducted in October 2013, at the South Central Coastal Information Center (SCCIC) housed at California State University, Fullerton. In early September 2015, the records search was updated to account for any changes to the archival data in the intervening years. The research focused on the identification of previously recorded cultural resources within the project area as well as within a 0.5-mile radius of the project area (study area). The archival research included review of previously recorded archaeological site records and reports, historic site and property inventories, and historic maps. Inventories of the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), the California State Historic Resources Inventory (HRI), California Historical Landmarks, and Points of Interest were also reviewed to identify cultural resources within both the project and study areas.

Records Search

The records search revealed that 68 cultural resource investigations were previously conducted within 0.5 mile of the project area (Table 1). In addition to the mapped investigations, a Phase I archaeological survey report for the Los Angeles Groundwater Replenishment Project, prepared by AECOM for LADWP, has been given to the SCCIC but does not yet appear on SCCIC maps. Approximately 50 percent of the area of potential effects (APE) has been previously surveyed or otherwise investigated (Figure 5).

Table 1. Previous Surveys Conducted within 0.5 Mile of the Project Area

Author	Report (LA-)	Description	Date
Kelly, Roger E., and Gerald R. Gates	00051	Cultural Resources of Los Angeles Reservoir, City of Los Angeles	1974
Gates, Gerald R.	00097	Report on the Salvage Excavation of CA-LAN- 493 and CA-LAN-645, Located in the Van Norman Reservoir Complex, City of Los Angeles	1975
Gates, Gerald R.	00818	Archaeological Resources of the Van Norman Reservoir Area: A Preliminary Report	1973
Rechtman, Robert B., and Richard D. Aycock	01151	An Archaeological Resource Survey and Impact Report Assessment of a 9 Acre Parcel, Eastern Holy Cross Property, Los Angeles County, California	1982
Lewis, Brandon S.	01379	Archaeological Resource Survey and Impact Evaluation for the Tujunga Well Field Site, Located Between Hollywood Freeway and Arleta Avenue, San Fernando Valley	1988

Author	Report (LA-)	Description	Date
Greenwood, Roberta S., and John M. Foster	01381	Cultural Resource Investigation of Ex-Mission Property, 14937 San Fernando Mission Boulevard, Los Angeles County	1984
Toren, George A.	01590	Archaeological Investigation at 14937 San Fernando Mission Boulevard (CA-LAN-169a) Los Angeles, California	1986
Lewis, Brandon S.	01699*	Archaeological Resource Survey and Impact Evaluation for the Tujunga Well Field Site, Located Between the Hollywood Freeway and Canterbury Avenue, San Fernando Valley	1988
Garfinkel, Alan P.	01981	The Andres Pico Adobe: A Research Proposal	1972
Knight, Albert	02488	The Andres Pico Adobe	1991
Wlodarski, Robert J.	02517	A Phase 1 Archaeological Study for Eight Areas Proposed for the New Los Angeles Police Training Academy, and Driver Training Facility, City of Los Angeles County, California	1991
Padon, Beth	02591	Archaeological Monitoring Report for the Tujunga Pumping Station Complex	1992
Anonymous	02683	Draft Environmental Impact Report for the Police Bond Program Police Driver Training Facility	1992
Anonymous	02950	Consolidated Report: Cultural Resource Studies for the Proposed Pacific Pipeline Project	1992
Knight, Albert	03009	Damages to and Losses of Cultural Resources in Los Angeles County, California During the Riots, Fire Storms and Earthquakes of 1992-1994	1994
Davis, Gene	03289	Mobil M-70 Pipeline Replacement Project Cultural Resource Survey Report for Mobil Corporation	1990
Stickel, Gary E.	03486	A Cultural Resources Inventory for the East Valley Water Reclamation Project	1994
Getchell, Barbie Stevenson, and John E. Atwood	03670	Cultural Resources Monitoring for the Stranwood Avenue to Sepulveda Boulevard Drain Project Located in the Community of Mission Hills, Los Angeles County, California	1997
Anonymous	03724	Historic Property Survey Roscoe Boulevard - Coldwater Canyon Avenue to Ventura Canyon Avenue	1977
McLean, Deborah K.	03977	Archaeological Assessment for Pacific Bell Mobile Services Telecommunications Facility La125-01, 13751 Van Nuys Boulevard, Pacoima, City and County of Los Angeles, California	1998
York, Andrew L., and Gene Davis	04107	B1r Route Variation Supplement & Templin Hwy Supplement to Mobile M-70 Pipeline Replacement Project Cultural Resources Survey Report	1991
Duke, Curt	04765	Cultural Resource Assessment for Pacific Bell Mobile Services Facility LA 221-02, County of Los Angeles, California	2000
Smith, Philomene C.	04858	Nasr Cold Plane Existing Pavement on Various On/Off-Ramps on Route 170 and One On-Ramp Route 5 with Rubberized Asphalt Concrete	2000
Duke, Curt	04966	Cultural Resource Assessment for AT&T Fixed Wireless Services Facility Number La_ 121_a, County of Los Angeles, California	2000
Iverson, Gary	05174	Negative Archaeological Survey Report: 20180k	1999
Sylvia, Barbara	05546	Negative Archaeological Survey Report	2001

Author	Report (LA-)	Description	Date
Bonner, Wayne H., and Arabesque Said	10293	Cultural Resource Records Search and Site Visit Results for T-Mobile USA Candidate SV12191B (Muscatine), 12860 Muscatine Street, Pacoima, Los Angeles County, California	2009
Duke, Curt	05596	Cultural Resource Assessment for Pacific Bell Wireless Facility La 141-03 County of Los Angeles, California	2000
Duke, Curt	05607	Cultural Resource Assessment for AT&T Wireless Services Facility Number La_191_a, County of Los Angeles, California	2001
McKenna, Jeanette A.	05611	A Phase 1 Cultural Resource Investigation of the Proposed Los Angeles Unified School District East Valley High School #2 in the Community of Pacoima City of Los Angeles, Los Angeles County, California	2001
Christy, Juliet L.	05676	Negative Archaeological Survey Report: Improvements on Van Nuys Boulevard Bridge over Pacoima Diversion Channel, Between Arleta Avenue and Beach Avenue, in the Los Angeles Community of Pacoima	2001
Duke, Curt	05749	Cultural Resource Assessment Cingular Wireless Facility No. Vy 191-01, Los Angeles County, California	2002
Duke, Curt	05928	Cultural Resources Assessment for AT&T Fixed Wireless Services Facility Number La_121_a, County of Los Angeles, California	2000
Sylvia, Barbara	06740	Highway Project to Construct Soundwalls at Three Locations along Interstate 5 in the San Fernando Valley Area of Los Angeles County	2000
Foster, John M.	06997	Archaeological Investigation for Northeast Valley Animal Shelter (Stranwood), Task ID No. Nev002, City of Los Angeles, California	2002
Chakurian, Anthony	07004	Site ID Number: D021-Mission Park Medical Center Geotrans Project Number: l260-734 Proposed AT&T Wireless Telecommunication Equipment Installation, 11273 Laurel Canyon Boulevard, San Fernando, California 91324	2001
Foster, John M.	07014	Highway Project for Devonshire Street Bridge Improvement Program in the City of Los Angeles	2002
Miller, Jason A.	07187	Archaeological Monitoring during Trenching at the Encino Reservoir, Los Angeles County, California	2001
Bonner, Wayne H.	07789	Cultural Resource Records Search and Site Visit for Cingular Telecommunications Facility Candidate Vy-321-01 (Victory Outreach), 13580 Osbourne Street, Arleta, Los Angeles County, California	2003
Bonner, Wayne H.	07790	Records Search Results and Site Visit for Sprint Telecommunications Facility Candidate La60x508d (Victory Outreach) 13580 Osborne Street, Arleta, Los Angeles County, California	2004
Bonner, Wayne H., and Christeen Taniguchi	07791	Indirect APE Historic Architectural Assessments for Sprint Telecommunications Facility Candidate La 60xc508d (victory Outreach), 13588 Osborne Street, Arleta, Los Angeles County, California	2004
Hale, Alice E.	07815*	Cultural Resources Survey Report Wentworth Street Bridge over Pacoima Diversion Channel Los Angeles County, California Project No. 071502-h	2002

Author	Report (LA-)	Description	Date
Hale, Alice E.	07816*	Highway Project Bridge Improvement Program-Wentworth Street Bridge Improvement Program	2002
Wlodarski, Robert J.	07903	Record Search and Field Reconnaissance for the Proposed Royal Street Communications Wireless Telecommunications Site La0042a (North Valley Storage-Rindaldi), Located at 14800 Rinaldi Street, Mission Hills, California 91345	2006
Bonner, Wayne H.	08838	Cultural Resources Records Search Results and Site Visit for T-Mobile Candidate Sv00948sd (Odyssey), 15600 Odyssey Drive, Granada Hills, Los Angeles County, California	2006
Bonner, Wayne H.	09179	Cultural Resources Records Search and Site Visit Results for T-Mobile Candidate SV11270B (Wingo and Bromwich Near I-5), 13333 Osborne Street, Arleta, Los Angeles County, California	2007
Carmack, Shannon, and Judith Marvin	09299	Cultural Resource Assessment Cingular Wireless Facility No. VY 312-02 Community of Arleta, Los Angeles County, California	2004
Bonner, Wayne H.	09584	Cultural Resources Records Search and Site Visit Results for T-Mobile USA Candidate SV00948F (Blucher Inn & Suites), 11510 Blucher Ave., Granada Hills, Los Angeles County, California	2008
Bonner, Wayne H., and Christeen Taniguchi	10000	Records Search and Site Visit Results for Sprint Telecommunications Facility Candidate La60xc504b (Mel-O-Dee Garden Center) 14906 Chatsworth Drive, Los Angeles, Los Angeles County, California	2004
Bonner, Wayne H., and Christeen Taniguchi	10002	Indirect APE Historic Architectural Assessment Results for Sprint Telecommunications Facility Candidate La60xc504b (Mel-O-Dee Garden Center), 14906 Chatsworth Drive, Los Angeles, Los Angeles County, California	1981
Foster, John M.	10003	An Extended Phase I Archaeological Program, Northeast Valley Animal Shelter Mission Hills, California	2004
Foster, John M.	10004	Archaeological Monitoring Program, Northeast Valley Animal Shelter Mission Hills, California	2005
Smith, Phil, and Gary Iverson	10179	Highway Project Description - 1Y0201	2000
Bonner, Wayne H., Sarah A. Williams, and Kathleen Crawford	10277	Cultural Resources Records Search and Site Visit Results for T-Mobile USA Candidate SV11945A (Han Yang Presbyterian Church), 13500 Branford Street, Pacoima, Los Angeles County, California	2009
Bonner, Wayne H., and Arabesque Said	10293	Cultural Resource Records Search and Site Visit Results for T-Mobile USA Candidate SV12191B (Muscatine), 12860 Muscatine Street, Pacoima, Los Angeles County, California	2009
Tang, Bai "Tom"	10642	Preliminary Historical/Archaeological Resources Study, Antelope Valley line Positive Train Control (PTC) Project Southern California Regional Rail Authority, Lancaster to Glendale, Los Angeles County, California	2010

Author	Report (LA-)	Description	Date
McKenna, Jeanette	10756	A Cultural Resources Overview and Preliminary Assessment of the Pacoima/Panorama City Redevelopment Plan Amendment/Expansion Project Area, Los Angeles County, California	2010
Bray, Madeleine	10898	Fox and Laurel Canyon Park Project, 14353 West Fox Street, City of Los Angeles, California, Phase I Cultural Resources Study	2011
Abdo-Hintzman, Kholod, M. Colleen Hamilton, and Keith Warren	10961	Archaeological Phase III Data Recovery at Mission San Fernando for the Brand Park Community Center. Mission Hills, San Fernando Valley, California	2010
Wallace, James R., and Sara Dietler	11186	Archaeological Monitoring Report and Assessment for the Van Norman Chloramination Stations Nos. 1 & 2, Los Angeles, California	2011
Travers, Ariela	11260	Cultural Resources Analysis: Arleta Target/CA-LOS0081 9725 Laurel Canyon Blvd. Pacoima, Los Angeles County, California 91331, EBI Project No. 61100740	2010
Maxon, Patrick	11606	Phase I Cultural Resources Assessment, Sylmar Ground Return Replacement Project, Los Angeles County, California	2011
Watson, Tracy	11663	McDonald's Restaurant No.834 Wireless Antenna Indoor Installation 11015 Sepulveda Boulevard Mission Hills, Los Angeles County, California	2012
Dietler, Sara, Linda Kry, and Heather Gibson	11818	Phase I Cultural Resources Assessment for the Van Norman Complex Water Quality Improvement Project City of Los Angeles, California	2012
Supernowicz, Dana	12067	Cultural Resources Study of the Highland Church Project, MetroPCS California, LLC Site No. MLAX04164, 7131 N Figueroa Street, Los Angeles, Los Angeles County, California 90042	2010
Bonner, Wayne, and Kathleen Crawford	12259	Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate SV00822A (VY321 DWP @ Osbourne), 9262 Canterbury Avenue, Los Angeles, Los Angeles County, California	2012
Fulton, Phil, and Casey Tibbet	12460	Cultural Resource Assessment Class III Inventory Verizon Wireless Services Beachy Facility, City of Los Angeles, Los Angeles County, California	2013
Maxon, Patrick	12607	Woodman Avenue Multi-Beneficial Stormwater Capture Pilot Project, Cultural Resources Study Los Angeles, California	2014
Millington, Chris, Sara Dietler, Brandi Shawn, and Heather Gibson	12635	Cultural Resources Monitoring report for the San Fernando Substation Grounding Rods and Lateral Installation Project (IO329985), Mission Hills, City of Los Angeles, Los Angeles County, California	2014
Beherec, Marc, Linda Kry, M. K. Meiser, and James R. Wallace	Report Number Pending*	Los Angeles Groundwater Replenishment Project Phase I Archaeological Assessment, Los Angeles County, California	2015

*Investigations overlapping the project area.

Previously Recorded Cultural Resources

The records search indicated that 23 cultural resources have been previously recorded within 0.5 mile of the project area (Table 2). In addition, one unmapped prehistoric village site, which was the subject of an article published in *American Anthropologist*, may exist within 0.5 mile of the project area (Rust 1906).

The cultural resources include one prehistoric village site with stone bowl cache (which is the unmapped resource); one prehistoric lithic and groundstone scatter; two multicomponent sites including prehistoric lithic and groundstone scatters with historic refuse; one multicomponent archaeological site including prehistoric lithic and groundstone scatter with a possible historic grave; one mission period archaeological site with stone foundations and later refuse; two historic period archaeological sites consisting of refuse deposits; the site of the demolished San Fernando Mission Church; the Mission San Fernando Convento Building; a mission period dam; the Andreas Pico/Romulo Pico Adobe and associated archaeological deposits; a historic garden with mission period oven and fountain; six historic-in-age residences; two historic-in-age transmission towers; a concrete-lined stormwater channel; and a middle 20th century church and school complex.

As the resource boundaries are currently defined, none of these resources overlap the project area. A resource location map is provided in confidential Appendix B. However, the project segment on the private road north of Rinaldi Road is located in proximity to sites 19-004227H and 19-004228H. One of these is a historic refuse scatter. The other is a multicomponent prehistoric groundstone scatter and historic refuse scatter. Several prehistoric sites, some of which are outside the 0.5-mile buffer, have been excavated on the Van Norman Complex property (Bellenger 2016).

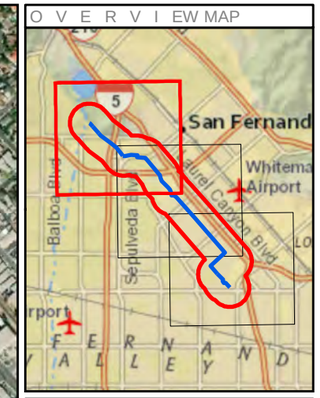
In addition, the segment of the project area located on San Fernando Mission Boulevard between Stanwood Avenue and Noble Avenue is adjacent to the Mission San Fernando building complex and divides the former mission property. The site of the demolished mission church and its rebuilt replica (19-000169) and the still-standing Convento Building (19-167231) are north of the road. Additional mission-era structures are in Brand Park Memory Garden, south of the road (19-186558). The resource boundaries of today are based upon current land uses and boundaries rather than mission-era land use. DPR forms for 19-000169, 19-167231, and 19-186558 are included in confidential Appendix B.

Table 2. Previously Recorded Cultural Resources within 0.5 Mile of the Project Area

Primary Number (P-19-)	Other Identifier	Description	Time Period	Eligibility Status
000160	Unmapped: Hunt Property, San Fernando, California	Possible village site: fragments of 30 stone bowls, plus one cache of 21 stone bowls in an approximately 4-foot by 5-foot area	Prehistoric	Unevaluated

Primary Number (P-19-)	Other Identifier	Description	Time Period	Eligibility Status
000169	Mission San Fernando Rey de Espana, 15151 San Fernando Mission Boulevard	Demolished mission church	Founded 1797	Removed from NRHP after demolition
000475	Van Norman Dam Site or Van Norman Reservoir Site	Prehistoric stone bowls, pestles, metates, manos, and mortars; 19th century glass and square nails	Prehistoric/ Historic	Unevaluated
000491	Van Norman #3	Metate, flakes, mano fragments, historic metal	Prehistoric/ Historic	Unevaluated
000492	Van Norman #4	Cores, flakes, mano fragments	Prehistoric	Unevaluated
000493	Van Norman #5	Manos, flakes, cores, roof tiles	Prehistoric/ Historic	Unevaluated
000646H	V.S 11	Metate fragments, mano fragments, lithic debitage, cores, possible historic grave	Prehistoric/ Historic	Unevaluated
000960	None	Lime mortar mission dam	Mission Period	Unevaluated
002006H	Andres Pico Adobe; Romulo Pico Adobe; Ranchito Romulo; 10940 Sepulveda Boulevard	2-story adobe house plus prehistoric artifacts and historic refuse deposits	1834–present	Listed in NRHP
003182	Northeast Valley Animal Shelter	Stone foundations and historic artifacts	Mission Period–early 20th century	Unevaluated
004227H	Van Norman Chloramination Tank No. 2	Groundstone, bricks, horseshoe, railroad spike	Prehistoric/ historic	Unevaluated
004228H	Van Norman Chloramination Tank No. 2-1	Historic refuse scatter including glass fragments, horseshoes, unidentified metal fragments, faunal remains, fire-affected rock, and charcoal fragments	Ca. 1880–1945	Unevaluated
167231	Mission San Fernando Re de Espana Convento Building; 15151 San Fernando Mission Boulevard	Mission convent building	Ca. 1810–1922	Listed in NRHP
180721	Romulo (Andres) Pico Adobe; Romulo Pico Adobe; 10940 Sepulveda Boulevard	2-story adobe house	1834	Listed in NRHP

Primary Number (P-19-)	Other Identifier	Description	Time Period	Eligibility Status
186558	Brand Park (Memory Garden); 15174 San Fernando Mission Boulevard	6-acre garden, with Mission period oven and fountain	Mission period–1920s	Unevaluated
187806	13571 Osborn Street	1-story Modern Ranch style residence	Ca. 1952	Determined ineligible for NRHP by consensus through Section 106 process – Not evaluated for CRHR or Local Listing
187807	13577 Osborn Street	1-story Modern Ranch style residence	Ca. 1952	Determined ineligible for NRHP by consensus through Section 106 process – Not evaluated for CRHR or Local Listing
188051	14944 Chatsworth Drive	1-story Modern Minimal Traditional residence	Ca. 1952	Determined ineligible for NRHP by consensus through Section 106 process – Not evaluated for CRHR or Local Listing
188052	14936 Chatsworth Drive	1-story Modern Minimal Traditional residence	Ca. 1952	Determined ineligible for NRHP by consensus through Section 106 process – Not evaluated for CRHR or Local Listing
188053	14930 Chatsworth Drive	1-story Modern Minimal Traditional residence	Ca. 1952	Determined ineligible for NRHP by consensus through Section 106 process – Not evaluated for CRHR or Local Listing
188054	14922 Chatsworth Drive	1-story Modern Minimal Traditional residence	1957	Determined ineligible for NRHP by consensus through Section 106 process – Not evaluated for CRHR or Local Listing
188174	DWP Transmission Towers	2 elevated metal transmission towers	1954	Recommended ineligible for NRHP; not evaluated for CRHR or Local Listing
190043	Bull Creek Extension Channel	Partially concrete-lined stormwater channel	1940; modified 1960	Recommended ineligible for CRHR
190649	Han Yang Presbyterian Church and Korean School; 13500 Branford Street	2-story stucco church building and 2-story school building	1953	Recommended ineligible for NRHP; not evaluated for CRHR or Local Listing



Legend

- Project Area
- Report Location (Point)
- Report Location (Line)
- Report Location (Polygon)
- Half Mile Buffer

NORTH

0 0.25

Miles

Scale 1:12,000

1 inch = 1,000 feet

City Trunk Line

Cultural Resource Report Boundaries

AECOM

Figure 5

10000 and 10002
4765
5546
3977 and 5928
4866
2950, 10179, and 10642
7014
10756
Report Number Pending
5676
5611
10179
3486
11260
9179
11260

Service Layer Credits: Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

Path: C:\GIS Data\Projects\City Trunk Line\MXD\City_Trunk_Line_Reports_11x17.mxd | Coordinate System: NAD 1983 UTM Zone 11N | User: stevensona1

O V E R V I EW MAP

Legend

- Project Area
- Report Location (Point)
- Report Location (Line)
- Report Location (Polygon)
- Half Mile Buffer

NORTH

0 0.25

Miles

Scale 1:12,000

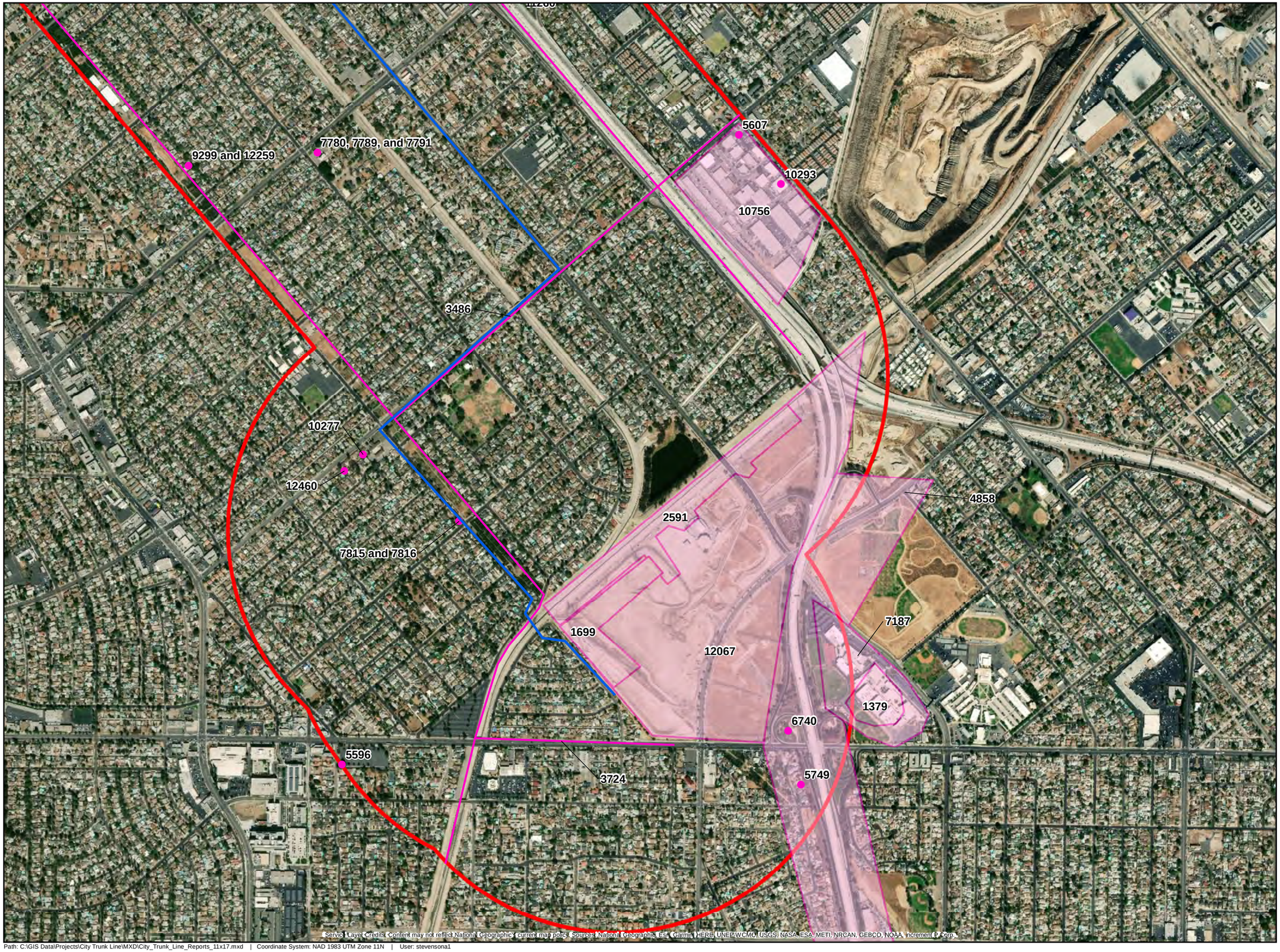
1 inch = 1,000 feet

City Trunk Line

Cultural Resource Report Boundaries

AECOM

Figure 5



OVERVIEW MAP

Legend

- Project Area
- Report Location (Point)
- Report Location (Line)
- Report Location (Polygon)
- Half Mile Buffer

NORTH

0 0.25

Miles

Scale 1:12,000

1 inch = 1,000 feet

City Trunk Line

Cultural Resource Report Boundaries

AECOM

Figure 5

California Historical Landmarks

A search of the California Historic Landmarks identified three landmarks within a 0.5-mile radius of the project area (Table 3). They are Brand Park, the San Fernando Mission complex, and the Romulo Pico Adobe.

Table 3. California Historical Landmarks within 0.5 Mile of the Project Area

Monument Number (CHL-)	Address	Description
150	15174 San Fernando Mission Boulevard	Brand Park (Memory Garden)
157	15151 San Fernando Mission Boulevard	Mission San Fernando Rey de Espana
362	10940 Sepulveda Boulevard	Romulo Pico Adobe (Ranchito Romulo)

Los Angeles Historic-Cultural Monuments

A search of the mapped Los Angeles Historic-Cultural Monuments (LAHCM) revealed that three LAHCMs are located within 0.5 mile of the project area (Table 4). These are the Romulo Pico Adobe, the Mission San Fernando Rey de Espana Convento Building, and Brand Park (Memory Garden).

Table 4. Los Angeles Historic-Cultural Monuments within 0.5 Mile of the Project Area

Monument Number (LAHCM-)	Address	Description
7 (2394)	10940 Sepulveda Boulevard	Romulo Pico Adobe
23 (2355)	15151 San Fernando Mission Boulevard	Mission San Fernando Rey de Espana Convento Building
150	15174 San Fernando Mission Boulevard	Brand Park (Memory Garden)

Historic Property Data File Historic Resources Inventory

The Directory of Properties in the Historic Property Data File HRI was consulted to identify historic properties within or facing the project footprint. The search of the Data File was limited to those segments of San Fernando Mission Boulevard, Noble Avenue, Brand Boulevard, Arleta Avenue, Wentworth Street, and Canterbury Avenue in Los Angeles, Mission Hills, and Arleta within the project footprint. Twelve properties were identified as facing the project footprint (Table 5). One property is an LADWP power line. Two of these properties are associated with Mission San Fernando. The remaining nine are structures within Brand Park.

Table 5. Historic Properties Listed in the Historic Property Data File Facing the Project Footprint

P-Number (P-19-)	City [or Community] Name	Address/Description	Time Period	Eligibility Status
150950	Arleta	Canterbury Avenue DWP Transmission Towers	1954	Determined ineligible for NRHP by consensus through Section 106 process – Not evaluated for CRHR or Local Listing
174268	Los Angeles	15151 San Fernando Mission Boulevard; Mission San Fernando Rey de Espana	1810	Individual property listed in NRHP by the Keeper; listed in the CRHR
167231	Los Angeles	15151 San Fernando Mission Boulevard; Mission San Fernando Rey de Espana	1810	Individual property determined eligible for NRHP by a consensus through Section 106 process; individual property listed in NRHP by the Keeper; listed in the CRHR
175300	Los Angeles	15174 San Fernando Mission Boulevard; Brand Park Comfort Station	1921	Contributor to a district determined eligible for NRHP by consensus through Section 106 process; listed in the CRHR
176393	Los Angeles	15174 San Fernando Mission Boulevard; Brand Park – Fountain	1921	Contributor to a district determined eligible for NRHP by consensus through Section 106 process; listed in the CRHR
176390	Los Angeles	15174 San Fernando Mission Boulevard; Brand Park – Pergolas	1921	Contributor to a district determined eligible for NRHP by consensus through Section 106 process; listed in the CRHR
176395	Los Angeles	15174 San Fernando Mission Boulevard; Brand Park – Statue	1921	Contributor to a district determined eligible for NRHP by consensus through Section 106 process; listed in the CRHR
176394	Los Angeles	15174 San Fernando Mission Boulevard; Brand Park – Mission Fountain	1921	Contributor to a district determined eligible for NRHP by consensus through Section 106 process; listed in the CRHR
176396	Los Angeles	15174 San Fernando Mission Boulevard; Brand Park – Sun Dial	1921	Contributor to a district determined eligible for NRHP by consensus through Section 106 process; listed in the CRHR
176392	Los Angeles	15174 San Fernando Mission Boulevard; Brand Park – Entrance Gate	1921	Contributor to a district determined eligible for NRHP by consensus through Section 106 process; listed in the CRHR
176391	Los Angeles	15174 San Fernando Mission Boulevard; Brand Park – Chest High Walls	1921	Contributor to a district determined eligible for NRHP by consensus through Section 106 process; listed in the CRHR
167232	Mission Hills	15174 San Fernando Mission Boulevard; Brand Park / Memory Garden	1921	Individual property determined eligible for NRHP by a consensus through Section 106 process; individual property listed in NRHP by the Keeper; listed in the CRHR

Caltrans Bridge Survey

Study of the Caltrans Historic Bridge Inventory focused on bridges within the project footprint (Caltrans 2010). Five bridges were identified within the APE (Table 6), although none of these bridges will be impacted by the project. Caltrans evaluated these bridges, and all five bridges were found not eligible for the NRHP; however, Caltrans notes that "Bridges constructed in 1965 and later may need to be evaluated as they reach fifty years of age" (Caltrans 2010).

Table 6. Bridges within the Project Footprint

Bridge Number	Bridge Name	Location	Caltrans Historical Evaluation	Year Built/ Modified
53 1518	Stranwood Avenue Pedestrian Undercrossing	07-LA-405-47.49-LA (I-405 at Stranwood Avenue)	Not eligible for NRHP	1963
53 2357	Arleta Avenue Undercrossing	07-LA-118-R11.05L-LA (118 Over Arleta Avenue)	Not eligible for NRHP*	1976
53C1152	Pacoima Diversion Channel (Arleta Avenue)	30 Meters East of Devonshire Street	Not eligible for NRHP	1952; 1969
53C0291	Tujunga Wash (Arleta Avenue)	Truesdale Street & Tonopah Street	Not eligible for NRHP	1968
53C1107	Pacoima Diversion Channel (Branford Street)	0.1 Mile South of Arleta Avenue	Not eligible for NRHP	1954; 1969

*"Bridges constructed in 1975 and later may need to be evaluated as they reach fifty years of age" (Caltrans 2010).

NATIVE AMERICAN CONTACT PROGRAM

LADWP is conducting government-to-government consultation with Native American representatives. LADWP contacted the NAHC and requested an SLF search be conducted for the project area. The NAHC responded in a letter dated March 21, 2018, "A search of the SFL [sic] was completed for the project with negative results."

LADWP notified local California Native American tribes of the planned project. One tribe, the Fernandeno Tataviam Band of Mission Indians, responded in an email dated June 5, 2018. On behalf of the tribe, Tribal Historic and Cultural Preservation Officer Jairo Avila stated that the project area is located within Tataviam ancestral territory, and that a "significant cultural area" is known to exist within 1 mile north of the project location. "However, the Tribe has no knowledge of cultural resources within the vicinity of the project nor has any concerns with the proposed project." Mr. Avila requested that the Fernandeno Tataviam Band of Mission Indians be contacted if any cultural resources are encountered during project work.

The results of the NAHC SLF search and the contact program, as provided to AECOM by LADWP, are included in confidential Appendix D.

HISTORIC MAPS

Historic map research was conducted to gain an understanding of the level of disturbance in the area as well as identify possible locations of archaeological sensitivity within the project area. Because of its late development and annexation history, relevant historic Sanborn Fire Insurance (Sanborn) maps do not exist for much of the project area. However, numerous historic maps do exist of the project area, including ethnographic maps, early survey maps, and historic U.S. Geological Survey (USGS) topographic maps, all of which provide insight into the development of the project area and the surrounding vicinity.

Ethnographic Maps

Maps prepared by anthropologists or by or at the direction of local tribes were consulted. These include maps published by A. L. Kroeber and William McCawley (Kroeber 1925; McCawley 1996); *Tongva Villages: Gabrieleno-Fernandeno of the Los Angeles Basin,* prepared by Keepers of Indigenous Ways (Sutimiv-Pa'alat 2010); *Kizh Tribal Territory (Gabrieleno Indian Lands),* prepared by archaeologist Gary Stickel for the Gabrieleno Band of Mission Indians-Kizh Nation (Flaherty 2016); and two maps prepared by the Fernandeno Tataviam Band of Mission Indians, the printed poster map *Native California: Los Angeles County* (Fernandeno Tataviam Band of Mission Indians n.d.) and the interactive online map *Ancestral Villages of Tataviam Citizens* (Fernandeno Tataviam Band of Mission Indians 2018).

All the consulted maps indicate that Native American villages existed in the vicinity of the project area. Kroeber's map, which is the least detailed, shows a site labeled Pasek in the vicinity of San Fernando and Pacoima Creek (Kroeber 1925: Plate 57). McCawley's map, which is also not detailed, shows three communities in proximity in the northern San Fernando Valley. Labeled from northwest to southeast, they are Pasheeknga, Achooykomenga, and Pakoonygna (McCawley 1995: 36). *Tongva Villages* shows Pasheeknga west of Sylmar but shows Achooykomenga at the San Fernando Mission; this may be more due to the scale of the map than the mapmaker's intent (Sutimiv-Pa'alat 2010). The *Kizh Tribal Territory* map shows Pasheekwnga at the San Fernando Mission, Pasknga to the south in North Hills, and Pakooynga at Pacoima (Flaherty 2016). *Native California: Los Angeles County* shows Passenga in the vicinity of San Fernando, and Achoicominga northwest of the intersection of Interstate 405 (I-405) and Interstate 5 (Fernandeno Tataviam Band of Mission Indians 2014). Finally, the interactive online map *Ancestral Villages of Tataviam Citizens* shows a campsite labeled Sikwanga under the waters of Van Norman Reservoir, a village labeled Passenga just east of the modern San Fernando Mission Cemetery, and a village labeled Achoicominga at the mission itself. Radial buttons for the latter two locations note that Passenga is "The whole place of the San Fernando Mission" while Achoicominga is a "Village at San Fernando Mission; became the center of farming and ranching during migration of Indians." This map shows a campsite labeled Pacoima well to the northeast of the project area, within the Shelter Isle Mobile Estates mobile home park in today's Pacoima (Fernandeno Tataviam Band of Mission Indians 2018).

In summation, the ethnographic maps indicate that Native American villages are known to exist in the northern San Fernando Valley and in particular in the vicinity of the Mission, although the exact locations of these villages are only approximately known.

1851 and 1854 San Fernando Mission Surveys

In 1851, the San Fernando Mission and its immediate surroundings were surveyed. A copy of this map was made in 1904 and photographed (Water and Power Associates n.d.). The resulting image shows the land use of that portion of the project area located along San Fernando Mission Boulevard (Plate 4). The long building, marked 7, is the Fathers' House or Convento Building. Today's San Fernando Mission Boulevard extends east-west to the south of this building, but it is not charted as a road on the map. A water conduit flows roughly north-south, through the project area, from what is today the Mission parking lot into Brand Park and then south. A fountain, marked 12, is the same fountain that still stands in Brand Park on the south side of San Fernando Mission Boulevard. The map shows that mission industries took place to the south of the mission church and convent building. A cluster of buildings marked 13 (a number that is left unattributed in the key) is located southwest of the mission quadrangle. The large tallow oven in Brand Park is marked 9, "Soap factory." A long line of structures that are now gone, labeled 10 for "Granaries, etc.," are shown to the south of this structure. The mission's famous vineyards are located farther south, in an area now occupied by housing. Today's San Fernando Mission Catholic Cemetery is occupied by an olive orchard on the map, and the original cemetery is a small plot northwest of the mission church.

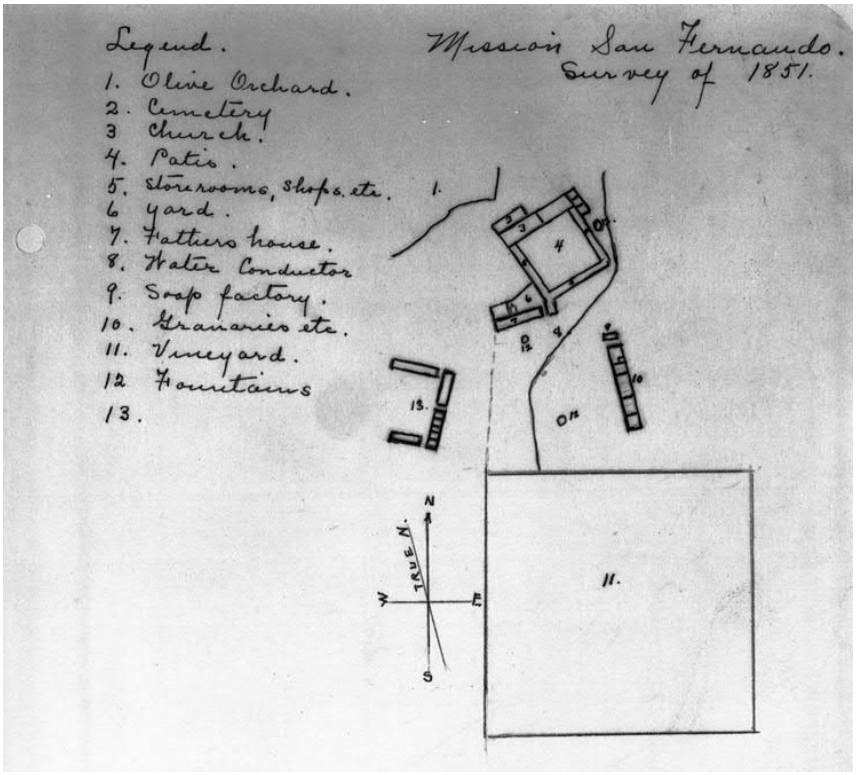


Plate 4: Mission San Fernando Survey of 1851 (Water and Power Associates n.d.).

A similar map, only slightly less detailed, shows the Mission San Fernando in 1854 (Cleal 1854). A "water conductor" is shown in the project area (Plate 5).

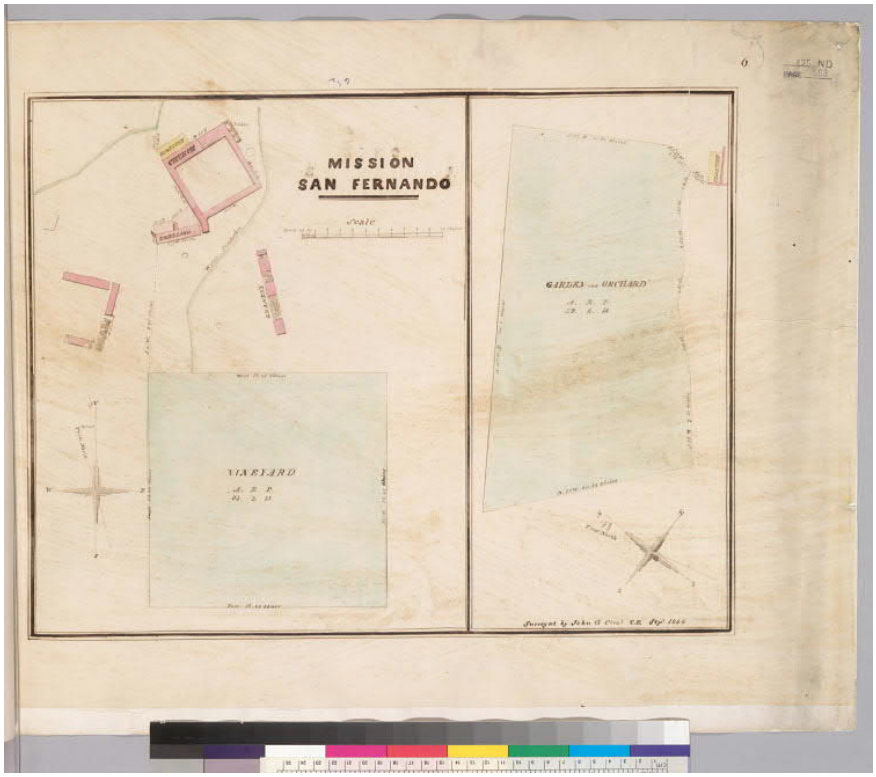


Plate 5: Early American Period Survey of Mission San Fernando (Cleal 1854).

1858 and 1869 Plats of the Ex Mission de San Fernando

Two *Plats of the Ex Mission de San Fernando Finally Confirmed to Eulogio de Celis*, dated 1858 and 1869, are less detailed than the 1851 map, but show a broader area. The 1858 map shows what is described as "Mission Building of San Fernando" (Hancock 1858). It also shows a road, labeled "Fort Tejon Road" proceeding up a canyon to the northeast (Plate 6). The 1869 map shows a series of tracts are now subdivided around the mission buildings. In addition, what appears to be a road comes to the mission from the northeast (Day 1869).

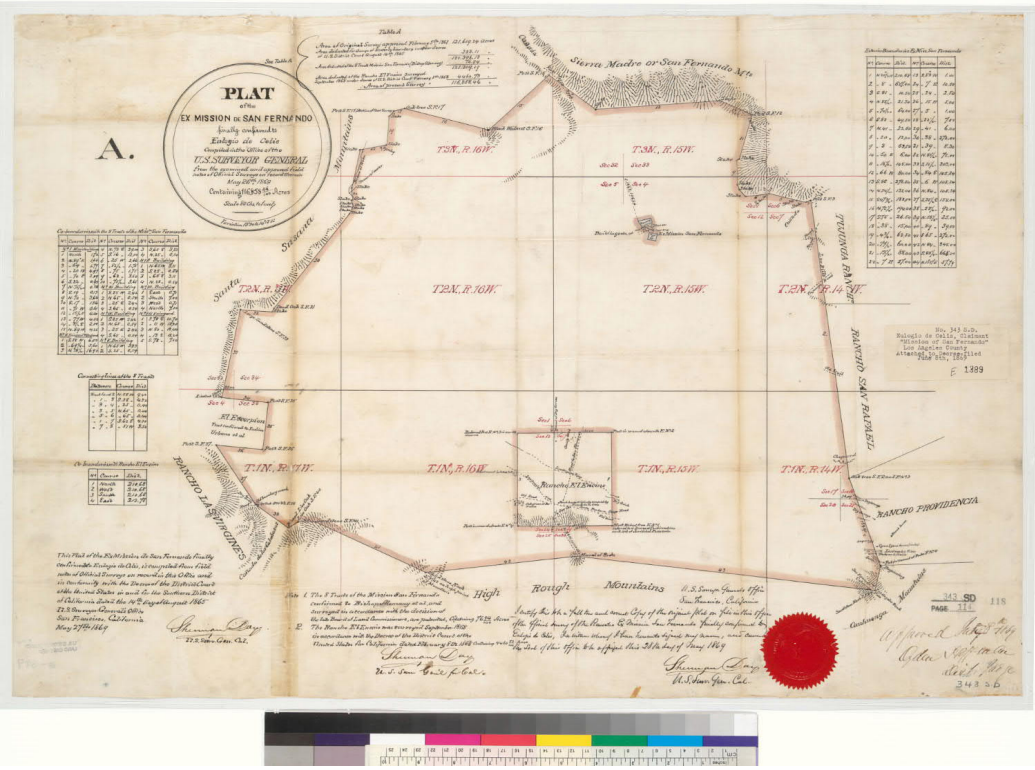


Plate 6: Plat of the Ex Mission de San Fernando (Day 1869)

Kirkman-Harriman Map

The Kirkman-Harriman Pictorial and Historical Map of Los Angeles County, 1860-1937, shows battle sites, Native American villages, and roads and trails as they were revealed by historic research. The map shows several elements of historical interest in the project vicinity. The mapmakers chart the route of the Portola Expedition through the project area, following San Fernando Creek north-south to a point near where San Fernando Mission was established. The expedition's campsite of August 2, 1769 is charted northwest of the mission. The mission is shown, and a Native American campsite is shown to the west of the mission, beside a creek. San Fernando Mission Boulevard is shown and labeled "Mission Road," but another road labeled "Mission Rd." also extends southeast of the mission, in or near the project area, connecting Mission San Fernando with a church labeled 1805 at Campo de Cahuenga.

Historical USGS and Security Trust & Savings Bank Maps

USGS topographic maps are often the most reliable historic maps for undeveloped and underdeveloped lands in the first half of the 20th century. A series of early 20th century USGS maps were consulted and compared with other available maps (Table 7).

Table 7. Historical USGS Maps Reviewed

Map Name	Scale	Date
U.S. Geological Survey California, Los Angeles Quadrangle	1:62500	1894
U.S. Geological Survey California, Los Angeles Quadrangle	1:62500	1900
U.S. Geological Survey California, San Fernando Quadrangle	1:62500	1900
U.S. Geological Survey California, Santa Monica Quadrangle	1:62500	1902
U.S. Geological Survey California, Pacoima Quadrangle	1:24000	1927
U.S. Geological Survey California, San Fernando Quadrangle	1:62500	1945
U.S. Geological Survey California, Van Nuys Quadrangle	1:24000	1953

The 1900 San Fernando map shows the former stage road extending northwest-southeast from the approximate location of today's Van Norman Reservoir. At about what is today's Rinaldi Street, the road appears to join today's Strathern Avenue and continues southeast to today's San Fernando Mission Boulevard. A cluster of buildings labeled San Fernando Mission stands east of the intersection. Six buildings stand north of San Fernando Mission Boulevard, and one stands to the south of the road. The water conduit shown in the 1851 Mission survey does not appear on this map. The remainder of the project area is mostly undeveloped, with a scattering of roads and the braided Pacoima and Tujunga Washes shown on the San Fernando, 1894 and 1900 Los Angeles, and 1902 Santa Monica maps southeast of the mission.

By the time of the 1927 Pacoima map, Stranwood Avenue, San Fernando Mission Boulevard, and Brand Boulevard are mapped and labeled. Nobel Avenue is also shown but is unlabeled. Arleta Avenue does not yet exist, and the Pacoima and Tujunga Washes remain untamed. But the grids of many roads have been laid out in the vicinity of the project area, and some buildings have been constructed.

However, in the 1924 Security Trust & Savings Bank map of the San Fernando Valley, the project area, including Arleta Avenue, Branford Street, and Canterbury Avenue, appears much as it does today. Stranwood Avenue is still shown extending northwest from San Fernando Mission Boulevard past the San Fernando Reservoirs and into Bee Canyon (Borgnis 1924).

By the 1945 San Fernando and 1953 Van Nuys quadrangles, the roads at the southeast end of the project area are definitely established. The Pacoima and Tujunga Washes have been channelized, and much of the land has been developed.

SURVEY METHODS AND RESULTS

SURVEY METHODOLOGY

A survey of the project area was conducted by Marc Beherec, Ph.D., RPA, on April 25, 2018. Survey methodologies varied depending on accessibility and local conditions.

A windshield survey was conducted along paved road segments of the project area. These areas include the paved portions of Rinaldi Street, Stranwood Avenue, San Fernando Mission Boulevard, Nobel Avenue, Brand Boulevard, Arleta Avenue, and Branford Street.

The unpaved segment of the project area on LADWP property north of Rinaldi Street was subject to an intensive pedestrian survey. In addition, the unpaved center divider in Brand Boulevard was also subjected to intensive pedestrian survey.

Although all the road alignments within the project area are historic in age, the roads were not recorded as historical resources because the character and visible attributes of these actively maintained, paved roadways will not be altered by the project. No historical elements of the roadways were observed during the survey.

Documentation

Cultural resources identified during the surveys were documented on appropriate DPR 523 forms. Minimally, these included Primary Form (Form 523A), an Archaeological Site Record (Form 523C), Location Map (Form 523J), and Sketch Map (Form 523K). Some resources required Continuation Sheets (Form 523L). Resource locations were determined using a handheld Global Positioning System unit.

The DPR forms are included in this report in Appendix C (confidential appendix). All completed DPR forms will be sent to the SCCIC for inclusion in the state inventory system.

SURVEY RESULTS

North End of Project Area to Rinaldi Street

The northwest end of the project area is located on LADWP property south of Van Norman Dam. At its extreme north end, the project area overlaps or is adjacent to the existing San Fernando Siphon of the City Trunk Line. At this far north end, the pipeline is mostly buried, but the top of the pipe is visible in a few exposures. All exposed surfaces were examined for the presence of cultural resources.

At a point downhill and southeast of a set of standing structures on the property, the pipeline emerges above the ground surface. The original LACTL in this location is a 72-inch-diameter riveted steel pipeline (Plate 7). The pipeline extends above the ground surface for approximately

1,400 feet. In this location much of the pipeline is mounted on cast-in-place concrete piers measuring approximately 7 feet long and 1.5 feet wide and ranging from approximately 1 foot to 3 feet above the ground surface. At least one apparent cut-off valve and one lateral pipeline were observed connected to the exposed pipeline. This valve system does not appear original, as it does not meet the description of valves in published descriptions of the pipeline construction (Heinly 1914, 1915) and it was installed at a point where part of the pipeline was removed and replaced (Plate 8). The majority of the pipeline is riveted steel construction and appears original, but the pipeline has been repaired and modified over time. In places, particularly at the southern end of the exposed section, segments of pipe have been replaced. A 400-foot-long segment within the Van Norman Complex collapsed in 2002 and was replaced with new pipeline. The pipe itself has been cut and interrupted by a thick metal plate serving as a bulkhead (Plate 9).

Plate 7: San Fernando Siphon Riveted Pipeline on Concrete Pylon, View West.

Plate 8: City Trunk Line San Fernando Siphon. Note Bulkhead Interrupting Water Flow and Lateral Pipe. View Southeast.

Plate 9: San Fernando Siphon. Riveted Pipe at Left and Apparent Replacement Pipe at Right, Separated by Valve Structure. View Southwest.

Approximately 700 feet northwest of the facility entrance, the pipeline is once again subsurface. Built-up gravel and a paved road cover the pipeline from this point to the facility entrance.

Approximately 400 feet northwest of the facility entrance to Rinaldi Street, uphill and northeast of the modern work trailers, is a collection of antiquated farming equipment (Plate 10). The source of this equipment, and whether it was found in the general vicinity, is unknown. However, it sits on a bed of imported gravel that appears to have been deposited at a relatively recent time. All the equipment appears to have been placed here as an outdoor museum due to the site's proximity to the modern work trailers and the DWP Valley Supervisors Activity Area, which was constructed in 1988 uphill of the project area. Although most of the equipment is probably historic in age, none of this equipment is in a historic context, and it was not recorded as a historic resource.

Plate 10: Antiquated Farming Equipment. View Northeast.

At the facility entrance, a bronze plaque mounted on a brick base commemorates the Lopez Station. The plaque reads:

LOPEZ STATION
NEAR THIS SITE OF THE LOS ANGELES DAM AND
RESERVOIR WERE LOCATED A BUTTERFIELD
STATE STATION, 1861-1871; SAN FERNANDO
VALLEY'S FIRST ENGLISH-SPEAKING SCHOOL,
1860-1883; AND ITS FIRST POST OFFICE,
1869-1874.

DEDICATED BY EL CAMINO REAL PARLOR NO. 324
NATIVE DAUGHTERS OF THE GOLDEN WEST
APRIL 29, 1978

As noted above, the Lopez Station was demolished to build the Van Norman Reservoir and lies outside the project area. This monument stands outside the project area and will not be impacted by the project.

Rinaldi Street to San Fernando Mission Boulevard

Outside the LADWP facility, the project area extends down Rinaldi Street for a short distance before turning southeast along Stranwood Avenue. Here, the project area passes through a residential neighborhood consisting of single-family residences, mostly built in the 1950s, which will not be impacted by the project.

Stranwood Avenue is interrupted by I-405. I-405 is carried over a pedestrian undercrossing on Caltrans Bridge 53 1518 (Plate 11). This bridge has been evaluated by Caltrans and found not to be eligible for listing in the NRHP. The undercrossing is currently blocked off.

Plate 11: Stranwood Avenue at I-405 (Caltrans Bridge No. 53 1518). View Southeast.

San Fernando Mission Boulevard to Arleta Boulevard

At the intersection of Stranwood Avenue and San Fernando Mission Boulevard, the project area turns east. Along this segment, the trench for the pipeline will be excavated in an open cut.

Along San Fernando Mission Boulevard, the project area extends east-west between the long Mission San Fernando's surviving Convento building to the north and Brand Park Memory Garden to the south (Plate 12). The project area passes the Convento entrance, the south entrance of the Mayordomo's House, and the main modern entrance to the mission property (Plate 13). One of the El Camino Real bells stands along the road outside the chapel's south entrance. The bell's support reads "ERECTED 1909 / -BY- / N. S. G. W. / -AND- / N. D. G. W. / OF LOS ANGELES." The bell itself reads "1789 & 1906 / EL CAMINO REAL." The bell, mission buildings, and park will not be impacted by the project and so were not formally documented.

Plate 12: San Fernando Mission Boulevard, View East. Mission Convento Building at Left; Brand Park Memory Garden at Right.

Plate 13: Mission San Fernando Convento Building, South Entrance of Mayordomo's House, and El Camino Real Bell Monument, with San Fernando Mission Boulevard in Foreground, View North.

At the intersection of San Fernando Mission Boulevard and Noble Avenue, the project turns south, passing along an approximately 250-foot-long segment of Noble Avenue between the eastern and western parts of Brand Park. At the intersection of Noble Avenue and Brand Boulevard, the project again turns east and follows the four-lane divided Brand Boulevard.

The unpaved median of Brand Boulevard was examined for the presence of cultural resources. Visibility ranged from approximately 80 percent to approximately 20 percent where vegetation obscured the ground surface. A series of street trees are planted along the median. These include several olive trees (Plate 14) that appear to be the same age as olive trees planted in the eastern part of Brand Park. Neither the street trees nor the olive trees in the eastern side of the park appear old enough to date to the period of significance of the park. No other cultural resources were observed along the Brand Boulevard median.

Plate 14: Olive Trees along Brand Boulevard Median, View East.

Arleta Boulevard to Southeast End of Project Area

At the intersection of Brand Boulevard and Arleta Avenue the project area turns southeast. It then follows Arleta Avenue through neighborhoods of single-family residences, mostly built between the 1920s and the 1970s. The project area continues along Arleta Avenue and passes beneath State Route 118 and along the north side of the Pacoima Spreading Grounds, where it crosses the Pacoima Channel. It continues along Arleta Avenue parallel to the Pacoima Channel, passing through another residential neighborhood where most buildings date to the 1940s to 1980s. At Branford Street, the project area turns southwest, crosses the Pacoima Channel again,

and follows Branford Street to the intersection of Canterbury Avenue. The project area then turns southeast, following Canterbury Avenue until it crosses the Pacoima Channel a third and final time before coming to an end south of the Tujunga Spreading Grounds.

The southeastern project area, along Arleta Avenue, Branford Street, and Canterbury Avenue, is located entirely within the boundaries of these three paved roads. This area was subjected to a windshield survey, but further investigation was considered unprofitable.

CULTURAL RESOURCES IDENTIFIED DURING SURVEY

The field survey resulted in the identification and documentation of one built resource, a segment of the San Fernando Siphon of the City Trunk Line.

Archaeological resources were not encountered within the project area. However, as part of the cultural resources field investigation of the project area, built environment resources were identified and documented.

MANAGEMENT RECOMMENDATIONS

REGULATORY SETTING

Cultural and paleontological resources in California are protected by a number of federal, state, and local regulations, statutes, and ordinances. Cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, and/or scientific importance. Paleontological resources are not only fossils themselves, but also the associated rocks or organic matter and the physical characteristics of the fossils' associated sedimentary matrix that provide evidence of past life on the planet.

National Environmental Policy Act and National Historic Preservation Act

Federal agencies must consider the effects of proposed projects on historic properties and natural resources. Lead agencies evaluate potential impacts under the National Environmental Policy Act (NEPA) and potential effects under the NHPA to "historic properties," which are defined as resources that are listed in or eligible for listing in the NRHP, in an effort to avoid potential significant impacts and adverse effects. Resources that may be eligible for listing in the NRHP include districts, sites, buildings, structures, and objects that are at least 50 years old and are significant in American history, prehistory, architecture, archaeology, engineering, and/or culture. To be eligible for listing, the resource must meet one of the NRHP Criteria for Evaluation (A–D) (36 CFR 60.4), as follows:

A. A property is associated with events that have made a significant contribution to the broad patterns of our history; or

B. A property is associated with the lives of a person or persons significant in our past; or

C. A property embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possesses high artistic values, or that represents a significant and distinguishable entity whose components may lack individual distinction; or

D. A property has yielded, or may be likely to yield, information important in prehistory or history.

In addition, historic properties must possess integrity of location, design, setting, material, workmanship, feeling, and association.

Resources younger than 50 years may be eligible if they have exceptional importance and meet Criteria Consideration G, as described in Bulletin No. 22 from the National Park Service (NPS), *How to Evaluate and Nominate Potential National Register Properties that have Achieved Significance Within the Last 50 Years* (Sherfy and Luce 1998). Other types of resources that are typically not eligible for the NRHP, including religious properties, moved properties, birthplaces or graves, cemeteries, reconstructed properties, and commemorative properties, may be eligible under other specific NRHP criteria considerations.

NEPA requires that environmental impacts to historic properties be evaluated and addressed during the environmental review process in coordination with procedures established by Section 106 of the NHPA to address effects on historic properties. A significant impact and/or an adverse effect would occur if a project would directly or indirectly diminish any of the characteristics that qualify a historic property for NRHP eligibility or listing. Under NEPA, a significant impact may be resolved with mitigation measures to avoid the impact or to reduce the impact to a level of less than significant. Under Section 106 of the NHPA, adverse effects must be resolved through a consultation process between the federal lead agency, the State Historic Preservation Office, interested parties, and the Advisory Council on Historic Preservation (ACHP). If an adverse effect cannot be avoided, mitigation may be agreed upon and documented in a signed Memorandum of Agreement to resolve the adverse effect. If mitigation is not agreed upon through the Section 106 process, consultation is terminated and the ACHP may make comments on the procedure.

California Environmental Quality Act

CEQA and its guidelines require the evaluation of potential impacts to "historical resources" that are defined as resources listed in or eligible for listing in the CRHR. Under California Public Resources Code (PRC) Section 5024.1, the CRHR was established to serve as an authoritative guide to the state's significant historical and archaeological resources. The CRHR consists of historical resources that are (a) listed automatically, (b) listed following procedures and criteria adopted by the State Historical Resources Commission, and/or (c) nominated by an application and listed after a public hearing process. The criteria for listing historical resources in the CRHR are consistent with those developed by the NPS for listing in the NRHP, but have been modified for state use to include a range of historical resources that better reflect the history of California.

A historical resource is significant at the local, state, or national level under one or more of the following four criteria (1–4):

1. Is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;
2. Is associated with the lives of persons important to local, California, or national history;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or
4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Historical resources must also possess integrity, the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance, and retain enough of this historic character or appearance to be recognizable as a historical resource and to convey the reasons for this significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association.

Historical resources may include built environment and archaeological resources, as well as "unique paleontological resources" or "unique geologic features." In addition to historic properties listed in or eligible for listing in the NRHP that are automatically considered historical resources under CEQA, the CRHR includes designated California Historic Landmarks, California Points of Historical Interest, and certain locally identified historic resources (see below). CEQA also requires that mitigation measures to reduce or avoid impacts to historical resources be incorporated into a project, and a range of alternatives be considered that could substantially lessen significant impacts to historical resources.

Under CEQA, a project would result in a significant impact to historical resources if it results in a direct or indirect substantial adverse change to the resource. A significant impact would occur if a project would directly or indirectly diminish any of the characteristics that qualify or define a historical resource. A significant impact may be resolved with mitigation measures to avoid the impact or to reduce the impact to a level of less than significant.

Treatment of paleontological resources under CEQA is generally similar to treatment of cultural resources, requiring evaluation of resources in the project area; assessment of potential impacts on significant or unique resources; and development of mitigation measures for potentially significant impacts, which may include monitoring combined with data recovery excavation and/or avoidance.

Application of the NRHP and CRHR Criteria to San Fernando Siphon

As noted above, a segment of the San Fernando Siphon of the City Trunk Line was observed and recorded within the project area. The siphon was initially constructed as part of the Los Angeles Aqueduct's distribution system about 1915, although it has been maintained and modified since that time.

NRHP Criterion A and CRHR Criterion 1

The San Fernando Siphon is associated with the City of Los Angeles water conveyance system constructed to take advantage of water brought to the San Fernando Valley by the Los Angeles Aqueduct, which was completed in 1913. However, the San Fernando Siphon does not appear to have played a significant individual role in local, state, or national history individually because it is representative of similar water works, including other siphons constructed for the Los Angeles Aqueduct, which were built throughout California in the 20th century. It does not meet NRHP Criterion A or CRHR Criterion 1.

NRHP Criterion B and CRHR Criterion 2

The San Fernando Siphon of the City Trunk Line was built by LADWP under the direction of its famous Chief Engineer, William Mulholland. However, Mulholland designed and built much of the period's water infrastructure, including the more notable Los Angeles Aqueduct and Colorado River Aqueduct. Research has not revealed a direct significant association between the design and construction of the City Trunk Line and William Mulholland or any individual engineers. The San Fernando Siphon has no direct association with important historic persons and, thus, does not meet NRHP Criterion A or CRHR Criterion 2.

NRHP Criterion C and CRHR Criterion 3

The San Fernando Siphon is representative of the steel-pipe construction of the City Trunk Line and other features constructed by the Los Angeles Department of Public Works. The above-ground segment, which was documented, consists of riveted steel plates and concrete pylons and does not display unusual or noteworthy design. Although the San Fernando Siphon as a whole was unusually long, its construction methods follow those of the 21 steel siphons in the Los Angeles Aqueduct system, and it is not unusual for the period in its design (Heinly 1915: 392). The pipeline solves no unusual design problems, has no known associations with individual engineers, and does not represent the work of a master. The utilitarian pipeline does not possess high artistic values because it was designed for function and utility and not for aesthetic quality. In summary, the San Fernando Siphon does not have distinctive engineering or architectural features to meet NRHP Criterion C or CRHR Criterion 3.

NRHP Criterion D and CRHR Criterion 4

The San Fernando Siphon is not likely to yield further information important to history or prehistory, because the construction history and use of this resource is well documented. Therefore, the siphon does not meet NRHP Criterion D or CRHR Criterion 4.

The exposed segment of the siphon retains much of its integrity of location, feeling, and association, but does not retain integrity of design, materials, workmanship, or setting. It is in its original location and retains its feeling and association because it expresses its historic purpose as a functional water system. However, the design, materials, and workmanship have lost integrity. The design of the pipeline has been substantially altered. The City Trunk Line as a whole and this segment of the San Fernando Siphon in particular have been actively maintained and upgraded during a century of use. Among other modifications, the exposed segment of the City Trunk Line within the Van Norman Dam complex includes a 400-foot-long segment that catastrophically collapsed and was replaced in 2002, the probable addition of a valve system, and a location where the pipeline was severed and a bulkhead installed to prevent the flow of water. Integrity of workmanship is also lost because the system has been altered with modern construction methods, not the outdated metal riveting technology used in 1914. The San Fernando Siphon does not retain integrity of materials because the alterations have removed portions of the original pipeline and introduced new materials into the water system.

In summary, the exposed segment of the San Fernando Siphon or the City Trunk Line does not meet any NRHP or CRHR criteria for designation, and does not retain sufficient integrity to be eligible for the NRHP or CRHR.

RECOMMENDATIONS

BUILT ENVIRONMENT

One built resource, an exposed segment of the San Fernando Siphon of the City Trunk Line, was identified, documented, and evaluated. It was found not to be eligible under any of the four CRHR and NRHP criteria. DPR 523 forms for the resource have been prepared and satisfy the minimum level of documentation required for cultural resources.

No additional work in connection with this historical-era structure is recommended.

ARCHAEOLOGICAL

Although no archaeological resources were identified within the project footprint during the course of this background research and cultural resources field survey, potentially eligible buried archaeological resources may exist. Archaeological deposits can be buried with no surface indications of their existence, particularly in developed areas or in areas of alluvial deposits. The level of potential site preservation below the modern roads remains unknown.

Potential for Archaeological Resources

Review of previous investigations in the vicinity of the project and of the prehistoric context for the area provides an understanding of the potential for encountering prehistoric and historic sites in the project area. Subsequent land use is an essential factor in whether archaeological remains have been preserved.

As described in the historical background section of this report, no cultural resources are recorded within the project area. However, prehistoric and ethnographic sites are documented on the Van Norman Dam Complex property and in the vicinity of Mission San Fernando.

In addition, the former stagecoach road from Fort Tejon formerly passed through the Van Norman Dam Complex Property and along today's Strathern Avenue to Mission San Fernando. Archaeological materials may have been left behind by people using this road. Artifacts may be buried and now covered by the asphalted modern roads through the project area.

A segment of the project area follows San Fernando Mission Boulevard, cutting through former mission lands. Mission buildings are located immediately to the north of the project area. To the south of the project area, in Brand Park Memory Garden, are remains of mission structures, including a fountain and a soap oven. Other buildings and structures that no longer have remains visible on the surface are depicted on historic maps in what is now Brand Park. Moreover, maps show a mission canal or irrigation ditch passing through the project area on what is today San Fernando Mission Boulevard.

Mission San Fernando and the former Lopez Stage Station are also documented as the sites of prehistoric villages. The project area's location relative to the nearby water sources would have

provided access to important resources during all periods of prehistory. Subsequent land use has included modern and historic development. It is possible that archaeological resources could be buried beneath the ground surface, especially in areas where development has included only minimal ground disturbance where the roadway may have effectively capped buried prehistoric or historic resources.

Archaeological Recommendations

Based on the results of the records search and the Native American contact program, the project area is culturally sensitive for prehistoric and/or historic archaeological resources. Such resources may lie beneath the surface obscured by pavement or buried beneath alluvial sediment. Because the potential to encounter archaeological resources exists for this project, archaeological monitoring is recommended during ground-disturbing activities over 10 feet in depth. The archaeological monitor will have the authority to redirect construction equipment in the event potential archaeological resources are encountered. In the event archaeological resources are encountered, work within 25 feet of the discovery will halt until appropriate treatment of the resource is determined by a qualified archaeologist.

It is recommended that a qualified cultural resources specialist prepare a cultural resources monitoring and mitigation plan (CRMMP) for the project. The plan will outline areas of high sensitivity for the project and define monitoring locations. It will describe monitoring procedures and treatment measures for potential discoveries. Finally, it will establish key staff and notification procedures to ensure compliance with appropriate state and federal laws.

In addition, it is recommended that construction personnel and supervisory staff be given training on possible archaeological resources that may be present in the area in order to establish an understanding of what to look for during ground-disturbing activities.

If Native American cultural materials are encountered during project-related ground disturbance, a representative from the Fernandeño Tataviam Band of Mission Indians should be engaged to monitor ground-disturbing work in the area containing the Native American cultural resources. This monitoring would occur on an as-needed basis and would be intended to ensure that Native American concerns are taken into account during the construction process. Native American involvement should also be addressed in the project CRMMP.

If human remains are discovered, work within 25 feet of the discovery shall be suspended and the Los Angeles County Coroner contacted. If the remains are deemed Native American in origin, the Coroner will contact the NAHC and a Most Likely Descendant will be identified pursuant to PRC Section 5097.98 and CCR Section 15064.5. Work may be resumed at the landowner's discretion but will only resume after consultation and treatment have been concluded. Work may continue on other parts of the project while consultation and treatment are conducted. Any archaeological materials recovered should be prepared for and curated at an approved facility.

This project will have no adverse effect to historic properties pursuant to Section 106 of the NHPA and its implementing regulations (36 CFR 800.4).

PALEONTOLOGICAL

A consultation of the USGS *Preliminary Geologic Map of the Los Angeles 30' x 60' Quadrangle, Southern California* (Yerkes and Campbell 2005) and the more detailed *Geologic Map of the San Fernando and Van Nuys (North 1/2) Quadrangles* (Dibblee and Ehrenspeck 1991) indicates that the surficial sediments of the project area consist of younger Quaternary Gravels and Alluvium and artificial fill. The field visit did not reveal the presence of any local conditions that would contradict this assertion or require special consideration. These deposits are younger than 10,000 years old. Consequently, such deposits have a low probability of yielding fossils, including vertebrate fossils or other scientifically significant fossils. No mitigation is typically required in deposits of this nature (Christensen 2007; Scott and Springer 2003).

However, older alluvium underlies the younger alluvium at unknown depths. This older alluvium has the potential to contain significant fossil deposits. If paleontological deposits are encountered during excavation, LADWP should contact a qualified paleontologist to evaluate and determine appropriate treatment for the resource in accordance with PRC Section 21083.2(i). If any paleontological resources are encountered during ground-disturbing activities, work will be temporarily halted within 25 feet of the find and the paleontologist will be called to the project site to examine and evaluate the resource in accordance with the provisions of CEQA. Work may continue on other parts of the project while consultation and treatment are conducted.

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APPENDIX A

RESUMES

Marc A. Beherec, PhD, RPA
Archaeologist

Education
PhD, Anthropology, University of California, San Diego, La Jolla, CA, 2011
MA, Anthropology, University of California, San Diego, La Jolla, CA, 2004
BA, Anthropology (Geology minor), University of Texas, Austin, Austin, TX, 2000

Professional Registration and Certifications
Register of Professional Archaeologists (RPA)
County of Orange Certified Archaeologist
Hazardous Waste Operations and Emergency Response (HAZWOPER) 40-hour trained
HAZWOPER Supervisor trained

Professional Affiliations
Member, Society for American Archaeology
Member, Society for California Archaeology

Dr. Marc Beherec is an archaeologist who has been involved in the field of cultural resources management for more than fifteen years. He has worked throughout the southwest on projects within Federal and State regulatory framework, and has written cultural resources assessments for several agency clients, satisfying the requirements of both the California Environmental Quality Act and Section 106 of the National Historic Preservation Act. He is experienced in the identification and analysis of both prehistoric and historic era artifacts. Dr. Beherec also has extensive experience in Paleoindian and Archaic period sites in the western US and has taken part in large-scale excavations in Jordan. He has served as Lead Monitor for the NextEra Genesis Solar Energy Project and as Project Manager and Project Archaeologist for several Los Angeles World Airports improvement projects and for the Los Angeles Metropolitan Transportation Authority's large Regional Connector and Crenshaw rail projects. He manages a team of full-time archaeologists and numerous project-specific part-time employees and subcontractors conducting work across the Greater Los Angeles area.

Selected Project Experience

Los Angeles Metropolitan Transportation Authority
Compliance Monitoring
Project Archaeologist and Project Manager for the cultural resources compliance monitoring of multiple multi-year projects within the greater Los Angeles area, including the 8.5-mile Crenshaw rail transit corridor and associated stations and the 1.9-mile Regional Connector subway corridor and associated stations. Tasks involve instructing construction team in cultural resources compliance; the scheduling and coordination of multiple concurrent Native American and archaeological monitors on diverse construction efforts throughout the metropolitan area; testing and evaluating finds; compilation, QA/QC, and delivery of daily monitoring logs and other documentation for all on-site monitors; serving as a liaison between archaeological monitors, construction crew, and client project team; preparing weekly and monthly reports of activities and findings; and ensuring overall cultural resources compliance within the permitted conditions of the project.

Los Angeles Metropolitan Transportation Authority
Zanja Discovery Program
Conducted archival research and assembled historical data to determine the location and construction history of the Los Angeles Zanja System; the city's first irrigation system. Included research

within city archives and published records to determine the probable locations of underground portions of this miles-long system, which is treated as an eligible resource for the National Register of Historic Places. Information was used to guide cultural resources compliance during construction of the Regional Connector subway corridor.

Los Angeles Department of Water and Power; City of Los Angeles Bureau of Engineering; Water Replenishment District of Southern California; Los Angeles Metropolitan Transportation Authority; County of Orange; City of Santa Ana; Port of Los Angeles
Cultural Resources Assessments

Assessed sites for pumping stations, pipelines, and other infrastructure improvements in compliance with CEQA and CEQA Plus. Tasks included archival research including researching known sites at the South Central Coastal Information Center at California State University, Fullerton; conducting archaeological and built environment surveys; assessing finds for inclusion on the California Register of Historic Places; writing reports of findings.

Los Angeles World Airports
Cultural Resources Specialist
Archaeologist and monitoring coordinator on Qantas Hanger, Midfield Satellite, Gateway, and Baggage Handling construction projects. Tasks involve scheduling and coordination of archaeological/paleontological monitors and ensuring overall cultural resources compliance within the permitted conditions of the project.

Southern California Edison
Cultural Resources Specialist
Archaeologist on multiple infrastructure projects. Completed cultural resources sensitivity reports, advised clients on monitoring requirements, and oversaw archaeological monitoring.

County of Los Angeles Department of Public Works Topanga Underground Utilities District Archaeological Mitigation
Field director of archaeological mitigation at CA-LAN-8, a prehistoric site in the Santa Monica Mountains. Oversaw a team of 8 in hand-excavation and sieving of mechanically excavated soils. Tasks include coordinating archaeologists and Native American monitors; compilation and QA/QC of field documents; preparing reserving as a liason between the Most Likely Descendant and other Native American groups, construction crew, and client representatives; writing reports of findings.

Los Angeles Department of Water and Power; City of Los Angeles Bureau of Engineering; Water Replenishment District of Southern California; Los Angeles Metropolitan Transportation Authority; County of Orange; City of Santa Ana; Port of Los Angeles
Cultural Resources Assessments
Assessed sites for pumping stations, pipelines, and other infrastructure improvements in compliance with CEQA and CEQA Plus. Tasks included archival research including researching known sites at the South Central Coastal Information Center at California State University, Fullerton; conducting archaeological and built environment surveys; assessing finds for inclusion on the California Register of Historic Places; writing reports of findings.

NextEra Genesis Solar Energy Project Cultural Resources Compliance Monitoring
Lead Monitor for the cultural resources compliance monitoring of a 2000-acre solar power project under the jurisdiction of the California Energy Commission and Bureau of Land Management (BLM) on BLM land in the Colorado Desert of eastern Riverside County. Tasks involve the coordination of between 5 and 20 concurrent archaeological monitors on diverse construction efforts throughout the project site; compilation, QA/QC, and delivery of daily monitoring logs for all on-site monitors; attending project construction scheduling and Health and Safety meetings; conducting and documenting daily monitoring crew Health and Safety meetings; serving as liaison between archaeological monitors, construction crew and client project team; ensuring overall cultural resources compliance with the permitted conditions of the project.

San Bernardino National Forest San Jacinto District Contract Archaeologist, Idyllwild, CA
Archaeologist assigned to Idyllwild Ranger Station, San Jacinto District, San Bernardino National Forest, Riverside County, California. Over the course of one year, assisted District Archaeologist in cultural resources efforts, including supervision of crews conducting cultural resources inventories of mountainous terrain, GPS documentation of resources, preparation of DPR 523 forms, research of prehistoric and historic artifact parallels, including projectile point typologies, makers' marks, and tin can typologies, and authoring technical reports. Work was performed before joining this firm.

Border Field State Park, San Diego County, CA
Excavated coastal Early Archaic sites in and adjacent to Border Field State Park in conjunction with the construction of the Mexico-United States Border Barrier. Work was performed before joining this firm.

Lake Meredith National Recreational Area Cultural Resources Surveys, Amarillo, TX
Archaeologist for intensive pedestrian surveys of the Lake Meredith National Recreational Area, an area along the Canadian River with documented human occupation for over 12,000 years. Relocated previously documented archaeological sites and documented newly identified sites. Work was performed before joining this firm.

East Texas Pipeline Survey, Rural East Texas
Crew Chief for intensive pedestrian survey of a new east Texas pipeline corridor. Efforts included field survey, shovel testing, site recordation, and GPS operation. Work was performed before joining this firm.

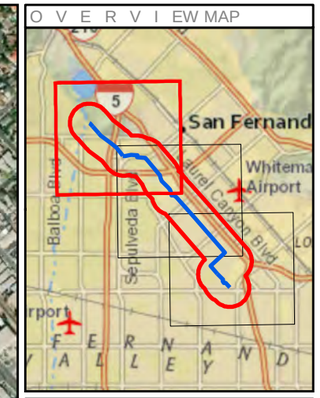
Camp Swift Archaeological Project, Bastrop, TX
Archaeologist for test excavations at Camp Swift Army National Guard Base. Excavated test units at eighteen sites, documented excavations, and drilled rock cores for archaeomagnetic dating research. Work was performed before joining this firm.

Gault Site Archaeological Project, Bell County, TX
Excavated at the Gault Paleoindian site (41BL323), completed documents, conducted preliminary lithic analysis, measured lithic blades for statistical studies, and supervised student volunteers in washing lithics. Work was performed before joining this firm.

APPENDIX B

RESOURCES MAP

(*CONFIDENTIAL)*



Legend

- Bridge
- San Fernando Siphon
- Project Area
- Cultural Resource Location (Point)
- Cultural Resource Location (Line)
- Cultural Resource Location (Polygon)
- Half Mile Buffer

NORTH

0 0.25

Miles

Scale 1:12,000

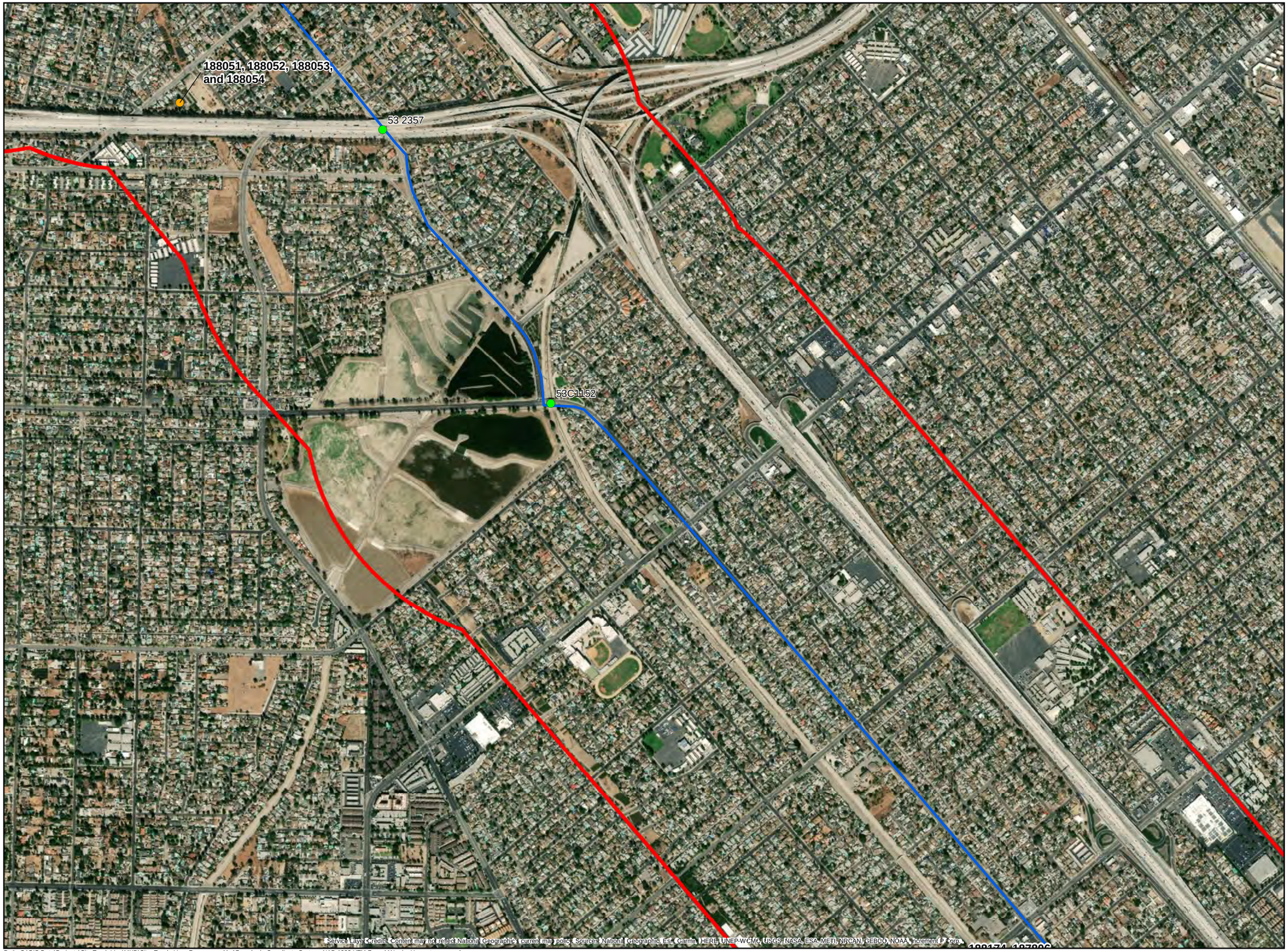
1 inch = 1,000 feet

City Trunk Line

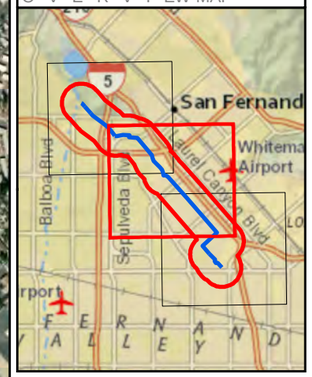
Cultural Resource Site Boundaries

Date: 8/3/2018

AECOM **Appendix B**



O V E R V I EW MAP



Legend

- Bridge
- Project Area
- Cultural Resource Location (Point)
- Half Mile Buffer

NORTH

0 0.25

Miles

Scale 1:12,000

1 inch = 1,000 feet

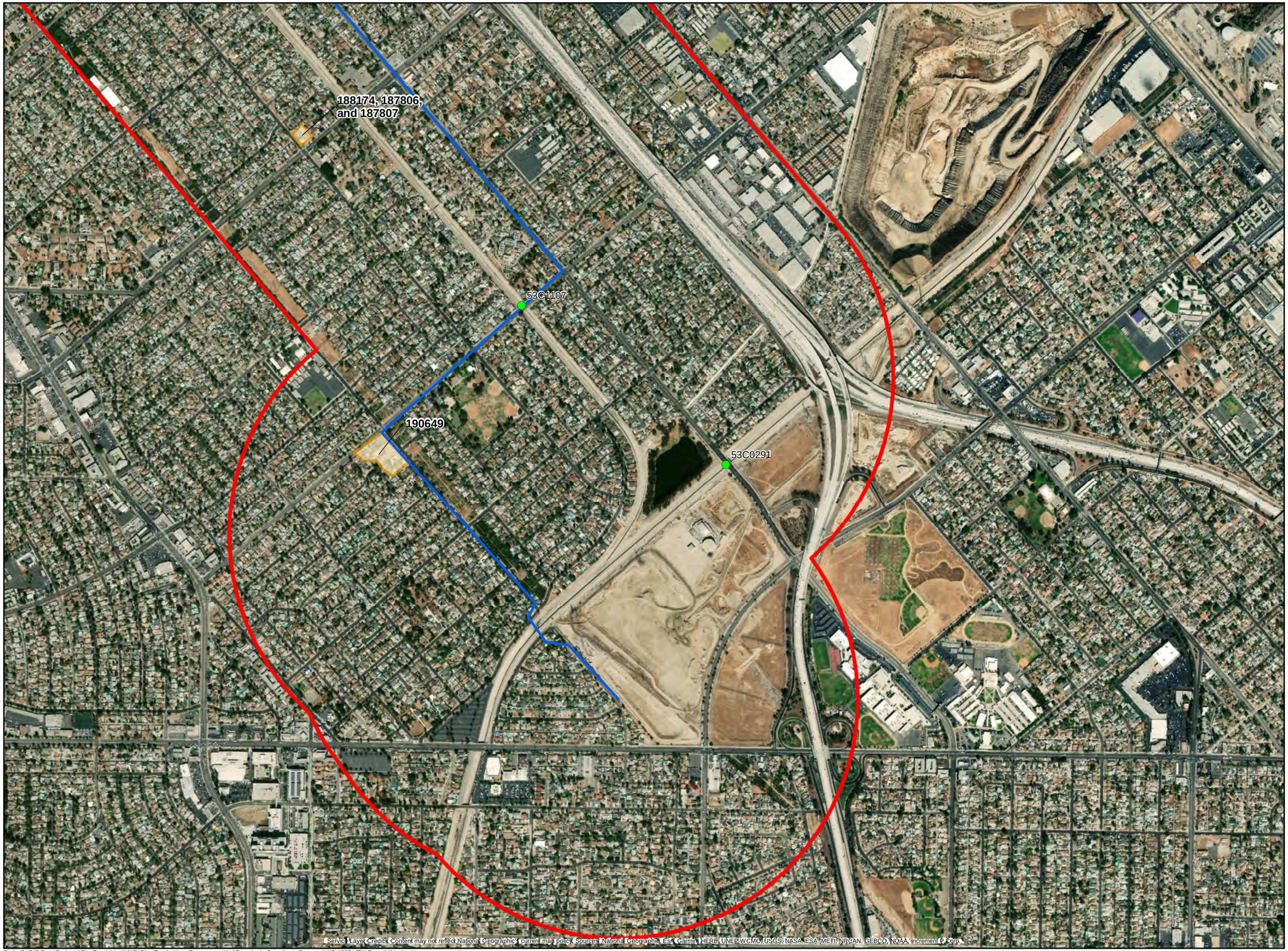
City Trunk Line

Cultural Resource Site Boundaries

Date: 8/3/2018

AECOM

Appendix B



Legend

- Bridge
- Project Area
- Cultural Resource Location (Polygon)
- Half Mile Buffer

NORTH

0 0.25

Miles

Scale 1:12,000

1 inch = 1,000 feet

City Trunk Line

Cultural Resource Site Boundaries

Date: 8/3/2018

AECOM

Appendix B

APPENDIX C

DPR FORMS

(*CONFIDENTIAL)*

State of California — The Resources Agency **Primary #**
DEPARTMENT OF PARKS AND RECREATION **HRI #**

PRIMARY RECORD

Trinomial
NRHP Status Code

Other Listings
Review Code **Reviewer** **Date**

 *__Resource Name or #:__ San Fernando Siphon

P1. Other Identifier: Los Angeles City Trunk Line

***P2. Location:** ☐ **Not for Publication** ■ **Unrestricted** ***a. County:** Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** San Fernando **Date:** 1995 **T**; **R** ; **¼ of ¼ of Sec ;** **B.M.**

c. Address: **City:** **Zip:**

d. UTM: Zone: 11; 363805 **mE**/ 3794568 **mN** (G.P.S.) to 364076 **mE**/ 3794273 **mN** (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation: 1015 to 1000 ft amsl
Resource is located within the Van Norman Reservoir Complex. The above-ground segment of the pipeline runs parallel to and northeast of the access road, beginning approximately 0.15 mile north of the complex entrance northwest of the intersection of Rinaldi Street and Stranwood Avenue.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
This resource is a segment of the San Fernando Siphon. The San Fernando Siphon is that segment of the Los Angeles City Trunk Line which carries Los Angeles Aqueduct water across the San Fernando Valley from the Van Norman Reservoir (formerly the San Fernando Reservoir), which marks the end of the Los Angeles Aqueduct. The San Fernando Siphon as a whole extends 63,327 (almost 12 miles) and is mostly underground. The documented segment measures approximately 1,400 feet where the siphon is above ground in the Van Norman Reservoir Complex.

See Continuation Sheet.

***P3b. Resource Attributes:** (List attributes and codes) HP 20. Aqueduct.

***P4. Resources Present:** ☐Building ■Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #) San Fernando Siphon, View Northwest, April 25, 2018

***P6. Date Constructed/Age and Sources:** ■Historic
☐Prehistoric ☐Both
Originally constructed 1914-1915 (Heinly 1914, 1915)

***P7. Owner and Address:**
Los Angeles Department of Water and Power, 111 North Hope Street, Los Angeles, CA 70012

***P8. Recorded by:** (Name, affiliation, and address)
Marc A. Beherec, AECOM, 300 South Grand Avenue, Suite 200, Los Angeles, CA 90071

***P9. Date Recorded:** April 25, 2018

***P10. Survey Type:** (Describe)
Intensive pedestrian survey.

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")
Beherec, Marc A. 2018. *Los Angeles City Trunk Line North Project Phase I Archaeological and Paleontological Assessment, Los Angeles County, California.* Document prepared by AECOM for LADWP.

***Attachments:** ☐NONE ☐Location Map ☐Sketch Map ■Continuation Sheet ■Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status Code** 6Z
***Resource Name or #** (Assigned by recorder) San Fernando Siphon

B1. Historic Name: San Fernando Siphon

B2. Common Name: City Trunk Line North

B3. Original Use: City water supply

B4. Present Use: None

***B5. Architectural Style:** Utilitarian

***B6. Construction History:** (Construction date, alterations, and date of alterations)

The San Fernando Siphon was constructed in 1914 to 1915, after the completion of the Los Angeles Aqueduct, in order to take water from the end of the aqueduct to the City of Los Angeles. Segments of the siphon have been replaced at various times, including a 400-foot-long segment within the Van Norman Reservoir Complex which collapsed in 2002.

***B7. Moved?** ■ **No** ☐ **Yes** ☐ **Unknown** **Date:** **Original Location:**

***B8. Related Features:** The San Fernando Siphon is part of the City Trunk Line, which itself is part of the vast system connecting the Los Angeles Aqueduct to the City of Los Angeles.

B9a. Architect: William Mulholland **B9b. Builder:** LADWP

***B10. Significance: Theme** Public Utilities **Area** Los Angeles
Period of Significance 1900-1925 **Property Type** Water supply system **Applicable Criteria** None.
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

See Continuation Sheet.

B11. Additional Resource Attributes: (List attributes and codes) None

***B12. References:**

Heinly, Burt A. 1914. San Fernando Inverted Siphon, Los Angeles Water-Supply. *Engineering News* 71(21): 1144-1149.

-----. 1915. Design and Methods and Cost of Constructing the Los Angeles City Trunk Line, Connecting Aqueduct to Distribution System. *Engineering and Contracting* 43(18): 390-394.

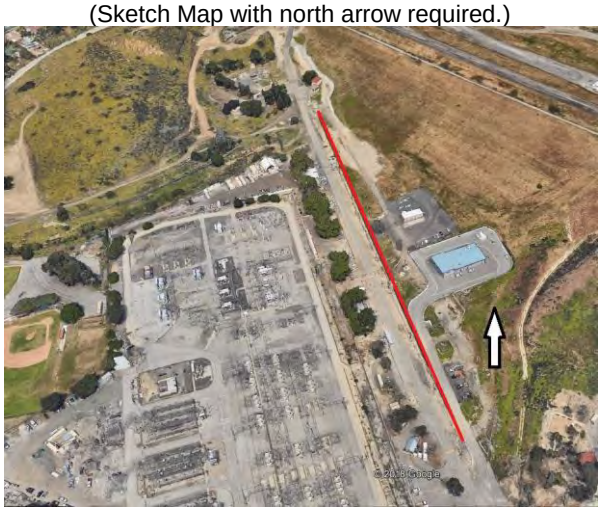
B13. Remarks: The above-ground segment of the San Fernando Siphon will be removed and replaced by the current project. Som subsurface segments will abandoned in place.

***B14. Evaluator:** Marc A. Beherec, Ph.D., RPA

***Date of Evaluation:** April 25, 2018

(This space reserved for official comments.)

(Sketch Map with north arrow required.)



***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries), continued:

In this location the pipeline consists of a 72-inch-diameter riveted steel pipe. Much of the pipeline is mounted on cast-in-place concrete piers measuring approximately 7 feet long and 1.5 foot wide and ranging from approximately 1 foot to 3 feet above the ground surface. At least one apparent cut-off valve and one lateral pipeline were observed connected to the exposed pipeline. This valve system does not appear to be original, as it does not meet the description of valves in published descriptions of the pipeline construction (Heinly 1914, 1915) and it was installed at a point where part of the pipeline was removed and replaced. The majority of the visible pipeline consists of apparently original riveted steel construction, but the pipeline has been repaired and modified over time. In places, particularly at the southern end of the exposed section, segments of pipe have been replaced. A 400-foot-long segment within the Van Norman Complex collapsed in 2002 and was replaced with new pipeline. The riveted pipe has also been cut and interrupted by a thick metal plate serving as a bulkhead at its north end.

***B10. Significance: Theme** Public Utilities **Area** Los Angeles
Period of Significance 1900-1920 **Property Type** Water supply system **Applicable Criteria** None.
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

NRHP Criterion A and CRHR Criterion 1

The San Fernando Siphon is associated with the City of Los Angeles water conveyance system constructed to take advantage of water brought to the San Fernando Valley by the Los Angeles Aqueduct, which was completed in 1913. However, the San Fernando Siphon does not appear to have played a significant individual role in local, state, or national history individually because it is representative of similar water works, including other siphons constructed for the Los Angeles Aqueduct, which were built throughout California in the 20th century. It does not meet NRHP Criteria A or CRHR Criterion 1.

NRHP Criterion B and CRHR Criterion 2

The San Fernando Siphon of the City Trunk Line was built by LADWP under the direction of its famous Chief Engineer, William Mulholland. However, Mulholland designed and built much of the period's water infrastructure, including the more notable Los Angeles Aqueduct and Colorado River Aqueduct. Research has not revealed a direct significant association between the design and construction of the City Trunk Line and William Mulholland or any individual engineers. The San Fernando Siphon has no direct association with important historic persons and, thus, do not meet NRHP Criterion A or CRHR Criterion 2.

NRHP Criterion C and CRHR Criterion 3

The San Fernando Siphon is representative of the steel-pipe construction of the City Trunk Line and other features constructed by the Los Angeles Department of Public Works. The above-ground segment which was documented consists of riveted steel plates and concrete pylons and does not display unusual or noteworthy design. Although the San Fernando Siphon as a whole was unusually long, its construction methods follow those of the 21 steel siphons in the Los Angeles Aqueduct system, and is not unusual for the period in its design (Heinly 1915: 392). They pipeline solves no unusual design problems, has no known associations with individual engineers, and does not represent the work of a master. The utilitarian pipeline does not possess high artistic values because it was designed for function and utility and not for aesthetic quality. In summary, the San Fernando Siphon does not have distinctive engineering or architectural features to meet NRHP Criterion C or CRHR Criterion 3.

NRHP Criterion D and CRHR Criterion 4

The San Fernando Siphon is not likely to yield further information important to history or prehistory, because the construction history and use of this resource is well documented. Therefore, the siphon does not meet NRHP Criterion D or CRHR Criterion 4.

The exposed segment of the siphon retains much of its integrity of location, feeling and association, but does not retain integrity of design, materials, workmanship, or setting. It is in its original location and retains its feeling and association because it expresses its historic purpose as a functional water system. However, the design, materials, and workmanship have lost integrity. The design of the pipeline has been substantially altered. The City Trunk Line as a whole and this segment of the San Fernando Siphon in particular have been actively maintained and upgraded during a century of use. Among other modifications, the exposed segment of the City Trunk Line within the Van Norman Dam complex includes a 400-foot-long segment which catastrophically collapsed and was replaced in 2002, the probable addition of a valve system, and a location where the pipeline was severed and a bulkhead installed to prevent the flow of water. Integrity of workmanship is also lost because the system has been altered with modern construction methods, not the outdated metal riveting technology used in 1914. The San Fernando Siphon does not retain integrity of materials because the alterations have removed portions of the original pipeline and introduced new materials into the water system.

19-000169

MAPPED

University of California

ARCHAEOLOGICAL SITE SURVEY RECORD

1. Site LAn 169 (H) 2. Map PACOIMA USGS 1939 6' SAN FERNANDO 7.5' 3. County LOS ANGELES
Ex-Mission San Fernando Land Grant
4. Twp. 2N Range 15W ; ____ 1/4 of ____ 1/4 of Sec. ____
5. Location At the old mission San Fernando, which is at a spot E of 118° 28' W and 34° 16' North.
6. On contour elevation 975
7. Previous designations for site San Fernando Mission; CRHL #157
8. Owner Roman Cath. Church 9. Address San Fernando
10. Previous owners, dates
11. Present tenant
12. Attitude toward excavation
13. Description of site an historic mission site
14. Area 15. Depth 16. Height
17. Vegetation 18. Nearest water
19. Soil of site 20. Surrounding soil type
21. Previous excavation In 1930's by church authorities
22. Cultivation 23. Erosion
24. Buildings, roads, etc. Many historic adobe bldgs.
25. Possibility of destruction nearly completely destroyed.
26. House pits
27. Other features
28. Burials
29. Artifacts
30. Remarks See notes in the Masterkey
31. Published references # L-1590
32. Accession No. 33. Sketch map
34. Date 1950 35. Recorded by Pilling 36. Photos

WEDNESDAY, FEBRUARY 28, 1973
WASHINGTON, D.C.

Volume 38 ■ Number 39

PART II

GARLAND GORDON

792-6501
Yetucks.

GS79 792-6501

federal register

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

■

NATIONAL REGISTER OF HISTORIC PLACES

Advisory Council on Historic Preservation

Protection of Properties on the National Register; Procedures For Compliance

SAN FERNANDO MISSION MATERIAL

Los Angeles, *Sowden, John, House*, 5121 Franklin Avenue.
Los Angeles, *Storer House*, 8161 Hollywood Boulevard.
Los Angeles, *Streetcar Depot (Building No. 661)*, Pershing and Dewey Avenues.
Los Angeles, *Will Rogers State Historic Park (Will Rogers House)*, 14253 Sunset Boulevard.
Mission Hills, *Pico-Romulo Adobe*, 10940 Sepulveda Boulevard.
Monrovia, **Sinclair, Upton, House*, 464 North Myrtle Avenue.
Pasadena, *Gamble House (Greene and Greene Library)*, 4 Westmoreland Place.
Pasadena (San Marino), *Old Mill (El Molino Viejo)*, 1120 Old Mill Road.
Pomona, *Palomares Adobe*, corner of Arrow Highway and Orange Grove Avenue.
San Dimas, *San Dimas Hotel*, 121 North San Dimas Avenue.
San Fernando, *Lopez Adobe*, 1100 Pico Street.
San Fernando, *San Fernando Mission*, 15151 San Fernando Mission Boulevard.
San Fernando vicinity, **Well No. 4, Pico Canyon Oil Field*, 9.6 miles north of San Fernando and west of U.S. 99.
San Gabriel, *San Gabriel Mission*, Junipero Street and West Mission Drive.
San Pedro, *Point Fermin Lighthouse*, 805 Paseo Del Mar.
South Pasadena, *Millimore House*, 1301 South Chelten Way.
Tujunga, *Bolton Hall (Tujunga City Hall)*, 10116 Commerce Avenue.
Wilmington, *Banning Home*, 401 East M Street.
Wilmington, *Drum Barracks*, 1053 Carey Street.

Madera County

Madera, *Madera County Courthouse*, 210 West Yosemite Avenue.

Marin County

San Rafael, *The Dixie Schoolhouse*, 2255 Las Gallinas Avenue.
San Rafael, *Dollar, Robert, Estate*, 1408 Mission Avenue.
San Rafael, *Miller Creek School Indian Mound*, 2255 Las Gallinas Avenue.
Tiburon vicinity, *Angel Island*, southeast of Tiburon in San Francisco Bay.

Mendocino County

Mendocino, *Mendocino and Headlands Historic District*, bounded approximately by the Pacific Ocean on the west and south, Little Lake Street on the north, and U.S. 1 on the east.
Pine Grove vicinity, *Point Cabrillo Site*, 0.75 mile west of Pine Grove and California 1.

Mono County

Bridgeport vicinity, **Bodie Historic District*, 7 miles south of Bridgeport on U.S. 395, then 12 miles east on secondary road.

Monterey County

Carmel, **Carmel Mission*, Rio Road.
Jolon vicinity, *Dutton Hotel, Stagecoach Station*, King City-Jolon Road.
Monterey, *El Castillo*, on Presidio Headlands facing Lighthouse Avenue.
Monterey, **Larkin House*, 464 Calle Principal.
Monterey, **Monterey Old Town Historic District*. Two districts. The southern one bounded by Dutra Street on the west, Madison Street on the east, Polk Street on the south, and Jefferson Street on the north; northern district bounded by Pacific Street on the west, Scott Street on the south, by Alvardo Street on the east, and Decatur Street on the north.
Monterey, *Monterey State Historic Park*, Houston Street between Pearl and Webster.
Monterey, **Royal Presidio Chapel*, 550 Church Street.
Monterey, **U.S. Customhouse (Old Customhouse)*, Calle Principal at Decatur Street.

Napa County

St. Helena, *Pope Street Bridge*, Pope Street, over the Napa River.
St. Helena, *Rhine House*, 2000 Main Street.
St. Helena vicinity, *Bale Mill*, 3 miles northwest of Saint Helena off California 128.

Nevada County

French Corral vicinity, *Bridgeport Covered Bridge*, across the South Fork of the Yuba River on the road between French Corral and Smartville.
French Lake vicinity, *Meadow Lake Petroglyphs*, east of French Lake, sec. 22, T. 18 N., R. 13 E.
Truckee vicinity, **Donner Camp*, 2.6 miles west of Truckee on U.S. 40.

Orange County

Costa Mesa, *Fairview Indian Site*, west of Harbor Boulevard, south of Adams Street.
Modjeska, *Modjeska House*, Modjeska Canyon Road.
San Juan Capistrano, *Mission San Juan Capistrano*, Camino Capistrano and Ortega Highway.
Yorba Linda, *Nixon, Richard, Birthplace*, 18061 Yorba Linda Boulevard.

Placer County

Auburn, *Old Auburn Historic District*, bounded approximately by Interstate 80, Maple Street, and Hamilton Lane on the north, High Street on the south, and including the westerly frontage on Spring Street, the easterly frontage on Lincoln Way and Sacramento Street, and the Traveler's Rest and Winery property at the southeast of the historic district.
Roseville vicinity, *Strap Ravine Nisenon Maidu Indian Site*, north of Roseville, 1 mile east of intersection of Douglas Boulevard and Highway 80.
Tahoe City, *Outlet Gates and Gatekeeper's Cabin*, at Calif. 89 and Truckee River.

Plumas County

Gold Lake vicinity, *Lakes Basin Petroglyphs*, northwest of Gold Lake, sec. 8, T. 21 N., R. 12 E.

Riverside County

Palm Springs, *Andreas Canyon*, South Palm Canyon Drive.
Palm Springs vicinity, *Tahquitz Canyon*, southwest of Palm Springs.
Riverside, *Mission Inn*, 3649 Seventh Street.
Valerie vicinity, *Coachella Valley Fish Traps*, 2 miles west of Valerie.

Rumsey

Rumsey Town Hall, California 16 at Manzanita Street.

Sacramento County

Locke, *Locke Historic District*, bounded on the west by the Sacramento River, on the north by Locke Road, on the east by Alley Street, and on the south by Levee Street.
Locke vicinity, *Delta Meadows Site*, 1 mile northeast of Locke.
Sacramento, *California Governor's Mansion*, southwest corner of 16th and H Streets.
Sacramento, *Crocker, E. B., Art Gallery*, 216 O Street.
Sacramento, *Joe Mound*, Discovery Park, 0.5 mile east of Interstate 5.
Sacramento, **Old Sacramento Historic District*, junctions of U.S. 40, 50, 99, and California 16 and 24.
Sacramento, **Pony Express Terminal (B. F. Hastings Building)*, 1006 Second Street.
Sacramento, *Stanford-Lathrop Home*, 800 N Street.
Sacramento, **Sutter's Fort*, 2701 L Street.
Sacramento, *Woodlake Site*, 0.5 mile southwest of KXOA radio towers.
Sacramento vicinity, *Bennett Mound*, 9 miles northwest of Sacramento on the Garden Highway.

Salano County

Collinsville vicinity, *Hastings Adobe*, One-Third mile north of Collinsville on County Route 68, then east 1.45 miles on County Route 403.

San Benito County

San Juan Bautista, **Anza House*, Third and Franklin Streets.
San Juan Bautista, **Castro, Jose, House*, south side of the Plaza.
San Juan Bautista, **San Juan Bautista Plaza Historic District*, beginning at the intersection of Washington, First and Second Street, northwest along Second to Mariposa Street, northeast along Mariposa to First Street, southeast on First to Washington Street, southwest on Washington to Second Street.

San Diego County

Camp Joseph H. Pendleton, **Las Flores Adobe*, Stuart Mesa Road, about 7 miles north of its junction with Vandegrift Boulevard.
Camp Pendleton, *Santa Margarita Ranch House*, off Vandegrift Boulevard.
Coronado, *Hotel Del Coronado*, 1500 Orange Avenue.
Oceanside vicinity, **San Luis Rey Mission Church*, 4 miles east of Oceanside on California 76.
San Diego, **Estudillo House*, 4000 Mason Street.
San Diego, **Old Mission Dam*, north side of Mission Street-Gorge Road.
San Diego, *Old Town San Diego Historic District*, approximately from the easterly line of Wallace and Washington Streets to the westerly line of Twiggs Street, and from the northerly line of Congress Street to the southerly line of Juan Street.
San Diego, **San Diego Presidio*, Presidio Park.
San Diego, *Santa Fe Depot (Union Station)*, 1050 Kettner.
San Diego, **Star of India*, San Diego Embarcadero.
San Diego, *Villa Montezuma (Jesse Shepard House)*, 1925 K Street.
San Diego vicinity, *Cabrillo National Monument*, 10 miles from San Diego off U.S. 101, near the southern tip of Point Loma.
San Diego vinicity, **San Diego Mission Church*, 5 miles east of Old Town San Diego on Friars Road.
Spring Valley, **Bancroft, Hubert H., Ranch House*, Bancroft Drive off California 94.
Vista vicinity, **Guajome Ranch House*, 2.5 miles northeast of Vista.
Warner Springs vicinity, **Oak Grove Butterfield Stage Station*, 13 miles northwest of Warner Springs on California 79.
Warner Springs vicinity, **Warner's Ranch*, 4 miles south of Warner Springs on secondary road.

San Francisco County

San Francisco, **C. A. Thayer*, San Francisco Maritime State Historic Park.
San Francisco, *Feusier Octagon House*, 1067 Green Street.
San Francisco, **Flood, James C., Mansion*, California and Mason Streets.
San Francisco, *Fort Mason Historic District*, northeast corner of Fort Mason, north and east of Franklin Street and McArthur Avenue.
San Francisco, *Fort Point National Historic Site*, northern tip of San Francisco Peninsula on U.S. 101 and Interstate 480.
San Francisco, *Golden Gate Park Conservatory*, Mount Lick, north of John F. Kennedy Drive, at the east end of Golden Gate Park.

19-000169

Demolition Work Started on Quake-Damaged Chapel

San Fernando Rey Mission Had Stood Since 1806; Photos Will Aid Rebuilding

By LORNA APPER

Demolition of the earthquake-damaged chapel of San Fernando Rey Mission in Mission Hills began yesterday. Reconstruction has been approved and the new structure will be an exact replica of the original chapel built in 1806.

Measurements and photographs were taken prior to demolition. Msgr. Benjamin G. Hawkes, a spokesman for the Archdiocese of Los Angeles said.

Figures and photographs now are in the hands of the architects, the firm of O'Leary and Terasawa of Beverly Hills. It will take about eight weeks for completion of the plans, Msgr. Hawkes said.

It has been estimated that the new building will cost in excess of $500,000.

Minor cracks in five other mission buildings have been repaired, a mission spokesman told The News, and the convento, the 21-arch main building, will be ready for reopening in two or three weeks.

Cracks Repaired

Renovation is being held up pending arrival of tile for one of the floors.

Damage to the chapel, which is situated behind the convento, was so great that the structural engineering firms of William M. Taggart determined that it would not be economically feasible to restore the building.

It was then decided by the Archdiocese and approval by the Cultural Heritage Board of Los Angeles that the old chapel be completely demolished to make way for construction of the chapel as an exact replica of the original building.

Earlier the Cultural Heritage Board had approved demolition of the structure after reviewing the engineering report.

The board has advisory jurisdiction over areas such as the Mission complex which have been declared cultural landmarks.

If the board had disapproved the proposed demolition it could have requested that a demolition permit not be granted by the Building and Safety Commission.

Given Go-Ahead

However, according to Mrs. Ileana Welch, cultural heritage coordinator, it is written into the board's ordinance that the board cannot go against public safety as defined by the Building and Safety Dept.

She said that the board had been kept informed concerning extent of mission buildings damaged prior to its April 18 meeting when the engineers report was presented and was prepared to lend its approval to the project.

The board cannot go against a demolition order when the building has been declared unsafe by the Building and Safety Dept.

The limit which the board can delay any project involving safety is 45 days. A longer period would be considered interference with a private party.

When the chapel plans are completed the Rev. Eugene Erilot, mission administrator, has agreed to take them to the board for inspection and review. However, no problems are

LA Times April 19

DEMOLITION GRANTED FOR HISTORIC CHURCH

The historic church at San Fernando Mission will be demolished because of earthquake damage under permission granted Wednesday by the city Cultural Heritage Board.

A fourth Mission Chapel, an exact replica of the 1812 church, will be built at a cost of more than $500,000.

The demolition was authorized after an appeal to the board by the Catholic Archdiocese of Los Angeles.

Repaired paintings, statues and stations of the cross will go into the new church when it is ready.

The convent on the site, the largest two-story adobe building reportedly in California, is being repaired at a cost of $250,000 and will reopen soon, a spokesman said minor cracks in three other buildings have already been repaired but the chapel suffered more severe earthquake damage.

19-000169

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

Northridge, California 91324

DEPARTMENT OF ANTHROPOLOGY

Area Code (213) 885-3331

AN AGREEMENT MAY 12,1973

The undersigned agree to the following conditions of archaeological research during the month of May 1973 on the grounds of the Mission San Fernando, Mission Hills, California.

1. That the research be confined to the chapel building area and particularly that area of interior floor space, contained within the now-dismantled walls.

2. That all artifactual and non-artifactual materials collected during the period of research remain the property of the Mission San Fernando and while such materials may be removed for study, all collected materials will be returned to the administration of the Mission.

3. That skeletal materials identified as human will be studied and returned for re-burial within the chapel building.

4. That student and other personnel aiding the archaeological research can have access to the site area but only with supervision by Dr. Roger Kelly.

5. That no monetary consideration for this work will be part of this agreement.

6. That both parties may make oral arrangements other than those mentioned above.

7. That the administration of the Mission San Fernando will not be held responsible for any illness,injury, or accidental trama suffered by any person participating in this research.

Signed:

Rev.Father Eugene Trilot
Procurator
San Fernando Mission
15101 San Fernando Blvd.
San Fernando, CA. 91340

Dr. Roger E. Kelly
Asst. Prof.
Department of Anthropology
California State University,Northridge

19-000169

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE
Northridge, California 91324

DEPARTMENT OF ANTHROPOLOGY
Area Code (213) 885-3331

May 25, 1973

Mrs. Ileana Welch
Cultural Heritage Board
Municipal Arts Commission
City Hall, Los Angeles 90012

Dear Mrs. Welch,

I am writing to strongly urge the adoption of professional archaeological consultation and advisement procedures within the Board's handbook, especially when Cultural or Historic Monuments are considered for modification or demolition.

The recent demolition of the Church at San Fernando Mission has caused the irreparable loss of some historical data of great use now and in the future. These data include the chronology of floor tile coverings, architectural details of foundation and footing construction, sequence of wall paintings and other details of decoration, and most importantly - and I stress this most strongly - the disturbance and near distruction of human skeletal remains of the priests known to have been buried beneath the church floors as well as lay persons buried within the confines of the walls. We have been successful in salvaging these skeletal remains and will return them for reburial after laboratory study. Architectural features such as floors and foundations are under study also. A descriptive report will be written during the next several months.

I hope a set of procedures can be instituted within the Board's operation whereby the recovery of information can precede programmed alternation of historic and cultural sites and buildings. I will be happy to provide further details on the excavations of the San Fernando Mission Church or testimony urging procedural changes.

Sincerely,

Roger E. Kelly

Roger E. Kelly, PhD
Asst. Prof.: Coordinator, Northridge
Archaeological Research Center

REK/prk
cc: Dr. Carl S. Dentzel, President, Cultural Heritage Board
Dr. Charles Rozaire, LA County Museum
N.Nelson Leonard, SCA Vicepresident
UCLA Archaeological Survey
Kirk, CSUN

19-000169

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE
Northridge, California 91324

DEPARTMENT OF ANTHROPOLOGY
Area Code (213) 885-3331

May 25, 1973

Mr. John Gibson
President, Los Angeles City Council
City Hall
Los Angeles, California 90012

Dear Mr. Gibson,

I am writing to urge implementation and passage of the amended and revised Proposed Conservation Plan (CPC 24578), especially Section VIII which pertains to archaeological and paleontological findings.

A recent event involving the demolition of the historic church at the San Fernando Mission points out the necessity for professional investigation of spots containing archaeological, historical, and paleontological evidence BEFORE issuance of building or demolition permits. In April and May, the standing walls and foundations of the 1804-1806 church at the San Fernando Mission were removed as permitted by the Cultural Heritage Board. This action caused the irreparable loss of information pertaining to the following:

1. Nature and chronology of floor tile coverings, dated from 1820's to 1940.
2. Architectural details of foundations and footings of the 1804 church and possibly of the 1799 church built near the 1804 building.
3. Sequence of wall paintings and other decorations.
4. Near-destruction of human skeletal remains of priests known to have been buried beneath the church floors and remains of lay persons recently found during our excavations.

These points of information are not inclusive but specify four areas of historical information which could have been thoroughly researched using archaelogical methods. During this month, I have directed salvage excavations within the church confines and have been moderately successful in recovering information relative to the four points above. A report describing our work will be written during the next several months.

I will be happy to provide further information or testimony regarding the content of Section VIII, CPC 24578 or the work at San Fernando Mission.

Sincerely,

Roger E. Kelly

Roger E. Kelly, PhD
Asst. Prof, Coordinator, NARC

REK/mcn

19-000169

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE
Northridge, California 91324

DEPARTMENT OF ANTHROPOLOGY
Area Code (213) 885-3331

May 25, 1973

Councilman Marvin Braude
City Hall, LA 90012

Dear Mr. Braude,

I am writing to urge implementation and passage of the amended and revised Proposed Conservation Plan (CPC 24578), especially Section VIII which pertains to archaeological and paleontological findings.

A recent event involving the demolition of the historic church at the San Fernando Mission points out the necessity for professional investigation of spots containing archaeological, historical, and paleontological evidence BEFORE issuance of building or demolition permits. In April and May, the standing walls and foundations of the 1804-1806 church at the San Fernando Mission were removed as permitted by the Cultural Heritage Board. This action caused the irreparable loss of information pertaining to the following:

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I will be happy to provide further information or testimony regarding the content of Section VIII, CPC 24578 or the work at San Fernando Mission.

Sincerely,

Roger E. Kelly

Roger E. Kelly, PhD
Asst. Prof., Coordinator, NARC

REK/prk

19-000169

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

Northridge, California 91324

DEPARTMENT OF ANTHROPOLOGY
Area Code (213) 885-3331

May 25, 1973

Ms. Alice Lepis
Department of City Planning
Room 561, City Hall
Los Angeles, 90012

Dear Ms. Lepis,

I am writing to urge implementation and passage of the amended and revised Proposed Conservation Plan (CPC 24578), especially Section VIII which pertains to archaeological and paleontological findings.

A recent event involving the demolition of the historic church at the San Fernando Mission points out the necessity for professional investigation of spots containing archaeological, historical, and paleontological evidence BEFORE issuance of building or demolition permits. In April and May, the standing walls and foundations of the 1804-1806 church at the San Fernando Mission were removed as permitted by the Cultural Heritage Board. This action caused the irreparable loss of information pertaining to the following:

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Sincerely,

Roger E. Kelly

Roger E. Kelly, PhD
Asst. Prof, Coordinator, NARC

REK/prk

19-000169

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE
Northridge, California 91324

DEPARTMENT OF ANTHROPOLOGY
Area Code (213) 885-3331

May 25, 1973

Councilman Donald Lorenzen
Third District
City Hall
Los Angeles, 90012

Dear Mr. Lorenzen,

I am writing to urge implementation and passage of the amended and revised Proposed Conservation Plan (CPC 24578), especially Section VIII which pertains to archaeological and paleontological findings.

A recent event involving the demolition of the historic church at the San Fernando Mission points out the necessity for professional investigation of spots containing archaeological, historical, and paleontological evidence BEFORE issuance of building or demolition permits. In April and May, the standing walls and foundations of the 1804-1806 church at the San Fernando Mission were removed as permitted by the Cultural Heritage Board. This action caused the irreparable loss of information pertaining to the following:

1. Nature and chronology of floor tile coverings, dated from 1820's to 1940.
2. Architectural details of foundations and footings of the 1804 church and possibly of the 1799 church built near the 1804 building.
3. Sequence of wall paintings and other decorations.
4. Near destruction of human skeletal remains of priests known to have been buried beneath the church floors and remains of lay persons recently found during our excavations.

These points of information are not inclusive but specify four areas of historical information which could have been thoroughly researched using archaeological methods. During this month, I have directed salvage excavations within the church confines and have been moderately successful in recovering information relative to the four points above. A report describing our work will be written during the next several months.

I will be happy to provide further information or testimony regarding the content of Section VIII, CPC 24578 or the work at San Fernando Mission.

Sincerely,

Roger E. Kelly, PhD
Asst. Prof., Coordinator, NARC

REK/prk

19-000169

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE
Northridge, California 91324

DEPARTMENT OF ANTHROPOLOGY
Area Code (213) 885-3331

May 25, 1973

Mr. Stanley Diller, President
City Planning Commission
Room 561, City Hall
Los Angeles, Ca. 90012

Dear Mr. Diller,

I am writing to urge implementation and passage of the amended and revised Proposed Conservation Plan (CPC 24578), especially Section VIII which pertains to archaeological and paleontological findings.

A recent event involving the demolition of the historic church at the San Fernando Mission points out the necessity for professional investigation of spots containing archaeological, historical, and paleontological evidence BEFORE issuance of building or demolition permits. In April and May, the standing walls and foundations of the 1804-1806 church at the San Fernando Mission were removed as permitted by the Cultural Heritage Board. This action caused the irreparable loss of information pertaining to the following:

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These points of information are not inclusive but specify four areas of historical information which could have been thoroughly researched using archaeological methods. During this month, I have directed salvage excavations within the church confines and have been moderately successful in recovering information relative to the four points above. A report describing our work will be written during the next several months.

I will be happy to provide further information or testimony regarding the content of Section VIII, CPC 24578 or the work at San Fernando Mission.

Sincerely,

Roger E. Kelly

Roger E. Kelly, PhD
Asst. Prof., Coordinator, NARC

REK/prk

19-000169

City Council of the City of Los Angeles

OFFICE OF THE PRESIDENT

John S. Gibson, Jr.
COUNCILMAN 15TH DISTRICT

485-3347

May 29, 1973

Mr. Roger E. Kelly, PhD
Asst. Professor
Coordinator, NARC
California State University, Northridge
Northridge, CA 91324

Dear Dr. Kelly:

Thank you for your letter expressing your views concerning the revised Proposed Conservation Plan (CPC 24578) and work at San Fernando Mission.

You may be assured that I will give my sincere consideration to this file when it is forward to the Council.

In the meantime we have taken the liberty of forwarding your letter to Councilman Louis R. Nowell, a member of the Planning Committee, in whose district the San Fernando Mission is located.

Yours very truly,

JOHN S. GIBSON, JR.
President
Los Angeles City Council

JSG:pb

cc: Clm. Nowell

COUNCILMAN MARVIN BRAUDE

ELEVENTH DISTRICT, CITY OF LOS ANGELES

May 31, 1973

Honorable Ernani Bernardi
Chairman
Planning Committee
Room 238 City Hall

Dear Councilman Bernardi:

RE: C.F. 73-2162 - CONSERVATION PLAN
C.P.C. 24578

I enclose a letter from Professor Kelly which should be added to the above-referenced file. The situation outlined in his letter is naturally of great concern to archaeologists and is also mentioned in a letter I have received from Mrs. Roberta Greenwood, Chairman of the Task Force for Archaeology and Paleontology and Treasurer of the Society for California Archaeology.

Mrs. Greenwood has suggested a change in the wording of the Conservation Plan which would obviate any future hasty demolition or destruction to archaeologically valuable sites. On page 28 of the Conservation Plan, under Policies, the third paragraph now reads:

> "After the issuance of grading or building permits the Cultural Heritage Board shall be notified of any archaeological sites ..."

It is suggested that this be changed to:

"As early as possible in the anticipation of grading ..."

Many thanks.

Very truly yours,

MB:cr/mls
Enclosures

cc: Professor Roger E. Kelly
Mrs. Robert S. Greenwood

City Hall, Los Angeles, California 90012 Telephone 485-3811
Committees, Finance (chairman), Industry & Transportation, Revenue & Taxation
Rules, Public Works Priority, Board of Referred Powers

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial CA-LAN-169/H
NRHP Status Code
Other Listings
Review Code Reviewer Date

*Resource Name or #: San Fernando Mission archaeological site

P1. Other Identifier:

*P2. Location: ■ Not for Publication ☐ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Fernando Date: 1966 (Photorevisd 1988) T 15 N ;R 15 W ; ¼ of ¼ of Sec (Unsectioned); S.B. B.M.

c. Address: 14973 San Fernando Mission Boulevard City: Mission Hills Zip: 91345

d. UTM: NAD 83 Zone: 11; 365721 mE/ 3793459 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation: 961 ft. AMSL

The San Fernando Substation is located on San Fernando Mission Blvd., 200 m east of the San Fernando Mission.

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The following update pertains to the portion of the San Fernando Mission archaeological site contained within the San Fernando Substation operated by Southern California Edison (SCE). Between October 2 and November 14, 2013, SWCA Environmental Consultants monitored the excavation of 10 mechanical trenches and four bore holes that were dug in designated excavation areas. During excavation of mechanical trenches, two archaeological features were identified. Two buried archaeological features (Features 1 and 2) and three isolated artifacts were documented during excavation, none of which dated to the Mission period (pre-1834). Feature 1 is an ephemeral deposit of construction material including burned wood, wire fragments, and wire (round) nails, as well as a small quantity of burned animal bone and shellfish, and dates between 1930 and 1941. Inspection of sediment profiles of the trenches revealed attributes consistent with the interpretation that the upper 50 to 60 cm below surface of the monitored area consists of redeposited fill or otherwise disturbed soils. The subsurface context in which Feature 1 was discovered appears to be intact. Feature 2 is a concrete stem wall foundation to a four-car garage constructed by 1941 and demolished by 1969. The feature was disturbed by the installation of a subsurface concrete electrical duct. The features are described in detail below.

*P3b. Resource Attributes: (List attributes and codes) AH2. Foundations/structure pads; AH4. Privies/dumps/trash scatters

*P4. Resources Present: ☐Building ☐Structure ☐Object ☒Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5b. Description of Photo: (View, date, accession #)
Feature 1 location (left side of trench adjacent to north arrow) in mechanical trench, SWCA Photo 361, view facing southeast

*P6. Date Constructed/Age and Sources: ☐Historic ☐Prehistoric ☒Both

*P7. Owner and Address:
Southern California Edison
1218 S. Fifth Avenue
Monrovia, CA 91016

*P8. Recorded by: (Name, affiliation, and address)
Aaron Elzinga and Chris Millingotn
SWCA Environmental Consultants
150 S. Arroyo Parkway, 2nd Floor
Pasadena, CA 91005

*P9. Date Recorded: 10/2/13 – 11/14/13

*P10. Survey Type: (Describe)
Intensive pedestrian & construction monitoring

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Millington, Chris and John Dietler 2013 Cultural and Paleontological Resources Monitoring Report for the San Fernando Substation Testing Project (IO 313561), Mission Hills, City of Los Angeles, Los Angeles County, California. Report prepared by SWCA Environmental Consultants.

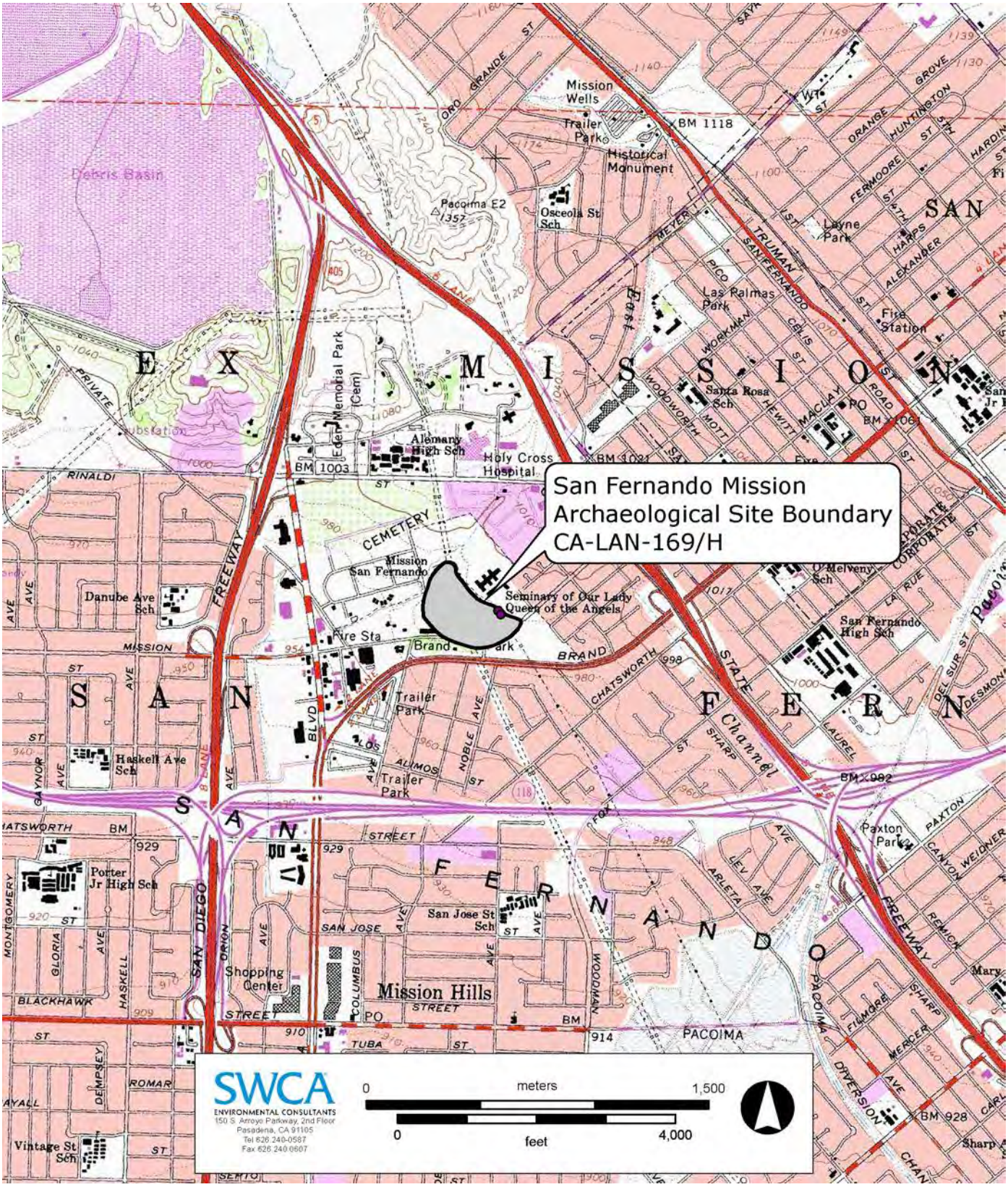
*Attachments: ☐NONE ■Location Map ■Sketch Map ■Continuation Sheet ☐Building, Structure, and Object Record ■Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI#
Trinomial CA-LAN-169/H

*Resource Name or #: San Fernando Mission archaeological site

***Map Name:** San Fernando ***Scale:** 1:24,000 ***Date of Map:** 1966 (Photorevisd 1988)



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
Primary #
Trinomial CA-LAN-169/H

ARCHAEOLOGICAL SITE RECORD

 ***Resource Name or #: San Fernando Mission archaeological site**

***A1. Dimensions: a. Length:** 440 m (northwest) × **b. Width:** 275 m (northeast) Dimensions reflect materials observed within project limits only, not the entire site.

Method of Measurement: ☐ Paced ☐ Taped ☐ Visual estimate ☒ Other: Measured in ArcGIS

Method of Determination (Check any that apply.): ☒ Artifacts ☒ Features ☐ Soil ☐ Vegetation ☐ Topography ☐ Cut bank ☐ Animal burrow ☐ Excavation ☒ Property boundary ☒ Other (Explain): Subsurface mechanical excavation associated with the project.

Reliability of Determination: ☐ High ☒ Medium ☐ Low Explain: A systematic study of the San Fernando Mission archaeological site boundary was beyond the scope of the current project.

Limitations (Check any that apply): ☒ Restricted access ☒ Paved/built over ☒ Site limits incompletely defined ☒ Disturbances ☐ Vegetation ☒ Other (Explain): Project constraints prohibited confirmation of the site boundary outside the current project area.

A2. Depth: ☐ None ☐ Unknown Method of Determination: 1 m below surface

***A3. Human Remains:** ☐ Present ☒ Absent ☐ Possible ☐ Unknown (Explain):

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.): Two features—a burned trash pit and garage wall foundation—were discovered in mechanically excavated trenches. See Continuation Forms for details.

***A5. Cultural Constituents (**Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.): A crushed historic can and ceramic sherds of unknown age and function were observed on a gravel surface within the southeast portion of the archaeological site boundary, within the southwest section of the San Fernando Substation. A whiteware cup fragment of indeterminate age was observed in a mechanical trench located within the north-central section of the San Fernando Substation.

***A6. Were Specimens Collected?** ☒ No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)

***A7. Site Condition:** ☐ Good ☒ Fair ☐ Poor (Describe disturbances.): All buildings associated with the historic substation have been razed and the surface has been graded and filled to at least 1 meter below the modern ground surface. Intact horizons with the potential to contain intact archaeological deposits still remain below the cut/fill disturbances.

***A8. Nearest Water** (Type, distance, and direction.)**:** Earthen-lined ditch, 1035 feet, west.

***A9. Elevation:** 961 ft. AMSL

A10. Environmental Setting **(**Describe culturally relevant variables such as vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc.)**:** Parcel contains an electrical substation with asphalt, gravel, and landscaped surfaces. The location is flat with an open aspect. Trees pictured in historic photos are located at the substation's south entrance. Up to one meter of redeposited fill exists above intact archaeological deposits, which overlie Quatenary alluvium.

A11. Historical Information:

The San Fernando Substation was constructed sometime around 1910 and has been in operation to the present day. See Continuation Form for larger historical context.

***A12. Age:** ☐ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☒ 1880-1914 ☒ 1914-1945 ☒ Post 1945 ☐ Undetermined **Describe position in regional prehistoric chronology or factual historic dates if known:** See Continuation Form.

A13. Interpretations (Discuss data potential, function[s], ethnic affiliation, and other interpretations): The features—a burned trash pit and concrete stem wall foundation to a four-car garage — collectively range in date from approximately 1930 to 1969 and appear to be associated with the development of the San Fernando Substation, constructed ca. 1910 and operated to the present day.

A14. Remarks:

A15. References (Documents, informants, maps, and other references):

Huntington Library, Southern California Edison Photographs and Negatives. Available at: http://hdl.huntington.org/cdm/landingpage/collection/p16003coll2

A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.): See Continuation Form.
Original Media/Negatives Kept at: SWCA Environmental Consultants. 150 S. Arroyo Parkway, 2nd Floor, Pasadena, CA 91105

***A17. Form Prepared by:** Chris Millington **Date:** 11/19/13

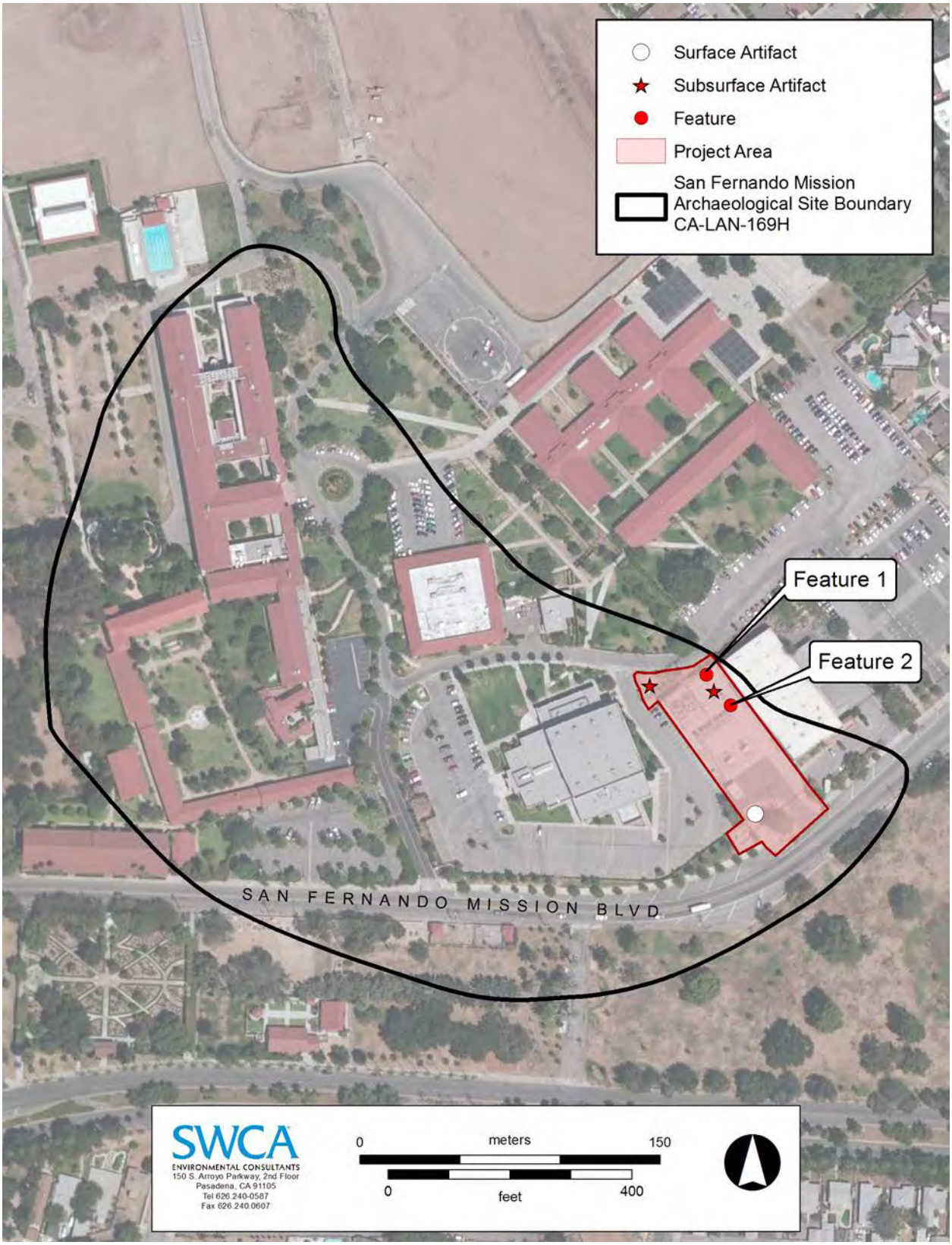
Affiliation and Address: SWCA Environmental Consultants. 150 S. Arroyo Parkway, 2nd Floor, Pasadena, CA 91105

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
SKETCH MAP

Primary #
HRI#
Trinomial CA-LAN-169/H

Page 4 **of** 14 ***Resource Name or #:** San Fernando Mission archaeological site

***Drawn By:** Chris Millington ***Date:** 11/18/13



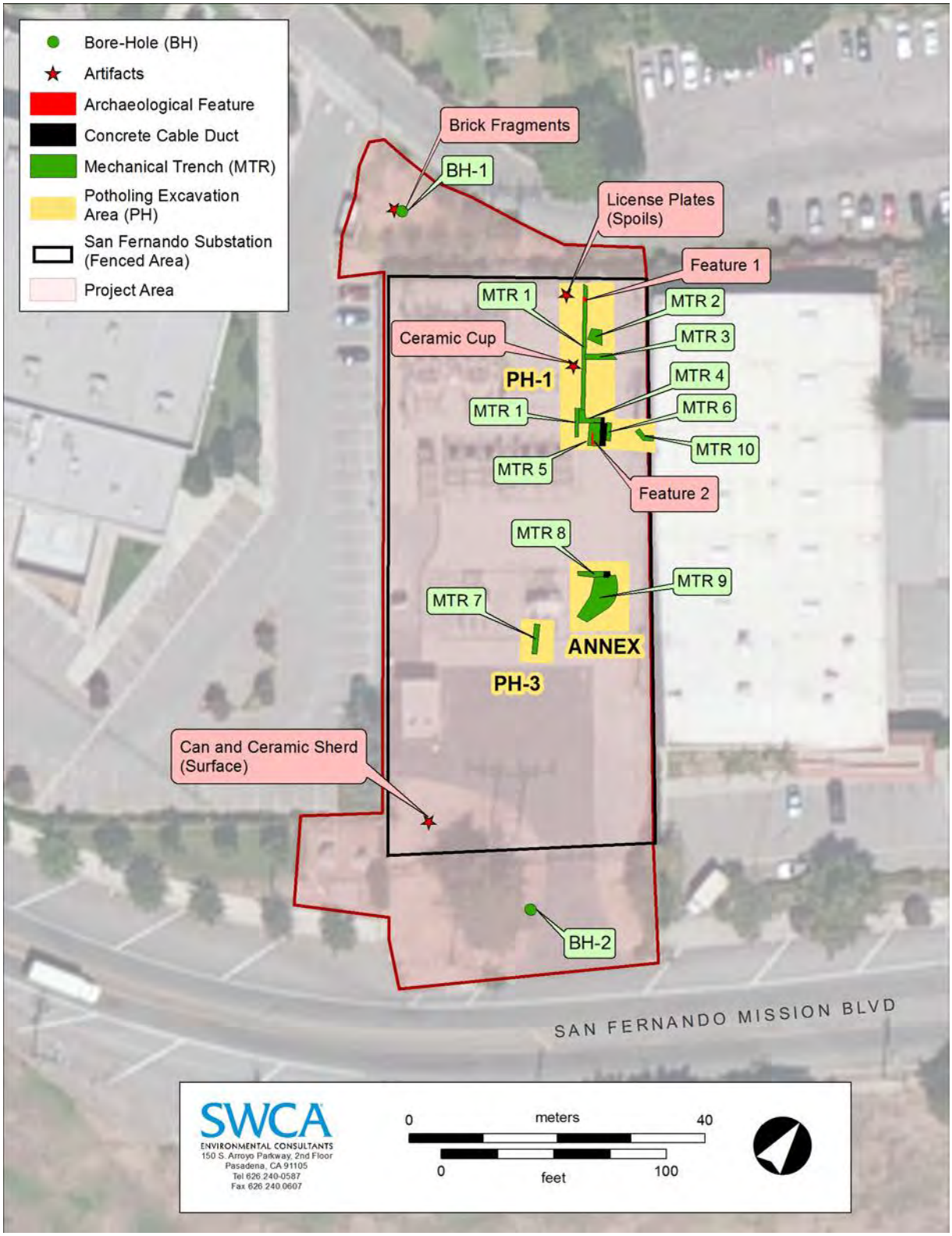
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
SKETCH MAP

Primary #
HRI#
Trinomial CA-LAN-169/H

*Resource Name or #: San Fernando Mission archaeological site

*Drawn By: Chris Millington

*Date: 11/18/13



*Required information

*A4. Features

Feature 1

This feature is a burned trash pit and consists of charcoal, reddened earth, nails, domestic sheep bone, shell (tentatively identified as clam and scallop) and glass. Prior to the feature being exposed, two 1930 California license plates were recovered in the trench spoils from a context later determined to be associated with Feature 1. The bases of both plates are embossed with "CAL 30" and all but the last two places of the license number could be verified as matching, suggesting they are matching plates from a single vehicle. These artifacts provide a *terminus post quem* for the feature, indicating that it must post-date 1930.

The nature of the fire-affected sediments and feature constituents suggest burning in place. The reddened soil as depicted both in the stratigraphic drawing and the photograph appear similar to the kind of oxidation that occurs below fires lit on the ground, especially in fire pits. Given the location of the feature on the portion of the property shown as being paved in photos as early as 1941, it is likely that the 50 cm of overlying re-deposited fill resulted from removal of the asphalt and upgrade of the substation. Therefore, the feature likely represents a trash-burning pit dating between 1930 and 1941.

The feature was initially observed as black soil concentrated in eastern profile of trench along with building material (burned cut lumber and nails), and the excavation was halted for trench inspection. Additional inspection of spoils and the trench profile revealed short segments of thin-gauge copper wire mixed with building material. The sediment surrounding the material was observed as being unconsolidated. The overlying stratum was clearly intrusive and it contains a PVC electrical conduit and braided cable. The feature was only visible in the profile wall—no remaining portions of the deposit were observable in the bottom of the trench. A concrete pad for the steel frame used in the substation is located directly above the extant portion of the feature.

The deposit measures approximately 20 cm think and 80 cm long (northwest orientation). A total of three samples of approximately 10 x 10 x 10 cm were taken from the middle and each end of the feature within the trench sidewall. The matrix was screened through 1/8-inch wire mesh and the artifacts tallied and partially documented. All of the screened samples contained round nails, carbonized wood, and small-gauge wire fragments. One of the samples included a glass jar fragment with a portion of an embossed Kerr maker's mark on the body. Two of the samples included carbonized animal bone fragments and one contained small shell fragments which appeared to be clam and scallop. The burned bone appears to be the distal radius of a domestic sheep. These artifacts and the license plates were collected and later reburied in a hand-excavated hole at the location of Feature 1 (UTM: 365709 mE, 3793475 mN, North American Datum 1983, Zone 11). The hole was excavated to a depth of 30 cm below the gravel surface, slightly above a buried PVC electrical conduit pipe.

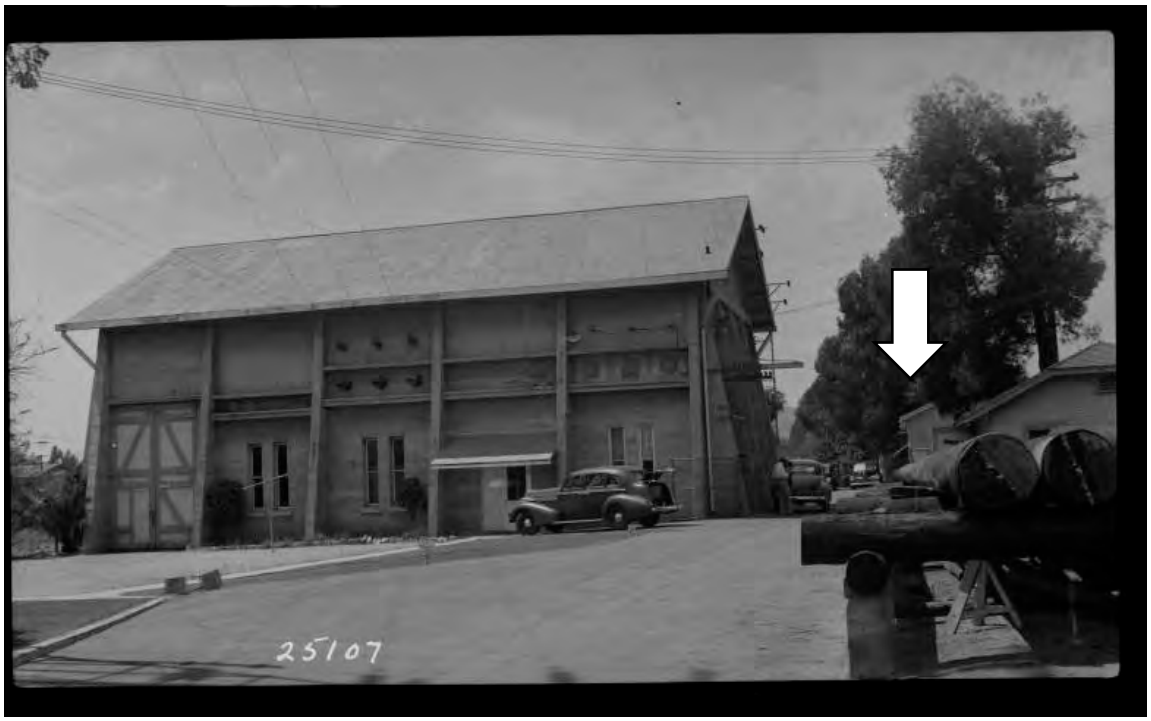
Feature 2

This feature is as an L-shaped linear segment of reinforced concrete stem wall to a four-car garage constructed by 1941 and demolished by 1969. It measures 1.7 × 0.7 m (northwest orientation) and is approximately 20 cm thick. The southeast-facing wall has been destroyed by an intrusive concrete electrical duct. The extant wall segments are damaged in several areas, likely from demolition, and segments of rebar are visible in the degraded portions. No artifacts were found in association with the feature. The position and orientation of the feature matches the location of a four-car garage appearing in archival photographs from 1941 and an aerial photograph from 1952. The garage no longer appears in aerial photographs in 1969. The garage was not pictured in earlier photographs taken in 1910.

Recorded By: Recorded By: Chris Millington and Aaron Elzinga ***Date:** 10/2/13 – 11/14/13 ■ Continuation ☐ Update

A11. Historical Information:

The earliest information for the San Fernando Substation currently available consists of photographs archived as part of an SCE collection housed at the Huntington Library. The earliest photographs in the collection referencing the San Fernando Substation date to 1910. The photos depict a tall, single-story concrete building with transmission cables entering on the north and south-facing sides of the building, two steel H-frame tower structures, and a single-story residence that is listed in archival photos as the "attendant's cottage." Photographs taken in 1941 show the north portion of the property as having been paved and the adjacent parcel developed. In the sequence of photos from the same year, a four-car garage is depicted in the northeast side of the property overlapping the parcel line. The garage is not pictured in photographs prior to this date. What little information is available on the development of the property after the early 1940s comes from aerial photographs, which show that the substation structure and house were extant until at least 1982. By 2003 all structures on the property were razed and most of the pavement removed and replaced with a gravel bed and modern electrical infrastructure as it is seen today. The garage is visible in aerial photographs from 1952 and by 1969 appears to have been demolished. The level of subsurface disturbance from the demolition is unknown. The original H-frame steel towers are still in use, but the cross-arms and hardware have been replaced.



The south-facing side of the San Fernando Substation building depicting the location of a four-car garage (white arrow) as seen in 1941, view facing northwest (Huntington Library, Southern California Edison Photographs and Negatives, Unique Digital Identifier 273494).

Four-car garage located in the northeast corner of the property of the San Fernando Substation ca. 1941, view facing northeast (Huntington Library, Southern California Edison Photographs and Negatives, Unique Digital Identifier 273497).

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI#
Trinomial CA-LAN-169/H

 ***Resource Name or #** San Fernando Mission archaeological site

Recorded By: Recorded By: Chris Millington and Aaron Elzinga ***Date:** 10/2/13 – 11/14/13 ■ Continuation ☐ Update

A16. Photographs

California 1930 license plates recovered from Feature 1 (top) and restored example (bottom).

Feature 1, artifacts recovered from screened sample.

Feature 1, distal portion of a radius from a domestic sheep, anterior (left) and posterior (right).

Feature 1, location in the east wall of MTR 1 below a concrete pad, view facing northeast.

Feature 1 profile, close-up showing oxidized and carbonized sediments with small gauge wire.

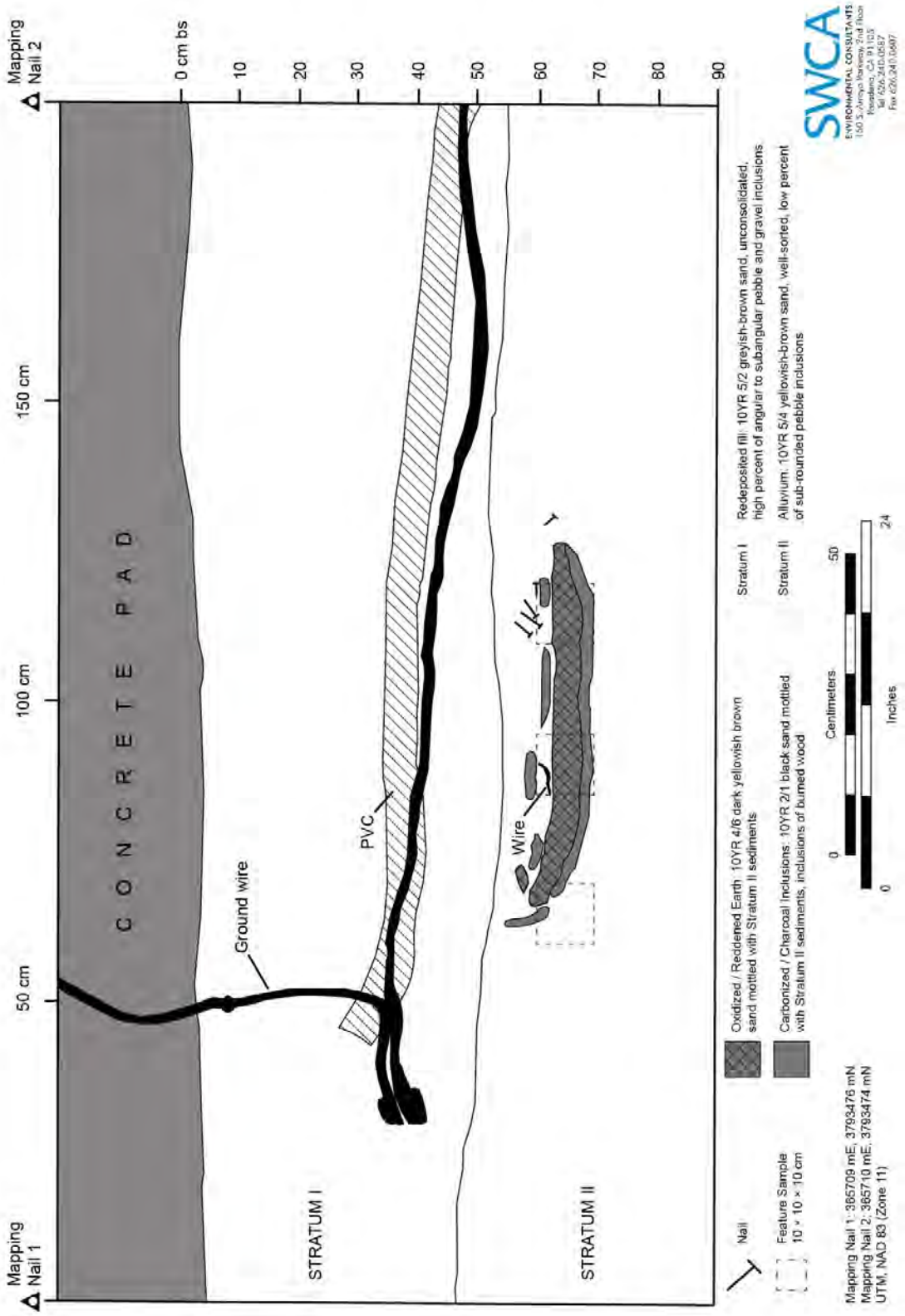
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI#
Trinomial CA-LAN-169/H

 ***Resource Name or #** San Fernando Mission archaeological site

Recorded By: Recorded By: Chris Millington and Aaron Elzinga ***Date:** 10/2/13 – 11/14/13 ■ Continuation ☐ Update

Feature 1 Profile



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI#
Trinomial CA-LAN-169/H

 ***Resource Name or #** San Fernando Mission archaeological site

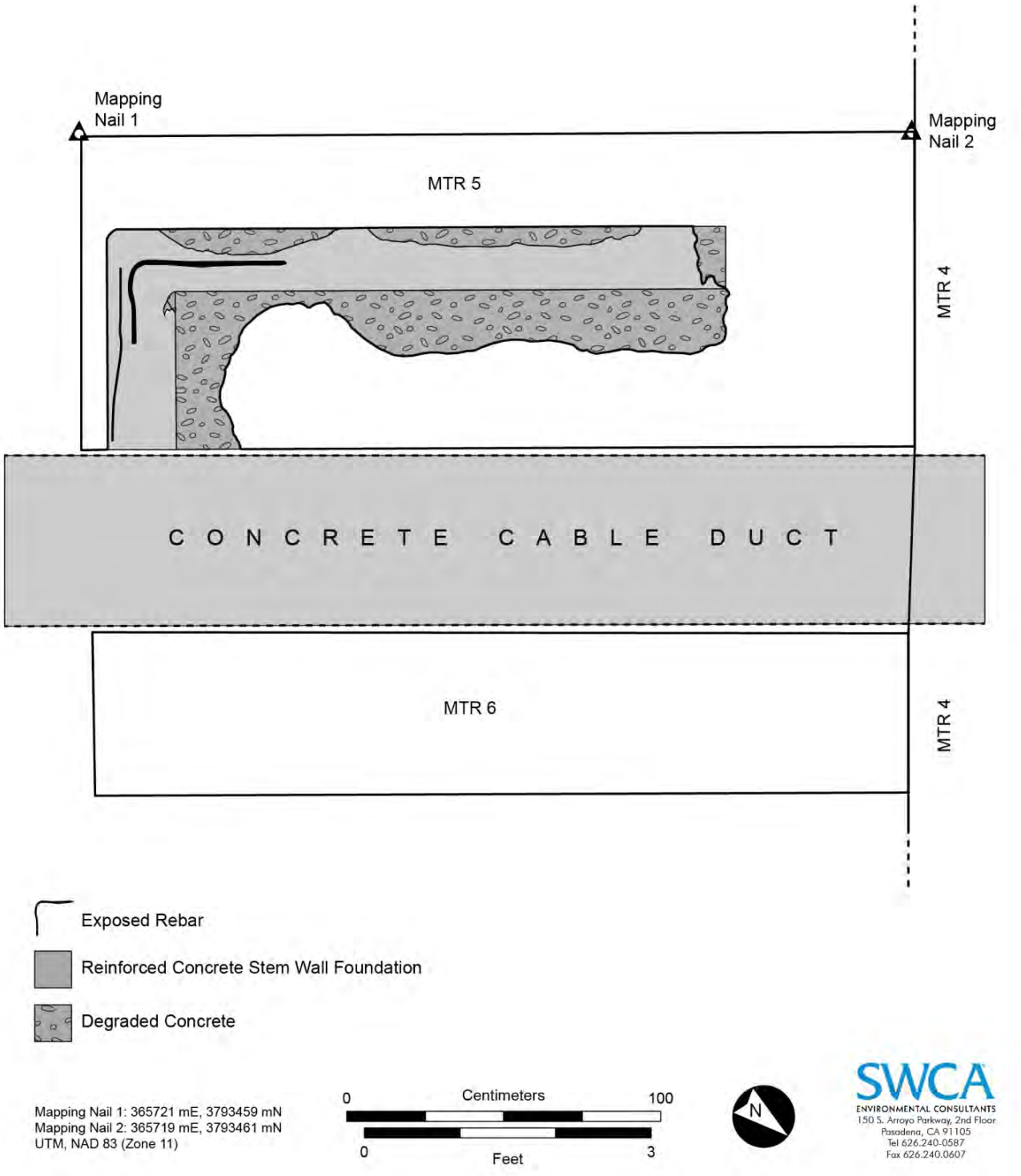
Recorded By: Recorded By: Chris Millington and Aaron Elzinga ***Date:** 10/2/13 – 11/14/13 ■ Continuation ☐ Update

Feature 2 (right) and concrete cable duct (center), facing southwest (towards San Fernando Mission Blvd).

Feature 2, detail of exterior showing exposed rebar.

State of California — The Resources Agency	Primary #
DEPARTMENT OF PARKS AND RECREATION	HRI#
CONTINUATION SHEET	Trinomial CA-LAN-169/H

Recorded By: Recorded By: Chris Millington and Aaron Elzinga ***Date:** 10/2/13 – 11/14/13 ■ Continuation ☐ Update



Feature 2, planview.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial CA-LAN-169/H
NRHP Status Code

Other Listings
Review Code **Reviewer** **Date**

 *__Resource Name or #:__ San Fernando Mission archaeological site

P1. Other Identifier:
***P2. Location:** ■ **Not for Publication** ☐ **Unrestricted** ***a. County:** Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** San Fernando **Date:** 1966 (Photorevisd 1988) **T** 15 N **;R** 15 W **; ¼ of ¼ of Sec (**Unsectioned**);** S.B. **B.M.**
c. Address: 14973 San Fernando Mission Boulevard City: Mission Hills Zip: 91345
d. UTM: NAD 83 Zone: 11; 365721 mE/ 3793459 mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation: 961 ft. AMSL
The San Fernando Substation is located on San Fernando Mission Blvd., 200 m east of the San Fernando Mission.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The following update pertains to the portion of the San Fernando Mission archaeological site contained within the San Fernando Substation operated by Southern California Edison (SCE). The work, conducted between March 24 and May 6, 2014, consisted of a total of six mechanical trenches and 11 bore (auger) holes were excavated and the monitoring resulted in the discovery of two historic archaeological features). The original plan called for the excavation of nine bore-holes, however Augers 4a and 9a had to be abandoned and relocated due to blockage or soil conditions. The new locations of these augers were then labeled 4b and 9b. Post-holes were located along the perimeters of the project area;, Augers 1 and 2 were located near the northwest perimeter; Augers 3 through 5 were along the northeast boundary; Augers 6 and 7 were along the southeast boundary;, and Augers 8 through 9b were located along the southwestern boundary. The post holes were hand excavated and approximately 30 cm in diameter to a depth of 180 cm. The trenches (MTR 1 through 8), varied in size and were also excavated near the project boundary, running the length of the fencing, to a depth of approximately 18 inches. All trench excavation was conducted with a small excavator fitted with an articulated arm and a bucket measuring 70 cm wide. Three features were recorded during excavation: Feature 1, a trash lens, was observed in Auger 1; Feature 2, a trash concentration, was observed in MTR 2 and MTR 3; and Feature 3 was also observed in MTR 3. Augers 2, 3, 4a, 7, 8, 9a, and 9b contained isolated sparse artifacts. An isolated bottle base was also observed in MTR 4, and isolated ceramic fragments, likely *tejas,* were documented on the surface near the southwestern fence line.

***P3b. Resource Attributes:** (List attributes and codes) AH2. Foundations/structure pads; AH4. Privies/dumps/trash scatters
***P4. Resources Present:** ☐Building ☐Structure ☐Object ☒Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5b. Description of Photo: (View, date, accession #)
***P6. Date Constructed/Age and Sources:** ■Historic ☐Prehistoric ☐Both
***P7. Owner and Address:**
Southern California Edison
1218 S. Fifth Avenue
Monrovia, CA 91016
***P8. Recorded by:** (Name, affiliation, and address)
Andrea Bean, John-Mark Cardwell, Chris Purtel
SWCA Environmental Consultants
150 S. Arroyo Parkway, 2nd Floor
Pasadena, CA 91005
***P9. Date Recorded:** 03/24/2014-05/06/2014
***P10. Survey Type:** (Describe)
Construction monitoring

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Millington, Chris and John Dietler 2014 Cultural and Paleontological Resources Monitoring Report for the San Fernando Substation Testing Project (IO 313561), Mission Hills, City of Los Angeles, Los Angeles County, California. Report prepared by SWCA Environmental Consultants.

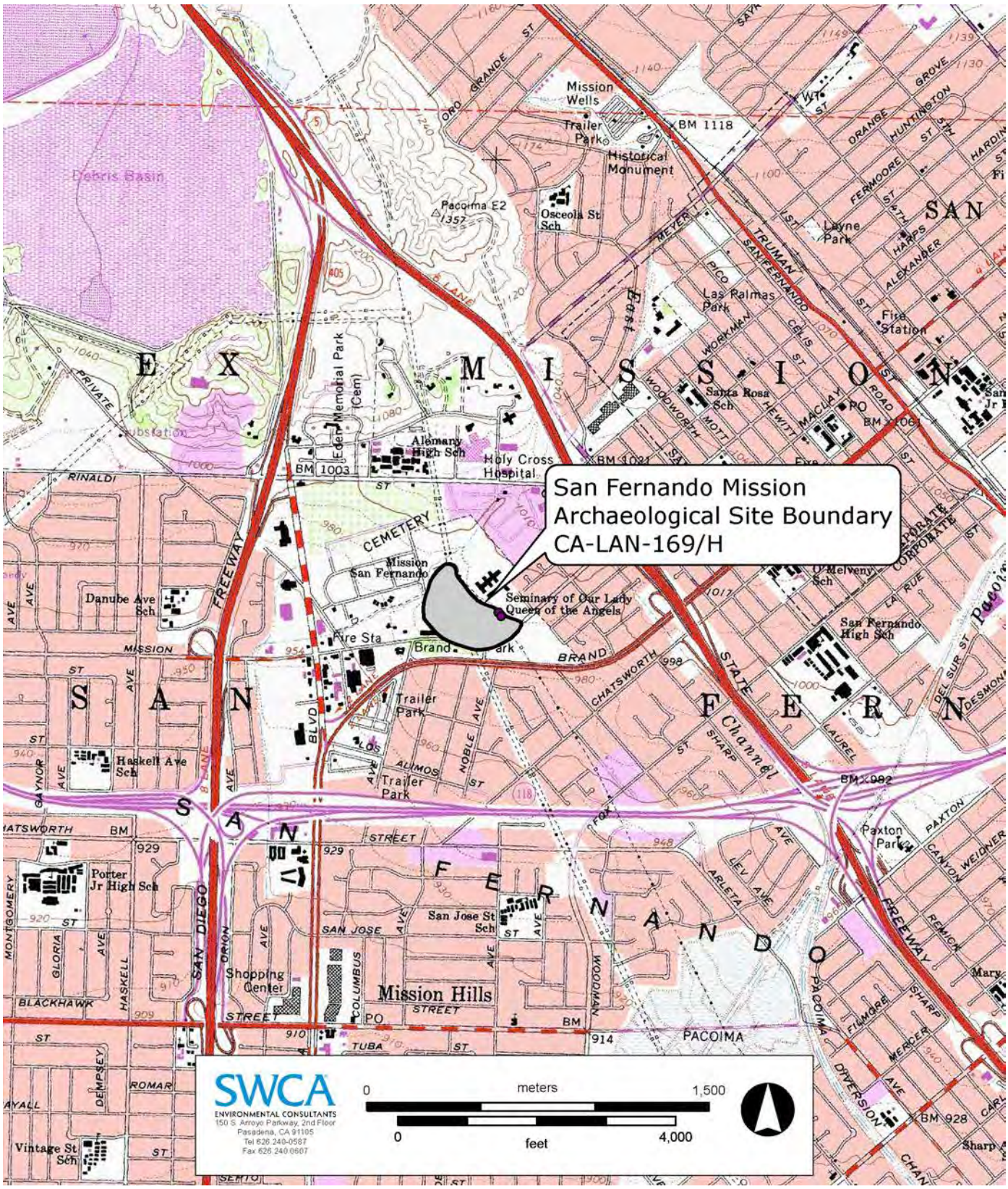
***Attachments:** ☐NONE ■Location Map ■Sketch Map ■Continuation Sheet ☐Building, Structure, and Object Record ■Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI#
Trinomial CA-LAN-169/H

*Resource Name or #: San Fernando Mission archaeological site

***Map Name:** San Fernando ***Scale:** 1:24,000 ***Date of Map:** 1966 (Photorevisd 1988)



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
Primary #
Trinomial CA-LAN-169/H

ARCHAEOLOGICAL SITE RECORD

 *Resource Name or #: San Fernando Mission archaeological site

*A1. Dimensions: a. Length: 84 m (north/south) × b. Width: 84 m (east/west) Dimensions reflect materials observed within project limits only, not the entire site.
Method of Measurement: ☐ Paced ☐ Taped ☐ Visual estimate ☒ Other: Measured in ArcGIS
Method of Determination (Check any that apply.): ☒ Artifacts ☒ Features ☐ Soil ☐ Vegetation ☐ Topography ☐ Cut bank ☐ Animal burrow ☐ Excavation ☒ Property boundary ☒ Other (Explain): Subsurface mechanical excavation associated with the project.

Reliability of Determination: ☐ High ☒ Medium ☐ Low Explain: A systematic study of the San Fernando Mission archaeological site boundary was beyond the scope of the current project.

Limitations (Check any that apply): ☒ Restricted access ☒ Paved/built over ☒ Site limits incompletely defined ☒ Disturbances ☐ Vegetation ☒ Other (Explain): Project constraints prohibited confirmation of the site boundary outside the current project area.

A2. Depth: ☐ None ☐ Unknown Method of Determination: 1 m below surface
*A3. Human Remains: ☐ Present ☒ Absent ☐ Possible ☐ Unknown (Explain):

*A4. Features (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.): Three features were recorded during excavation: Feature 1, a trash lens, was observed in Auger 1; Feature 2, a trash concentration, was observed in MTR 2 and MTR 3; and Feature 3 was also observed in MTR 3.
See Continuation Forms for details.

*A5. Cultural Constituents (Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.):
Augers 2, 3, 4a, 7, 8, 9a, and 9b contained isolated sparse artifacts. An isolated bottle base was also observed in MTR 4, and isolated ceramic fragments, likely tejas, were documented on the surface near the southwestern fence line.
See Continuation Forms for details.

*A6. Were Specimens Collected? ☒ No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)
*A7. Site Condition: ☐ Good ☒ Fair ☐ Poor (Describe disturbances.): All buildings associated with the historic substation have been razed and the surface has been graded and filled to at least 1 meter below the modern ground surface. Intact horizons with the potential to contain intact archaeological deposits still remain below the cut/fill disturbances.

*A8. Nearest Water (Type, distance, and direction.): Earthen-lined ditch, 1035 feet, west.
*A9. Elevation: 961 ft. AMSL
A10. Environmental Setting (Describe culturally relevant variables such as vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc.): Parcel contains an electrical substation with asphalt, gravel, and landscaped surfaces. The location is flat with an open aspect. Trees pictured in historic photos are located at the substation's south entrance. Up to one meter of redeposited fill exists above intact archaeological deposits, which overlie Quatenary alluvium.

A11. Historical Information:
The San Fernando Substation was constructed sometime around 1910 and has been in operation to the present day. See Continuation Form for larger historical context.

*A12. Age: ☐ Prehistoric ☐ Protohistoric ☐ 1542-1769 ■ 1769-1848 ☐ 1848-1880 ☒ 1880-1914 ☒ 1914-1945 ☒ Post 1945 ☐ Undetermined **Describe position in regional prehistoric chronology or factual historic dates if known:**
See Continuation Form.

A13. Interpretations (Discuss data potential, function[s], ethnic affiliation, and other interpretations): The features—a burned trash pit and concrete stem wall foundation to a four-car garage — collectively range in date from approximately 1930 to 1969 and appear to be associated with the development of the San Fernando Substation, constructed ca. 1910 and operated to the present day.
A14. Remarks:
A15. References (Documents, informants, maps, and other references):
Huntington Library, Southern California Edison Photographs and Negatives. Available at: http://hdl.huntington.org/cdm/landingpage/collection/p16003coll2
A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.): See Continuation Form.
Original Media/Negatives Kept at: SWCA Environmental Consultants. 150 S. Arroyo Parkway, 2nd Floor, Pasadena, CA 91105
*A17. Form Prepared by: Sara Dietler and Chris Millington Date: 06/19/2014
Affiliation and Address: SWCA Environmental Consultants. 150 S. Arroyo Parkway, 2nd Floor, Pasadena, CA 91105

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
SKETCH MAP

Primary #
HRI#
Trinomial CA-LAN-169/H

*Resource Name or #: San Fernando Mission archaeological site

*Drawn By: Chris Millington

*Date: 06/20/2014

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
SKETCH MAP

Primary #
HRI#
Trinomial CA-LAN-169/H

 ***Resource Name or #:** San Fernando Mission archaeological site

***Drawn By:** Chris Millington *__Date:__ 06/20/2014

*Required information

*A4. Features

FEATURE 1

Feature 1 is a historic trash deposit that contained clay brick fragments, a loose nail and nail fragments, various unidentifiable metal objects, clay roof-tile, portion of metal "Visitors Wel—" sign and a possible metal door handle. This feature was identified during hand excavation of Auger 1 on March 24, 2014, in a gravel covered area of the project site near the northwest corner of the project area. Discovered in the auger tailings between 0 to 30 centimeters below surface (cmbs), several fragments of what were likely kiln-fired mission era roof tiles, or tejas. An additional fragment was recovered in the 30 to 60 cmbs level. Upon widening the auger hole, a lens of rust and associated artifacts was observed at approximately 30 cmbs.. These tejas may date to the Mission period (1797-1834), however, they may also relate to later reconstruction and development at the Mission. The remaining artifacts are likely associated with the substation and date from circa 1910 to present. The Feature 1 deposit likely represents a disturbed context, based on the previously described development over time within the project area.

Portion of the "Visitors Welcome" sign found in association with Feature 1.

FEATURE 2

Feature 2 is historic trash concentration observed in both MTR 2 and MTR 3. This artifact concentration consisted of a large ceramic insulator, a complete square bottle, a light bulb base, a "HIGH" voltage sign, a nail, a small ceramic insulator, and fragmentary red brick. Diagnostic items in the feature include the large ceramic insulator which was marked LAPP 5841, and was likely a Station Post Insulator which the LAPP company began making in 1931. (LAPP Insulator Company n.d.). The bottle is a Hopkins Square Automatic Bottle Machine bottle with a collared ring finish. The base on this bottle included a maker's mark "7 O [in square] 6". This maker's mark matches a mark for the

Owens Bottle Company which was in use from 1911 to 1929 (Toulouse 2001:393).The final diagnostic artifact was a fragment of a Locke Mfg. Co. porcelain insulator with the makers mark "VICTOR [inside line drawing of an insulator]," which dates from 1902 to 1921. A date range of 1902 to 1931 is inferred for this feature. The time period and the types of artifacts present are consistent with the historic use of the substation in this location.

Feature 2 artifacts

Feature 3

Feature 3 consists of a linear segment of reinforced concrete stem wall which was part of a four-car garage constructed by 1941 and demolished by 1969 in this location. The foundation measures approximately 20 cm thick, and ran perpendicular to MTR 3. This is a portion of the same foundation that was documented as Feature 2 in the SWCA 2014 report of testing within the project area, *Cultural Resources and Paleontological Monitoring Report for the San Fernando Substation Testing Project (IO 313561) Mission Hills, City of Los Angeles, Los Angeles County, California* (Millington 2014). No artifacts were found in association with the feature. The position and orientation of the wall matches the location of a four-car garage appearing in archival photographs from 1941 (see Figure 7 and Figure 8) and an aerial photograph from 1952. The garage no longer appears in aerial photographs in 1969 (Nationwide Environmental Title Research 2013). The garage was not pictured in earlier photographs taken in 1910.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI#
Trinomial CA-LAN-169/H

 ***Resource Name or #** San Fernando Mission archaeological site

Recorded By: A. Bean, JM Cardwell, C. Purtel ***Date: 03/24/2014-05/06/2014** ■ Continuation ☐ Update

Feature 3 (stem wall) in MTR 3

Recorded By: A. Bean, JM Cardwell, C. Purtel *Date: 03/24/2014-05/06/2014 ■ Continuation ☐ Update

A11. Historical Information:

The earliest information for the San Fernando Substation currently available consists of photographs archived as part of an SCE collection housed at the Huntington Library. The earliest photographs in the collection referencing the San Fernando Substation date to 1910. The photos depict a tall, single-story concrete building with transmission cables entering on the north and south-facing sides of the building, two steel H-frame tower structures, and a single-story residence that is listed in archival photos as the "attendant's cottage." Photographs taken in 1941 show the north portion of the property as having been paved and the adjacent parcel developed. In the sequence of photos from the same year, a four-car garage is depicted in the northeast side of the property overlapping the parcel line. The garage is not pictured in photographs prior to this date. What little information is available on the development of the property after the early 1940s comes from aerial photographs, which show that the substation structure and house were extant until at least 1982. By 2003 all structures on the property were razed and most of the pavement removed and replaced with a gravel bed and modern electrical infrastructure as it is seen today. The garage is visible in aerial photographs from 1952 and by 1969 appears to have been demolished. The level of subsurface disturbance from the demolition is unknown. The original H-frame steel towers are still in use, but the cross-arms and hardware have been replaced.

The south-facing side of the San Fernando Substation building depicting the location of a four-car garage (white arrow) as seen in 1941, view facing northwest (Huntington Library, Southern California Edison Photographs and Negatives, Unique Digital Identifier 273494).

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI#
Trinomial CA-LAN-169/H

 ***Resource Name or #** San Fernando Mission archaeological site

Recorded By: A. Bean, JM Cardwell, C. Purtel ***Date: 03/24/2014-05/06/2014** ■ Continuation ☐ Update

Four-car garage located in the northeast corner of the property of the San Fernando Substation ca. 1941, view facing northeast (Huntington Library, Southern California Edison Photographs and Negatives, Unique Digital Identifier 273497).

NPS Form 10-900
OMB No. 1024-0018
Exp. 10-31-84

United States Department of the Interior
National Park Service

19-167231
For NPS use only
received
date entered

National Register of Historic Places Inventory—Nomination Form

See instructions in *How to Complete National Register Forms*
Type all entries—complete applicable sections

1. Name

HRI# 021181

historic Mission San Fernando Rey de Espana Convento Building

and/or common

2. Location

street & number 15151 San Fernando Mission Boulevard NA not for publication

city, town (Post Office: Mission Hills) (Incorporated City:) Los Angeles NA vicinity of

state California code 91345 county Los Angeles code 037

3. Classification

Category	Ownership	Status	Present Use	
___ district	___ public	X occupied	___ agriculture	X museum
X building(s)	X private	___ unoccupied	___ commercial	___ park
___ structure	___ both	___ work in progress	___ educational	___ private residence
___ site	**Public Acquisition**	**Accessible**	___ entertainment	___ religious
___ object	___ in process	___ yes: restricted	___ government	___ scientific
	___ being considered	X yes: unrestricted	___ industrial	___ transportation
		___ no	___ military	___ other:

4. Owner of Property

name The Roman Catholic Seminary of Los Angeles

street & number P.O. Box 1071

city, town San Fernando NA vicinity of state California (91341)

5. Location of Legal Description

courthouse, registry of deeds, etc. Los Angeles County Hall of Records

street & number 227 North Broadway

city, town Los Angeles state California (90012)

6. Representation in Existing Surveys

title Historic American Buildings Survey has this property been determined eligible? ___ yes X no

date X federal ___ state ___ county ___ local

depository for survey records U.S. Department of the Interior, National Park Service; also, Library of Congress

city, town Washington state District of Columbia

7. Descriptio

Condition		Check one	Check one
___ excellent	___ deteriorated	_X_ unaltered	_X_ original site
_X_ good	___ ruins	___ altered	___ moved date _____
___ fair	___ unexposed		

Describe the present and original (if known) physical appearance

The Mission San Fernando Rey de Espana Convento is a long, low rectangular adobe with tiled gable roof. It contains a ground floor, an attic and a small cellar. The eave of the roof extends on one long side to form the cover of a 19 arch colonnade. It is believed the building was built in stages between 1810 and 1922. The original physical appearance of the convento, or monastery, is not documented, but there is strong reason to believe it has not changed greatly over the years. An 1868 drawing of the mission buildings indicates at least by that time the building had attained the general appearance it retains today. Over the years new windows have probably been pierced, glass panes have been added, thin wall partitions have been added on the interior, an exterior door has been boarded up, the roof tiles were removed and then replaced after a new wood frame was built, broken floor tiles have been replaced with tiles from the chapel, the bell tower which crumbled in 1971 has not been reconstructed. The convento, along with a fountain across the street on city property, is the only original feature which remains from Mission San Fernando Ray de Espana.

The convento is a rectangular building, containing a ground floor, an attic, and a small cellar. It is 234' 2" in length (east to west), and 64' 11" in width (north to south). The roof, covered with red clay tile, is peaked in form, with the ridgeline parallel to the long dimension of the building and centered over the principal volume of the building, the adobe walls of which have exterior dimensions of 234' 2" by 50' 4". The roof also extends over an arcade in front of the entire south facade of the building. The outer surface of the arcade is 14' 7" from the corresponding surface of the main building volume. The arcade contains one arched opening at each end and nineteen along its south facade; these vary slightly in size, but typically have 10' to 11' openings; the spring line of the curves is approximately 8' above grade. The arches are separated by 2' by 2' square piers. All exterior surfaces of the building and arcade are stuccoed. The south wall of the building is penetrated by eight doors and eleven windows, all arched. The north wall is penetrated by nine doors (all arched) and nine windows (six arched and three rectangular) on the first floor, and fourteen windows on the second floor, all rectangular. The east facade contains two rectangular windows on each floor, and the west facade, a rectangular door and the outline of another, now walled up. The adobe walls (both the exterior walls of the main volume and an interior wall extending down the center of the building, except for the easternmost room) are 3' 10" in thickness. The interior volumes created by these major walls are subdivided into smaller rooms by thinner walls, now set up with period furnishings as museum displays illustrative of the history of the Mission. The attic is also divided by the central wall, except on the east end, where a transverse room corresponds to that below. The small cellar is below the first-floor transverse room.

The original physical appearance of the convento is not documented, but there is strong reason to believe it has not changed over the years. The present

(CONTINUED)

appearance is substantially identical to that documented by photographs in the late 19th century; since then, only rehabilitation and repairs of earthquake damage have occurred. For economic reasons, the building would not have been altered following secularization in 1835, hence the present appearance should fairly represent the building as of the end of the Mission era. The one minor exception to this is the loss of a small bell tower from the roof over the southwest corner of the building, which was destroyed in the 1971 earthquake and not replicated.

As to the surroundings, there has been a paved street directly in front of the building since the early 20th century. On the west, property under separate ownership virtually abuts the wall of the building. On the north and east, any historic gardens or outbuildings went to waste and ruin following secularization and throughout the remainder of the 19th century; this area has now been developed with gardens incorporating plant materials known to have been used during the Mission era.

Resource Count:

1 Contributing building

Total: 1

8. Significance

Period	Areas of Significance—Check and justify below			
___ prehistoric	___ archeology-prehistoric	___ community planning	___ landscape architecture	_X_ religion
___ 1400–1499	___ archeology-historic	___ conservation	___ law	___ science
___ 1500–1599	___ agriculture	___ economics	___ literature	___ sculpture
___ 1600–1699	_X_ architecture	___ education	___ military	___ social/ humanitarian
___ 1700–1799	___ art	___ engineering	___ music	___ theater
_X_ 1800–1899	___ commerce	_X_ exploration/settlement	___ philosophy	___ transportation
___ 1900–	___ communications	___ industry	___ politics/government	___ other (specify)
		___ invention		

Specific dates 1810–1835 **Builder/Architect** (Unknown)

Statement of Significance (in one paragraph)

Summary of Significance: The convento building of the Mission San Fernando Rey de Espana is the oldest surviving building in the San Fernando Valley district of the City of Los Angeles (hence its significance in architectural history), the only one in that area surviving from the era of Spanish occupation of California (hence its significance to the history of the exploration and settlement of California), and the only surviving one in that area built as part of the development of the chain of Franciscan missions of Spanish and Mexican California (hence its significnace in the history of religion in California); additionally, it appears to be the largest surviving building of Spanish California, which adds to its significance in architectural history.

The Mission San Fernando Rey de Espana was founded on September 8, 1797, by Fr. Fermin Francisco de Lasuen, then Presidente of the Franciscan missions of Alta, California. The chain of missions had been developed in conjunction with Spanish settlement, to convert the native peoples to Christianity. The converts, or "neophytes", were, in addition to religious instruction, taught agricultural techniques and handicrafts. San Fernando, like the other missions, thus developed extensive farming and ranching operations. Early structures were replaced with a substantial church built in 1804-06. At this time, there were about 1,000 neophytes attached to San Fernando. From 1810 to 1822, construction was carried out in stages on what contemporary documents referred to as a "house for the Fathers" (i.e., the Franciscan missionaries assigned to San Fernando). This is the convento, or monastery, which survives today. It exceeded the residential needs of the two Franciscans customarily assigned to San Fernando, and accomodated such other uses as the provision of rooms for visitors and other travelers. Mexican independence from Spain in 1821, communicated to and accepted by California the following year, brought individuals to political power far less sympathetic to the Franciscan missions than the Spanish government had been, and the ultimate result was the "secularization" of San Fernanco and the other missions in 1835. By this act the neophytes and nearly all of the lands were taken from the control of the Franciscans. The neophytes dispersed and there ceased to be financial resources available for maintenance of the mission buildings. Following cession of California by Mexico to the United States government in 1848, Bishop Alemany petitioned the government in 1853 for title to the San Fernando Mission buildings and immediate grounds; this resulted in the issuance of a patent, signed by President Lincoln on May 31, 1862. The convento was sufficiently intact for continued use by various tenants, but the church decayed badly and the other buildings virtually disappeared. (CONTINUED)

The Landmarks Club of Southern California, under the leadership of Charles F. Lummis, began rehabilitation efforts by leasing the San Fernando Mission buildings from Bishop Montgomery on May 1, 1897, for a five-year period at $1 per year, renewable for an additional five years. The Club installed a shake roof on the church; on the convento, it removed the tile roof, installed a new pine framework, and replaced the tiles. Following the expiration of the Landmarks lease, Bishop Conaty turned the Mission over to the care of the Calretian Fathers. The Club continued its interest; Candle Day at the Mission on August 16, 1916, raised over $3,400 for repairs. Major rehabilitation undertaken during the 1930s was undone in 1971, when the great earthquake of that year damaged the church beyond repair, leaving only the convento surviving from the Mission era.

0-7864X

9. Major Bibliographical References

(Books) Engelhardt, Fr. Zephyrin, O.F.M., San Fernando Rey, The Mission of the Valley (Chicago, Franciscan Herald Press, 1927) Weber, Msgr. Francis J., The Mission in the Valley: a Documentary History of San Fernando, Rey de Espana (1975)
(CONTINUED)

10. Geographical Data

Acreage of nominated property One half

Quadrangle name San Fernando **Quadrangle scale** 1:24,000

UTM References

	Zone	Easting	Northing		Zone	Easting	Northing
A	11	361510	3791310	B			
C				D			
E				F			
G				H			

Verbal boundary description and justification Bounded on the south by San Fernando Mission Boulevard, on the west by the property line (which is approximately the west wall of the building), on the north and east by lines parallel to the corresponding facades of the building and distant ten feet therefrom. (CONTINUED)

List all states and counties for properties overlapping state or county boundaries

state	code	county	code
state	code	county	code

11. Form Prepared By

name/title	(P.O. Box 611, Santa Monica, CA 90406-0611; (213) 452-0914) David G. Cameron for Msgr. Francis J. Weber, Director
organization	Archival Center, San Fernando Mission
date	April 15, 1988
street & number	15151 San Fernando Mission Boulevard
telephone	(818) 361-0186
city or town	Mission Hills
state	California

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

___ national X state ___ local

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

State Historic Preservation Officer signature Kathryn Gualtieri

title date 9/26/88

For NPS use only

I hereby certify that this property is included in the National Register

date

Keeper of the National Register

Attest: date

Chief of Registration

(Anon.) The California Missions: A Pictorial History (Menlo Park, Calif., Lane Book Co., 1964)

(Papers) Cameron, David G., Charles Fletcher Lummis and the Landmarks Club of Southern California: Pioneering in Historic Preservation (given at the Charles F. Lummis Centennial Symposium, Southwest Museum, Los Angeles, California, February 2, 1985)

(Measured Drawings) Mission San Fernando Rey de Espana - Church (Sheet 1 of 8 Sheets) and Monastery (Sheets 1, 2 and 3 of 7 sheets) in Historic American Buildings, California (David G. De Long, ed.) (New Yord, Garland, 1980), pp. 174 ff. in Volume II)

The boundaries on the south and west are the original boundaries of the 1862 patent; the boundaries on the north and east are approximate, representing the current setting of the convento in gardens planted with historically relevant plant materials. Beyond these boundaries is the remainder of the historic Mission grounds, with reconstructions of the church and other long-since-destroyed buildings sited on the original foundations.

Mission San Fernando Rey de Espana Staff Evaluation
Convento Building

The Mission San Fernando Rey de Espana Convento is a long rectangular adobe with tiled gable roof. It contains a ground floor, an attic and a small cellar. The eave of the roof extends on one long side to form the cover of a 19 arch colonnade. It is believed the building was built in stages between 1810 and 1922. By 1868 the building had attained the general appearance it retains today. Over the years new windows have been pierced, glass panes have been added, thin wall partitions have been added on the interior, an exterior door has been boarded up. The roof tiles have been removed and then put back after a new wood roof was built. Broken floor tiles have been replaced with tiles from the chapel.

The convento building was once part of the Mission San Fernando Rey de Espana complex and was used as sleeping quarters for the fathers. The mission was founded in 1797 by Fr. Fermin Lasuen and was named for St. Ferdinand, King of Spain. It was the 17th mission founded in the chain of 21. The mission complex was previously listed in the National Register. It was removed from the Register following the demolition of the mission church in a 1971 earthquake. The church has since be reconstructed along with other mission buildings. The convento and a garden fountain, which is located across the street on city owned property, are the only features remaining from the mission. It is only the convento which is being nominated to the National Register.

The convento building appears to be eligible under Criteria A and C. It is the only building which remains from the San Fernando Rey Mission complex and as such has strong importance for its association with the Spanish/ Mexican settlement of California. The building is also important as an example of adobe building practices. Staff recommends listing at the ~~local~~ State level of significance.

Cynthia Howse
July 13, 1988

Form 10-300
(July 1969)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY – NOMINATION FORM

(Type all entries – complete applicable sections)

STATE: California
COUNTY: Los Angeles
FOR NPS USE ONLY
ENTRY NUMBER | DATE

SEE INSTRUCTIONS

1. NAME

COMMON: San Fernando Mission
AND/OR HISTORIC: Mision San Fernando Rey De Espana

2. LOCATION

STREET AND NUMBER: 15151 San Fernando Mission Blvd.
CITY OR TOWN: San Fernando
STATE: California | CODE: 91342 | COUNTY: Los Angeles | CODE: 91342

3. CLASSIFICATION

CATEGORY (Check One)	OWNERSHIP		STATUS	ACCESSIBLE TO THE PUBLIC
☐ District ☒ Building ☐ Site ☐ Structure ☐ Object	☐ Public ☐ Private ☒ Both	Public Acquisition: ☐ In Process ☐ Being Considered	☒ Occupied ☐ Unoccupied ☐ Preservation work in progress	Yes: ☐ Restricted ☒ Unrestricted ☐ No

PRESENT USE *(Check One or More as Appropriate)*

☐ Agricultural	☐ Government	☐ Park	☐ Transportation	☐ Comments
☐ Commercial	☐ Industrial	☐ Private Residence	☐ Other *(Specify)*	
☐ Educational	☐ Military	☒ Religious		
☐ Entertainment	☐ Museum	☐ Scientific		

4. OWNER OF PROPERTY

OWNER'S NAME: Archdiocese of Los Angeles
STREET AND NUMBER: Chancery Office: 1531 West 9th Street
CITY OR TOWN: Los Angeles | STATE: California | CODE: 90015

5. LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC: Hall of Records
STREET AND NUMBER: 220 N. Broadway
CITY OR TOWN: Los Angeles | STATE: California | CODE: 90012

6. REPRESENTATION IN EXISTING SURVEYS

TITLE OF SURVEY: California Historical Landmarks Advisory Committee
DATE OF SURVEY: ☐ Federal ☒ State ☐ County ☐ Local
DEPOSITORY FOR SURVEY RECORDS: Department of Parks and Recreation
STREET AND NUMBER: 1416 9th Street
CITY OR TOWN: Sacramento | STATE: California | CODE: 95814

STATE: California
COUNTY: Los Angeles
FOR NPS USE ONLY
ENTRY NUMBER
DATE

7. DESCRIPTION

CONDITION	(Check One)					
	☐ Excellent	☒ Good	☐ Fair	☐ Deteriorated	☐ Ruins	☐ Unexposed
	(Check One)		(Check One)			
	☒ Altered	☐ Unaltered	☐ Moved	☒ Original Site		

DESCRIBE THE PRESENT AND ORIGINAL *(If known)* PHYSICAL APPEARANCE

Highways, streets and parks have cut into the Mission design, until today, as in the case of most missions, only about half of the complement exists. After the Church fell into ruin, the only building remaining from the once extensive complex was the huge Convento. For many years it was mistaken by travellers for the Mission itself, so impressive are its dimensions. The Convento, variously known as the "Long Building", "Monastery", "Hospice", or "Mission House" is 243 feet long and 50 feet wide, bordered for its full length by a 19 arch colonnade. Today the church building has been reconstructed and is used for services, and many of the other buildings which formed part of the quadrangle have been restored as well.

The structure (Hospice etc) is made primarily of adobe bricks, reinforced, after 1812, by burned brick buttresses. The building is roofed with pink tile. It has heavy beams, iron window grilles, and a decorative chandelier.

SEE INSTRUCTIONS

8. SIGNIFICANCE

PERIOD *(Check One or More as Appropriate)*

- ☐ Pre-Columbian
- ☐ 15th Century
- ☐ 16th Century
- ☐ 17th Century
- ☒ 18th Century
- ☒ 19th Century
- ☐ 20th Century

SPECIFIC DATE(S) *(If Applicable and Known)*

AREAS OF SIGNIFICANCE *(Check One or More as Appropriate)*

- ☐ Aboriginal
- ☐ Prehistoric
- ☐ Historic
- ☐ Agriculture
- ☒ Architecture
- ☐ Art
- ☐ Commerce
- ☐ Communications
- ☐ Conservation
- ☐ Education
- ☐ Engineering
- ☐ Industry
- ☐ Invention
- ☐ Landscape Architecture
- ☐ Literature
- ☐ Military
- ☐ Music
- ☐ Political
- ☒ Religion/Philosophy
- ☐ Science
- ☐ Sculpture
- ☐ Social/Humanitarian
- ☐ Theater
- ☐ Transportation
- ☐ Urban Planning
- ☐ Other *(Specify)* _____

STATEMENT OF SIGNIFICANCE

San Fernando Mission was the seventeenth founded in Alta, California. Its founder was Friar Fermin Lasuen, who named it for Saint Ferdinand, King of Spain 1217-1252. The first church was completed in 1799; present church was completed in 1806, damaged by earthquake of 1812. In the turbulent days that followed the Mission became involved in the provincial power struggles. It became headquarters for a revolt against Mexico which died out when Governor Echeandia was recalled; it was Governor Pico's headquarters in 1846; and later, when abandoned by Pico, became that of Fremont and his California Battalion.

Following the Mexican War it passed through a succession of owners, ultimately being used as a hog ranch. This finally attracted attention to its plight and from 1916 resulted in its gradual restoration and use as a church.

SEE INSTRUCTIONS

9. MAJOR BIBLIOGRAPHICAL REFERENCES

Historic Spots in California - Rensch and Hoover

California Missions - Lane Publishing Company

10. GEOGRAPHICAL DATA

LATITUDE AND LONGITUDE COORDINATES DEFINING A RECTANGLE LOCATING THE PROPERTY			OR	LATITUDE AND LONGITUDE COORDINATES DEFINING THE CENTER POINT OF A PROPERTY OF LESS THAN TEN ACRES	
CORNER	LATITUDE	LONGITUDE		LATITUDE	LONGITUDE
	Degrees Minutes Seconds	Degrees Minutes Seconds		Degrees Minutes Seconds	Degrees Minutes Seconds
NW	34° 16' 33"	118° 27' 46"		° ' "	° ' "
NE	34° 16' 34"	118° 27' 36"			
SE	34° 16' 21"	118° 27' 32"			
SW	34° 16' 20"	118° 27' 42"			

APPROXIMATE ACREAGE OF NOMINATED PROPERTY: 15 ACRES.

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE:	CODE	COUNTY	CODE
STATE:	CODE	COUNTY:	CODE
STATE:	CODE	COUNTY:	CODE
STATE:	CODE	COUNTY:	CODE

11. FORM PREPARED BY

NAME AND TITLE:
Allen W. Welts - Historian

ORGANIZATION
Department of Parks and Recreation

DATE
7/2/70

STREET AND NUMBER:
1416 9th Street

CITY OR TOWN:
Sacramento

STATE
California

CODE
95814

12. STATE LIAISON OFFICER CERTIFICATION

As the designated State Liaison Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service. The recommended level of significance of this nomination is:

National ☐ State ☐ Local ☐

Name _____

Title _____

Date _____

NATIONAL REGISTER VERIFICATION

I hereby certify that this property is included in the National Register.

_____
Chief, Office of Archeology and Historic Preservation

Date _____

ATTEST:

_____
Keeper of The National Register

Date _____

SEE INSTRUCTIONS

Form 10-301
(Dec. 1968)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES

PROPERTY MAP FORM

(Type all entries - attach to or enclose with map)

STATE	
California	
COUNTY	
Los Angeles	
FOR NPS USE ONLY	
ENTRY NUMBER	DATE

SEE INSTRUCTIONS

1. NAME

COMMON: San Fernando Mission

AND/OR HISTORIC: Mision San Fernando Rey De Espana

2. LOCATION

STREET AND NUMBER:

15151 San Fernando Mission Blvd.

CITY OR TOWN:

San Fernando

STATE:	CODE	COUNTY:	CODE
California	91342	Los Angeles	91342

3. MAP REFERENCE

SOURCE:

U.S.G.S. Quad (San Fernando)

SCALE: 7.5 min.

DATE: 1966

4. REQUIREMENTS

TO BE INCLUDED ON ALL MAPS

1. Property broundaries where required.
2. North arrow.
3. Latitude and longitude reference.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES

PROPERTY PHOTOGRAPH FORM

(Type all entries - attach to or enclose with photograph)

STATE	
California	
COUNTY	
Los Angeles	
FOR NPS USE ONLY	
ENTRY NUMBER	DATE

SEE INSTRUCTIONS

1. NAME

COMMON: San Fernando Mission

AND/OR HISTORIC: Mision San Fernando Rey De Espana

2. LOCATION

STREET AND NUMBER:

15151 San Fernando Mission Blvd.

CITY OR TOWN:

San Fernando

STATE:	CODE	COUNTY:	CODE
California	91342	Los Angeles	91342

3. PHOTO REFERENCE

PHOTO CREDIT: Department of Parks and Recreation

DATE OF PHOTO: 1950

NEGATIVE FILED AT:

1416 9th Street, Sacramento, California

4. IDENTIFICATION

DESCRIBE VIEW, DIRECTION, ETC.

FACADE FACING SOUTH.

Mission San Fernando Rey de Espana
Convento Building
15151 San Fernando Mission Boulevard
Mission Hills (City of Los Angeles), Los Angeles County, California
David G. Cameron

April 13, 1988
c/o photographer, PO Box 611, Santa Monica, CA 90406--0611
East facade, looking south
No. 1 of 9

Mission San Fernando Rey de Espana
Convento Building
15151 San Fernando Mission Boulevard
Mission Hills (City of Los Angeles), Los Angeles County, California
David G. Cameron

April 13, 1988
c/o photographer, PO Box 611, Santa Monica, CA 90406--0611
East facade, looking west over roof of modern building in vicinity
No. 4 of 9

Mission San Fernando Rey de Espana
Convento Building
15151 San Fernando Mission Boulevard
Mission Hills (City of Los Angeles), Los Angeles County, California
David G. Cameron

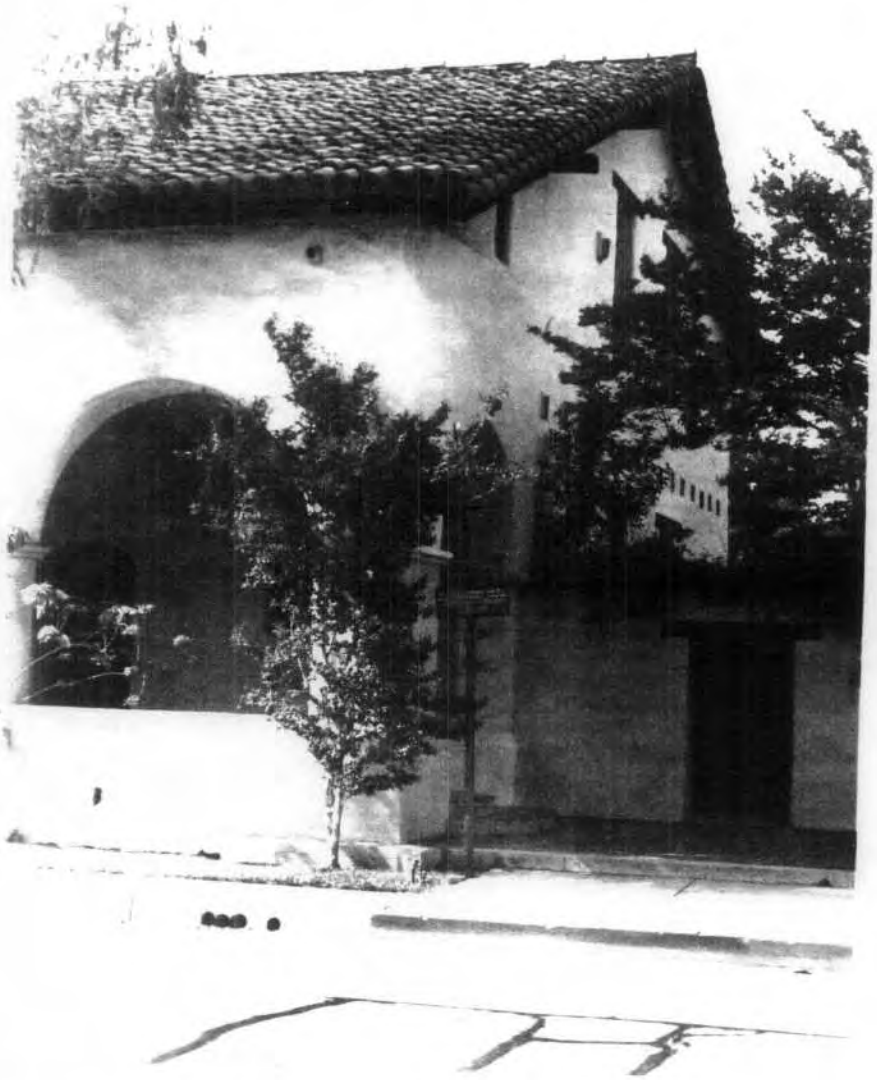
April 13, 1988
c/o photographer, PO Box 611, Santa Monica, CA 90406--0611
North facade, looking east southeast
No. 3 of 9

Mission San Fernando Rey de Espana
Convento Building
15151 San Fernando Mission Boulevard
Mission Hills (City of Los Angeles), Los Angeles County, California
David G. Cameron

April 13, 1988
c/o photographer, PO Box 611, Santa Monica, CA 90406--0611
North facade, looking west southwest
No. 2 of 9

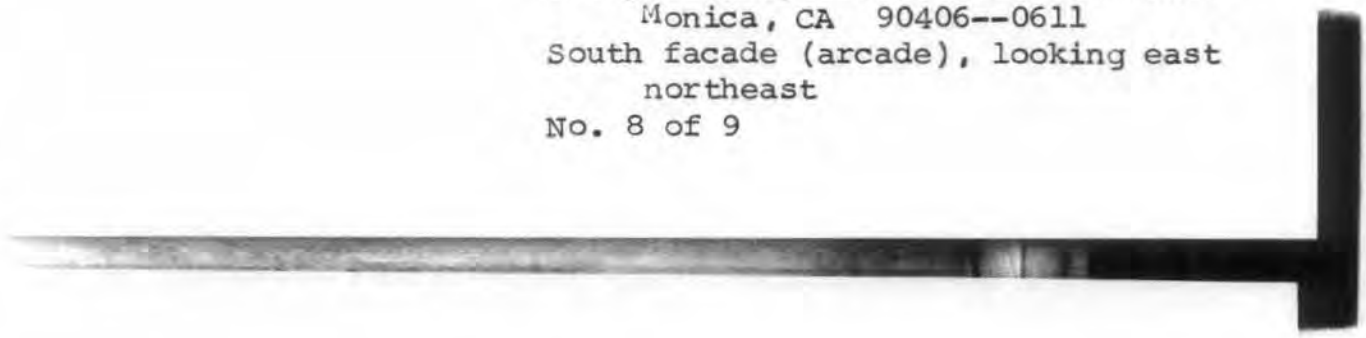
Mission San Fernando Rey de Espana
Convento Building
15151 San Fernando Mission Boulevard
Mission Hills (City of Los Angeles), Los Angeles County, California
David G. Cameron

April 13, 1988
c/o photographer, PO Box 611, Santa Monica, CA 90406--0611
East facade and arches at southeast corner, looking north northwest
No. 5 of 9



Mission San Fernando Rey de Espana
Convento Building
15151 San Fernando Mission Boulevard
Mission Hills (City of Los Angeles), Los Angeles County,
California
David G. Cameron

April 13, 1988
c/o photographer, PO Box 611, Santa Monica, CA 90406--0611
South facade (arcade), looking east northeast
No. 8 of 9



Mission San Fernando Rey de Espana
Convento Building
15151 San Fernando Mission Boulevard
Mission Hills (City of Los Angeles), Los Angeles County,
California
David G. Cameron

April 13, 1988
c/o photographer, PO Box 611, Santa Monica, CA 90406--0611
South facade (arcade) and southern portion of east facade, looking west northwest
No. 6 of 9

Mission San Fernando Rey de Espana
Convento Building
15151 San Fernando Mission Boulevard
Mission Hills (City of Los Angeles), Los Angeles County,
California
David G. Cameron

April 13, 1988
c/o photographer, PO Box 611, Santa Monica, CA 90406--0611
West facade and southwest corner, looking north northeast
No. 7 of 9

Mission San Fernando Rey de Espana
Convento Building
15151 San Fernando Mission Boulevard
Mission Hills (City of Los Angeles), Los Angeles County,
California
David G. Cameron

April 13, 1988
c/o photographer, PO Box 611, Santa Monica, CA 90406--0611
South facade (arcade), fifth through ninth arches (counting from the east end), looking north past fountain in Brand Park
No. 9 of 9

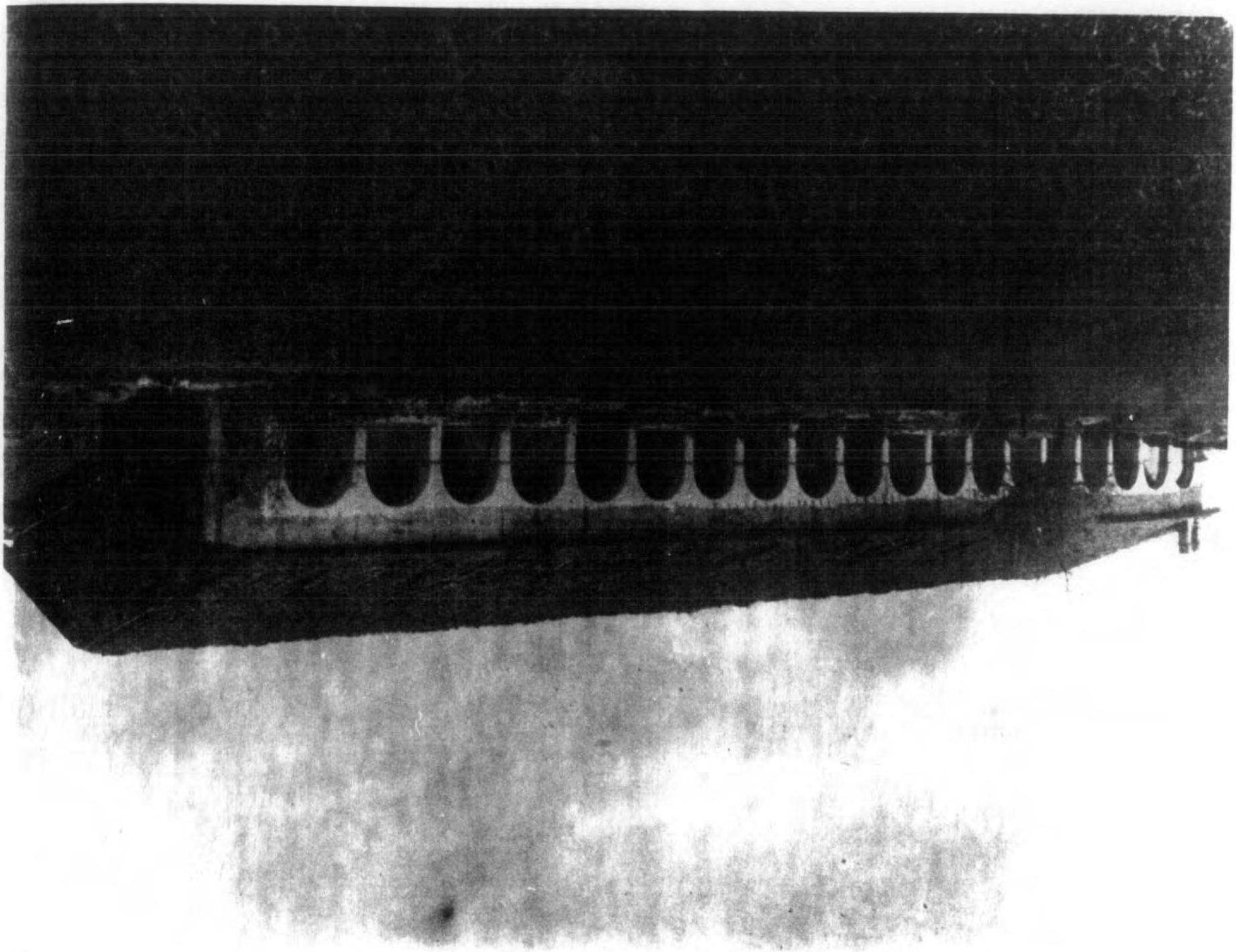
Mission San Fernando Rey de Espana
- Convento Building
15151 San Fernando Mission Boulevard
Mission Hills (City of Los Angeles), Los Angeles County, California
(drawing signed "Vischer")

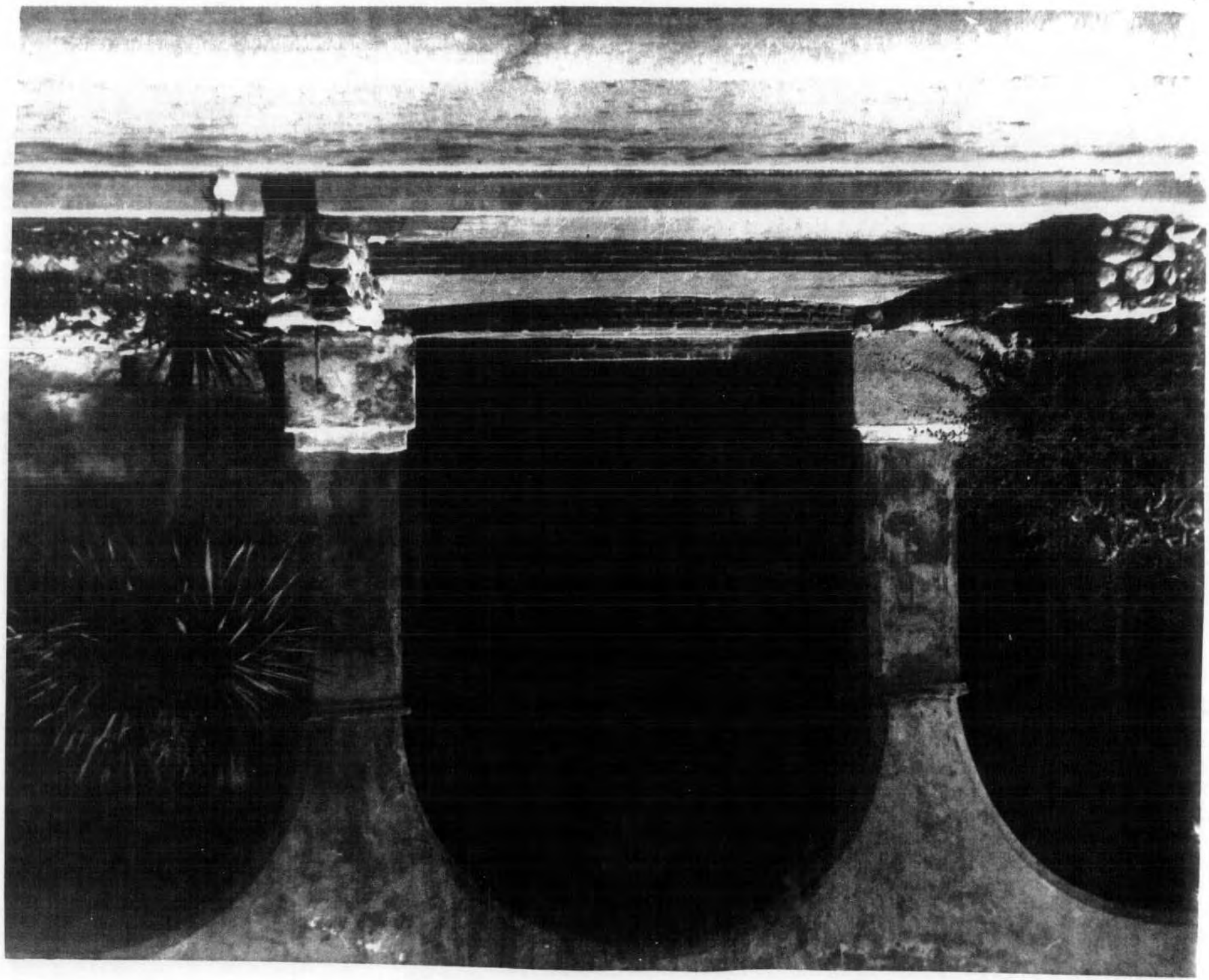
(drawing dated "1865")
(drawing, hence no negative)
Convento and other Mission Buildings, looking east northeast
Historic images series, no. 1 of 3

CHAPEL and PRINCIPAL BUILDINGS of the EX-MISSION SAN FERNANDO.

Mission San Fernando Rey de Espana
Convento Building
15151 San Fernando Mission Boulevard
Mission Hills (City of Los Angeles), Los Angeles County, California
(photographer unknown)

(date of photograph unknown, appears to be circa 1880s)
(location of negative, if still extant, unknown)
Convento and other Mission buildings, looking east northeast
Historic images series, no. 2 of 3





Putnam - 1892

Mission San Fernando Rey de Espana
Convento Building
15151 San Fernando Mission Boulevard
Mission Hills (City of Los Angeles), Los Angeles County, California
(attributed to "Putnam")

(believed to be 1892)
(location of negative, if still extant, unknown)
Convento and other Mission buildings, looking northwest
Historic images series, no. 3 of 3

The Missions and Missionaries of California

New Series. Local History

San Fernando Rey

THE

Mission of the Valley

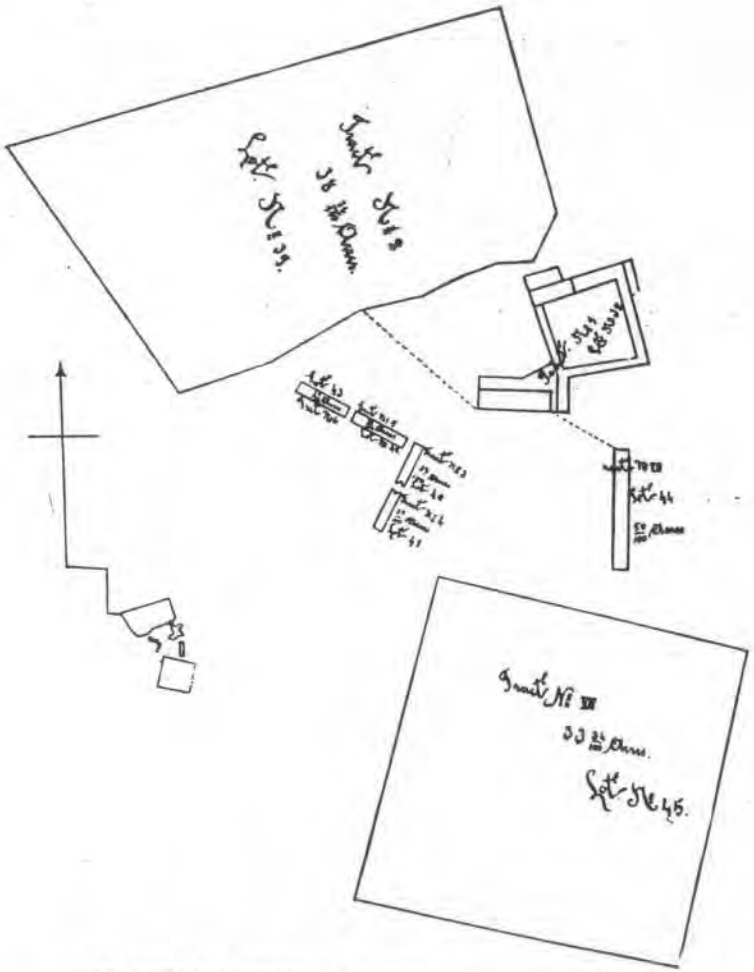
BY

Fr. ZEPHYRIN ENGELHARDT, O. F. M.

Author of "The Missions and Missionaries," "The Franciscans in Arizona," "Mission Dolores," "Mission San Diego," "Mission Santa Barbara," "Mission San Gabriel," etc., etc.

"Colligite quae superaverunt fragmenta, ne pereant," John, vi, 12.

FRANCISCAN HERALD PRESS
CHICAGO, ILLINOIS
1927



THE LANDS RESTORED BY THE U. S. GOVERNMENT
THE SURVEY AND DESCRIPTION

the rear of the main building runs south to the said building, Station.

"Thence north sixty-four degrees east, one chain and seventy-seven links to the wall of buildings situated on the west side of a courtyard, Station.

"Thence, along the said wall, north twenty degrees west, three chains and nineteen links to the southwest corner of the church, four chains and two links to the northwest corner of the church and the southwest corner of the cemetery, four chains and ninety-seven links to the northwest corner of the cemetery wall, Station.

"Thence north, seventy degrees east, two chains and nine links to the northeast corner of the cemetery, Station.

"Thence south, twenty-two degrees east, ninety-five links to the southeast corner of the cemetery and the north wall of the Church, Station.

"Thence north, seventy-one degrees thirty minutes east, thirty-eight links to the northeast corner of the Church, Station.

"Thence south, nineteen degrees east, thirteen links to the wall of a row of buildings on the north of the court yard before mentioned, Station.

"Thence north, seventy degrees east, three chains and sixty-six links to the northeast corner of said wall, Station.

"Thence south, seventeen degrees east, one chain and eighty-six links to a corner of said wall, Station.

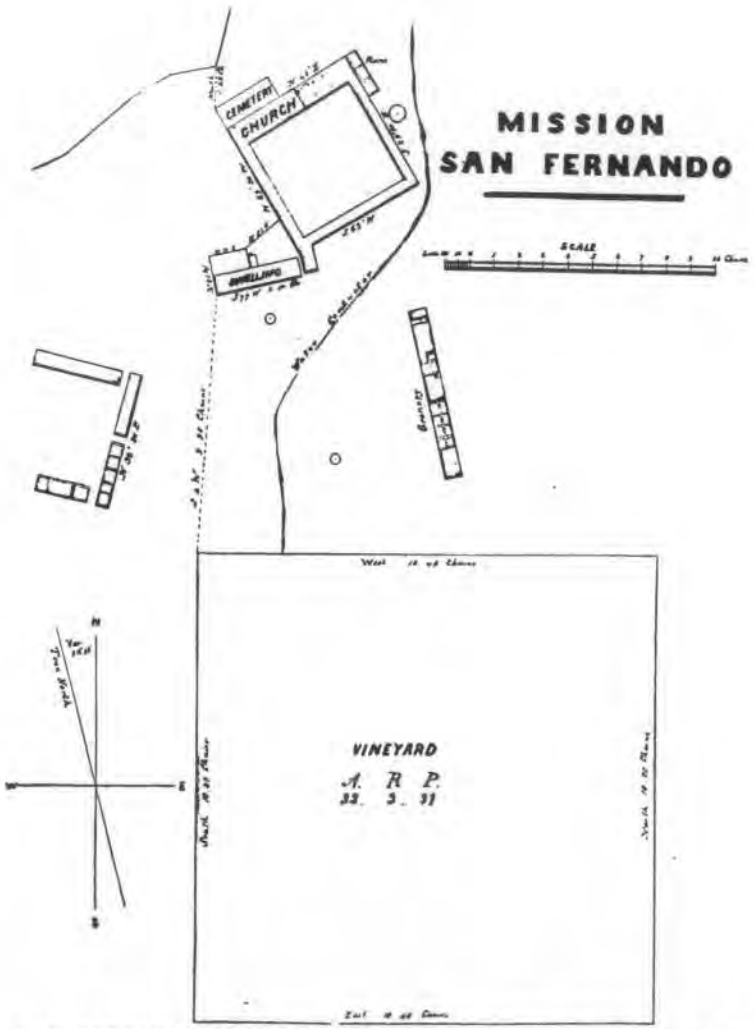
"Thence south, seventy-one degrees west, sixty-one links to main body of block of buildings, Station.

"Thence south, fifteen degrees thirty minutes east, four chains to the southeast corner of block of buildings, Station.

"Thence south, seventy-seven degrees west, four chains and fifty links to the northeast corner of the wing, Station.

"Thence south, three degrees thirty minutes east, two chains to the southeast corner of the wing, Station, and

"Thence north, eighty-nine degrees west, seventy-one links to southwest corner of the wing and entrance to corral, at one



SAN FERNANDO MISSION GROUNDS AS DRAWN AT THE U. S. LAND OFFICE, SAN FRANCISCO, IN 1904

"Thence south, seventy-eight degrees east, ten chains and twenty links to the southeast corner of this tract, Station.

"Thence eleven degrees west, eighteen chains and twenty links to the southeast corner of this tract, Station.

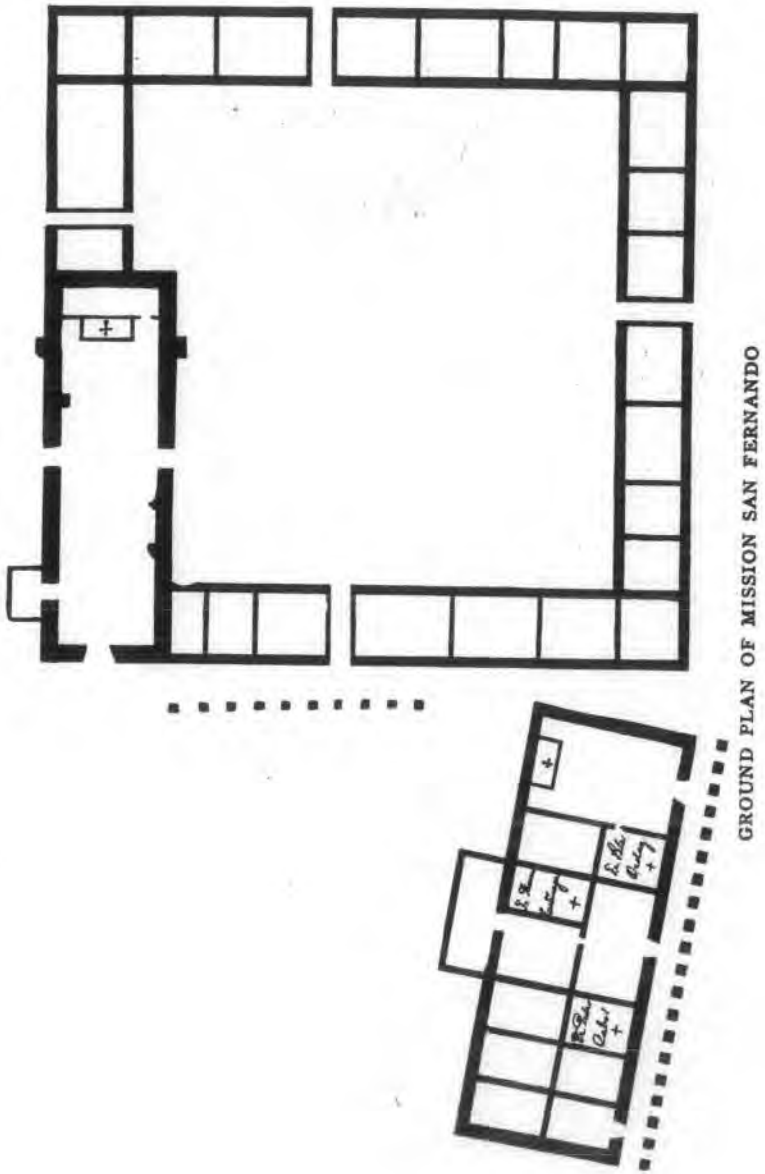
"Thence north, eighty degrees west, eighteen chains and forty links to the southwest corner of this tract, Station.

"Thence north, thirteen degrees east, eighteen chains and twenty links to the northwest corner of this tract, Station, and

'Thence south, seventy-eight degrees east, seven chains and fifty links to the place of beginning, containing thirty-three and thirty-four one hundredths of an acre, and being designated upon the pltas of the public surveys as Lot Number Forty-five in Township Two, North, Range Fifteen West of the San Bernardino Meridian."

U. S. Surveyor General's Office,
San Francisco, California.

Under and by virtue of the provisions of the 13th section of the Act of Congress on the 3rd of March, 1851, entitled An Act to ascertain and settle Private Land Claims in the State of California, and of the 12th section of the Act of Congress approved on the 31st of August, 1852, entitled An Act making appropriations for the Civil and Diplomatic expenses of the Government for the year ending the thirtieth of June, eighteen hundred and fifty-three and for other purposes, and in consequence of a certificate of the United States District Court for the Southern District of California, of which a copy is annexed having been filed in this office, whereby it appears that the Attorney General of the United States having given notice that it was not the intention of the United States to prosecute the appeal from the decision of the said District Court, said decision having confirmed the title and claim of Joseph S. Alemany, Bishop, etc., to the tract of land designated as the "Church and Mission buildings of the Mission of San Fernando," the said appeal has



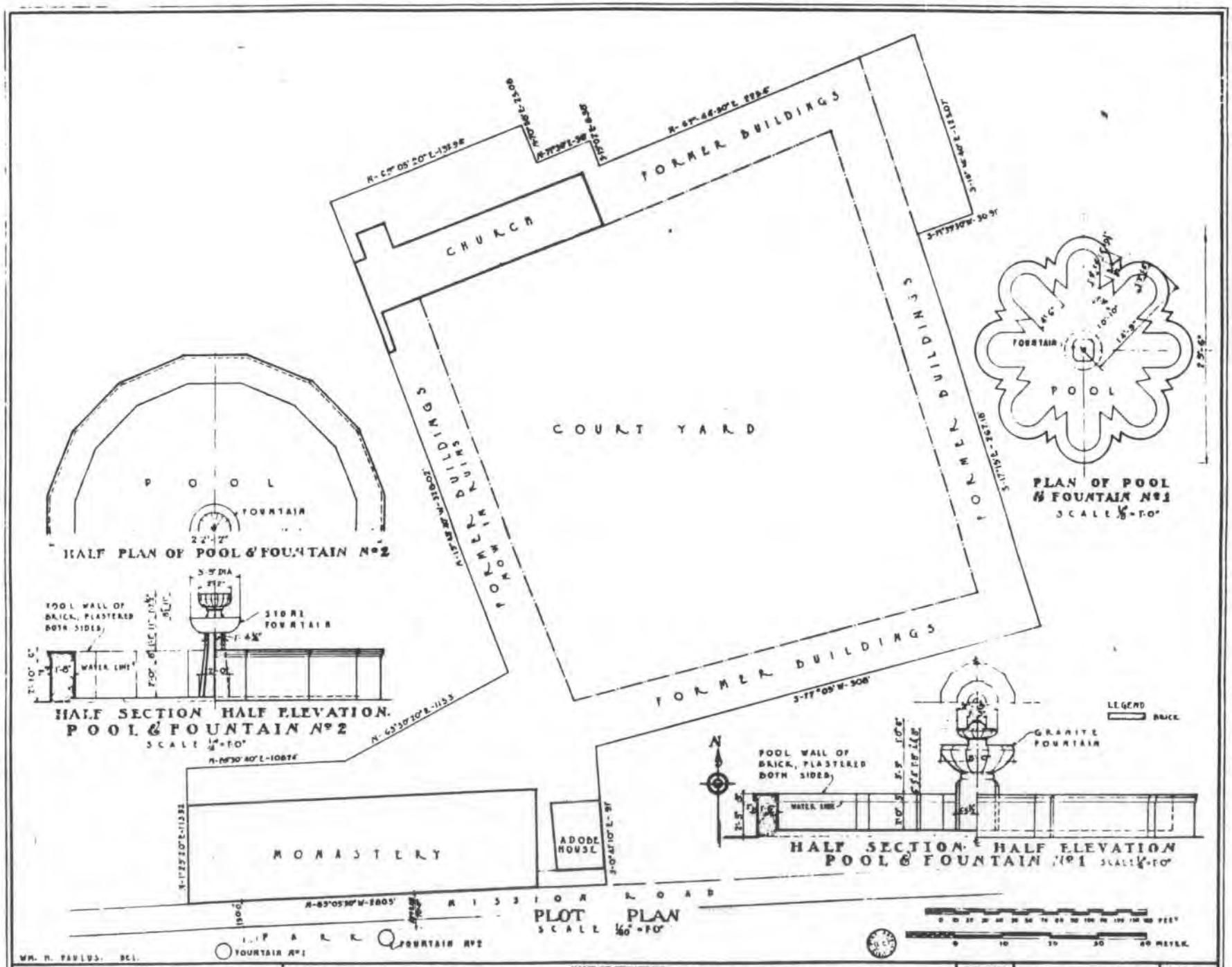
GROUND PLAN OF MISSION SAN FERNANDO

therefore, endeavor to clear up the case by relating the facts as they were.

Let the intelligent reader bear in mind that California at the time, end of the eighteenth century, still belonged to Spain, and was governed in accord with Spanish laws. On this particular subject, however, the Spanish laws did not differ from those that regulate the affairs of the Indians in the United States. In consequence, the royal decrees or laws, as do the laws of the United States, always recognized the natural right of the Indian natives to their lands. The Government could not dispose of such lands any more than of the lands of white settlers or citizens. It was private property as much as the land of the white citizens. Furthermore, the Indians themselves could not dispose of their lands without the consent of the whole tribe, because such land was community property. However, as the Indians had everywhere proved themselves incapable of controlling their landed property for their benefit, and lest unscrupulous white men took advantage of the childish and improvident character of the Indians, the Spanish Government, as does the United States Government, constituted itself the guardian of the natives to the extent of making laws that insured the possession of the lands to themselves and families. The Spanish laws were very minute and always took the part of the natives against aggressors. For these laws the reader may consult our larger volume, especially volume ii, 516-517; iii, 387. Hence the position of the Indians was that of minors before the law, owners of their lands indeed, but still children until they reached the age and condition required for the enjoyment of full citizenship.

The Spanish Government, or the King of Spain, had a twofold object in view when it assumed the guardianship of the Indians anywhere: the Christianization and the civilization of the Indian wards. For that double purpose the king sent missionaries into the territory of the savages to teach the Gospel to all that would listen; for no one could be compelled to adopt Christianity.

The method for winning the savages away from their savage and improvident ways was left to the missionaries, because as experts they alone could determine what system was the best adapted to the peculiar circumstances of the various regions. In California it was found imperative to segregate the converts from their savage environments and to induce them to erect their permanent homes around the church, built in the convert settlement, under the eyes of the Gospel messengers. At the same time, in order to wean the indolent creatures from their inborn love for idleness, the converts were taught how to support themselves by means of agriculture, mechanical arts and stock-raising. Thus the famous Mission System of itself grew out of the


FORMER BUILDINGS
CHURCH
COURT YARD
FORMER BUILDINGS
FORMER BUILDINGS
FORMER BUILDINGS
POOL
FOUNTAIN
HALF PLAN OF POOL & FOUNTAIN N°2
POOL WALL OF BRICK, PLASTERED BOTH SIDES
STONE FOUNTAIN
WATER LINE
HALF SECTION HALF ELEVATION.
POOL & FOUNTAIN N°2
SCALE 1/4"=1'0"
PLAN OF POOL & FOUNTAIN N°1
SCALE 1/8"=1'0"
LEGEND
BRICK
GRANITE FOUNTAIN
POOL WALL OF BRICK, PLASTERED BOTH SIDES
WATER LINE
HALF SECTION HALF ELEVATION
POOL & FOUNTAIN N°1 SCALE 1/4"=1'0"
MONASTERY
ADOBE HOUSE
MISSION ROAD
PLOT PLAN
SCALE 1/60"=1'0"
PARK
FOUNTAIN N°2
FOUNTAIN N°1
WM. H. PAULUS, DEL.
WORKS PROGRESS ADMINISTRATION
OFFICIAL PROJECT NO 65-1719
UNDER DIRECTION OF UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE, BRANCH OF PLANS AND DESIGN
NAME OF STRUCTURE
MISSION SAN FERNANDO REY DE ESPANA - CHURCH
SAN FERNANDO · LOS ANGELES COUNTY · CALIFORNIA
SURVEY NO.
CAL 325
HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 1 OF 6 SHEETS

United States Department of the Interior

NATIONAL PARK SERVICE
P.O. BOX 37127
WASHINGTON, D.C. 20013-7127

IN REPLY REFER TO:

The Director of the National Park Service is pleased to inform you that the following properties have been entered in the National Register of Historic Places. For further information call 202/343-9552.

NOV 04 1988

WEEKLY LIST OF LISTED PROPERTIES
10/24/88 THROUGH 10/28/88

KEY: Property Name, Multiple Name, Address/Boundary, City, Vicinity, Certification Date, Reference Number, NHL status

CALIFORNIA
Los Angeles County
X Mission San Fernando Rey de Convento Building
15151 San Fernando Mission Blvd.
Los Angeles 10/27/88 88002147

19-A

RECEIVED
NOV 21 1988
OHP

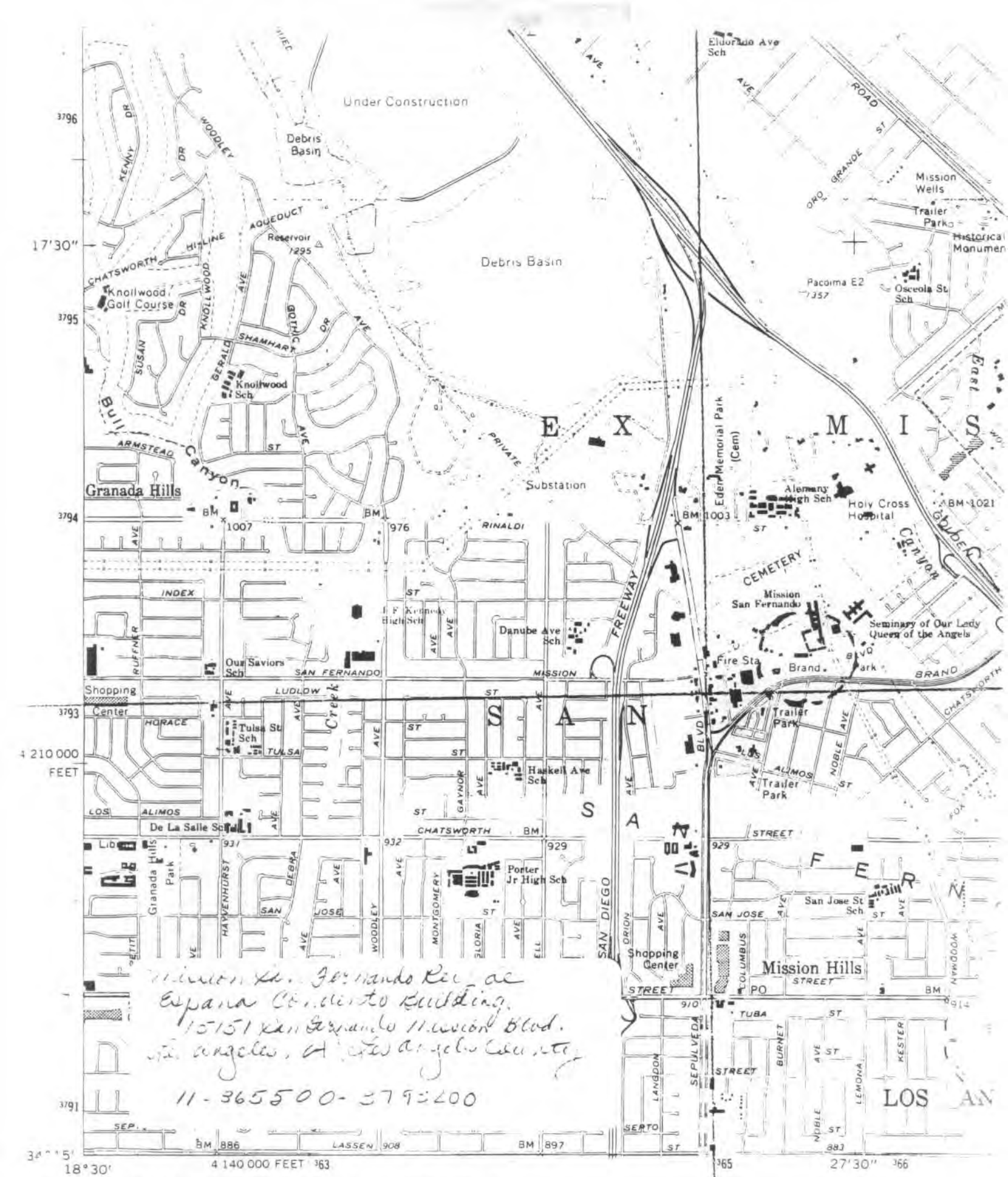
KANSAS
Sedgwick County
Calvary Baptist Church
601 N. Water
Wichita 10/28/88 88001905

LOUISIANA
Bienville Parish
Hill, The
700 Line St.
Arcadia 10/27/88 88002055

Catahoula Parish
Catahoula Parish Courthouse
LA 124
Harrisonburg 10/27/88 88002056

De Soto Parish
Mansfield Historic District
Texas and Adams Sts. at Courthouse Sq.
Mansfield 10/27/88 88002067

MARYLAND
Harford County
Mount Adams
1912 Fountain Green Rd.
Bel Air vicinity 10/27/88 88002062



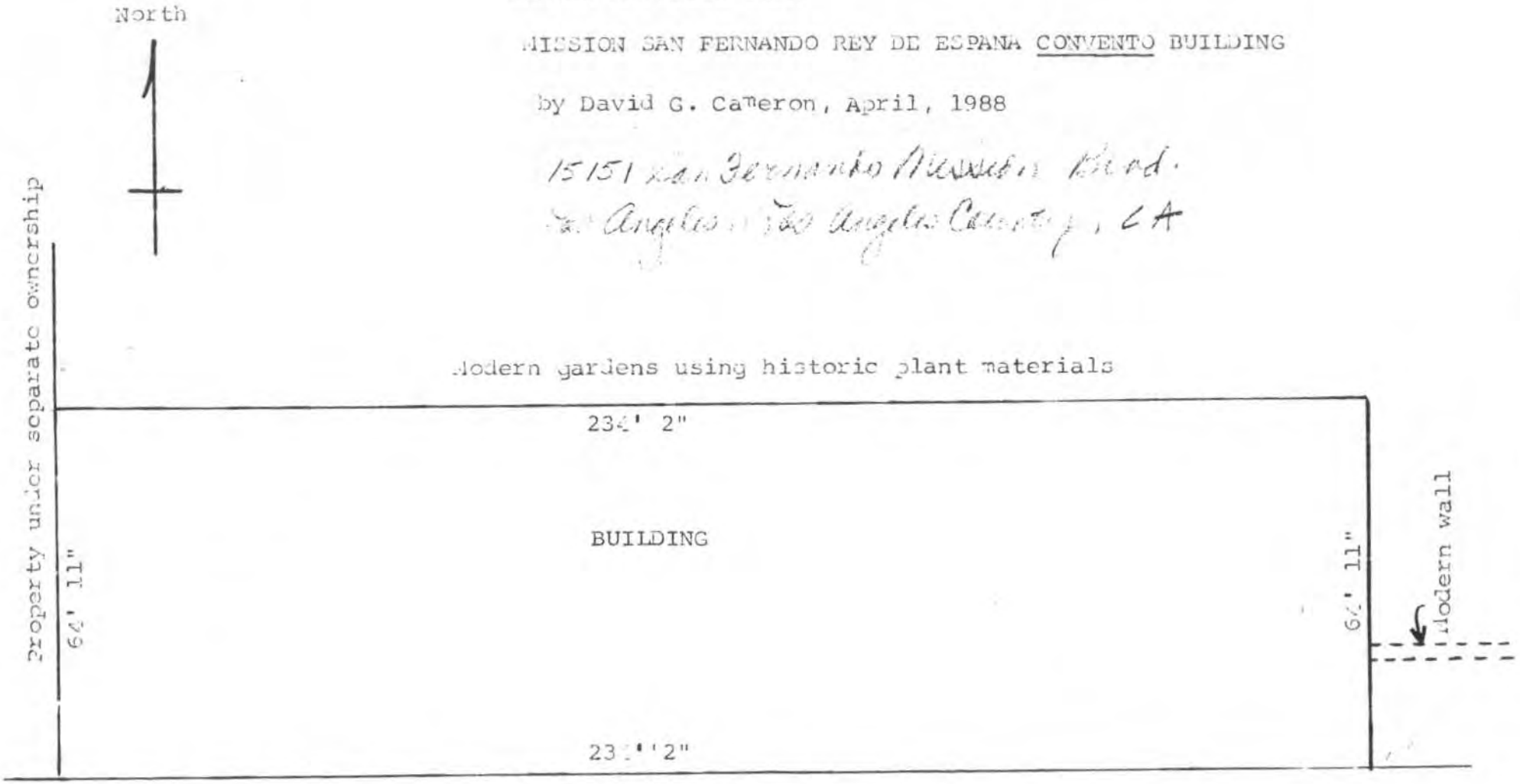
Mission Rd. Fernando Rey de España Condominium Building.
15151 San Fernando Mission Blvd.
Mission Hills, CA Los Angeles County
11-365500-3795200

SKETCH MAP/SITE PLAN

MISSION SAN FERNANDO REY DE ESPANA CONVENTO BUILDING

by David G. Cameron, April, 1988

15151 San Fernando Mission Blvd.
San Angeles, Los Angeles County, CA



PROPERTY-NUMBER	PRIMARY-#	STREET ADDRESS	NAMES	CITY NAME	OWN	YR-C	OHP-PROG.	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
026241	19-172228	1250 S WINDSOR BLVD	M H IHMSEN	LOS ANGELES	P	1911	HIST.SURV.	0053-3569-0000		7N	
026253	19-172240	1253 S WINDSOR BLVD	SIDNEY HYLER HOME	LOS ANGELES	P	1921	HIST.SURV.	0053-3581-0000		3S	
026254	19-172241	1259 S WINDSOR BLVD		LOS ANGELES	P	1924	HIST.SURV.	0053-3582-0000		7N	
026255	19-172242	1263 S WINDSOR BLVD	EDWARD TYMAN HOME	LOS ANGELES	P	1922	HIST.SURV.	0053-3583-0000		3S	
026242	19-172229	1264 S WINDSOR BLVD	WILLIAM E DIMMICH HOME	LOS ANGELES	P	1921	HIST.SURV.	0053-3570-0000		7N	
026243	19-172230	1276 S WINDSOR BLVD	HARRY W. WATSON HOME	LOS ANGELES	P	1909	HIST.SURV.	0053-3571-0000		7N	
156016		3817 S WISCONSIN ST		LOS ANGELES	P	1924	PROJ.REVW.	HUD050926A	10/21/05	2S2	C
162442		116 S WITMER ST		LOS ANGELES		1923	PROJ.REVW.	HUD060501M	06/01/06	6U	
162443		122 S WITMER ST		LOS ANGELES		1907	PROJ.REVW.	HUD060501M	06/01/06	6U	
162444		124 S WITMER ST		LOS ANGELES		1905	PROJ.REVW.	HUD060501M	06/01/06	6U	
020944	19-167011	633 S WITMER ST	MARY E. FAY HOUSE	LOS ANGELES	P	1873	HIST.SURV.	0053-0136-0000		7N	
							HIST.SURV.	0053-2363-0000		3S	
098272	19-175603	725 S WITMER ST	PARKER HOTEL	LOS ANGELES	P		HIST.RES.	DOE-19-94-0209-0000	06/10/94	6Y	
							PROJ.REVW.	HRG940202Z	06/10/94	6Y	
069871	19-173866	448 S WOODS AVE		LOS ANGELES	U		PROJ.REVW.	HUD860507F	06/03/86	6Y	
065019	19-173449	656 S WOODS AVE	RESIDENCE	LOS ANGELES	U		PROJ.REVW.	HUD861203F	12/31/86	6Y	
154677		917 S WOODS AVE		LOS ANGELES		1929	PROJ.REVW.	HUD050627E	06/27/05	6U	
154687		923 S WOODS AVE		LOS ANGELES		1929	PROJ.REVW.	HUD050627E	06/27/04	6U	
116385		1527 S WOOSTER ST		LOS ANGELES	P	1930	HIST.RES.	DOE-19-96-0291-0000	08/27/96	6U	
							PROJ.REVW.	HUD970203Z	08/27/96	6U	
098169	19-175543	4560 SALTILLO AVE		LOS ANGELES	P	1948	HIST.RES.	DOE-19-94-0627-0000	09/30/94	6Y	
							PROJ.REVW.	HRG940202Z	09/30/94	6Y	
021207	19-167255	10620 SAMOA AVE	ELMER REAVIS HOUSE	LOS ANGELES	P	1922	HIST.SURV.	0053-0311-0000		7N	
083798	19-174588	1508 SAMPSON AVE		LOS ANGELES	U		PROJ.REVW.	HUD910630Y	08/24/93	6Y	
076992	19-174268	15151 SAN FERNANDO MISSION	MISSION SAN FERNANDO REY DE ESPANA	LOS ANGELES	P	1810	HIST.SURV.	0053-4688-0000	10/27/88	1S	AC
021181	19-167231	15151 SAN FERNANDO MISSION	MISSION SAN FERNANDO REY DE ESPANA	LOS ANGELES	P	1810	HIST.RES.	DOE-19-94-0382-0000	03/20/94	2S2	AC
							PROJ.REVW.	HRG940202Z	09/30/94	2S2	AC
							HIST.RES.	NPS-88002147-0000	10/27/88	1S	AC
							HIST.SURV.	0053-0285-0000	10/01/75	3S	
							HIST.RES.	SHL-0157-0000	01/11/35	7L	
097817	19-175300	15174 SAN FERNANDO MISSION	BRAND PARK COMFORT STATION	LOS ANGELES	M	1921	HIST.RES.	DOE-19-94-0446-0003	06/01/94	2D2	AC
							PROJ.REVW.	HRG940202Z	06/01/94	2D2	AC
101522	19-176392	15174 SAN FERNANDO MISSION	BRAND PARK-ENTRANCE GATE	LOS ANGELES	M	1921	HIST.RES.	DOE-19-94-0446-0004	06/01/94	2D2	AC
							PROJ.REVW.	HRG940202Z	06/01/94	2D2	AC
101525	19-176395	15174 SAN FERNANDO MISSION	BRAND PARK-STATUE	LOS ANGELES	M	1921	HIST.RES.	DOE-19-94-0446-0007	06/01/94	2D2	AC
							PROJ.REVW.	HRG940202Z	06/01/94	2D2	AC
101526	19-176396	15174 SAN FERNANDO MISSION	BRAND PARK-SUN DIAL	LOS ANGELES	M	1921	HIST.RES.	DOE-19-94-0446-0008	06/01/94	2D2	AC
							PROJ.REVW.	HRG940202Z	06/01/94	2D2	AC
101520	19-176390	15174 SAN FERNANDO MISSION	BRAND PARK-PERGOLAS	LOS ANGELES	M	1921	HIST.RES.	DOE-19-94-0446-0001	06/01/94	2D2	AC
							PROJ.REVW.	HRG940202Z	06/01/94	2D2	AC
101521	19-176391	15174 SAN FERNANDO MISSION	BRAND PARK-CHEST HIGH WALLS	LOS ANGELES	M	1921	HIST.RES.	DOE-19-94-0446-0002	06/01/94	2D2	AC
							PROJ.REVW.	HRG940202Z	06/01/94	2D2	AC
101523	19-176393	15174 SAN FERNANDO MISSION	BRAND PARK-FOUNTAIN	LOS ANGELES	M	1921	HIST.RES.	DOE-19-94-0446-0005	06/01/94	2D2	AC
							PROJ.REVW.	HRG940202Z	06/01/94	2D2	AC
101524	19-176394	15174 SAN FERNANDO MISSION	BRAND PARK-MISSION FOUNTAIN	LOS ANGELES	M	1921	HIST.RES.	DOE-19-94-0446-0006	06/01/94	2D2	AC
							PROJ.REVW.	HRG940202Z	06/01/94	2D2	AC
158939		530 SAN FERNANDO RD	CITY OF LOS ANGELES MAINTENANCE BU	LOS ANGELES	M	1947	PROJ.REVW.	FHWA050627C	01/30/06	6Y	
024846	19-170866	1518 SAN FERNANDO RD		LOS ANGELES	P	1929	HIST.SURV.	0053-2315-0000		5S2	
024847	19-170867	2121 SAN FERNANDO RD		LOS ANGELES	P	1935	HIST.SURV.	0053-2316-0000		7N	
	19-155216										
098170	19-175544	2911 SAN FERNANDO RD	RIBET ACADEMY	LOS ANGELES	P		HIST.RES.	DOE-19-94-0632-0000	09/30/94	6Y	
							PROJ.REVW.	HRG940202Z	09/30/94	6Y	
025631	19-171620	8359 SAN FERNANDO RD		LOS ANGELES	P	1919	HIST.SURV.	0053-3035-0000		7R	
098171	19-175545	9321 SAN FERNANDO RD		LOS ANGELES	P	1933	HIST.RES.	DOE-19-94-0628-0000	09/30/94	6Y	
							PROJ.REVW.	HRG940202Z	09/30/94	6Y	
098172	19-175546	9971 SAN FERNANDO RD		LOS ANGELES	M		HIST.RES.	DOE-19-94-0574-0000	09/30/94	6Y	

BIENVENIDOS!

Amigos

Mission

SAN FERNANDO

Rey de Espana

M
SAN F
Rey (

In the late 1890s, after years of neglect and abuse, San Fernando was approaching complete ruin and some of its adobe buildings had all but melted back into the earth. The structures seen here, looking west from the main gate, include the captain's house on the left, the convento in the rear and a workshop in the foreground. All have been restored. The latter building now houses the mission gift shop.

The area shown below as it appears today. Restoration of the church and belltower was completed in 1947. These massive, simple structures of quietly imposing character, typify the architecture of San Fernando.

The magnificent convento as it appears today from Brand Park, south of San Fernando Mission Blvd. This huge, two story building, the largest adobe structure in California, required 13 years to complete.

The church, belltower, school and workshop, seen from the west garden near the turn of the century, were bleak ruins. The large adobe blocks for the walls and the red brick for the columns were hand-made at the mission.

Mission San Fernando has "starred" in more than 30 motion pictures and dozens of TV episodes but rarely played itself. It appeared as a poor East Los Angeles parish church in a DRAGNET episode titled "A Christmas Story." Here, Sgt. Joe Friday (Jack Webb) and officer Bill Gannon (Harry Morgan) investigate the theft of the infant Jesus from the church's nativity scene.

The convento retained its elegant grandeur even as a dilapidated ruin in the late 1890s. The fountain and two trees in the foreground have been separated from the convento by San Fernando Mission Blvd. and are now part of Brand Park.

This diagram shows mission quadrangle was in 1833. Shaded b ings have been rest

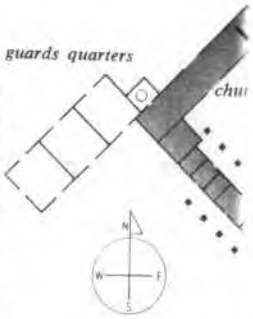
cemetery

guards quarters

chu

west garden

con



When you enter Mission San Fernando Rey de España, you step back in history nearly 200 years to a time when the San Fernando Valley was a vast, open plain sparsely populated by primitive, nomadic Indians.

The mission, named in honor of sainted 13th century King Ferdinand III of Spain, was established near the apex of the triangular shaped, 235 square mile San Fernando Valley on September 8, 1797.

Before the end of 1797, 56 Indians joined the mission community and a church and quarters for the two priests and their escolta of six soldiers were built of adobe. Grain fields, orchards and vineyards were planted. The huge valley rancho was explored and sources of lime and clay were found. Additional water was located and an elaborate irrigation system was built. Workshops, granaries, stables and houses for the rapidly increasing number of Indian converts were constructed.

San Fernando quickly outdistanced the tiny pueblo of Los Angeles which had been established 16 years earlier 21 miles southeast below the Santa Monica Mountains. The mission was soon producing abundant harvests of wheat, corn, beans and olives. Metalwork, leathergoods, cloth, soap and candles bega pouring from its workshops. Its herds of cattle, sheep an hogs grew.

By 1810, the year Mexico began its 10 year fight for ind pendence from Spain, San Fernando had become a maj center of agriculture, industry and commerce. It accounted f two thirds the population of what is now Los Angeles Coun and had grown into a complex of 25 large adobe buildin and scores of small houses for the more than 1,000 reside Indians.

Mexico replaced Spain as ruler of California in 1821 an settlers were soon clamoring for transfer of the rich missio rancho to private hands. In 1833 a decree of secularization w issued and San Fernando was among the first of the great mi sion ranchos confiscated. A civil administrator was appointe and the priests were restricted to religious duties. The Indian soon began leaving and production fell as crops rotted in th fields and unattended livestock were stolen or perished.

In 1846, on the eve of an American invasion of Californi San Fernando was sold to raise money for defense. The missio

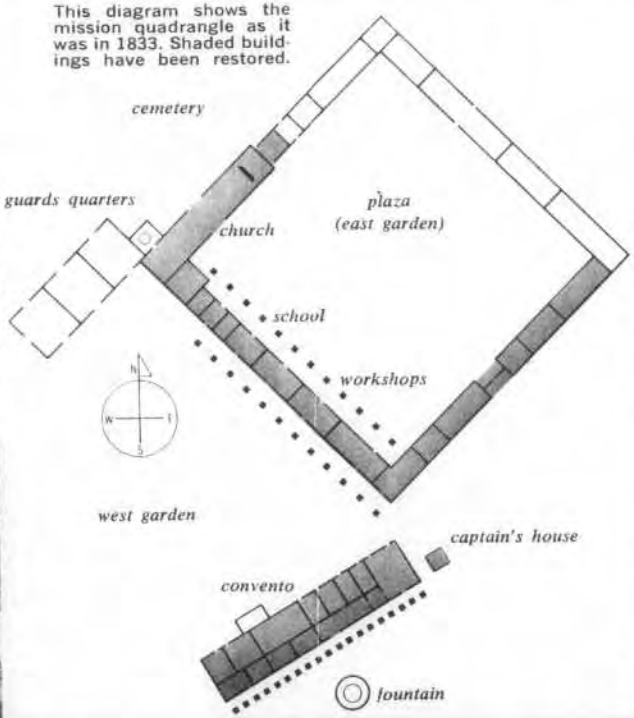
Mission SAN FERNANDO Rey de Espana

fountain stands in the center of the old mission plaza, now the east garden. It is a copy of a fountain in Córdova, Spain and was built during the restoration period.

San Fernando's rustic elegance has made it a popular location for fashion photography. These pictures, taken by photographer Jane McGowan, show costumes created by Los Angeles designer Eddy George. The photo on the left was taken in front of the captain's house and that on the right at the east end of the convento's portico.

The church and belltower are here viewed from the southeast corner of the old mission plaza. The huge fountain stands in the center of the lushly planted, tranquil garden.

This diagram shows the mission quadrangle as it was in 1833. Shaded buildings have been restored.



on San Fernando has red" in more than 30 n pictures and doz- of TV episodes but played itself. It ap- d as a poor East Los les parish church in a BNET episode titled ristmas Story." Here, oe Friday (Jack Webb) officer Bill Gannon y Morgan) investigate theft of the infant from the church's ity scene.

In a GUNSMOKE episode titled "The Noon Day Devil," San Fernando played a mission in Taos, New Mexico. Here, Marshall Matt Dillon (Jim Arness) enters the church to capture a deranged outlaw whose twin brother is a mission priest. The confessional seen in the background was built at San Fernando about 1800.

This picture, taken from the church's main entrance, shows how the walls, more than five feet thick at the base and less than three feet at the crown, appear to lean outward.

The colorful Indian designs that decorate the altar area are seen clearly in this close-up. Above the altar is a large, ornate, wood and plaster statue of Saint Ferdinand. The statue, made in Spain by an unknown artist more than 300 years ago, was brought to the mission soon after its founding.

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e eve of an American invasion of California, s sold to raise money for defense. The mission rancho, which encompassed virtually all the San Fernando Valley was sold for just $14,000! Today, that same land has a value of more than three billion dollars!

The last priest left the mission in 1847 and Mass was not celebrated in the church again until sometime after 1923.

San Fernando's buildings were constructed of sun-baked adobe blocks and reinforced with rough timbers. Red tile was used for roofing and flooring. Walls were surfaced with stucco and finished with white lime. Most, including the church, were ornamented inside and out with colorful dados and Spanish motifs. The convento, largest free-standing adobe structure in California, was painted a bright shade of red, white and blue.

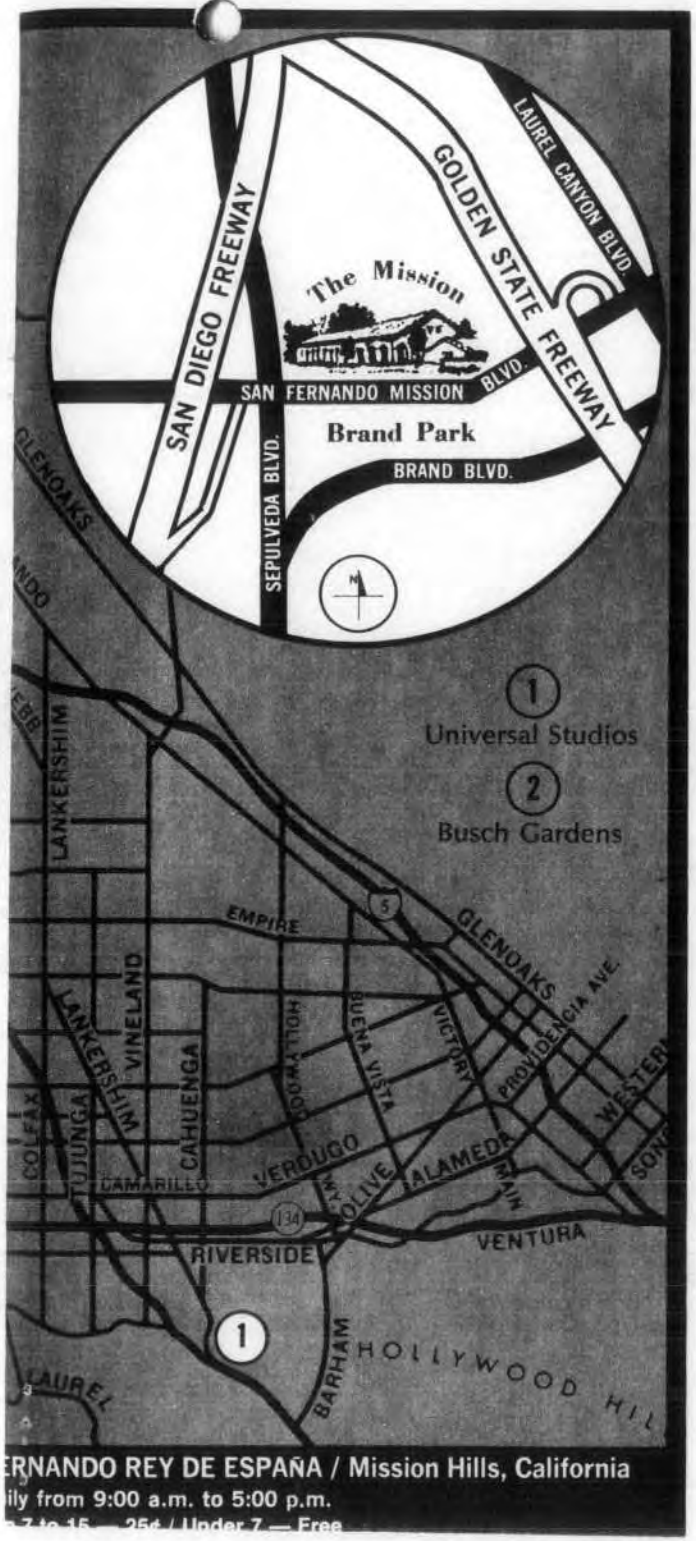
In the years following secularization, the mission buildings suffered from abuse and neglect. For a time the palatial convento was a private residence and the scene of glittering social events. In 1847, U.S. Army colonel John C. Fremont used it as his headquarters and garrisoned troops in other mission buildings. Later the convento served as a bunkhouse for cowboys and still later as a warehouse for a land and water company while the mission plaza was used as a hog farm.

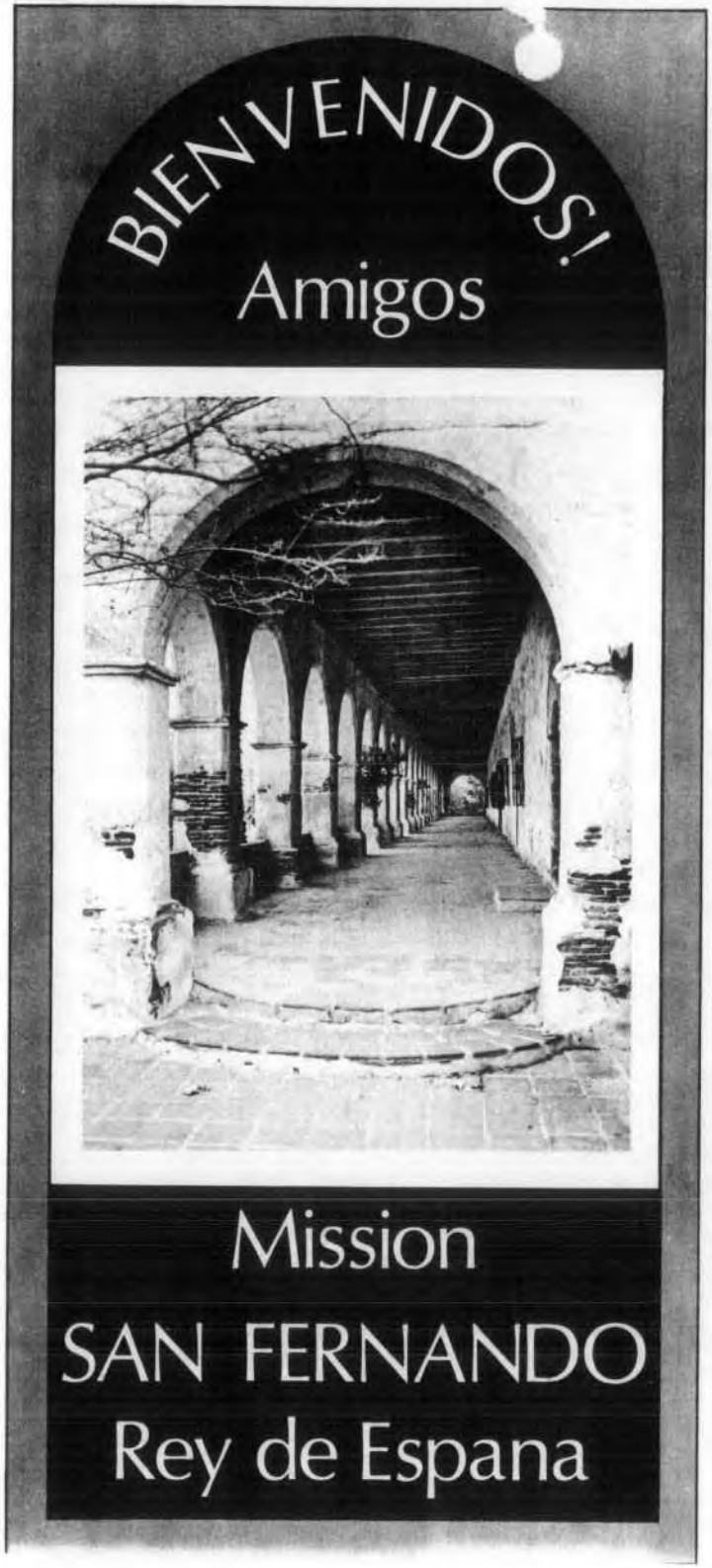
By the late 1800s settlers had stripped roofing tiles from many mission buildings exposing the adobe walls to the ravages of wind and rain. The church became a crumbling shell and many other buildings melted back into the soil. Only the convento remained in reasonable repair. The church suffered another indignity as well. Caping holes were dug beneath the altar in search of treasure supposedly hidden by the mission fathers.

An extensive restoration program was initiated in 1923 and today the six massive buildings that remain are very much as they were when they formed the core of an enormously successful and productive enterprise.

Step into California's romantic past soon with a visit to Mission San Fernando Rey de Espana. There is much to see and enjoy. You'll have fun exploring its seven acres of living history . . . wandering through its rustically elegant buildings . . . examining the dozens of carefully restored rooms with their wealth of unique and beautiful artifacts . . . or just relaxing in its tranquil gardens.

San Fernando Mission is easy to reach. See map on back page.


The Mission
SAN DIEGO FREEWAY
GOLDEN STATE FREEWAY
LAUREL CANYON BLVD.
SAN FERNANDO MISSION BLVD.
Brand Park
BRAND BLVD.
SEPULVEDA BLVD.
GLENOAKS
1 Universal Studios
2 Busch Gardens
LANKERSHIM
EMPIRE
GLENOAKS
VINELAND
LANKERSHIM
HOLLYWOOD
BUENA VISTA
VICTORY
PROVIDENCIA AVE.
COLFAX
TUJUNGA
CAHUENGA
CAMARILLO
VERDUGO
OLIVE
ALAMEDA
MAIN
RIVERSIDE
VENTURA
BARHAM
HOLLYWOOD HIL
LAUREL
ERNANDO REY DE ESPAÑA / Mission Hills, California
ily from 9:00 a.m. to 5:00 p.m.
Under 7 — Free


BIENVENIDOS!
Amigos
Mission
SAN FERNANDO
Rey de Espana

The California Missions

The Mission Era was brief . . . less than an average lifespan . . . yet its impact on the development of California was monumental!


Father Serra

It began in 1769 when Spain sent a small military force and several Franciscan Fathers, 219 men in all, to secure and develop the still unexplored territory of California. They were instructed to establish a fort and the first in a chain of missions at Moterey Bay. This action, taken 227 years after Spain claimed California, was prompted by Russia's push south from Alaska.

The Franciscans were directed to pacify the Indians and prepare them for colonial citizenship. Conversion to Catholicism, acceptance of Spanish authority and training in productive skills were essential steps in this process. The challenge proved enormous as there were over 100,000 Indians in California but never more than 45 Franciscans!

To Imperial Spain, the missions were tools of conquest, but to the dedicated Franciscans who founded them, mission service provided an exceptional opportunity to serve man and glorify God.

Between 1769 and 1824 the Franciscans established 21 missions, spaced a hard day's march apart from San Diego in the south to Sonoma in the north, and in the process proved themselves resourceful diplomats, teachers and technicians.

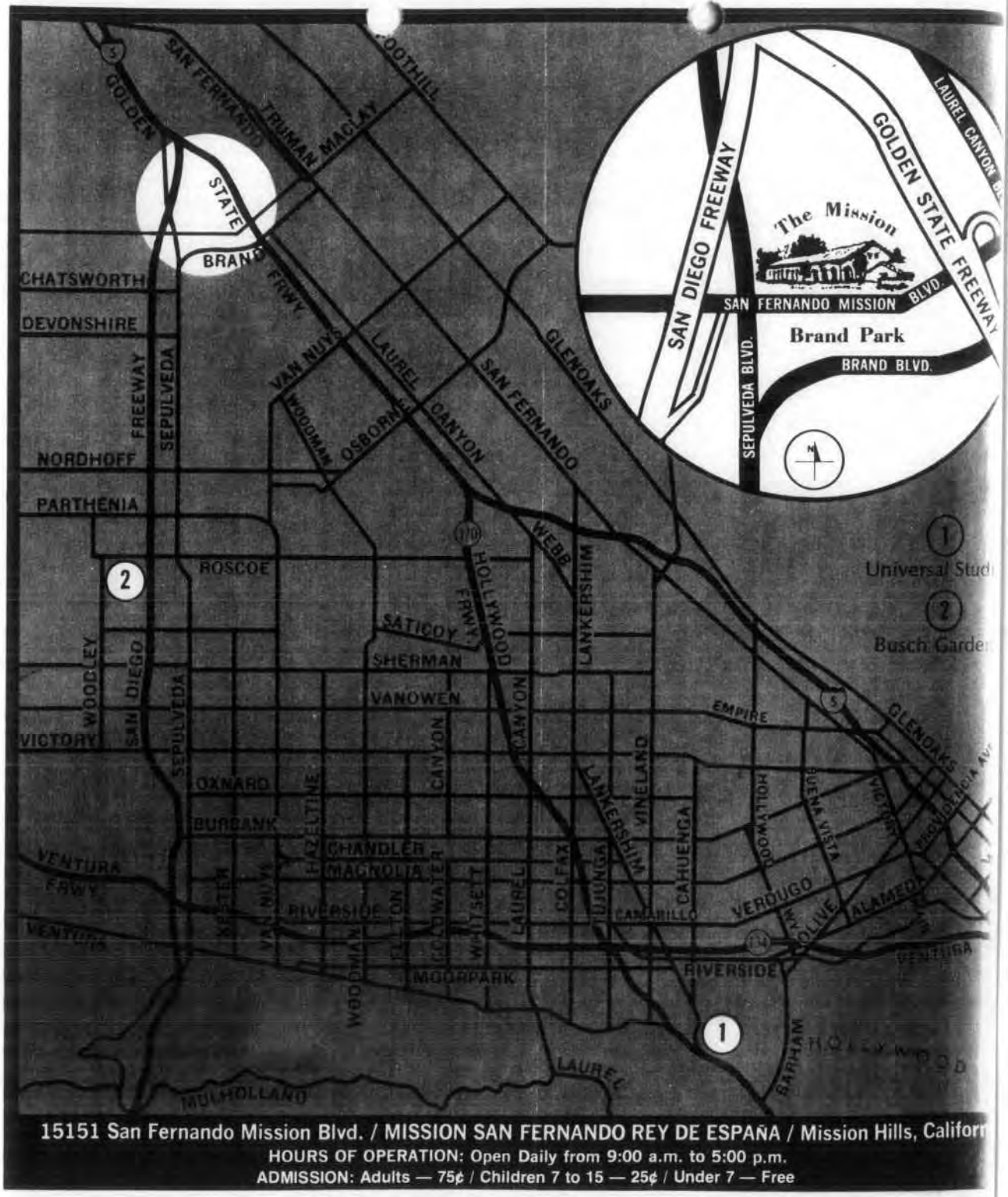
The mission fathers persuaded thousands of Indians to join the mission settlements and accept the new faith and new way of life. Starting with nothing more than seed grains, fruit cuttings, a few breeding animals and elemental tools, the missionaries and their Indian charges cultivated California's first fields, orchards and vineyards . . . developed its first herds of cattle, sheep and hogs . . . established its first industries . . . built its first communities.

The missions became great commercial centers that formed the base for California's economy and set the pattern for its future development. Under the stewardship of the missionaries, California was peacefully transformed from an unexplored wilderness into a thriving, united commonwealth within 65 years!

The success of the missions was due largely to the talents of Fathers Junipero Serra and Fermín Lasuén, the first two presidentes of the mission system. Both were decisive, innovative administrators. Serra, the pioneer, served 16 years and founded nine missions. Lasuén served 18 years and established nine more. Those founded by Serra . . . simple structures of reeds, were rebuilt of stone mud and thatch . . . what is now known or adobe and tile in sion style of architecture. Under Lasuén, conversions increased dramatically and the missions flourished.


Father Lasuén

The Mission Era was brought to an end in 1834 when the government began confiscating the mission ranchos. After California became the 31st star in the American flag, the mission churches, adjacent buildings and the land on which they stood were returned to the Catholic Church.



15151 San Fernando Mission Blvd. / MISSION SAN FERNANDO REY DE ESPAÑA / Mission Hills, Californ

HOURS OF OPERATION: Open Daily from 9:00 a.m. to 5:00 p.m.

ADMISSION: Adults — 75¢ / Children 7 to 15 — 25¢ / Under 7 — Free

S U R V E Y

of

California Registered Historical Landmarks

19-167231
19-174268
See Also

Name MISSION SAN FRENANDO REY DE ESPAÑA Number 157

County Los Angeles

Location 15151 San Fernando Mission Blvd. Mission Hills

Type of Plaque PRESENTED BY LOS ANGELES PARLOR NO. 124
NATIVE DAUGHTERS OF THE GOLDEN WEST
MARCH 12, 1939

Condition of Plaque Excellent, but in dire need of cleaning

Condition of Base mounted to side of building

Condition of Surroundings Excellent

Wording on Plaque MISSION SAN FERNANDO REY DE ESPAÑA
FOUNDED BY
FATHER FERMÍN FRANCISCO DE LASUÉN
SEPTEMBER 8, 1797

Are there Highway Directional Signs? Yes

If so, where? on I-5 at San Fernando Road and near site.

Remarks: Private plaque on private property.

Submitted by J. Arbuckle Date 6-11-80

157

DIVISION OF BEACHES & PARKS
DISTRICT 6

HISTORICAL LANDMARKS

Date July 1, 1959

Name of Landmark MISSION SAN FERNANDO REY de ESPĀNA

Registration Number #157 County LOS ANGELES

Location 15151 San Fernando Road, San Fernando, Califorinia

Type of Plaque Bronze, 12" x 18", in Adobe Plaster at left of old entrance.

Condition of Plaque Fair

Condition of Plaque Base Good

Condition of Surroundings Good

Wording on Plaque "MISSION SAN FERNANDO REY de ESPĀNA * Founded by Father Fermin de LaSuen, September 8, 1797. Presented by Los Angeles Parlor No. 124, Native Daughters of the Golden West, March 12, 1939."

Location of Highway Directional Markers At intersection of Brand Blvd. and Columbus Ave.

Remarks None

Photos taken by Nos. 0, Roll 2 Date June, 1959 Hour 1:45 P.M.
Nos. 21, Roll 3

Submitted by

WENDELL K. DAVIS
Park Supervisor

NAME MISSION SAN FERNANDO REY DE ESPANA

COUNTY LOS ANGELES

APPROVAL COMMITTEE

Aubrey Drury

Francis P. Farquhar

DeWitt V. Hutchings

Robert E. Cowan

Carl I. Wheat

Leroy A. Wright

Herbert E. Bolton

Orra E. Monnette

Ynez Colby Chairman

STATE PARK COMMISSION

DIRECTOR, DEPARTMENT NATURAL RESOURCES

REGISTERED LANDMARK NUMBER 157

DATE 1-11-35

THIS PAGE RESERVED FOR COMMENTS BY THE APPROVAL COMMITTEE

APPLICATION FOR REGISTRATION OF HISTORICAL POINT OF INTEREST

NAME OF HISTORICAL POINT Mision San Fernando Rey de España -, the land grant to the Mision originally comprised 131,000 acres.

LOCATION Within the city limits of Los Angeles, one mile from the business center of San Fernando, California .

NAME OF OWNER THE ROMAN CATHOLIC BISHOP OF LOS ANGELES AND SAN DIEGO, a corporation sole.

Street 108 West 2nd Street

City Los Angeles, California

HISTORY AND DESCRIPTION

Mision San Fernando Rey de España was founded September 8, 1797, by Fr. Superior Fermin Francisco de Lasuen assisted by Father Francisco Dumetz. The first location selected was on Encino Rancho, known by the Indians as Achois Comihavit, then occupied by the alcalde, mayor, of Los Angeles, Don Francisco Reyes. Reyes kept his own live stock as well as that of Cornelio Avila and others, on Encino Rancho. The ranch house was converted into a dwelling for the priests, Fr. Dumetz and Francisco Javier Uria, who were left in charge of the new mission work.

As Encino Rancho is six miles from the present location of Mision San Fernando it is evident that the site of the permanent mission buildings was changed, as in the case of several other of the missions. An adobe chapel was built and blessed in December 1806. The destructive earthquake of 1812 damaged this building. A new church was completed in 1818, the ruins of which are seen today, but are being restored. (?) Dimensions and aperatures (?) of this building are 40 x 6 varas or yards, tile roof with a board ceiling, a brick floor, adobe walls, three

HISTORY AND DESCRIPTION (Continued) (Mision San Fernando Rey de Espana)

doors and seven windows with wooden bars. The sacristy was eight varas square, (now gone). There were other buildings most of which are gone. Only the long low building with corridor along the front used originally as meeting room, dining room and kitchen, remains. It is in good repair. The church is being restored in a permanent manner. Cellars and a unique and attractive bell tower are of interest. The fountains and gardens in front of the church holdings are public park property enclosed and kept in perfect condition. It is Brand Park in which the garden is called Memory Garden.

Mision San Fernando was secularized and became a parish church in 1834. with Antonio del Valle as comisionado in charge of the estate. The inventory showed a valuation at the time of secularization of $41,714, of which $5,000 was in coin and $20,000 in hides and tallow. A library of 193 volumes was valued at $417. Some of these books were transferred to Mision Santa Barbara, but others were taken out and burned on a pile. There was 9,530 head of live stock. In 1843 San Fernando was restored to the management of the church. The estate was in debt and only about 300 Indians were around and about the mission. Gov. Pico leased the property to his brother Andres Pico and Juan Manso. for an annual rental of $1,120. On June 17, 1846 Pico sold the Mision San Fernando and surrounding acres to Eulogio de Celis for $14,000. Under his management the mission property fell into utter ruins.

By Act of Congress of March 3, 1851, the missions and certain lands were returned to the Catholic Church. In 1912 thru interest of the Landmarks Club some substantial repairs were made on the monastic buildin but not until the priests returned to take charge of the place was there permanent progress made toward saving the church and rebuilding the mission. It is now being permanently restored.

written By Mrs. A.S.C. Forbes

PHOTOGRAPHS Mission San Fernando Rey de España

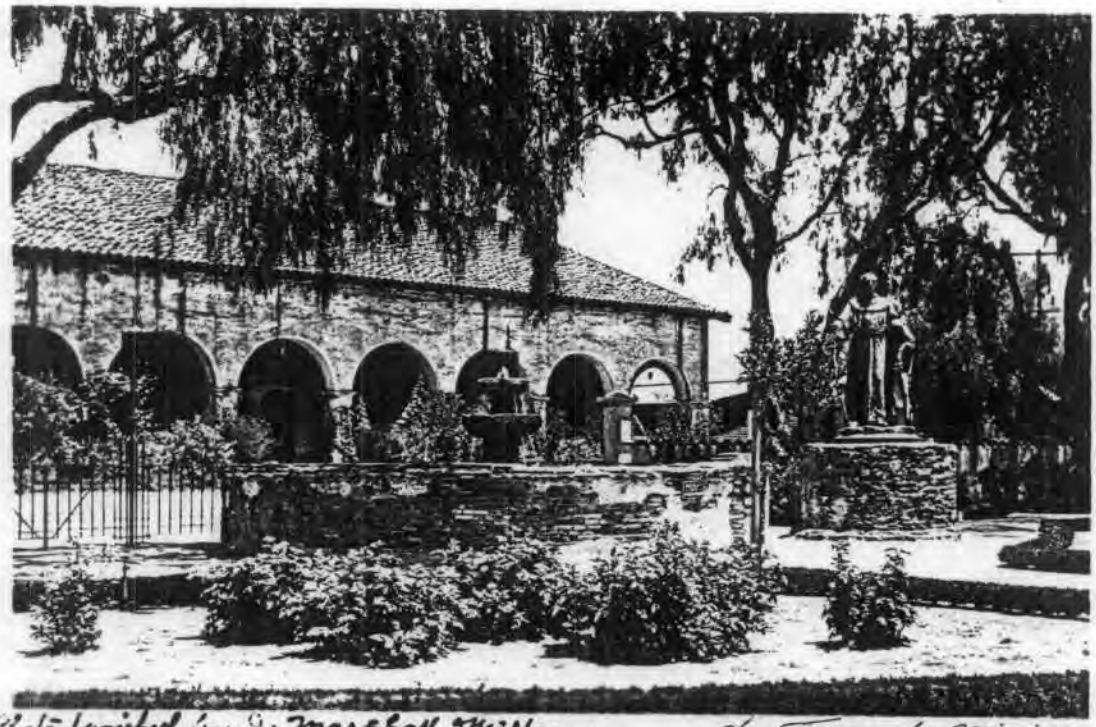


Photo furnished by J. Marshall Miller — San Fernando Mission

STATEMENT OF PROPERTY OWNER

TO THE

STATE PARK COMMISSION

AUTHORIZING THE NUMBERING AND REGISTRATION OF HISTORICAL POINT OF INTEREST

The accompanying HISTORY AND DESCRIPTION of Mission San Fernando Rey de Espana has been submitted to Rt. Rev. John J. Cantwell for his approval and signature for authority to number and register this mission as a point of historical interest. His signature is to be found on page 5 of this set of papers. He signed there through a misunderstanding.

REFERENCES TO BOOKS, RECORDS AND OTHER AUTHORITIES SUSTAINING THESE FACTS

Fr. Zepherin Engelhardt, O.S.F. - " The Franciscans in California."

Bancroft's Works -- " History of California."

Hon. R. F. del Valle.

ARE PICTURES ATTACHED? Yes

IS STATEMENT OF OWNER ATTACHED? Yes

SIGNED The Roman Catholic Bishop OF LOS ANGELES AND SAN DIEGO

By

written by Incumbent Mrs. E.S.C. Forbes

CITY Los Angeles 335 W. 31st St

COUNTY Los Angeles

DATE January 1934

(This form when filled out completely is to be sent to the Official Approval Committee, care of the California State Chamber of Commerce, Ferry Building, San Francisco.)

STATEMENT COVERING PROCEDURE FOR REGISTRATION OF HISTORICAL POINT OF INTEREST

In accordance with the present law, the Department of Natural Resources is authorized to register historical points of interest in California, if, in the judgment of the Director of the Department, the building or land mark is of sufficient historical interest to warrant registration.

In order to be in a position to determine definitely on the outstanding historical points of interest in the State, the State Park Commission, under whose jurisdiction the carrying out of this law now falls, has appointed an Official Approval Committee composed of men extremely well qualified and having a general knowledge of California. The membership of the Official Approval Committee is as follows:

Orra E. Monnette - CHAIRMAN - Los Angeles

Professor Herbert Bolton - Berkeley	Harry Carr - Los Angeles
Aubrey Drury - San Francisco	DeWitt V. Hutchings - Riverside
Francis P. Farquhar - San Francisco	LeRoy A. Wright - San Diego
Carl I. Wheat - San Francisco	Robert Ernest Cowan - Los Angeles

Application for registration is to be made on this form. It is important that complete information be given in order to assist the Committee in making its decision regarding qualification of the point of interest for actual registration.

It is of equal importance that two or more photographs be made a part of the application <u>together with a statement in writing from the owner of the point of interest requesting or authorizing</u> the Department of Natural Resources to number the historical location. Requests for registration are to be sent to the Official Approval Committee, care of the State Chamber of Commerce, Ferry Building, San Francisco.

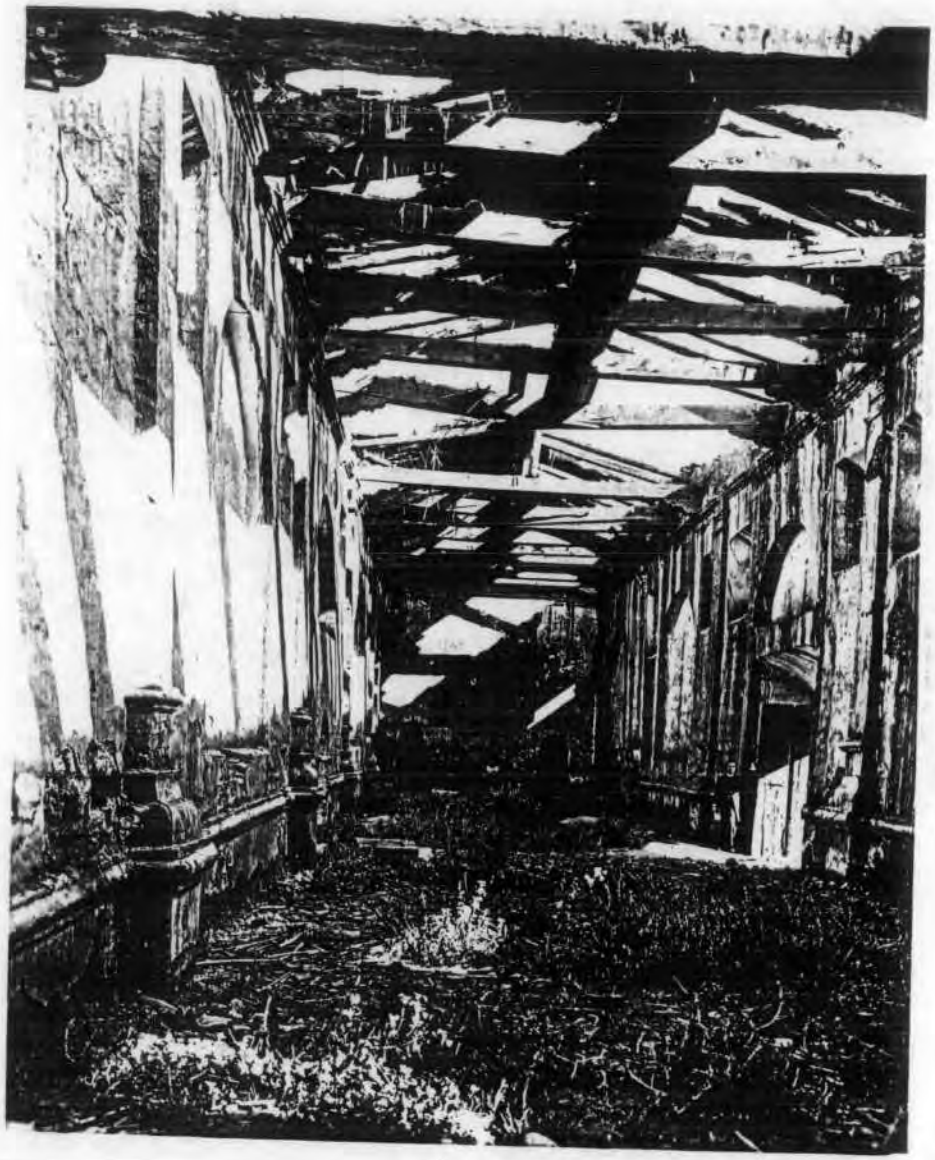
Very truly yours,

STATE PARK COMMISSION

By Laura E. Gregory
Secretary

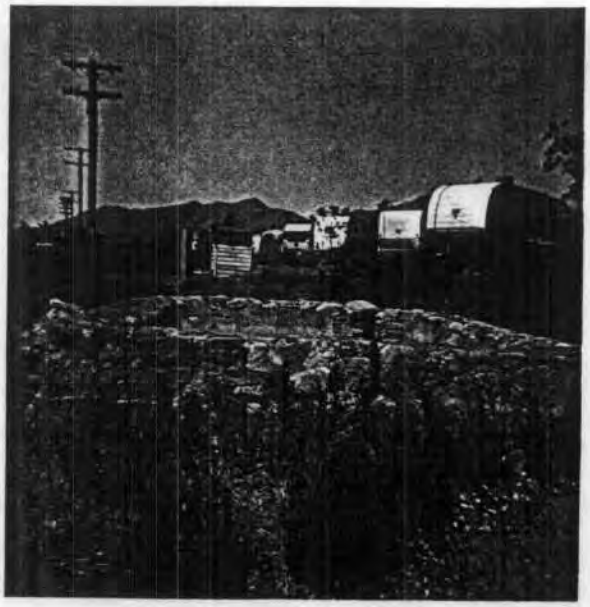
- Mission San Fernando Rey de Expaña
- Landmark No. 157

Note: This photograph is mislabeled as being La Purisima.
It is actualy interior of Church at San Fernando.



Photographs of MISSION WELLS
This is the original catch basin for the cenegas,
or little springs.

P



The above pictures shows the Intake Box (drinking water)
the Tank was made of Mission Brick, and the bottom was
lined with Mission Floor Tile, and is still in good
condition after weathering 162 years.

CALIFORNIA HISTORICAL LANDMARKS SERIES

Edited by Vernon Aubrey Neasham

MISIÓN SAN FERNANDO REY de ESPAÑA

Registered Landmark #157

by

Chester Lyle Guthrie

for

State of California, Department of Natural Resources

Division of Parks

Berkeley, 1936

Written under auspices of Works Progress Administration
District #8, Project #65-3-3218, Symbol #1873

MISIÓN SAN FERNANDO REY DE ESPAÑA

Important indeed was the part played by the Franciscan missionaries in California. They left the refinements found in such centers as Mexico City and the cities of the Old World to exile themselves on a distant frontier in order to civilize and Christianize the untutored, often stupid, savages who dwelt there. It was a thankless task at best - and the best was not always to be found in California. But the Franciscan friars wasted little time in counting the costs.. Theirs was a spirit of optimism and religious zeal that carried the enterprise above its sordid side and raised it to the nobility of a crusade. Their achievements were marvelous, and California owes them an everlasting debt.

Misión San Fernando Rey de España entered into the scheme of the mission system, not as a spear point thrust into the very heart of savagery, but as a timber to fill in the gaps between the great fundamental beams in the mission structure. The long distance between the missions of San Gabriel and San Buenaventura was bridged by San Fernando. Nevertheless, although its position was secondary, it soon became a vital part of the whole. San Fernando was successful. Its cattle and grain were a material prop, not only to the mission en-

deavor but to the civil government also. In number of converts, too, it was well among the foremost of the California missions.

Not until late in 1795 was the expedition sent into the region north of San Gabriel to discover a suitable site for San Fernando. Its establishment was almost a quarter of a century later than that of its neighbors. By that time the country was well known, the Indians had been subdued, and the first of the private ranchos had come into existence. Although the romance of pushing into a strange frontier and the possibility of meeting lurking and unknown dangers was not there to add piquancy to the adventure, the enthusiasm for the undertaking was in no way dimmed. The opportunity to create a new and highly necessary mission, economically, strategically, and religiously, spurred the missionaries and their aids on in their search.

August 16, 1795, at twelve o'clock noon, Fr. Vicente de Santa María, accompanied by Ensign Pablo Cota, Sergeant José María Ortega, and four soldiers mounted their horses at San Gabriel and rode away to the north. For three days they inspected the country, dissatisfied with what they saw. On the morning of the nineteenth they reached what was then called Encino (Oak) Valley. It looked promising. The party proceeded to the rancho of Francisco Reyes, the alcalde of Los Angeles,

who had established himself about two leagues from the camino real. Fr. Santa María reported:[1]

> In the afternoon, the ensign, the sergeant, the soldier José Antonio Lugo, the alcalde Reyes (who had reached his rancho on the same morning a little after us), and I set out to investigate. We found the place quite suitable for a mission, because it has much water, much humid land, and also limestone; for we came upon a party of gentiles (unchristianized Indians) who were finishing a kiln for burning lime which they had already heaped up. Stone for the foundations of the buildings is near by. There is pine timber in the direction of west-northwest of this locality, not very far away; also pastures are to be found and patches very suitable for cattle; but there is a lack of firewood; for the place has no more than is found in the arroyo, which is about one league long. There we found willows, poplars, alders, and a few live-oaks, at a distance of a quarter or a half a league from the mission, if it should be founded there. In this place we came to a rancheria (Indian village) near the dwelling of Reyes - with enough Indians. They take care of the field of corn, beans, and melons, belonging to Reyes, which with that of the Indians could be covered with two fanegas of wheat. These Indians are the cowherds, cattlemen, irrigators, bird-catchers, foremen, horsemen, etc.

After some further exploration, the party arrived at Misión San Buenaventura on the twenty-eighth, and made its report.

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1. Fr. Vicente de Santa María to Fr. President Fermín de Lasuén, September 3, 1795, quoted in C. A. Engelhardt, San Fernando Rey, the mission of the valley, 5.

What Señor Reyes, who had located his ranch in the Encino Valley, felt about the procedure was not recorded. However, the padres were powerful, he had no title deed, and there was plenty of unoccupied land left in California; so Reyes gave way with the best possible grace before the pressure of progress.

Quite an impressive ceremony marked the founding of San Fernando. On September 8, 1797, two years after the site had been explored, the presidente of the missions, old Fr. Lasuén, took charge in person. The name, Misión San Fernando Rey, had been chosen by no less a personage than the viceroy of New Spain. Fr. Lasuén wrote of the occasion:[2]

> Señor Governor - My dear sir: I have the happy satisfaction to communicate to your Honor that today the solemn feast of the nativity of Mary Most Holy, on this suitable spot called by the natives Achois Comihabit, between the missions of San Buenaventura and San Gabriel, with the assistance of the Rev. Fr. Francisco Dumetz, destined for this mission, of the troops assigned to guard the new establishment, and in the presence of many pagans of both sexes and all ages, who manifested a good deal of pleasure and satisfaction, I blessed the water, site, and a large cross, which we planted and venerated. I concluded the function by solemnly singing the Te Deum. Having finished this in the same little arbor in which I celebrated the holy sacrifice of the Mass, I blessed the baptismal font and then baptized those offered.

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2. Lasuén to Diego Borica, September 8, 1797, quoted in Engelhardt, San Fernando, 10.

Thus, while the Indians crowded around to see the strange medicine of the white man, the good padres officially began the seventeenth mission.

After the ceremonies were over, Padre Dumetz, with what help he was able to get from the Indians, set to work with a will. There was much to be done, for buildings had to be erected and affairs put in order before the winter rains came. For awhile the enramadita, or little arbor, had to serve as a church, but by the end of November there was an adobe chapel, about twenty-two feet long, finished. The quarters of the guards and the store-room were completed in October. As for the priests' house, the one built by Señor Reyes was temporarily pressed into use.

The year 1797 marked a beginning in other ways. Many of the older missions contributed livestock and goods. Santa Barbara, San Buenaventura, San Gabriel, and San Juan Capistrano gave to the new establishment in all 310 head of cattle, 508 sheep, sixteen yoke of oxen, forty-six horses, and eighteen mules. This material beginning was small but sufficient to insure the success of the new mission. Religiously, the first year made a showing as well, inasmuch as there were fifty-eight neophytes enrolled, counting men, women, and children. That was the start from which Padre Dumetz and his successors built the prosperous and important Mision San Fernando Rey.

For many years building at the mission continued

steadily. By 1806 there were large granaries, several smaller structures for workshops, store-rooms, a priests' house of more than 120 feet long and eighteen feet wide, all of which were roofed with tiles. The main buildings were grouped in the form of a square. Furthermore, there were seventy adobe houses for the use of neophytes' families. One of the most important developments so far as the good padres were concerned was the dedication of the new church on December 7, 1806. The small temporary structure which had been built earlier was quickly outgrown. Inasmuch as there were 985 neophytes by that time at the mission, some need for the new construction was evident.

Almost as important were the improvements which came during the next decade. A corridor was run from the house of the padres to the church, thus making the whole more unified; also, an addition was built onto the priests' house from the "long buildings." When most of the other structures had disappeared or fallen into ruin a century later, the long building remained, and became popularly termed the mission. It took thirteen years to complete it after its beginning in 1812. In all it was more than 243 feet in length and fifty feet wide. This added greatly to the growing needs of the mission. Other improvements included two fountains, or reservoirs, and, in 1818, a soap factory as well as other buildings for the Indians at the missions and the surrounding rancho

outposts.

Such large scale operations were necessary, for the prosperous and successful mission had become a veritable town. By 1811, which was the peak year for the population of San Fernando, the mission was housing and caring for 1,081 neophytes.

To this must be added the usual number of whites, including the soldiers and their families. These communities had to be not only self supporting but able to aid the government upon demand - a large order indeed for a missionary endeavor! Artists, artisans, and farm laborers were necessary, and the only material was the Indian, recently snatched from savagery and thrust into a bewildering new life of civilization and strange religious concepts. Through his own inborn ability and the unending patience of the versatile padres, skill and new habits were acquired and alien standards accepted. The very picture of the Indians tilling the fields, herding the cattle, beating out iron wares on the anvil, weaving cloth, or engaging in any one of the other score of trades plied at the missions was a tribute to the success of the system and to the powers of leadership and administration possessed by the early padres.

A good description of the Indians who were incorporated into San Fernando Rey was given by the resident padres in 1813. At that time the Spanish government had the

bishop of Sonora sent out a questionnaire to the various missions. A fair understanding of the pagan Indians as interpreted by the missionary fathers can be gleaned from that report. In appearance, the Indians around San Fernando were not prepossessing. The men wore a woolen shirt, called coton, a loin cloth or taparabo, and a blanket. The women wore the same coton, a skirt and a blanket. All went barefoot. Once in the mission, however, they were more or less completely clothed, depending upon the materials on hand or which could be manufactured.

In character they were compassionate and generous, although somewhat vindictive. They showed mostly a supreme indifference to the Europeans. They did not have a language common to all, for there were three distinct idioms in the region. However, many had obtained at least a slight understanding of Spanish.

Their customs were particularly interesting. They used red and other pigments on their faces. They had a number of superstitions, among which were carrying a stick or stone in order to avoid fatigue while climbing hills, and taking salt-water and certain leaves in order to be successful in hunting deer and also to be immune to snake bites or wounds. Closely related to their superstitions were their ideas on medicine. They had certain herbs and preparations for curing practically every malady or injury.

They even resorted to bleeding in order to overcome feelings of oppression. Some of their remedies were somewhat barbaric, as for instance when they suffered pains in the side it was customary to mix red ants with water and apply them alive, externally, while at the same time striking themselves with nettles. Undoubtedly the pains in the side would seem an unimportant matter after that treatment!

There was no definite time set apart for meals while the Indian was in his wild state. Food was eaten when, where, and if it were found, or according to the inclination of the diner. Acorns, pine-nuts, sage and ialai, as well as deer, antelope, rabbit, squirrel, rat, dog, birds, mole, snakes - rattlesnakes were especially prized as food. All this of course was greatly changed with the coming of the mission. Not only was the diet altered, but the routine regularity of mission life completely did away with the haphazard, hand-to-mouth former existence. For the most part this was accepted with a good deal of relief by the savages. Indeed, it was often the promise of a regular and unfailing food supply which brought about a rapid conversion of the natives to Christianity.

Marriage customs differed widely from the European concept. There were no formal compacts or conditions agreed to by the two parties, but rather an ancient custom of purchase was practiced. The nervous suitor, either in person, or, if it all looked too formidable, through a sym-

pathetic friend, would present the father of his heart's desire with two or three dollars worth of beads. If the gift was accepted, then the fortunate youth would present to his betrothed a cape made from the fur of rabbit, otter, or lamb, and also a small basket. After that they were man and wife, ready to set up housekeeping. As a general rule, the Indian became more or less indifferent towards his chosen mate, although there always were a number whose love was not chilled by the prosaic tasks of securing rabbits and gathering acorns for an ever-enlarging establishment. In some ways the Indian was very generous - in the opinion of the padres too generous - for he would readily lend to needy friends not only money, beads, seeds, and other effects, but also his wife. All of which made the fast "until death do thee part" ideas of the padres concerning monogamy and fidelity incomprehensible and illogical to the Indian in his wild state.

Other interesting customs, ideas, and habits prevailed among the natives. Their primitive religion included a number of gods and goddesses. Belief in ghosts was unquestioned. When a member of the tribe died there were elaborate funeral ceremonies, after which the hut and everything which the deceased possessed were burned and his name never mentioned again lest he come back to haunt the people. These and similar deeply engrained ideas made the labor of

the missionaries exceedingly difficult. In fact, it seemed always a question to the padres whether their neophyte charges had completely accepted the new customs and religion. Even in the report mentioned above, the San Fernando friars, in answer to the thirty-fifth question, said:[3]

> The gentiles have no idea of eternity, of reward or punishment, of heaven, purgatory, and hell. The Christians (i.e. neophytes) say they believe these truths.

During the Mexican revolt from Spain, from 1810 to 1821, San Fernando Rey, as well as the other missions, found conditions increasingly difficult. Because of the disturbances in Mexico, the central government had great difficulty in getting funds and supplies to its outlying provinces, such as California. As a consequence, the missions were called upon for the necessary support. This brought about many difficulties and disputes. The friars protested vigorously against the heavy burden upon themselves and their charges, pointing out many instances of arbitrary tyranny on the part of the military. The government, on the other hand, felt that it was the duty of the missions patriotically to respond to the exactions. Furthermore, the officials began to feel more and more that the old religious system had outlived its usefulness, and that it was time to bring about secularization, or breakup of the missionary estates.

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3. Quoted in Engelhardt, San Fernando, 33; the complete report given in the above work, 26-33.

From about 1810 to 1820 Misión San Fernando Rey was at its height. Throughout the period there were more than a thousand neophytes at the mission, a proof of the religious success of the enterprise. Materially, also, San Fernando was at its best during that period. Cattle increased from about 7,000 head to 12,800, and that despite the constant slaughtering for hides, tallow, and meat. Sheep ranged from 2,800 to 7,800; goats, from ninety-two to 600; pigs from twenty-five to 250, reaching a peak in 1814; horses from 446 to 1,320; mules, from ninety-two to 340. The largest total for livestock came in 1819 when 21,745 were recorded. Agricultural products attained their highest point for the period in 1812 - 10,038 bushels of various produce. Wheat, barley, corn, beans, peas, lentils, garbanzos, and habas were cultivated at San Fernando. Wheat, corn, and beans, were the most important crops. The orchards and vineyards produced well. Many kinds of fruit and some olives were raised. Wine and brandy were made in quantities.

November 5, 1820, Fr. Francisco Gonzales de Ybarra was given control of the mission. Under him the most dramatic part of San Fernando Rey's history took place. He saw the mission reach its highest point and then dwindle almost to extinction. A vivid but rather uncomplimentary picture was left in 1829 by one who, it has been suggested, was per-

haps not altogether impartial:[4]

> St. Fernando was founded in the year 1797, and at this time was governed by the reverend Father Francisco Ybarra; a short, thick, ugly-looking old man, whose looks did not belie his character. In his own opinion no one knew so much as himself; nothing was so good as that which he possessed; and, being the head of his establishment, no one ever presumed to call his sentiments into question. The niggardly administration of this place, compared with the liberality and profusion of the other missions we had visited, presented a complete contrast.... At supper I was amused at the economy displayed in the arrangement of his table, which seemed perfectly in accord with the narrowness of his mind. A door, hinged at the bottom, which served to close a recess in the wall used as a cupboard, was let down upon the occasion; and on this was placed our repast. The dimensions were only sufficient to admit of four persons comfortably seated; and, when the number was larger, to accomodate (sic) them all, recourse was had to a dirty-looking bench which stood in one corner of the apartment.
>
> Distrustful of everyone who wished to purchase his tallow or hides, he had accumulated an immense amount in his storehouses, where many of the latter had been destroyed by the length of time they had remained deposited. The tallow he had laid down in large, arched, stone vats, of sufficient capacity to contain several cargoes.

In theory, after a certain length of time, the missions were to give way to secular authority and private

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4. A. Robinson, Life in California during a residence of several years in that territory. Comprising a description of the country and the missionary establishments, with incidents, observations, etc., 47-48.

ownership. Instead of any set rule as to time limit, the missions had been allowed to continue decade after decade because of the great economic and social services which they had rendered. After Mexican national independence, anything so feudal as the missions quite naturally drew a fire of criticism. For many years there was agitation to bring the whole system to a close. Many plans and programs were advocated. Governor Echeandia, in 1827, considered turning San Fernando into a pueblo, or town of Indians, and leaving the padre no other position than that of pastor. After that, for many years San Fernando was left little disturbed in its status until on August 9, 1834, Governor Figueroa took the inevitable step and issued the decree for secularization.

Lieutenant Antonio del Valle, in October, 1834, was commissioned to secularize the establishment. Father Ybarra turned over to the commissioner 20,000 dollars, mostly in hides and tallow, and 5,000 dollars in coin. Of the rest of the goods there was no complete inventory at that time. Soon the new order took effect. In November, 1834, San Fernando was made a parish of the second class with a priest's salary of 1,000 dollars. By May 25, 1835, Valle's status was changed to that of <u>mayordomo</u> at a salary of 800 dollars. In July, a short summary of the mission property was drawn up. There were found to be 32,000 vines and 1,600 fruit trees, as well as a large amount of goods, tools, implements, and other assets.

One difficulty arose to plague the administrators. In the confusion and changes of the times, some of the Indians tended to get out of control. Raids began to be made upon the mission livestock, and, according to a complaint by the officials, the culprits took refuge in the mission itself. Many skirmishes took place and some blood was spilled before order was restored. Under such conditions, Fr. Ybarra, thoroughly discouraged, retired temporarily to Sonora.

Valle, in 1837, was succeeded by Anastacio Carrillo, who in turn gave way to Captain Jose M. Vellavicencio in 1838. At that time an inventory of the property was drawn up which gave a total valuation of 156,915 dollars. In this was listed the debits and credits, buildings, house utensils, goods in the storehouse, wine and liquors, livestock, San Francisco rancho, grain, tannery, carpenter shop, blacksmith shop, soap works, mills, tools, tallow works, church, vestments, and library. The inventory gave some idea of the scale upon which San Fernando was operating.[5]

During the decade of the 1840's, events moved very rapidly indeed around San Fernando. It was upon the plains before the mission that some of the most significant scenes in the fast moving drama of political events occurred. The revolutionary period of early California came to a climax

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5. H. H. Bancroft, History of California, III, 645-648.

within that period of time, and the part of the mission valley called Cahuenga was the place where the highest and the lowest points in the fortunes of Californians as a separate entity took place. There the Mexican government was expelled, and only a short time later an invading general representing what at that time was a foreign power, the United States, forced the capitulation of the proud Californians.

Another event which happened in the 1840's focused attention on the fast dying mission, and that was the discovery of gold upon one of its outlying ranchos. In March, 1842, the story has it, a man, while out searching for stray cattle, stopped to rest under an oak tree. While there he happened to dig up some wild onions with his knife, and to his surprise found a gold nugget enmeshed in the roots. The news of the strike spread rapidly, and miners began flocking to the diggings from as far away as Sonora. Over a distance of about five miles men soon were busily panning the pay dirt, which despite the inadequate supply of water was yielding on an average of two dollars a day to each miner. These activities continued for four years. The gold was found on the San Francisco rancho which had been acquired by the Valle family, and, therefore, was of no direct benefit to the rapidly declining San Fernando Rey.[6]

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6. Bancroft, California, IV, 297.

The next great step towards secularization of San Fernando came on December 5, 1845, when Governor Pío Pico leased the mission to his brother, Andrés Pico, and Juan Manso. On January 1, 1846, Fr. Ordáz, who was resident at San Fernando, drew up an inventory for the lessees which showed graphically the extent to which the former wealth had melted away. Only seventy-four head of cattle remained where in 1842 there had been more than 7,000. Other things were more or less in proportion. In all, the total value of the livestock, tools, and furniture was estimated as a little more than 2,100 dollars. That was a far cry from the estimate given eight years previously when livestock alone was valued at 53,854 dollars.

The lease was soon superseded, however, by a sale in June to Eulógio Celís for 14,000 dollars in order to obtain money for the use of the government in maintaining itself and defending California against the invasion of the United States. The document is very interesting in its stipulations and regulations, showing exactly what was the nature of the title obtained and how the ex-neophytes were treated:[7]

> The undersigned, Constitutional Governor of the Department of the Californias, in virtue of the powers vested in him by the Supreme Government of the Nation, and in virtue of a degree of the Honorable Departmental

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7. United States District Courts, Northern and Southern Districts of California, Claims for mission lands, brief for the United States, 89-90; translation, 91-92.

Assembly, of April thirteenth of the present year, to raise means for the purpose of maintaining the integrity of the territory of the department, for the sum of fourteen thousand pesos which he receives, sells to Don Eulogio de Celis, and his heirs, the Ex-Mission of San Fernando with all its properties, estates, and lands, and inventory, with the exception of the church and all its appurtenances which remain for public use, and he to provide what is necessary for divine worship.

The above mentioned purchaser obligates himself to maintain on their lands the old Indians on the premises during their lifetime, with the right to make their crops, with the only condition that they shall not have the right to sell the lands they cultivate....

The above mentioned purchaser binds himself to assure to the Father Minister of the aforesaid establishment his subsistence and clothing with all possible decency, together with the rooms assigned to him or those he justly requires....

And in testimony hereof the undersigned and the Secretary of the Department grant this authority and affix their signatures, in the City of Los Angeles, on this ordinary paper for want of stamped paper, the seventeenth of June, one thousand eight hundred and forty-six.

PIO PICO

José Matias Moreno, Sec'y. rru tem.

Legal title had to be reconfirmed under the new régime of the United States. During the struggle San Fernando had even served as quarters for troops. Frémont himself has stayed there for a short time with his men just before receiving the surrender of the Californian forces.

With the coming of more settled times, a land commission was appointed to unravel the difficulties involved in the many titles. In this period a remnant of what was once the great and prosperous Misión San Fernando Rey was returned to the Catholic Church. On February 19, 1853, Bishop José Sadoc Alemany filed claim with the land commission for the buildings and the immediate grounds of all the missions. By 1858 the title at San Fernando was completely cleared, awarding to the church the buildings and 76.94 acres of land.

For many years the mission remained one of the most impressive structures in the district. In 1853 the mission and its grounds were described as being very striking. There were groves of olive, lemon, and orange trees inclosed by adobe walls. The long building was plastered and whitewashed, and the floor was paved with tiles. Before the building was the remains of one of the fountains, adding a somewhat forlorn and deserted air to the whole. Some activities continued at San Fernando, however, for wine, brandy, and olive oil were produced in commercial quantities.[8]

Slowly but steadily the old structures fell into ruin. By 1900 the main building, or long building, was still kept in fair repair and used as a ranch house by the Porter

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8. Engelhardt, San Fernando, 119-121.

Land and Water Company. A great change indeed had come. Grain was raised right up to the very doors; different parts of the structure were used as bunkhouse, office, storerooms, stables, kitchen and mess hall, while a chapel had been formed, of another part, where services were held each Sunday by a priest who rode over from the nearby town of San Fernando. It always gave visitors something of a shock to see the Chinese cook come out of the kitchen and belabor a large mission bell to call the ranch hands to dinner!

Most sadly neglected was the old church. Tiles from its roof and other materials were taken away for repairs and improvements elsewhere. The structures connecting the church with the main part were little more than piles of adobe mud, melted by the winter rains which fell, unchecked by adequate roofing, on the absorbent brick.[9] Agitation to preserve the historic ruins began actively as early as 1896 under the impetus of Charles F. Lummis, a newspaper editor. The next year, 1897, the Landmarks Club, of which Lummis was the founder and president, succeeded in installing a temporary roof on the church in order that the centennial might be satisfactorilycelebrated. This improvement lasted but a short time. Finally a "Candle Day"

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9. C. F. Carter, Missions of Nueva California, 136-143.

was held on August 6, 1916, at which time several thousand candles were sold at a dollar each, and the money used to re-roof the church and strengthen the walls.

In 1914, a traveler described the mission as follows:[10]

> The structure is long, low, solid looking - utterly devoid of artistic touches save the graceful, rounded arches of the long 'portello' and the simple grille-work of wrought iron which still covers a few of the windows - work of the rude artisans of a hundred years ago. The old tile roof is the glory of San Fernando; the huge, semi-circular tiles are time-stained to a color combination to delight the eye of an artist. Moss greens, silver greys, dull reds, and soft browns predominate, blending together in a most pleasing manner. Back from the mission extends a row of old-time living apartments, now little more than shapeless heaps of adobe, while the huge church, a little farther to the rear, seems approaching the final stages of dissolution. It was once a massive structure, built as well as loving care and endless industry could do - walls five or six feet in thickness, bound together at the top by heavy beams perhaps fifteen inches square. Traces of the ancient decorations appear, though they are nearly effaced by the weather, to which they have been long exposed. Apparently the earthquake (1812) began the work of ruin and long neglect has done the rest.
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> One enters the church with some trepidation, for it seems as if the cracked and crazy structure may stagger to a shapeless ruin at any moment. What a pity that the material of California's missions was not enduring stone, like English abbeys, rather

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10. T. D. Murphy, On sunset highways, a book of motor rambles in California, new and revised edition, 76-77.

> than the quickly disintegrating adobe! Back of the church is a pathetic little burying ground where wooden crosses and simple memorials indicate that the present parishioners of San Fernando are the poorest of the poor, - probably a few wretched Mexican families such as the one we found in charge of the mission.

After many years of haphazard care, the mission buildings were placed in the charge of the Oblates of Mary Immaculate, a religious order which largely concerned itself with the poorer districts. At the same time the parish of San Fernando was turned over to the order. The new padres not only cared for the spiritual welfare of their congregations, but also undertook the material restoration of the mission. Roofing was repaired and the structures in general improved and restored as rapidly as inadequate funds allowed.

At present (1936), the large building is in a fair state of preservation, and the church has been renovated. The connecting rooms, which were once workshops, are now shapeless mounds of adobe, and only by the greatest stretch of imagination can they be visioned as the busy hives of industry they once were. Few other reminders are left. Two large palms and some olive trees serve as a link to the past, while the long-neglected graveyard gives mute evidence of the numbers of Indian neophytes who labored and died at San Fernando.

Misión San Fernando Rey de España has served its

purpose. A great and flourishing civilization has sprung up in what was a cactus strewn waste, which the padres brought under cultivation. The need for the mission system as a pioneer institution has long since gone, and San Fernando, which after all was built largely to bridge the gap between the two older establishments of San Gabriel Arcángel and San Buenaventura, has perforce faded into a venerable memory.

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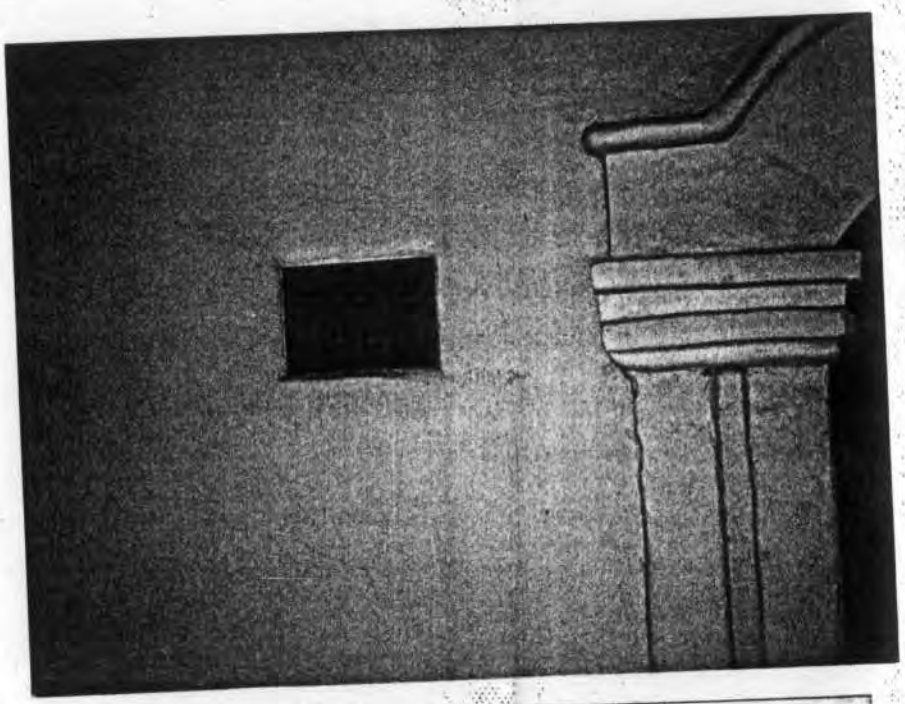
MISSION
1797
DECLARED
HISTORIC CULTURAL MONUMENT NO.23
BY THE


FERMIN FRANCISCO DE LASUEN
PRESENTED BY
PARLOR

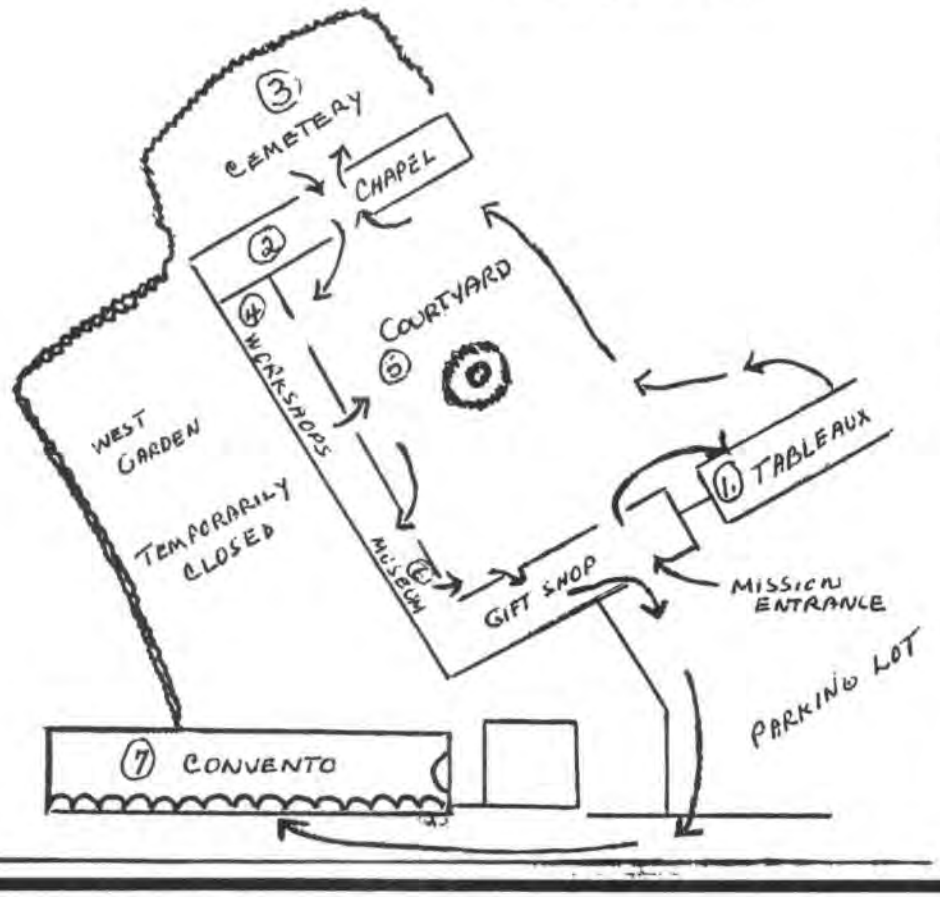

Old Mission
San Fernando
Rey de España
1797




SAN FERNANDO MISSION

SHC #157

Mission San Fernando
California



Mission San Fernando was founded by Padre Fermin Lasuen in 1797. Lasuen founded 9 of the 21 California Missions, succeeding Padre Serra as Presidente of the Mission Chain.

← To San Diego Freeway / San Fernando Mission Blvd. / To Golden State Freeway →

1. SORROWFUL MYSTERIES - Life size tableaux of the Crucifixion of Our Lord.

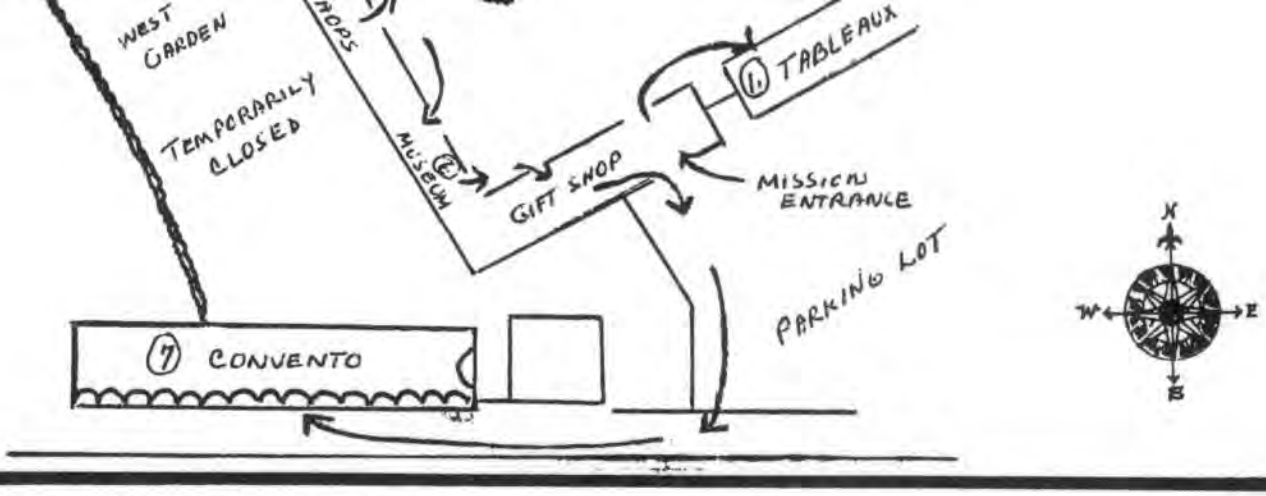
2. FOURTH MISSION CHAPEL - Exact replica of the third chapel which was built from 1804 to 1806 - 166 by 35 feet - walls 7 feet thick at base tapering to 5 feet at top - unusual wall niches- Indian decorations - old paintings. Mission San Fernando, between 1797 and 1846 listed 3188 baptisms, 842 marriages and 2449 burials, 7 of which are inside the chapel near the Communion rail.

3. CEMETERY - Final resting place for over 2400 Mission Indians and early settlers.

4. WORKSHOPS - Blacksmith, saddlery, carpentry, pottery and weaving room.

5. FOUNTAIN AND EAST GARDEN - Large flower-shaped fountain, copied from original in Cordova, Spain - palms, banana trees, cacti and seasonal flowers- this quadrangle (in Mission days completely enclosed) originally served as a work area for the Indian craftsmen.

6. MUSEUM - Pictorial history of the Mission - display of Indian crafts - pottery, baskets, weapons, "santos" - Mission trade and commerce display.



← To San Diego Freeway / San Fernando Mission Blvd. / To Golden State Freeway →

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7. CONVENTO - Thirteen years in construction, 1810-1822 - 243 by 65 feet - famous corridor of 21 Roman arches - four foot adobe walls - Moorish arches on interior windows and doors -original iron grills - curious Indian wall decorations - padres' quarters - reception rooms -magnificent "Escaray Collection" of 17th century hand carved gold leaf altars, art treasures, paintings, pipe-organ, old vestments, assortment of Spanish, Mexican and Indian furniture - dining room - kitchen - huge fireplace for smoking meats - wine cellar and vat where grapes were pressed under foot.

The Mission ranch (which was 121,542 acres) produced in 1806, 12,868 bushels (mostly corn and wheat) - in 1819 her live stock, principally cattle, sheep and horses, numbered 21,745 - the Mission became a thriving industrial center supplying tallow and soap, hides and shoes, cloth and blankets, wine, olive oil and iron work to other Missions and to the Presidios.

THE BELLS OF SAN FERNANDO:- a 35 bell carillon - electronically controlled -rings hourly between 10 A.M. and 6 P.M. - "Cantico del Alba", an ancient Indian melody.

SURVEY
of
California Registered Historical Landmarks

19-186558

Name BRAND PARK (MEMORY GARDEN) Number 150

County Los Angeles

Location 15174 San Fernando Mission Blvd, Mission Hills (San Fernando)

Type of Plaque None

Condition of Plaque

Condition of Base

Condition of Surroundings Excellent

Wording on Plaque

Are there Highway Directional Signs? No

If so, where? should be on I-5 at San Fernando Blvd.
and at site

Remarks:

Private plaque on city park property.

Submitted by J. Arbuckle Date 6-11-80

19-186558
P-19-033644 ✓

NAME BRAND PARK (or) MEMORY GARDEN

COUNTY LOS ANGELES

APPROVAL COMMITTEE

Aubrey Drury
Francis P. Farquhar
DeWitt V. Hutchings
Robert E. Cowan
Carl I. Wheat
Leroy A. Wright
Herbert E. Bolton

Orra E. Monnette

Wm. E. Colby, Chairman,
STATE PARK COMMISSION

[illegible]
DIRECTOR, DEPARTMENT NATURAL RESOURCES

REGISTERED LANDMARK NUMBER 150

DATE 1-11-35

THIS PAGE RESERVED FOR COMMENTS BY THE APPROVAL COMMITTEE

Your attention is directed to a letter dated February 7, 1934, signed by J. J. Hassett, Secretary of Los Angeles Department of Parks, granting permission to register this landmark. (Letter attached)

19-186558

APPLICATION FOR REGISTRATION OF HISTORICAL POINT OF INTEREST

NAME OF HISTORICAL POINT Brand Park also called Memory Garden

LOCATION San Fernando Boulevard, - opposite the monastic buildings of Mision San Fernando Rey de España, California

NAME OF OWNER City of Los Angeles, Park Department in control.

Street 200 North Spring Street

City Los Angeles, California

HISTORY AND DESCRIPTION

Brand Park, also called Memory Garden, with an area of six acres is located on San Fernando Blvd., opposite the monastic buildings of Mision San Fernando Rey de España. It is a part of the original land grant given to mission San Fernando. In 1846 Governor Pio Pico asked permission to sell Rancho San Fernando, then known as Rancho Ex- Mission, that he might have funds wherewith to equip an army to defend California against the American invasion. He sold the entire ranch described as including 121,000 acres extending from mountains to mountains and across the valley of San Fernando, for the sum of $14.000, a trifle less than eleven and one half cents per acre. The purchaser was Eulogio de Celis. Later this ground and other surrounding acreage became the property of the Mission Land Company. The Company presented Brand Park to the City of Los Angeles. The transfer was made Nov. 4, 1920. A Sun Dial occupies the center of the grounds and bears the inscription : " Sun Dial presented by San Fernando friends in appreciation of Eva Hettinger, thru whose initial efforts this historic site was secured for the park. July 26th 1924. " The grounds were used in mission days by the guards and

HISTORY AND DESCRIPTION (Continued) Brand Park -- Memory Garden

Indian workmen. During the American occupation of California, it was used as a camp site by Lieut-Col John C. Fremont and his soldiers Jan. 12, 1847, the night before the signing of the Treaty at Campo de Cauenga.

Brand Park has many features of great interest, - the original old fountain, the great stone oven used for roasting meats and rendering tallow in mission days, a splendid statue of Fr. Junipero Serra, by Sallie Farnun of New York, seven memorial benches, avenues of memorial trees, various old garden plants, shrubs and flowers brought by the Park Commissioners from the gardens of the old missions throughout California, two ornamental seals done in terra cota and placed over the entrance arches in memory of Fremont and Pico, signers of the Treaty of Cauenga. These seals represent the great Seal of the United States and the Seal of Spain. They were the gift of Eschscholtzia Chapter D.A.R. and unveiled May 31, 1924. The most unique feature is the great Star Fountain that formerly was located away out in the mission fields. The fountain was built a century ago by the Indians under direction of the padres and is a copy of the one at Cordova, Spain. It belonged to L.C.Brand who gave it to the Park and removed it to its present location at his own expense. It is a huge mass of cement, brick and tile weighing about fifty tons, On the 4th of July 1933, Mr. Brand presented a receipted bill of sale to the City of Los Angeles for the fountain, arriving for the ceremony in an aeroplane. The Park is bordered by rows of pepper trees placed there by the women of San Fernando. Mr. Frank Shearer, park superintendent furnished the young trees. He raised them from seeds grown from the famous mother pepper tree that grows in the quadrangle of the Mision San Luis Rey de Francia. There is a historic avenue of memory trees planted by many different organization on March 9, 1934, under the leadership of the Division of California History and Landmarks of the Federated Women's Clubs Mrs. A.S.C.Forbes, Chairman. They commemorate the deeds of the American officers who led the army of occupation that took California for the U.S.A. Each tree bears a small bronze marker with the name of the person thus honored. Names well known in history : Sloat, Stockton, Fremont, Kearny, Gillespie, Hull, Montgomery, Reading, Russell McLane, Kit Carson, Beale, Mrs. Wood and Griffin, Mauntleroy, Duvall, Revere, Foler, Higgins, John Brown, President James Knox Polk and many others, thirty - eight in all. These trees are olive trees grown from the original olive orchards of the San Fernando Mission.

One tree of great interest is a distinctive American tree grown from an acorn from the " Charter Oak " tree of Hartford Connecticut. When the tree fell in the great storm of 1856 some acorns were salvaged. The father of Mrs. J.C.Maclay of San Fernando, saved several and raised this tree. Mrs. Maclay presented the historic oak tree to Brand Park for its Garden of Memories.

Mr. William Bowen, the late Mrs. Martha Nelson McCann, Mr. Frank Shearer and many others created this historic and unique Park.

written by Mrs. A.S.C. Forbes Pres
El Camino Real Association
335 W. 31st St.
Los Angeles
2/10-1934

19-186558

REFERENCES TO BOOKS, RECORDS AND OTHER AUTHORITIES SUSTAINING THESE FACTS

Public Records
Mission Land Company
L. C. Brand
Park Commissioners of Los Angeles
Mrs. E. C. Maclay
Records of Division of California History and Landmarks of the Federation of Women's Clubs

ARE PICTURES ATTACHED? Yes

IS STATEMENT OF OWNER ATTACHED? Yes, in letter from the Park Commission. herewith attached

SIGNED Mrs. A. S. C. Forbes, Pres. El Camino Real association

CITY Los Angeles, California

COUNTY Los Angeles

DATE 2/10, 1934

(This form when filled out completely is to be sent to the Official Approval Committee, care of the California State Chamber of Commerce, Ferry Building, San Francisco.)

19-186558

STATEMENT OF PROPERTY OWNER

TO THE

STATE PARK COMMISSION

AUTHORIZING THE NUMBERING AND REGISTRATION OF HISTORICAL POINT OF INTEREST

The State Park Commission is hereby authorized to number and register Brand Park, San Fernando, California, as a point of historical interest,

signed Board of Park Commissioners

CALIFORNIA HISTORICAL LANDMARKS SERIES

Edited by Vernon Aubrey Neasham

BRAND PARK or MEMORY GARDEN

Registered Landmark #150

by

Lois Ann Woodward

for

State of California, Department of Natural Resources

Division of Parks

Berkeley, 1936

Written under auspices of Works Progress Administration
District #8, Project #65-3-3218, Symbol #1873

BRAND PARK or MEMORY GARDEN

Brand Park, or, as it is often called, Memory Garden, had its origin in a desire to recapture to some extent the romantic, the colorful, the picturesque atmosphere of the early California missions. The missions, indeed, formed one of the most important elements of the Spanish occupation. Established more than a century ago by the Spanish padres, these institutions, through the constant effort and hard work of the spiritual pioneers and their Indian converts, became the first centers of education, industry and civilization in California - and this despite the many difficulties which challenged their success in an uncivilized land. With the secularization of the missions came the passing of their heyday. The mission lands usually became privately owned, subdivided, and absorbed into the communities which grew up and expanded about them. Many of the missions were abandoned and left in the not too kind hands of time and the elements; so that, unless measures were employed for their restoration, they rapidly fell into ruin, becoming only memories. This was the fate which overtook the Misión San Fernando, Rey de España, founded September 8, 1797,

by padre Fermín Francisco de Lasuén.

The site on which Brand Park is located was part of the original land grant of Mision San Fernando. With the assumption of the governorship of California by Pío Pico and the secularization of the missions, San Fernando was leased on December 5, 1845, to the governor's brother, Andrés Pico, and Juan Manso for nine years for the sum of $1,120 annually.[2] When Pío Pico sold the lands of all the missions for the defense of California against the Americans, Rancho San Fernando was sold to Juan Celís for $14,000. In 1854, at the expiration of the lease of Don Juan, Andrés Pico bought a half interest in the property. Here he herded his cattle on the range, and maintained the old mission building as a country home, which he occupied at intervals during his public career.

In 1851, the northern half of the ranch was purchased by Senator McClay and his two partners, George K. Porter and B. F. Porter of San Francisco. The southern part had been purchased previously by Isaac Lankershim.[3]

The seven acres of the former mission lands, which

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1. H. E. Rensch, Historic spots in California, the southern counties, 56.
2. Fr. Z. Engelhardt, San Fernando Rey, the mission of the valley, 64-65.
3. H. E. Rensch, Historic spots, 56-57.

were converted into Brand Park, lie between Brand Boulevard and Mission Street, opposite the buildings of the old mission in San Fernando. This land was presented to the city of Los Angeles by the Mission Land Company at the solicitation of the citizens of San Fernando, and was dedicated to the purpose of a park November 4, 1920. However, because of its distance from the city, the park commission did nothing to improve or develop the park until the spring of 1921.[4]

In order to recreate the old atmosphere of the missions, it was decided to make a "memory garden," typical of those developed by the Spanish missionaries in California, and in which would be preserved flowers and plants from mission gardens, as well as interesting relics on the grounds. The Spanish padres planned their gardens in California according to the ideas of landscaping and design brought with them from Spain and the Old World. Before plans for the "memory garden" in Brand Park were drawn up, a tour of the California missions was made in order to study the landscaping and the architectural designs used in mission gardens. As a result of this trip of inspection, "the sacred garden" at Santa Barbara was chosen as a model, because it was laid

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4. M. N. McCann, "Memory Garden, Brand Park," in Grizzly Bear, May 1924, XXXV, 205:218. San Fernando is now included in the city of Los Angeles.

out in geometrical design and was recognized as the only example of a mission type garden in existence. Hence, the landscaping of Brand Park assumed the formal arrangement generally seen in Europe, with diagonal, right angle, semi-circular and oval paths. The intersections of the paths were made into flower beds.

The Spanish padres, whose missions were so well known for their gardens, were usually great flower lovers and adept in their culture. Native flowers of Spain and Mexico as well as California were cultivated. Hence, in the "memory garden," many varieties of flowers were planted, including cuttings of plants, vines and shrubs obtained from each of the California missions.

Native trees and flowers of California were given a predominant place in Brand Park. In the central part were planted such specimens as carpenterias, palo verde, pen-stemmons, bush nimbulus, poppies, yellow tree poppy, matilija, hollies, sage and lupins. Native California cacti and ferns were also given space in two other sections of the garden. A pool was made in a bed of the ferns, in which tiles obtained from various missions were utilized; the name of the mission from which it came was cut into the tile and filled with bronze metal.

Plants, direct descendants of those brought to California from Mexico and Spain, were especially prized

and cultivated. The outer borders of the garden were cevoted to many of these. At the north and south ends of the park gate, pergolas of concrete standards in the mission style, topped with hewn timbers, were erected. Grapevines obtained from cuttings at Santa Clara Mission, which were grown from the first planted there, were trained along these pergolas. Famous roses, the rose of Castile - an old fashioned moss rose loved by the people of Spain - and the equally prized "seven sisters" obtained from Monterey were also trained along the pergolas. Other climbing plants given a place along the pergolas included jasmine, begonias, passion vines and solanums.

Outside the pergolas were oleander, pomegranate, guava, lime, lemon, orange, fig, and avocado trees. The whole park was surrounded by pepper trees, which had their origin in trees grown at San Luis Rey Mission.[5]

Besides the great varieties of plants, shrubs and trees which were grown to fill the garden with living memories of early mission days, other items of historic interest were commemorated. The mission of San Fernando was used as a camp site by Lieutenant-colonel John C. Frémont and his

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5. M. N. McCann, "Memory Garden, Brand Park," in Grizzly Bear, May, 1924, XXXV, 205: 18-20.

soldiers in January, 1847, just prior to the signing of the treaty at Camp de Cahuenga.[6] In honor of Colonel Frémont and Pío Pico as signers of the Treaty of Cahuenga, two seals in terra cotta, representing those of the United States and Spain, were placed over the entrance arches of the park. They were gifts of the Eschscholtzia Chapter D.A.R., and were unveiled on May 21, 1924.[7]

A double row of olive trees, planted to form a central path in the "memory garden," were dedicated to American army officers. Those officers headed the army of occupation in the war by which California became a part of the United States. The trees had grown from cuttings of the original olive orchards for which San Fernando Rey was famous in the mission days. They were planted March 9, 1924, by various orders under the leadership of the Division of California History and Landmarks of the Federated Women's Clubs. They were dedicated to the following men: Commodore John Drake Sloat, Commodore Robert Field Stockton, Robert Carson Duvall, Doctor William M. Wood, Captain Samuel F. Dupont, Captain T. B. Montgomery, Lieutenant J. W. Revere, Edward F. Beale, Captain J. B. Hull, Kit Carson, Colonel

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6. C. J. Prudhomme and T. E. Keaveney, "Early days in California. I. Conquest of the Pueblo de Los Angeles," in Grizzly Bear, February, 1917, XX, 118:4, 14.
7. H. R. Forbes, Brand Park, also called Memory Garden. 2.

John C. Frémont, Colonel John D. Stevenson, Lieutenant-colonel Phillip St. George Cook, Doctor John F. Griffin and others. There were thirty-eight trees altogether.[8]

The great stone soap vats built during mission days were preserved in a part of the park. However, the most interesting of the mission ruins of this sort were the fountains, which were built by the missionaries and the Indians as a part of the mission irrigation system.[9] The larger one, built in 1812, was reproduced from a fountain in Cordova, Spain. It was constructed of cement, brick and tile in the form of an eight-pointed star, and had a capacity of 1,600 gallons. Its diameter was thirty feet and its weight about fifty tons. At the time the park was built, the fountain was located on private property. Mr. Brand, the owner, later donated it to the park. It was moved three hundred feet from its original location in the mission fields, and was relocated in the park near the smaller fountain with which it had been connected. On July 6, 1922, the fountain was presented to the City of Los Angeles and dedicated at ceremonies attended by many old pioneers.[10]

In the central circle of the park a sun dial was

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8. Forbes, Brand Park, 2.
9. Rensch, Historic Spots, 57.
10. McCann, Memory Garden, 18.

placed, on July 26, 1924. It was given in honor of Eva Hettinger, who was instrumental in obtaining the property for the park site. Near it was placed a statue of Friar Junípero Serra sculptured by Sallie Farnum of New York. Here also were located seven memorial benches, each dedicated to a person prominent in California History.[11]

The people of Los Angeles and San Fernando, through their sentiment and reverence for the old mission San Fernando, have created thus, in Brand Park, an interesting spot in which the historic reminiscences of mission days abound. The ruinous hand of time has been thwarted, and the beauties of at least one part of bygone days have been preserved.

11. Forbes, Brand Park, 2.

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19-186558

PHOTOGRAPHS

Brand Park -- Memory Garden

19-186558

19-186558

19-186558


FRA JUNIPERO SERRA
1713-1784
FOUNDER OF THE CALIFORNIA MISSIONS
PRESENTED TO
THE CITY OF LOS ANGELES
BY THE
SAN FERNANDO MISSION LAND COMPANY
1924

19-186558


THIS
GREAT SEAL OF SPAIN
PRESENTED HOW BY
ESCHSCHOLTZIA CHAPTER D.A.R.
IN MEMORY OF
GEN. ANDRES PICO


"THIS FOUNTAIN"
A REPLICA OF ONE IN CORDOVA, SPAIN, WAS BUILT
ABOUT 1812-14 AND WAS PART OF THE WATER
SYSTEM IN SAN FERNANDO MISSION GARDEN.
100 YEARS LATER THIS GARDEN WAS THE
PROPERTY OF MR. LESLIE C. BRAND, WHO DONATED
A PART OF IT TO LOS ANGELES FOR A PARK.
WHEN THE LOS ANGELES PARK DEPARTMENT
UNDERTOOK TO RESTORE THE MISSION GARDEN
IN BRAND PARK, THIS FOUNTAIN WAS PRESENTED
TO LOS ANGELES BY MR. BRAND. IT WAS MOVED
BODILY FROM ITS FORMER LOCATION A DISTANCE
OF 300 FEET TO ITS PRESENT SITE, JULY 4 1929


THIS
GREAT SEAL OF THE UNITED STATES
PRESENTED HOW BY
ESCHSCHOLTZIA CHAPTER D.A.R.
IN MEMORY OF
LIEUT. COL. JOHN C. FREMONT

BRAND PARK OR MEMORY GARDEN

(Summary by Lois Ann Woodward)

The seven acres of ground which constitute Brand Park lie between Brand and Mission boulevards, opposite the buildings of Misión San Fernando. It was originally a part of that mission land grant. The land was presented to the city of Los Angeles for a park, November 4, 1920, by the Mission Land Company. In order to recreate the atmosphere of the old missions in the park, it was decided to make a "Memory Garden," typical of those developed by the Spanish missionaries in California and in which would be preserved flowers and plants from mission gardens as well as interesting relics which remained on the site. The "sacred garden" at Misión Santa Barbara was chosen as a model because it was laid out in geometrical design and was recognized as the only example of a mission type garden in existence.

In the "Memory Garden" many varieties of flowers were planted, including cuttings of plants, vines and shrubs obtained from each of the California missions. Native California trees and plants, including carpenterias, palos verde, penstemmons, bush nimbulus, poppies, matilia, holly, sage, lupin, cacti and ferns, were given prominent places. A pool was made in a bed of the ferns, in which tiles obtained from the California missions were placed; the name of each mission

was cut into the tiles and filled with bronze metal. Grape vines, roses and other climbling plants were trained along the pergolas at the north and south ends of the park gate. The pergolas were made of concrete standards, in mission style, topped with hewn timbers.

Misión San Fernando was used as a camp site by Lieutenant-colonel John C. Frémont and his soldiers in January, 1847, just prior to the signing of the treaty at Campo de Cahuenga. In honor of Colonel Frémont and Pío Pico as signers of the treaty of Cahuenga, two seals in terra cotta, representing those of the United States and Spain, were placed over the entrance arches of the park. They were gifts of the Eschscholtzia Chapter D.A.R. and were unveiled May 21, 1924.

Thirty-eight olive trees from the original olive orchards of Misión San Fernando Rey were planted and dedicated to the officers who headed the American army during the American conquest of California.

The great stone soap vats built during mission days were preserved in a part of the park, as were the fountains built by the friars and the Indians as a part of the irrigation system. The larger vat, built in 1812, was reproduced from a fountain in Cordova, Spain. It was constructed of cement, brick and tile in the shape of an eight-pointed star, and had a capacity of 1,600 gallons. Its diameter was thirty feet and

its weight about fifty tons. When the park was built it was located on private property. Mr. Brand, its owner, donated it to the park and it was relocated there near the smaller fountain with which it had been connected. It was presented to the city at dedication ceremonies July 6, 1922.

In the central circle of the park a statue of Friar Junípero Serra was erected. Near it, seven memorial benches, each dedicated to a person prominent in California history, were placed. In Brand Park the people of Los Angeles and San Fernando have made the colorful and picturesque atmosphere of the California missions live again.

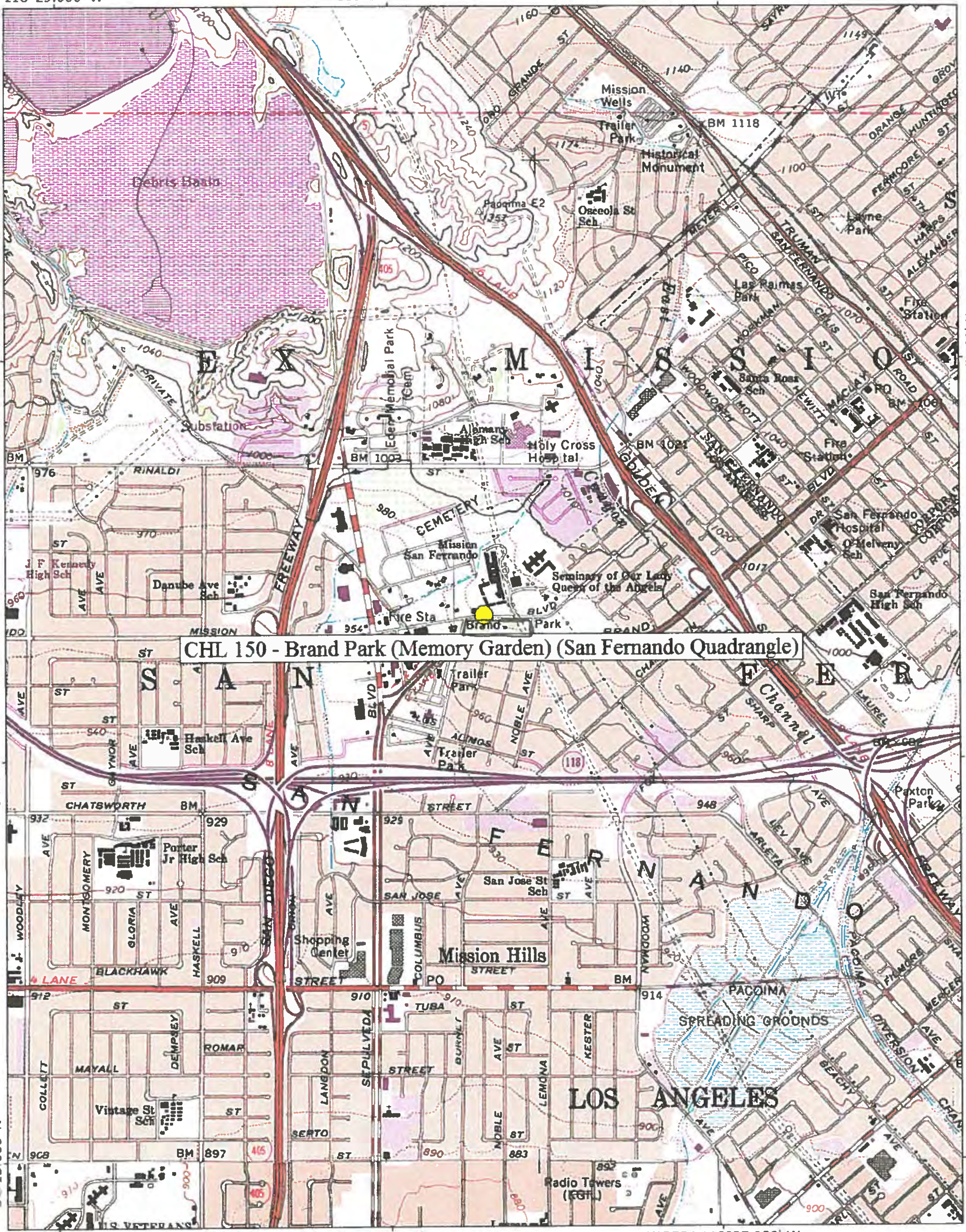
BRAND PARK OR MEMORY GARDEN #150

Brand Park, also called Memory Garden, was given to the city for the purpose of a park November 4, 1920. It is a part of the original land grant of Mision San Fernando. The colorful and picturesque atmosphere of the early California missions is preserved in Memory Garden.

19-186558

TOPO! map printed on 10/13/05 from "LA.tpo" and "Untitled.tpg"

118°29.000' W 118°28.000' W WGS84 118°27.000' W



34°17.000' N 34°16.000' N 34°15.000' N

118°29.000' W 118°28.000' W WGS84 118°27.000' W

TN MN 13½°

0 1/2 1 MILE

0 1000 FEET 0 500 m 1000 m

Printed from TOPO! ©2000 National Geographic Holdings (www.topo.com)

No. 150 Brand Park (Memory Garden)
Brand Park, also called Memory Garden, was given to the city for a park November 4, 1920. It is a part of the original land grant of Mission San Fernando de Rey de Espana, and the colorful and picturesque atmosphere of the early California missions is preserved in Memory Garden. Located at 15174 San Fernando Mission Blvd, Los Angeles
19-186558

APPENDIX D

NATIVE AMERICAN CONTACT PROGRAM

(*CONFIDENTIAL)*

NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710

March 21, 2018

Jane Hauptman
Los Angeles Department of Water and Power

Sent by E-mail: jane.hauptman@ladwp.com

RE: Proposed City Trunk Line North Project, City of Los Angeles; San Fernando and Van Nuys USGS Quadrangles, Los Angeles County, California

Dear Ms. Hauptman:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties. Please note that the intent of the reference codes below is to avoid or mitigate impacts to tribal cultural resources, as defined, for California Environmental Quality Act (CEQA) projects under AB-52.

As of July 1, 2015, Public Resources Code Sections 21080.3.1 and 21080.3.2 **require public agencies** to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose mitigating impacts to tribal cultural resources:

> **Within 14 days** of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section. (Public Resources Code Section 21080.3.1(d))

The law does not preclude agencies from initiating consultation with the tribes that are culturally and traditionally affiliated with their jurisdictions. The NAHC believes that in fact that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

In accordance with Public Resources Code Section 21080.3.1(d), formal notification must include a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation. The NAHC believes that agencies should also include with their notification letters information regarding any cultural resources assessment that has been completed on the APE, such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

   - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - If the probability is low, moderate, or high that cultural resources are located in the APE.
   - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE; and
   - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measurers.

     All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure in accordance with Government Code Section 6254.10.

3. The results of any Sacred Lands File (SFL) check conducted through Native American Heritage Commission. A search of the SFL was completed for the project with negative results.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the case that they do, having the information beforehand well help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst
(916) 373-3714

Native American Heritage Commission
Tribal Consultation List
Los Angeles County
3/21/2018

Fernandeno Tataviam Band of Mission Indians
Jairo Avila, Tribal Historic and Cultural Preservation Officer
1019 Second Street, Suite 1 — Tataviam
San Fernando, CA, 91340
Phone: (818) 837 - 0794
Fax: (818) 837-0796
jairo.avila@tataviam-nsn.us

Fernandeno Tataviam Band of Mission Indians
Rudy Ortega, Tribal President
1019 Second Street, Suite 1 — Tataviam
San Fernando, CA, 91340
Phone: (818) 837 - 0794
Fax: (818) 837-0796
rortega@tataviam-nsn.us

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 — Gabrieleno
Covina, CA, 91723
Phone: (626) 926 - 4131
admin@gabrielenoindians.org

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 — Gabrieleno
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 — Gabrielino
Los Angeles, CA, 90012
Phone: (951) 807 - 0479
sgoad@gabrielino-tongva.com

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Chairperson
P.O. Box 490 — Gabrielino
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com

Gabrielino-Tongva Tribe
Charles Alvarez,
23454 Vanowen Street — Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

San Fernando Band of Mission Indians
Donna Yocum, Chairperson
P.O. Box 221838 — Kitanemuk, Serrano, Tataviam
Newhall, CA, 91322
Phone: (503) 539 - 0933
Fax: (503) 574-3308
ddyocum@comcast.net

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 6097.98 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed City Trunk Line North Project, Los Angeles County.

Beherec, Marc

From: Hauptman, Jane <Jane.Hauptman@ladwp.com>
Sent: Thursday, June 14, 2018 4:33 PM
To: Kibriya, Fareeha; Chung, Cristina
Subject: FW: FTBMI AB52 Consultation for Trunk Line North Project

Follow Up Flag: Follow up
Flag Status: Completed

Cristina and Fareeha,

See below for the Fernandeno Tatavium Band of Mission Indians comment for CTLN.

Jane Hauptman
LADWP
(213) 367 - 0968
jane.hauptman@ladwp.com

From: Hauptman, Jane
Sent: Thursday, June 14, 2018 4:31 PM
To: 'Jairo Avila'
Subject: RE: FTBMI AB52 Consultation for Trunk Line North Project

Good Afternoon Mr. Avila,

Thank you for contacting us with your comments regarding the City Trunk Line North Project. Your comments have been noted and will be incorporated in to the planning and development of our environmental document.

Please let me know if you would like to consult on this project further in the future. For now, we will certainly continue to mail you notices on the project as they develop.

Thank you,

Jane Hauptman
Environmental Specialist
Environmental Planning and Assessment
Los Angeles Department of Water and Power
111 N. Hope Street, Room 1044
Los Angeles, CA 90012
(213) 367 – 0968
jane.hauptman@ladwp.com

From: Jairo Avila [mailto:jairo.avila@tataviam-nsn.us]
Sent: Tuesday, June 05, 2018 5:49 PM
To: Hauptman, Jane
Subject: FTBMI AB52 Consultation for Trunk Line North Project

Tribal Historic & Cultural Preservation Department

Project: ***Trunk Line North Project***
Address: ***Van Nuys, San Fernando***

Hello Jane,

On behalf of the Tribal Historic and Cultural Preservation (THCP) department of the Fernandeño Tataviam Band of Mission Indians (Tribe), thank you for your notification on the project referenced above.

The region in which the project area is located falls within the traditional Tataviam ancestral territory and encompasses the lineage-villages from which members of the Tribe descend. Our records indicate the presence of significant cultural area within a mile north of the Project location. However, the Tribe has no knowledge of cultural resources within the vicinity of the project nor has any concerns with the proposed project.

The THCP department would like to be notified if and when cultural resources are encountered during excavation. Since the archaeology of this region is not well defined, the Tribe would like to assure that all cultural materials on the surface and subsurface (if any) and any inadvertent discovery, is properly documented, salvaged, and protected.

Please feel free to contact me if you have any questions.

Respectfully,

--
Jairo F. Avila, M.A., RPA.
Tribal Historic and Cultural Preservation Officer

Fernandeño Tataviam Band of Mission Indians
1019 Second Street, Suite 1
San Fernando, California 91340
Office: (818) 837-0794
Website: http://www.tataviam-nsn.us

APPENDIX D
Noise and Vibration Impact Study

CITY TRUNK LINE NORTH REPLACEMENT PROJECT

NOISE AND VIBRATION IMPACT STUDY

Prepared for

AECOM

Prepared by

TERRY A. HAYES ASSOCIATES INC.

DECEMBER 2018

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LIST OF TABLES

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TECHNICAL APPENDIX

1.0 SUMMARY OF FINDINGS

Terry A. Hayes Associates Inc. (TAHA) completed a noise and vibration impact analysis for the Los Angeles Department of Water and Power City Trunk Line North Replacement Project (proposed project). The analysis assessed construction and operational noise and vibration impacts associated with the proposed project. Conclusions that address significance determinations under the California Environmental Quality Act (CEQA) Environmental Checklist criteria are shown in **Table 1-1**. Mitigation measures are summarized following the table.

TABLE 1-1: SUMMARY OF IMPACT STATEMENTS

Impact Statement	Proposed Project Level of Significance	Applicable Mitigation Measures
Would the proposed project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Less-than-Significant Impact with Mitigation	**N1** though **N8**
Would the proposed project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	Less-than-Significant Impact	None
Would the proposed project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	No Impact	None
Would the proposed project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	Less-than-Significant Impact with Mitigation	**N1** though **N7**
For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the proposed project expose people residing or working in the project area to excessive noise levels?	No Impact	None
For a project within the vicinity of a private airstrip, would the proposed project expose people residing or working in the project area to excessive noise levels?	No Impact	None

SOURCE: TAHA, 2018.

Mitigation Measures

N1 For construction activities lasting more than one month in one location and within 500 feet of a sensitive receptor, temporary barriers (e.g., noise blankets) shall be placed between the equipment and sensitive receptor.

N2 Construction equipment shall be properly maintained and equipped with mufflers.

N3 Rubber-tired equipment shall be used rather than tracked equipment.

N4 Equipment shall be turned off when not in use for an excess of five minutes, except for equipment that requires idling to maintain performance.

N5 A public liaison shall be appointed for project construction will be responsible for addressing public concerns about construction activities, including excessive noise. As needed, the liaison shall determine the cause of the concern (e.g., starting too early, bad muffler) and implement measures to address the concern.

N6 The public shall be notified in advance of the location and dates of construction hours and activities.

N7 Truck routes shall be limited to major arterial roads located within non-residential areas when feasible.

2.0 INTRODUCTION

2.1 PURPOSE OF REPORT

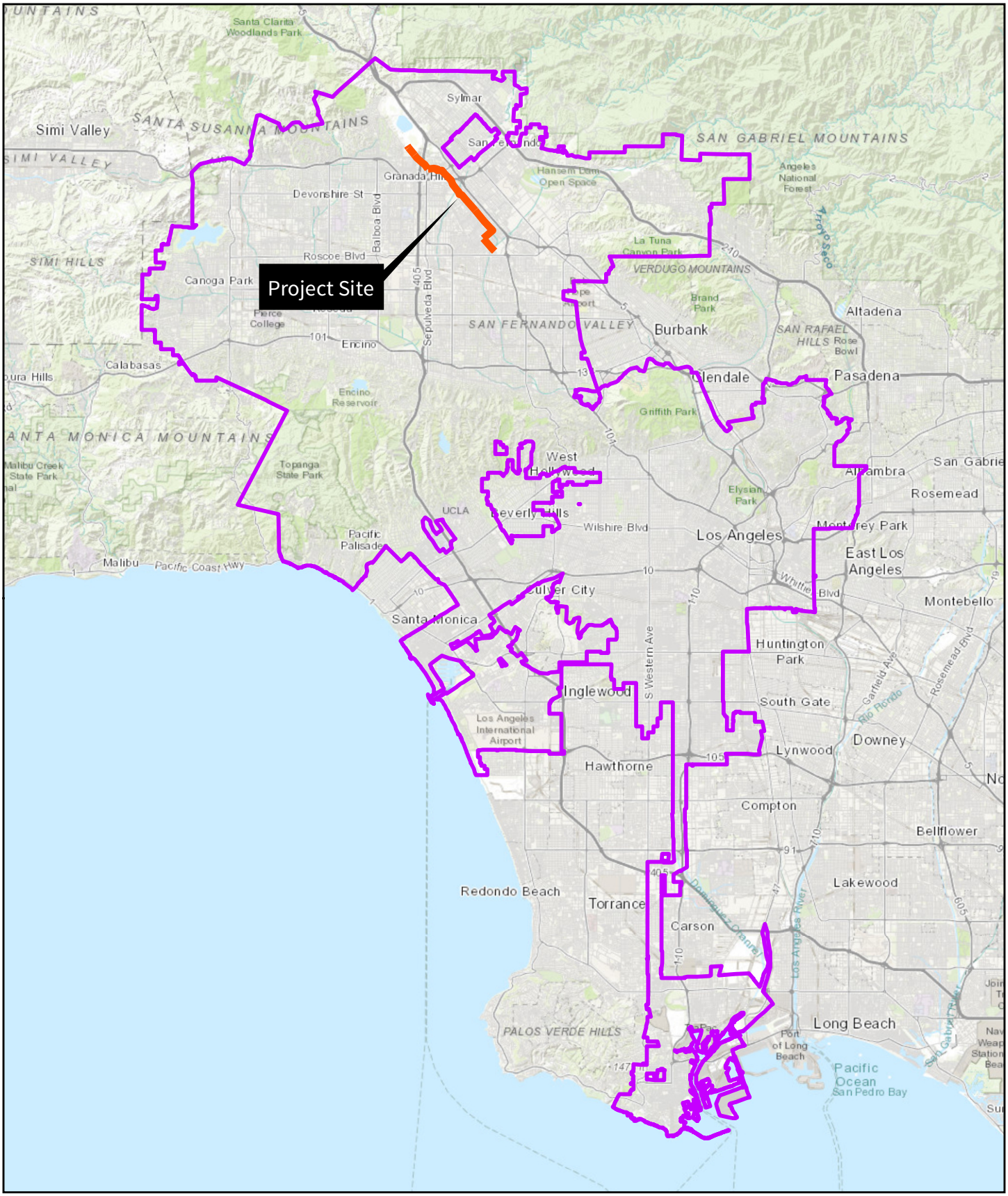
The purpose of this report is to evaluate the potential noise and vibration impacts associated with the proposed project.

2.2 PROJECT DESCRIPTION

The Los Angeles Department of Water and Power (LADWP) proposes to replace the northern extent of the existing Los Angeles City Trunk Line (LACTL) with approximately 33,000 linear feet of 54-inch-diameter trunk line (the City Trunk Line North [CTLN] Project, also referred to herein as the project or proposed project). The CTLN would originate at the LADWP Van Norman Complex in the Granada Hills community of Los Angeles and terminate adjacent to the LADWP Tujunga Spreading Grounds in Sun Valley community of Los Angeles, where it would connect to the existing City Trunk Line South (CTLS). The CTLN project is shown in **Figure 2-1** and will be constructed in two units as described below:

- Unit 1 would extend from the Van Norman Complex to the intersection of Arleta Avenue and Terra Bella Street, a distance of approximately 21,000 feet. Approximately 2,700 feet of Unit 1 would be located within the Van Norman Complex, and the balance would be located with public streets. Based on preliminary estimates, approximately 14,000 feet of Unit 1 would be installed using traditional open-trench construction, approximately 5,000 feet by slip-lining the new pipe within the existing LACTL, and a total of approximately 2,000 feet using a jack and bore method at several sites along the alignment. Regardless of the method of installation, ERDIP would be employed. (See **Figure 2-2**)
- Unit 2 of the CTLN would extend from the intersection of Arleta Avenue and Terra Bella Street to the CTLS in Canterbury Avenue, just west of Tujunga Spreading Grounds, a distance of approximately 11,800 feet. The trunk line would not cross any active earthquake faults within Unit 2. Therefore, although pipe joints would be designed to withstand the applicable seismic loads, ERDIP is not required, and welded steel pipe would be utilized. All of Unit 2 would be located within public streets. Based on preliminary estimates, approximately 7,200 feet of Unit 2 would be installed using traditional open-trench construction, approximately 3,100 feet by slip-lining the new pipe within the existing LACTL, and a total of approximately 1,500 feet using a jack and bore method at several sites along the alignment. Construction on Unit 2 would be initiated before construction on Unit 1. (See **Figure 2-3**)

Construction on Unit 1 of the CTLN is anticipated to begin in early 2022 and end in late 2028 while construction on Unit 2 is anticipated to begin in late 2019 and end in mid-2026. As with Unit 1, only relatively limited portions of the proposed route would be actually under construction at any given time during this period. Because there would be an approximately four-year overlap in the construction schedules for Unit 1 and Unit 2, construction within each unit would occur concurrently during this period. However, the zones under construction within each unit at a given time would likely be widely separated. The total construction time for the CTLN project is estimated to be approximately nine years. Open-trench activity would typically progress at a rate of five days per pipe section. Slip-lining activity would typically take approximately two to three months per section. Pipe jacking activity would take on average approximately two months.



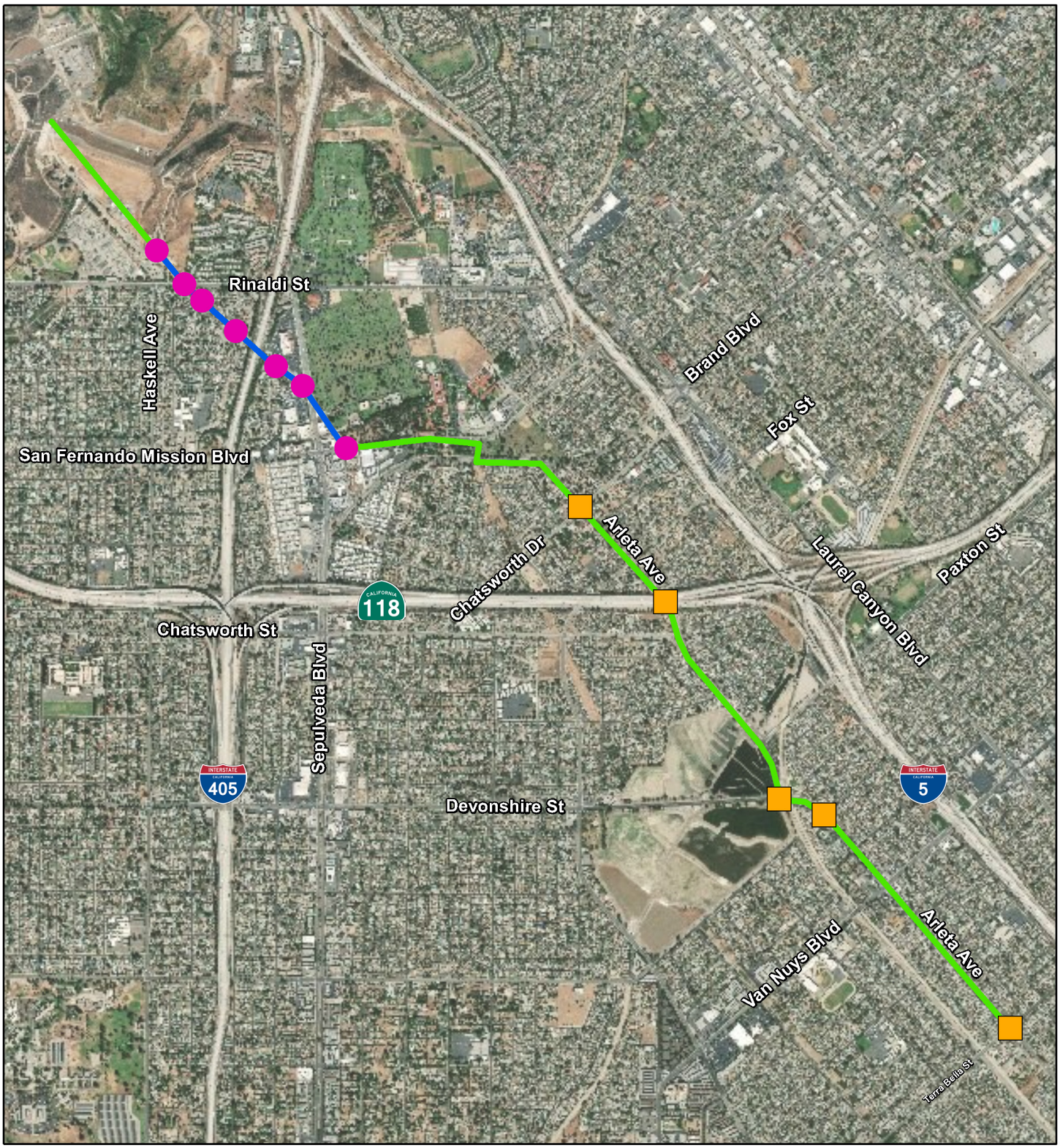
Source: TAHA, 2018.

LADWP City Trunk Line North Replacement
Noise & Vibration Impact Study

TAHA 2018-010 CITY OF LOS ANGELES

FIGURE 2-1

PROJECT LOCATION



LEGEND:

Slip Lining Sites

Jack and Bore Sites

Slip Lining

Open Trench

0 2,100 4,200 Feet

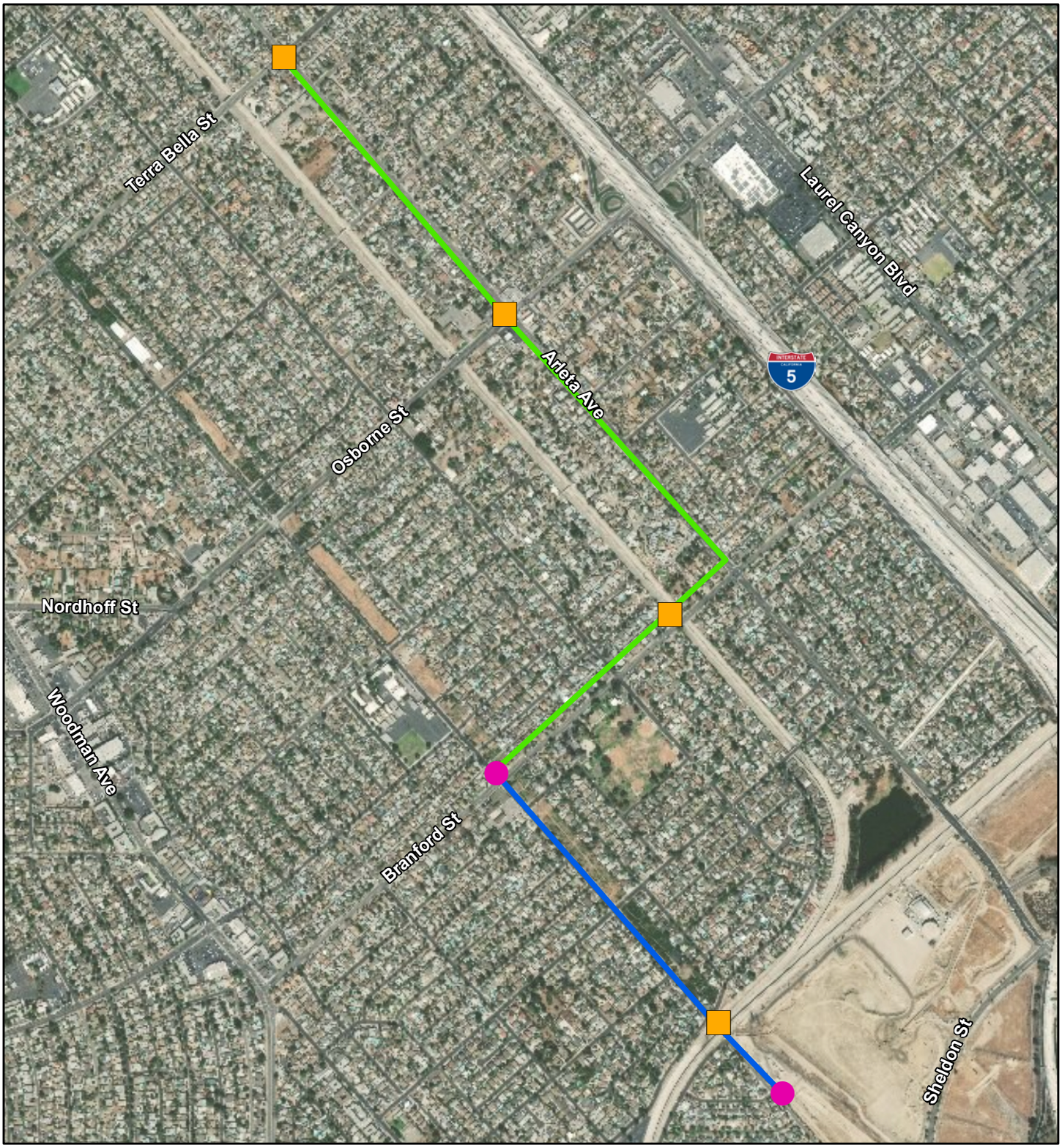
Source: AECOM, 2018; TAHA, 2018.

LADWP City Trunk Line North Replacement
Noise & Vibration Impact Study

FIGURE 2-2

PROPOSED PROJECT – UNIT 1

TAHA 2018-010 CITY OF LOS ANGELES



LEGEND:

Slip Lining Sites

Jack and Bore Sites

Slip Lining

Open Trench

0 1,100 2,200 Feet

Source: AECOM, 2018; TAHA, 2018.

LADWP City Trunk Line North Replacement
Noise & Vibration Impact Study

TAHA 2018-010

CITY OF LOS ANGELES

FIGURE 2-3

PROPOSED PROJECT – UNIT 2

3.0 NOISE & VIBRATION

This section describes the characteristics of noise and vibration, discusses the applicable regulatory framework, defines the existing setting, and evaluates noise and vibration levels associated with the proposed project.

3.1 NOISE AND VIBRATION CHARACTERISTICS AND EFFECTS

3.1.1 Noise

Characteristics of Sound

Sound is technically described in terms of the loudness (amplitude) and frequency (pitch).[1] The standard unit of measurement for sound is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The A-weighted scale, abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA. **Figure 3-1** provides examples of A-weighted noise levels from common sounds.

Noise Definitions

This noise analysis discusses average sound levels in terms of Equivalent Noise Level (L_{eq}) and Community Noise Equivalent Level (CNEL).

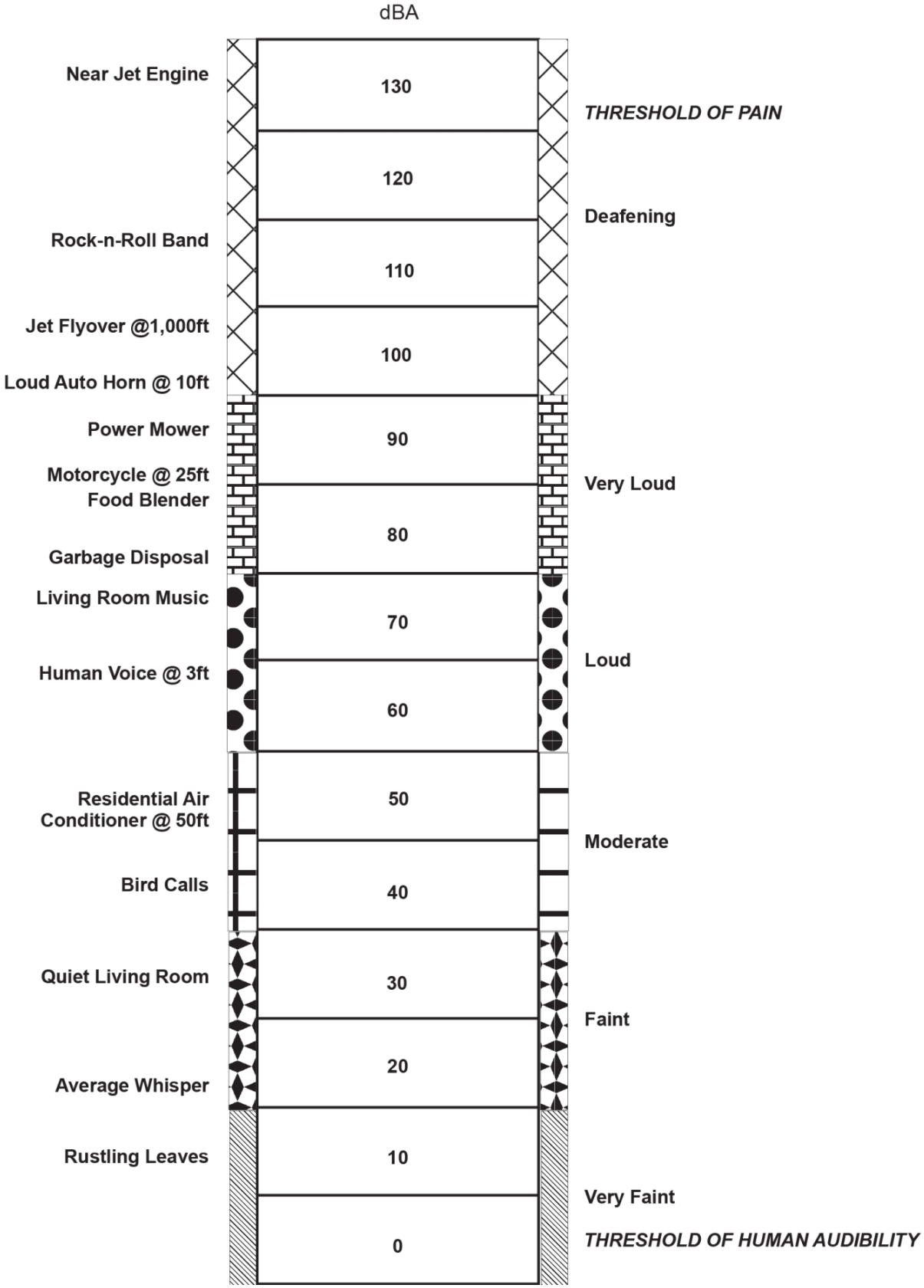
Equivalent Noise Level (L_{eq}). L_{eq} is the average sound level for any specific time period, on an energy basis. The L_{eq} for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. L_{eq} is expressed in units of dBA.

Community Noise Equivalent Level (CNEL). CNEL is an average sound level during a 24-hour period. CNEL is a noise measurement scale, which accounts for noise source, distance, single-event duration, single-event occurrence, frequency and time of day. Due to the lower background noise level, human reaction to sound between 7:00 p.m. and 10:00 p.m. is as if the sound were actually 5 dBA higher than if it occurred from 7:00 a.m. to 7:00 p.m. From 10:00 p.m. to 7:00 a.m., humans perceive sound as if it were 10 dBA higher. Hence, the CNEL is obtained by adding an additional 5 dBA to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and 10 dBA to sound levels in the night from 10:00 p.m. to 7:00 a.m. Because CNEL accounts for human sensitivity to sound, CNEL is always a higher number than the actual 24-hour average sound level.

Effects of Noise

Noise is generally defined as unwanted sound. The degree to which noise can impact the human environment ranges from levels that interfere with speech and sleep (annoyance and nuisance) to levels that cause adverse health effects (hearing loss and psychological effects). Human response to noise is subjective and can vary greatly from person to person. Factors that influence individual response include the intensity, frequency, and pattern of noise, the amount of background noise present before the intruding noise, the nature of work or human activity that is exposed to the noise source.

[1] California Department of Transportation, *Technical Noise Supplement*, November 2009.



Source: Cowan, James P., Handbook of Environmental Acoustics, 1993.

FIGURE 3-1
A-WEIGHTED DECIBEL SCALE

Audible Noise Changes

Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 dBA. A change of at least 5 dBA would be noticeable and may evoke a community reaction. A 10-dBA increase is subjectively heard as a doubling in loudness and would likely cause a community response.

Noise levels decrease as the distance from the noise source to the receiver increases. Noise levels generated by a stationary noise source, or "point source," will decrease by approximately 6 dBA over hard surfaces (e.g., pavement) and 7.5 dBA over soft surfaces (e.g., grass) for each doubling of the distance. For example, if a noise source produces a noise level of 89 dBA at a reference distance of 50 feet, then the noise level would be 83 dBA at a distance of 100 feet over hard surface from the noise source, 77 dBA at a distance of 200 feet, and so on. Noise levels generated by a mobile source will decrease by approximately 3 dBA over hard surfaces and 4.5 dBA over soft surfaces for each doubling of the distance.

Generally, noise is most audible when traveling by direct line-of-sight.[2] In urban environments, barriers, such as walls, berms, or buildings, are often present, which breaks the line-of-sight between the source and the receiver, greatly reducing noise levels from the source since sound can only reach the receiver by bending over the top of the barrier (diffraction). However, if a barrier is not high or long enough to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced. In situations where the source or the receiver is located 3 meters (approximately 10 feet) above the ground, or whenever the line-of-sight averages more than 3 meters above the ground, sound levels would be reduced by approximately 3 dBA for each doubling of distance.

3.1.2 Vibration

Characteristics of Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as rock blasting, pile driving, and heavy earth-moving equipment.

Vibration Definitions

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to measure RMS. The Vdb acts to compress the range of numbers required to describe vibration.[3]

[2] Line-of-sight is an unobstructed visual path between the noise source and the noise receptor.
[3] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

Effects of Vibration

High levels of vibration may cause physical personal injury or damage to buildings. However, vibration levels rarely affect human health. Instead, most people consider vibration to be an annoyance that may affect concentration or disturb sleep. In addition, high levels of vibration may damage fragile buildings or interfere with equipment that is highly sensitive to vibration (e.g., electron microscopes).

Perceptible Vibration Changes

In contrast to noise, vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually 50 Vdb RMS or lower, well below the threshold of perception for humans which is around 65 Vdb RMS.[4] Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

3.2 REGULATORY SETTING

3.2.1 Noise

Federal

The Noise Control Act of 1972 established programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In 1981, the United States Environmental Protection Agency (USEPA) determined that subjective issues such as noise would be better addressed at local levels of government, thereby allowing more individualized control for specific issues by designated federal, state, and local government agencies. Consequently, in 1982, responsibilities for regulating noise control policies were transferred to specific federal agencies, and state and local governments. However, noise control guidelines and regulations contained in the USEPA rulings in prior years remain in place. No federal noise regulations are directly applicable to the proposed project.

State

The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation. State regulations governing noise levels generated by individual motor vehicles and occupational noise control are not applicable to planning efforts, nor are these areas typically subject to CEQA analysis.

Local

The City of Los Angeles has established policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise-sensitive land uses. Regarding construction, Section 41.40 (Noise Due to Construction, Excavation Work – When Prohibited) of the Los Angeles Municipal Code (LAMC) states that no construction or repair work shall be performed between the hours of 9:00 p.m. and 7:00 a.m. on Monday through Friday since such activities would generate loud noises and disturb persons occupying sleeping quarters in any adjacent dwelling, hotel, apartment, or other place of residence. Further, no person, other than an individual home owner engaged in the repair or construction of his/her single-family dwelling, shall

[4] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

perform any construction or repair work of any kind or perform such work within 500 feet of land so occupied before 8:00 a.m. or after 6:00 p.m. on any Saturday, nor at any time on any Sunday or on a federal holiday. Under certain conditions, the City may grant a waiver to allow limited construction activities to occur outside of the limits described above.

LAMC Section 112.05 (Maximum Noise Level of Powered Equipment or Powered Hand Tools) specifies the maximum noise level of powered equipment or powered hand tools. Any powered equipment or hand tool that produces a maximum noise level exceeding 75 dBA at a distance of 50 feet is prohibited. However, this noise limitation does not apply where compliance is technically infeasible. Technically infeasible means the above noise limitation cannot be met despite the use of mufflers, shields, sound barriers and/or any other noise-reduction device or techniques during the operation of equipment.

3.2.2 Vibration

Federal

The Federal Transit Administration (FTA) has published guidance for assessing vibration effects of structures. **Table 3-1** shows the FTA building damage criteria for vibration. Residences are typically Type II buildings constructed of engineered concrete. Historic structures are considered Type IV buildings, which are extremely susceptible to vibration damage.

TABLE 3-1: CONSTRUCTION VIBRATION DAMAGE CRITERIA

Building Category	PPV (inches per second
I. Reinforced-concrete, steel or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

SOURCE: FTA, *Transit Noise and Vibration Impact Assessment*, May 2006.

State

There are no adopted State vibration standards.

Local

There are no adopted City of Los Angeles vibration standards.

3.3 EXISTING SETTING

3.3.1 Existing Noise and Vibration Environment

To characterize the existing noise environment around the project site, ambient noise was monitored using a SoundPro DL Sound Level Meter on Wednesday, August 22, 2018, between 9:00 a.m. and 12:00 p.m and on Thursday, August 23, 2018 between 9:30 a.m. and 1:00 p.m. The detailed locations are shown in **Figures 3-2a** through **3-2c**. Measurements were taken for 15-minute periods at each site. As shown in **Table 3-3**, the existing ambient sound levels range between 55.8 and 68.0 dBA L_{eq}. Traffic was the primary source of noise at each site.

TABLE 3-2: EXISTING AMBIENT NOISE LEVELS

Figure Key	Noise Monitoring Location	Sound Level (dBA, L_{eq})
1	Single-Family Residence (8511 Canterbury Ave.)	61.4
2	Single-Family Residence (9175 Arleta Ave.)	66.0
3	Vena Ave. Elementary School (9377 Vena Ave.)	56.0
4	Single-Family Residence (9817 Arleta Ave.)	63.6
5	Devonshire Arleta Park (14215 Devonshire St.)	65.0
6	Single-Family Residence (14400 San Jose St.)	62.1
7	Single-Family Residence (11020 Arleta Ave.)	57.3
8	Utter Mckinley San Fernando Mission Mortuary (11071 Columbus Ave.)	68.0
9	San Fernando Mission Catholic Cemetery (11160 Stranwood Ave.)	58.6
10	Single-Family Residence (11372 Stranwood Ave.)	57.0
11	Multi-Family Residence (15780 Midwood Dr.)	55.8

SOURCE: TAHA, 2018.

3.3.2 Sensitive Receptors

Sensitive receptors are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. They typically include residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas. The project is located in an urban environment and many sensitive receptors are located near construction zones. The majority of the alignment is densely populated with residences. Additional receptors located within 500 feet of the trunk line include Vena Avenue Elementary School, Bishop Alemany High School, community facilities, parks, medical facilities, and religious institutions. In addition, the historic Mission San Fernando Mission Rey de Espana is particularly sensitive to increased vibration levels.

3.4 METHODOLOGY AND SIGNIFICANCE CRITERIA

3.4.1 Methodology

The noise and vibration analysis considers construction and operational sources. Construction noise levels were based on information obtained from USEPA. Noise levels associated with typical construction equipment were obtained from the Federal Highway Administration (FHWA) Roadway Construction Noise Model.[5] This model predicts noise from construction operations based on a compilation of empirical data and the application of acoustical propagation formulas. Maximum equipment noise levels were adjusted based on anticipated percent of use. Combined construction activity noise levels were estimated by combining anticipated equipment for each activity using RCNM. The projected noise level during the construction period at receptors was calculated by (1) making a distance adjustment to the construction source sound level and (2) logarithmically adding the adjusted construction noise source level to the ambient noise level. According to California Department of Transportation (Caltrans) guidance, air temperature and humidity affect molecular absorption differently depending on the frequency spectrum and can vary significantly over long distances in a complex manner. Molecular absorption in air also reduces noise levels with distance. According to Caltrans, this process only accounts for about 1 dBA per 1,000 feet, which is an inaudible and negligible difference in noise levels. Noise levels have been estimated using a decrease of 6 dBA over hard surfaces for each doubling of the distance. The methodology and formulas obtained from the Caltrans Technical Noise Supplement can be viewed below.

[5] Federal Highway Administration, *Roadway Construction Noise Model*, Version 1.1, August 2006.

(1) *Noise Distance Attenuation Formula:* $dBA_2 = dBA_1 + 20 \times LOG_{10} (D_1/D_2)$

Where:

dBA_1 *= Noise level at the reference distance of 50 feet*

dBA_2 *= Noise level at the receptor*

D_1 *= Reference distance (50 feet)*

D_2 *= Distance from source to receptor (measured distance)*

(2) Logarithmic Noise Level Addition Formula: Nc = 10 x LOG10 ((10^(N1/10)) + (10^(N2/10)))

Where:

Nc = Combined noise level

N1 = Noise level one

N2 = Noise level two

Vibration levels were estimated using example vibration levels and propagation formulas provided by FTA.[6] The methodology and formulas obtained from the FTA Transit Noise and Vibration Assessment guidance can be viewed below. Vibration damage is assessed using formula (3) and vibration annoyance is assessed using formula (4).

(3) *Vibration Damage Attenuation Formula:* $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

Where:

PPV_{equip} *= Peak particles velocity in inches per second of the equipment adjusted for distance*

PPV_{ref} *= Reference vibration level in inches per second at 25 feet*

D = Distance from the equipment to the receptor in feet

(4) *Vibration Annoyance Attenuation Formula:* $Lv_{equip} = Lv_{ref} - 30 \times LOG (D/25)$

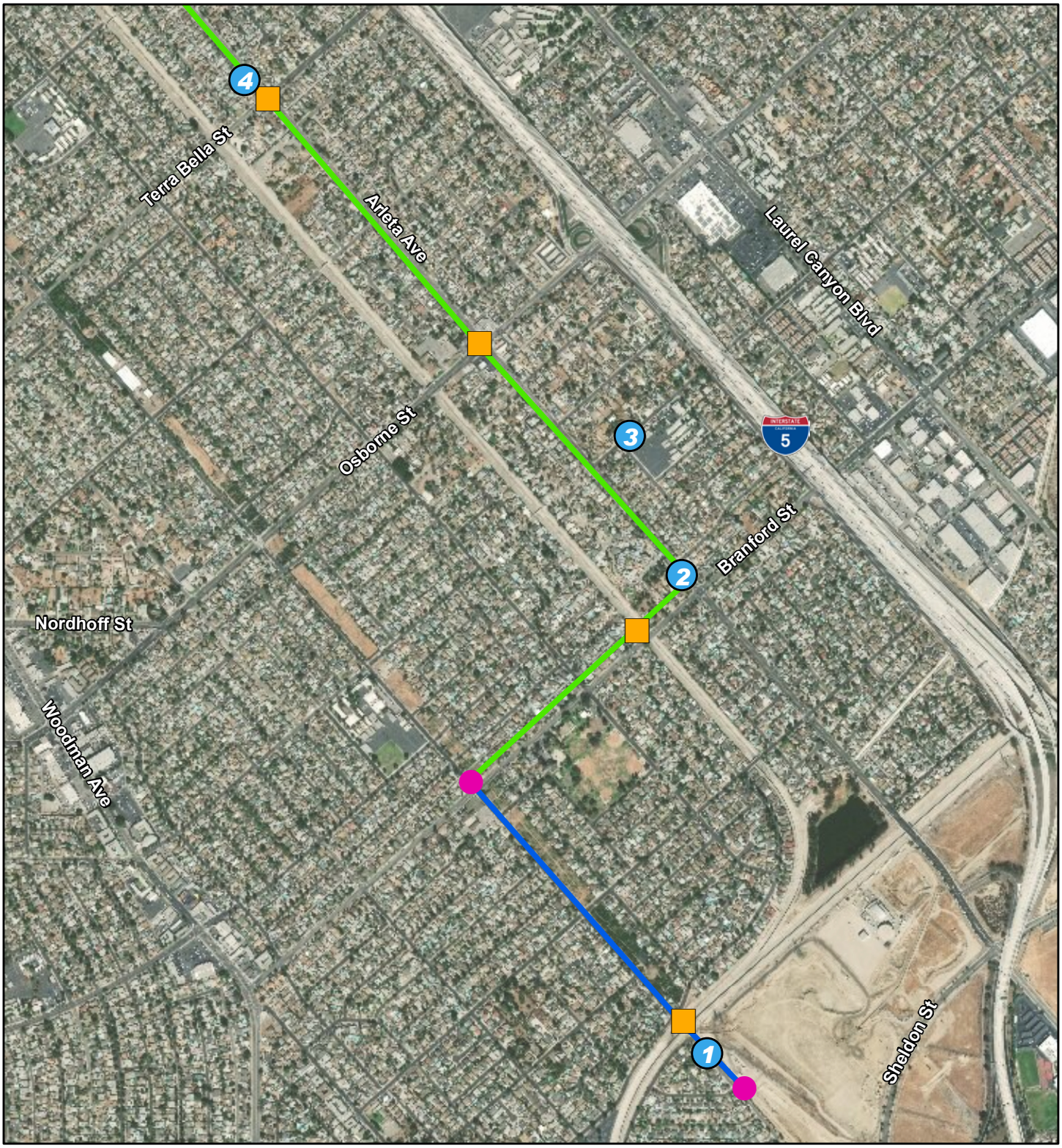
Where:

Lv_{equip} *= Vibration level in vibration decibels of equipment adjusted for distance*

Lv_{ref} *= Reference vibration level in vibration decibels at 25 feet*

D = Distance from the equipment to the receptor in feet

[6] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.



LEGEND:

Noise Monitoring Locations

Slip Lining Sites

Jack and Bore Sites

Slip Lining

Open Trench

0 1,200 2,400 Feet

Source: AECOM, 2018; TAHA, 2018.

taha environmental planners

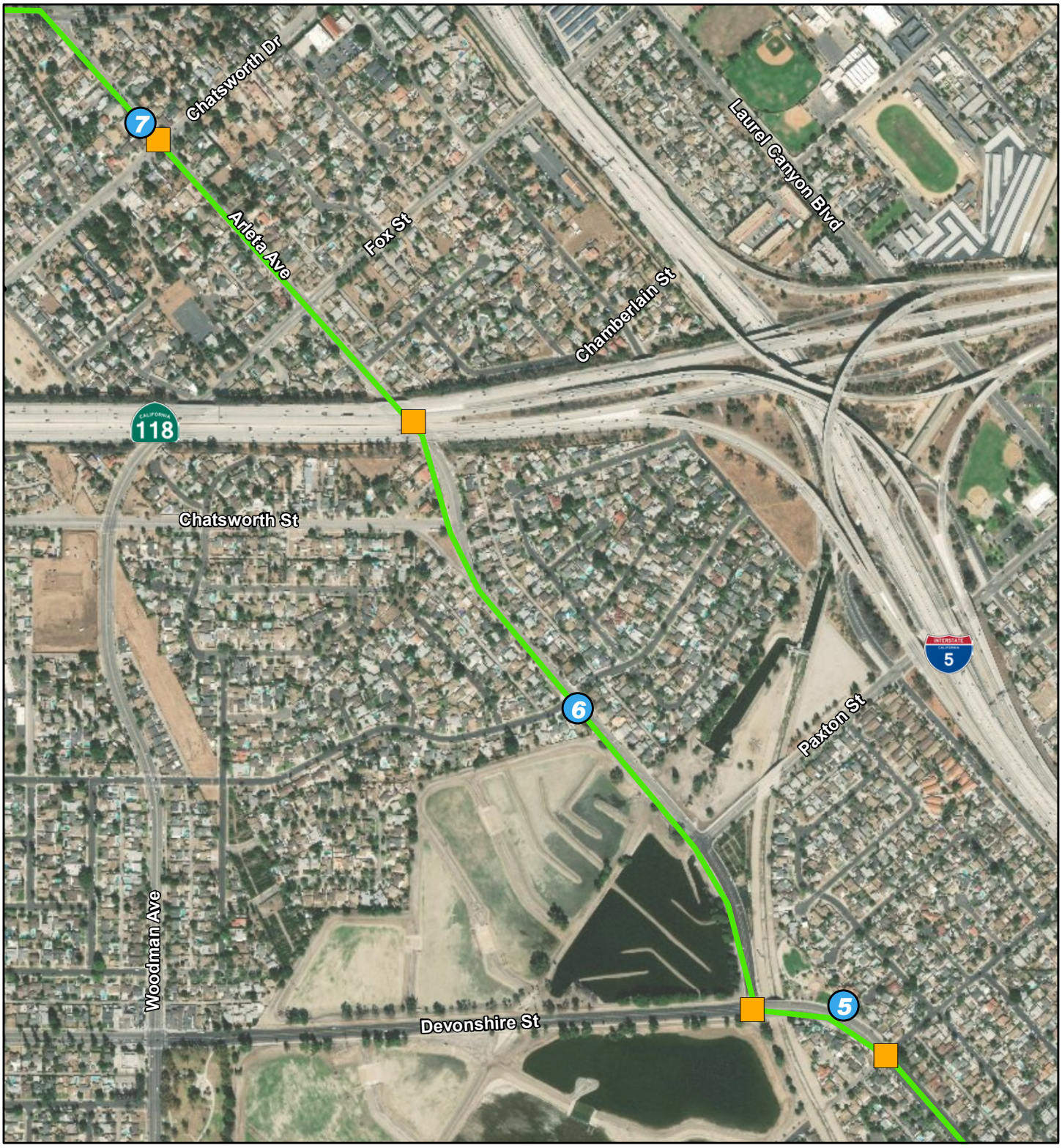
TAHA 2018-010

LADWP City Trunk Line North Replacement
Noise & Vibration Impact Study

CITY OF LOS ANGELES

FIGURE 3-2a

NOISE MONITORING LOCATIONS



LEGEND:

Noise Monitoring Locations

Jack and Bore Sites

Open Trench

0 700 1,400 Feet

Source: AECOM, 2018; TAHA, 2018.

taha environmental planners

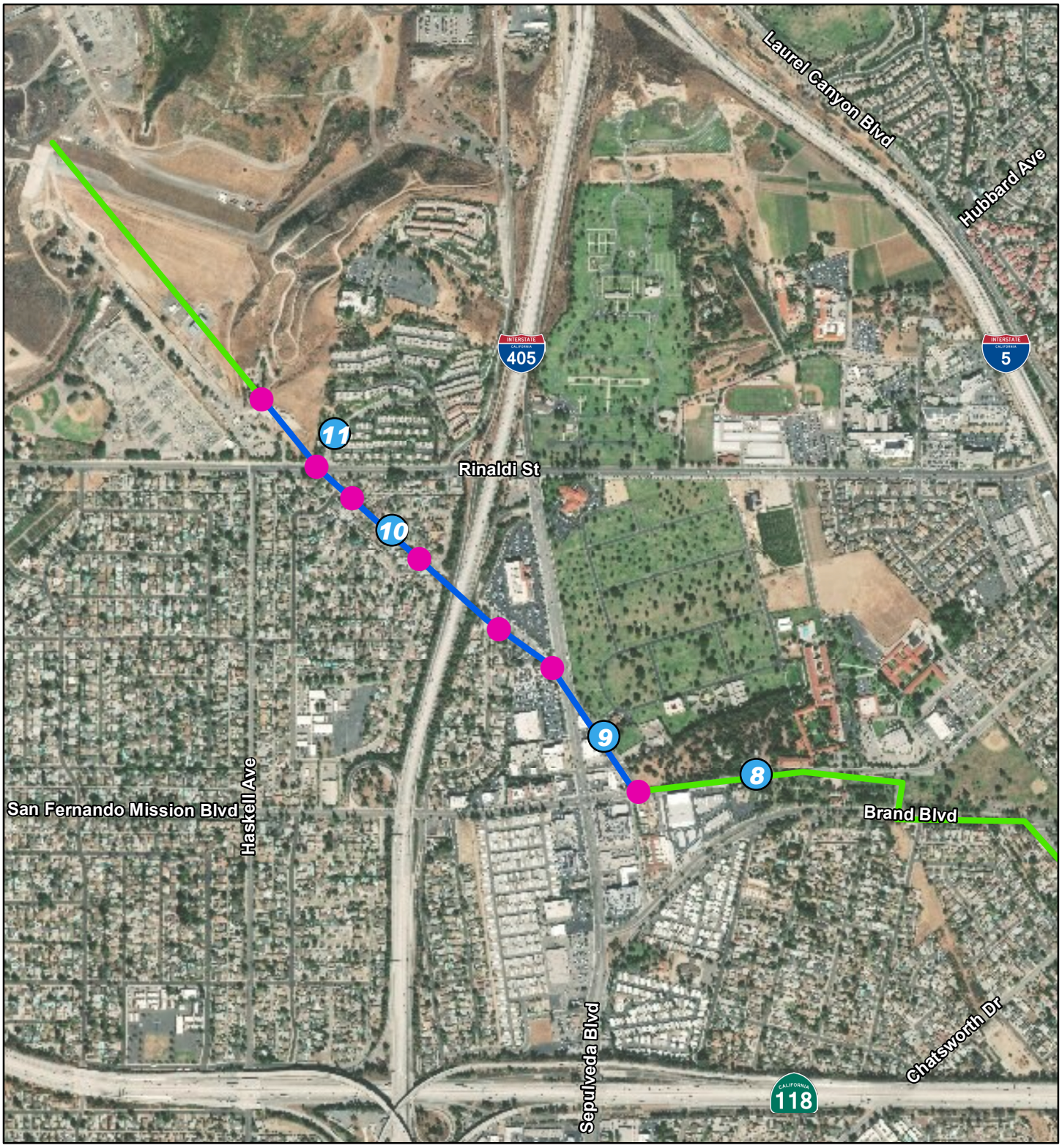
TAHA 2018-010

LADWP City Trunk Line North Replacement
Noise & Vibration Impact Study

CITY OF LOS ANGELES

FIGURE 3-2b

NOISE MONITORING LOCATIONS



LEGEND:

Noise Monitoring Locations

Slip Lining Sites

Slip Lining

Open Trench

0 1,000 2,000 Feet

Source: AECOM, 2018; TAHA, 2018.

taha environmental planners

LADWP City Trunk Line North Replacement
Noise & Vibration Impact Study

TAHA 2018-010 CITY OF LOS ANGELES

FIGURE 3-2c

NOISE MONITORING LOCATIONS

3.4.2 CEQA Significance Thresholds

In accordance with Appendix G of the CEQA Guidelines, the proposed project would have a significant impact related to noise and vibration if it would result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
e) For a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels; and/or
f) For a project located within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

Noise

Based on the LAMC, the proposed project would exceed the local standards and substantially increase temporary construction noise levels if:

- Construction activities would occur within 500 feet of a noise-sensitive use and outside the hours allowed in the LAMC. The allowable hours of construction in the LAMC include 7:00 a.m. to 9:00 p.m. Monday through Friday and 8:00 a.m. to 6:00 p.m. on Saturday. No construction activity is allowed on Sundays or federal holidays; and/or
- Equipment noise levels would exceed 75 dBA L_{eq} at 50 feet unless technically infeasible.

- Off-site mobile source noise causes the ambient noise level measured at the property line of the affected uses to increase by 3 dBA.

Vibration

The construction-related vibration analysis considers the potential for building damage and annoyance. Maximum vibration levels were assessed based frequent vibration events happening more than 70 times in one day, which would be consistent with the movement of construction equipment. The proposed project would result in a significant construction or operational vibration impact if:

- Vibration levels would exceed 0.3 inches per second at non-historic structures.
- Vibration levels would exceed 0.12 inches per second at historic structures.

3.5 ENVIRONMENTAL IMPACTS

3.5.1 Would the proposed project exposure of persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (*Less-than-Significant Impact with Mitigation Incorporated*)

Impact Analysis

Construction

On-Site Equipment. Construction activity is anticipated to begin in late 2019 and take approximately 9 years to complete. LAMC allows construction activity to occur Monday through Friday between the hours of 7:00 a.m. and 9:00 p.m. and the hours of 8:00 a.m. and 6:00 p.m. on Saturdays. Construction activity is prohibited on Sundays and federal holidays. Construction activity would occur Monday through Friday from 7:00 a.m. to 4:00 p.m. and would not occur outside of the allowed hours.

Open-Trench. Construction equipment associated with open-trench activity would likely involve the use of a backhoe, front end loader, dump truck, pickup trucks, and generators. Construction noise associated with open-trenching activity would typically occur around the work zone and not throughout the entire corridor. Installation of each pipe section would take approximately five days, including trench excavation, shoring, pipe segment placement, and pipe joining.

Slip-Lining. Construction equipment associated with slip-lining activity would likely involve the use of use of a crane, excavator, front end loader, generator, hydraulic pushing machine, and pickup trucks. Construction noise associated with slip-lining activity would largely be limited to the launching and receiving pits. Once the pits are established, the pipe would be installed at an average rate of about two to three pipe sections per day. The overall time to complete the installation of a slip-lining span would depend on the length of the span. However, on average, the entire operation in one span between a launching and receiving pit would be expected to take about two to three months.

Jack and Bore. Construction equipment associated with jack and bore activity would likely involve the use of a crane, excavator, front end loader, generator, hydraulic pushing machine, and pickup trucks. Construction noise associated with pipe jacking activity would largely be limited to the launching and receiving pits. On average, the entire jack and bore operation at a given location would be expected to take about two months.

Typical noise levels from various types of equipment that may be used during construction are listed in **Table 3-3** by activity. The table shows noise levels at distances of 50 from the construction noise source.

Construction activities typically require the use of numerous pieces of noise-generating equipment. The noise levels shown in **Table 3-4** takes into account that multiple pieces of construction equipment would be operating simultaneously. However, not all of the equipment shown in the table would operate every day. The active construction areas along the alignment would be relatively small and the amount of equipment that could operate in one day would be limited by the size of the active construction zone.

TABLE 3-3: NOISE LEVEL RANGES OF TYPICAL CONSTRUCTION EQUIPMENT	
Construction Equipment	**Noise Level at 50 feet (dBA)**
OPEN-TRENCH CONSTRUCTION	
Concrete Saw	82.6
Crane	72.6
Excavator	76.7
Front End Loader	75.1
Generator	77.6
Pickup Truck	71.0
Vacuum Excavator (Vac-truck)	81.3
SLIP-LINING	
Crane	72.6
Excavator	76.7
Front End Loader	75.1
Generator	77.6
Hydraulic Pushing Machine (Auger Drill Rig)	77.4
Pickup Truck	71.0
PIPE JACKING	
Crane	72.6
Excavator	76.7
Front End Loader	75.1
Generator	77.6
Hydraulic Pushing Machine (Auger Drill Rig)	77.4
Pickup Truck	71.0
SOURCE: FHWA, *Roadway Construction Noise Model*, Version 1.1, 2008.	

TABLE 3-4: TYPICAL OUTDOOR CONSTRUCTION NOISE LEVELS BY ACTIVITY	
Construction Method	**Noise Level at 50 feet (dBA, L_{eq})**
Open-Trench Construction	86.9
Slip-Lining	83.5
Jack and Bore	83.5
SOURCE: FHWA, *Roadway Construction Noise Model*, Version 1.1, 2008.	

The impact analysis is based on the construction limits in the LAMC. Construction activity would comply with the allowable hours of construction in the LAMC, including 7:00 a.m. to 9:00 p.m. Monday through Friday, 8:00 a.m. to 6:00 p.m. on Saturday, and no construction activity on Sundays or federal holidays. The LAMC limits equipment noise levels to 75 dBA at 50 feet unless technically infeasible. Noise levels from individual pieces of equipment would typically range from 71.0 to 82.6 dBA L_{eq} at 50 feet. Unmitigated noise levels would typically exceed the allowable noise level stated in the LAMC. Therefore, without mitigation, the proposed project would result in a significant impact related to construction noise.

For informational purposes, the noise levels associated with each construction component and activity are discussed below.

Unit 1. Construction of the proposed project would generally occur within the public right-of-way and the Van Norman Complex. Construction activity within the public right-of-way would typically be located at least 50 feet away from sensitive receptors on either side of the street. Noise levels at sensitive receptors near construction activities associated with Unit 1 are shown in **Table 3-5** by street segment. Construction within the Van Norman Complex would primarily include open-trench construction, with slip-lining at the north and south of the complex. The majority of construction within the Van Norman Complex would typically occur at distances of 500 feet or more, but slip-lining activity may be as close as 50 feet. The closest receptors to construction in the Van Norman Complex would be multi-family residences to the east along Midwood Drive. Open-trench activity would generate noise levels of approximately 66.9 dBA L_{eq} at 500 feet. Slip-lining activity would generate noise levels of approximately 83.5 dBA L_{eq} at 50 feet. The existing noise level along Mildwood Drive is 55.8 dBA L_{eq}. When added to the existing noise level construction activity would result in increases of 11.4 to 31.1 dBA for open-trench construction and 27.7 dBA for slip-lining activity.

TABLE 3-5: UNIT 1 TYPICAL CONSTRUCTION NOISE LEVELS AT RECEPTORS - UNMITIGATED

Sensitive Receptor	Activity	Distance (feet) /a/	Maximum Noise Level (dBA)	Existing Ambient (dBA, L_{eq})	New Ambient at Receptor (dBA, L_{eq})	Increase (dBA)
CONSTRUCTION IN VAN NORMAN COMPLEX						
Residences along Midwood Dr.	Open-Trench	Adjacent to the ROW	86.9	55.8	86.9	31.1
	Slip-Lining	Adjacent to the ROW	83.5	55.8	83.5	27.7
	Open-Trench	500	66.9	55.8	67.2	11.4
CONSTRUCTION ALONG STRANWOOD ST.						
Residence	Slip-Lining	Adjacent to the ROW	83.5	57.0	83.5	26.5
		Adjacent to the ROW	83.5	58.6	83.5	24.9
CONSTRUCTION ALONG SAN FERNANDO MISSION BLVD. AND BRAND BLVD.						
Residences	Open-Trench	Adjacent to the ROW	86.9	68.0	87.0	19.0
Bishop Alemany High School	Open-Trench	500	86.9	68.0	70.5	2.5
CONSTRUCTION ALONG ARELTA AVE.						
Residences	Open-Trench	Adjacent to the ROW	86.9	57.3	86.9	29.6
			86.9	62.1	86.9	24.8
			86.9	63.6	86.9	23.3
Residences	Jack and Bore	Adjacent to the ROW	83.5	57.3	83.5	26.2
			83.5	62.1	83.5	21.4
			83.5	63.6	83.5	19.9

/a/ Distance is the setback of the receptor from the roadway.
SOURCE: TAHA, 2018.

Construction along Stranwood Street would primarily involve slip-lining. Six slip-lining launch and receiving sites would be located along Stranwood Street, which would begin at Rinaldi Street and be completed at San Fernando Mission Boulevard. Existing noise levels along Stranwood Street are between 57.0 dBA L_{eq} and 58.6 dBA L_{eq}. When added to the existing noise level slip-lining activity would result an increase of 24.9 dBA to 26.5 dBA.

Construction along San Fernando Mission Boulevard and Brand Boulevard would primarily involve open-trench activity. The existing noise level along San Fernando Mission Boulevard and Brand Boulevard is 68.0 dBA L_{eq}. When added to the existing noise level open-trench activity would result in an increase of 19.0 dBA.

Construction along Arleta Avenue would primarily involve open-trenching and pipe jacking. Existing noise levels along Arleta Avenue range from 57.3 dBA L_{eq} to 63.6 dBA L_{eq}. Typical open-trench activity would result in an increase of 23.3 to 29.6 dBA at adjacent residential uses. Construction along Arleta Avenue would also include pipe jacking at Chatsworth Drive, the SR-118 Freeway, Devonshire Street, Filmore Street, and Terra Bella Street. Jack and bore activity would result in an increase of 19.9 to 26.2 dBA at adjacent residential uses.

Unit 2. Similar to Unit 1, construction of Unit 2 would occur within the public right-of-way would typically be located at least 50 feet away from sensitive receptors on either side of the street. Noise levels at sensitive receptors near construction activities associated with Unit 1 are shown in **Table 3-6** by street segment. Construction along Arleta Avenue would primarily involve open-trenching and jack and bore activity. Existing noise levels along Arleta Avenue range from 65.0 dBA L_{eq} to 66 dBA L_{eq}. Typical open-trench activity would result in an increase of 20.9 to 21.9 dBA at adjacent residential uses and an increase of 6.4 dBA at Vena Avenue Elementary School. Construction along Arleta Avenue would also include jack and boring activity at Osborne Street. Jack and bore activity would result in an increase of 17.6 to 18.6 dBA at adjacent residential uses. Jack and Bore activity would not result in an audible increase at Vena Avenue Elementary School as the nearest pipe jacking site would be located approximately 1,200 feet away with several rows of intervening buildings that would act as a buffer between the school and pipe jacking activity.

TABLE 3-6: UNIT 2 TYPICAL CONSTRUCTION NOISE LEVELS AT RECEPTORS - UNMITIGATED

Sensitive Receptor	Activity	Distance (feet) /a/	Maximum Noise Level (dBA)	Existing Ambient (dBA, L_{eq})	New Ambient at Receptor (dBA, L_{eq})	Increase (dBA)
CONSTRUCTION ALONG ARLETA AVE.						
Residences	Open-Trench	Adjacent to the ROW	86.9	65.0	86.9	21.9
			86.9	66.0	86.9	20.9
Vena Ave. Elementary School /b/		480	61.3	56.0	62.4	6.4
Residences	Jack and Bore	Adjacent to the ROW	83.5	65.0	83.6	18.6
			83.5	66.0	83.6	17.6
CONSTRUCTION ALONG BRANFORD ST.						
Residences	Open-Trench	Adjacent to the ROW	86.9	66.0	86.9	20.9
	Jack and Bore	Adjacent to the ROW	83.5	66.0	83.6	17.6
CONSTRUCTION ALONG CANTERBURY AVE.						
Residences	Slip-Lining	Adjacent to the ROW	86.9	61.4	83.5	22.1
	Jack and Bore	Adjacent to the ROW	83.5	61.4	83.5	22.1

/a/ Distance is the setback of the receptor from the roadway.
/b/ Intervening building reduction of -4.5 dB for first row of buildings and -1.5 dB for each subsequent row.
SOURCE: TAHA, 2018.

Construction along Branford Street would be similar to Arleta Avenue. Existing noise levels along Arleta Avenue were recorded at 66 dBA L_{eq}. Typical open-trench activity would result in an increase of 20.9 dBA at adjacent residential uses. Construction along Brandford Street would also

include jack and bore activity, which would occur near the Paicoima Diversion Channel. Jack and bore activity along Brandford street would result in an increase of 17.6 dBA.

Construction along Canterbury Avenue would involve slip-lining as well as jack and bore activity near the Paicoima Diversion Channel. Existing noise levels along Canterbury Avenue were recorded at 61.4 dBA L_{eq}. Slip-ling activity and jack and boring activity would result in an increase 22.1 dBA.

Off-Site Trucks. In addition to on-site construction activities, noise would be generated off-site by construction-related trucks and construction worker vehicles. Construction trucks generate higher noise levels than construction worker-related traffic. For example, one heavy-duty truck, traveling 35 miles per hour, generates the equivalent noise of 31 passenger vehicles.[7]

It is acknowledged that project-related truck trips would instantaneously increase the ambient noise levels along haul routes. A doubling of traffic volume is typically needed to audibly increase noise levels along a roadway segment. The impact analysis is based on the potential for truck activity to result in prolonged noise exposure. Open-trenching activity is anticipated to generate the maximum number of haul truck trips per day, which would be approximately 40 trips per day. Multiple work sites would be active along the corridor and haul truck trips would be distributed along several roadways. No more than five haul truck trips per hour are anticipated to occur at any work site. Jack and bore activity and slip-lining activity would only require four haul truck trips per day. Haul truck trips associated with open-trenching activity, slip-lining, and jack and bore activity would not audibly increase ambient noise levels over a prolonged period of time due to the low number of hauls trucks at a work site at any given time. Daily traffic volumes are not anticipated to double along any roadway segment and off-site vehicle activity is not anticipated to audibly change ambient noise levels. Furthermore, all truck activity would occur during daytime hours, which would be less impactful to nearby residents. Therefore, the proposed project would result in a less-than-significant impact related to off-site noise.

Operations

The CTLN would be connected to several existing trunk lines to provide redundant pathways for water supply. With the exception of minor appurtenant facilities that would be located above ground in the public right of way (such as utility cabinets), the CTLN would be located entirely underground and would not be visible. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. No additional permanent workforce would be required to operate the CTLN. The pipeline would be subterranean and would not generate audible noise. Therefore, no impact would occur.

Mitigation Measures

N1 For construction activities lasting more than one month in one location and within 500 feet of a sensitive receptor, temporary barriers (e.g., noise blankets) shall be placed between the equipment and sensitive receptor.

N2 Construction equipment shall be properly maintained and equipped with mufflers.

N3 Rubber-tired equipment shall be used rather than tracked equipment.

N4 Equipment shall be turned off when not in use for an excess of five minutes, except for equipment that requires idling to maintain performance.

[7] California Department of Transportation, *Technical Noise Supplement*, November 2009.

N5 A public liaison shall be appointed for project construction will be responsible for addressing public concerns about construction activities, including excessive noise. As needed, the liaison shall determine the cause of the concern (e.g., starting too early, bad muffler) and implement measures to address the concern.

N6 The public shall be notified in advance of the location and dates of construction hours and activities.

N7 Truck routes shall be limited to major arterial roads located within non-residential areas when feasible.

Significance After Mitigation

Construction. Mitigation Measures **N1** through **N7** are designed to reduce construction noise levels. When the line-of-sight would be blocked from the equipment to the receptor, the barriers associated with Mitigation Measure **N1** would reduce construction noise levels by approximately 10 dBA for slip-lining and jack and bore sites. The equipment mufflers associated with Mitigation Measure **N2** would reduce construction noise levels by approximately 3 dBA. Mitigation Measures **N3** through **N7**, although difficult to quantify, would also reduce and/or control construction noise levels. Temporary noise barriers were considered for placement along open-trench work zones. However, such barriers were determined to be infeasible for multiple reasons, including safety at intersections and cost effectiveness given the transient and short-term nature of the proposed construction activity in any one location. **Table 3-7** and **Table 3-8** show mitigated noise levels by street segment.

As shown in **Table 3-7** and **Table 3-8**, construction noise levels would exceed 75 dBA at some receptors even after mitigation. LAMC Section 112.05 specifies that noise levels shall not exceed 75 dBA at a distance of 50 feet. However, the noise limitation does not apply where compliance is technically infeasible, meaning the noise limitation cannot be met despite the use of mufflers, shields, sound barriers and/or any other noise-reduction device or techniques during the operation of equipment. As discussed above, Mitigation Measures **N-1** through **N-7** would reduce construction equipment noise impacts to the greatest extent technically feasible. Additionally, the proposed project would comply with LAMC Section 41.40, which limits the hours that construction activities may occur to 7:00 a.m. to 9:00 p.m. Monday through Friday, 8:00 a.m. to 6:00 p.m. on Saturday, and no construction activity on Sundays or federal holidays. Therefore, compliance with existing regulations and implementation of Mitigation Measures **N-1** through **N-7** would ensure that impacts related to construction equipment noise would be less than significant.

Operations. No significant impacts have been identified related to operational noise. Therefore, no mitigation measures are required.

TABLE 3-7: UNIT 1 TYPICAL CONSTRUCTION NOISE LEVELS AT RECEPTORS - MITIGATED

Sensitive Receptor	Activity	Distance (feet) /a/	Maximum Noise Level (dBA) /b/	Existing Ambient (dBA, L_{eq})	New Ambient at Receptor (dBA, L_{eq})	Increase (dBA)
CONSTRUCTION IN VAN NORMAN COMPLEX						
Residences along Midwood Dr.	Open-Trench	Adjacent to the ROW	83.9	55.8	83.9	28.1
	Slip-Lining	Adjacent to the ROW	70.5 /c/	55.8	70.6	14.8
	Open-Trench	500	63.9	55.8	64.5	8.7

CONSTRUCTION ALONG STRANWOOD ST.						
Residence	Slip-Lining	Adjacent to the ROW	70.5 /c/	57.0	70.7	13.7
		Adjacent to the ROW	70.5 /c/	58.6	70.8	12.2
CONSTRUCTION ALONG SAN FERNANDO MISSION BLVD. AND BRAND BLVD.						
Residences	Open-Trench	Adjacent to the ROW	83.9	68.0	84.0	16.0
Bishop Alemany High School	Open-Trench	500	59.4	68.0	68.6	0.6
CONSTRUCTION ALONG ARLETA AVE.						
Residences	Open-Trench	Adjacent to the ROW	83.9	57.3	83.9	26.6
			83.9	62.1	83.9	21.8
			83.9	63.6	83.9	20.3
Residences	Jack and Bore	Adjacent to the ROW	70.5 /c/	57.3	70.7	13.4
			70.5 /c/	62.1	71.1	9.0
			70.5 /c/	63.6	71.3	7.7

/a/ Distance is the setback of the receptor from the roadway.
/b/ A 3 dB reduction has been applied for equipment mufflers.
/c/ A 10 dB reduction has been applied for sound barriers.
SOURCE: TAHA, 2018.

TABLE 3-8: UNIT 2 TYPICAL CONSTRUCTION NOISE LEVELS AT RECEPTORS - MITIGATED

Sensitive Receptor	Activity	Distance (feet) /a/	Maximum Noise Level (dBA) /c/	Existing Ambient (dBA, L_{eq})	New Ambient at Receptor (dBA, L_{eq})	Increase (dBA)
CONSTRUCTION ALONG ARLETA AVE.						
Residences	Open-Trench	Adjacent to the ROW	83.9	65.0	84.0	19.0
			83.9	66.0	84.0	18.0
Vena Ave. Elementary School		480	58.3	56.0	60.3	4.3
Residences	Jack and Bore	Adjacent to the ROW	70.5 /d/	65.0	71.6	6.6
			70.5 /d/	66.0	71.8	5.8
CONSTRUCTION ALONG BRANFORD ST.						
Residences	Open-Trench	Adjacent to the ROW	83.9	66.0	84.0	18.0
	Jack and Bore	Adjacent to the ROW	70.5 /d/	66.0	71.8	5.8
CONSTRUCTION ALONG CANTERBURY AVE.						
Residences	Slip-Lining	Adjacent to the ROW	70.5 /d/	61.4	71.0	9.6
	Jack and Bore	Adjacent to the ROW	70.5 /d/	61.4	71.0	9.6

/a/ Distance is the setback of the receptor from the roadway.
/b/Intervening building reduction of 4.5 dB for first row of buildings and 1.5 dB for each subsequent row.
/c/ A 3 dB reduction has been applied for equipment mufflers.
/d/ A 10 dB reduction has been applied for sound barriers.
SOURCE: TAHA, 2018.

3.5.2 Would the proposed project exposure of persons to or generate excessive ground-borne vibration or ground-borne noise levels? (*Less-than-Significant Impact with Mitigation*)

Impact Analysis

Construction

Construction activity can generate varying degrees of vibration, depending on the procedure and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, and to slight damage at the highest levels. In most cases, the primary concern regarding construction vibration relates to damage. Community parks are not typically considered sensitive to short-term vibration levels.

On-Site Equipment. The FTA provides vibration levels for various types of construction equipment with an average source level reported in terms of velocity.[8] Jack and bore sites would include the use of vibration-free hydraulic piling equipment and no impact pile driving would be required. Equipment used for boring pipe tunnels would be most similar to a caisson drill. **Table 3-9** provides estimates of vibration levels for a wide range of soil conditions. The reference levels were used to estimate vibration levels at the sensitive receptors most likely to be impacted by equipment at each location of construction activity.

TABLE 3-9: VIBRATION VELOCITIES FOR CONSTRUCTION EQUIPMENT

Equipment	PPV at 25 feet (Inches/Second)	Approximate L_v at 25 feet /a/
Large Bulldozer	0.089	87
Caisson Drilling	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

/a/ RMS velocity in decibels (VdB) related to 1 micro-inch/second.
SOURCE: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

Construction activity would occur within the public right-of-way, approximately 50 feet from residences on either side of the street. No impact pile-driving would be necessary for open-trench construction, slip-lining, or jack and bore sites. Installing piles would be accomplished using an excavator with various attachments, depending on the method. Vibration generating equipment used for trenching, slip-lining, and jack and bore sites would be similar and would be best characterized by caisson drilling, loaded trucks, jackhammers and small bulldozers as shown **Table 3-9**. Vibration damage to structures is the primary concern when operating heavy equipment. **Table 3-10** shows vibration levels and impacts at structures closest to the proposed project alignment. The majority of structures along the alignment are constructed of engineered concrete and masonry, which is held to a 0.3 inches per second vibration damage thresholds. However, there are also historic structures in close proximity to construction activity, such as a structure associated with the Mission San Fernando Rey De Espana and a fountain associated with the Brand Park Community Garden. No impacts were identified at historic structures or non-

[8] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

historic structures near the alignment. Therefore, the proposed project would result in a less-than-significant impact related to on-site equipment vibration.

TABLE 3-10: VIBRATION VELOCITIES FOR CONSTRUCTION EQUIPMENT

Receptor	Activity	Equipment /a/	Distance (ft)	Reference Vibration Level (Inches/Second)	Vibration Damage Threshold (Inches/Seconds)	Vibration Level at receptor (Inches/Second)	Impact?
Non-historic structures	Open-Trench	Loaded Trucks	50	0.076	0.3	0.027	No
	Slip-Lining	Caisson Drilling	50	0.089	0.3	0.031	No
	Jack and Bore	Caisson Drilling	50	0.089	0.3	0.031	No
Bishop Alemany High School	Open-Trench	Loaded Trucks	500	0.076	0.3	0.001	No
Mission San Fernando Rey de Espana Structure	Open-Trench	Loaded Trucks	20	0.076	0.12	0.106	No
Brand Park Community Garden Fountain	Open-Trench	Loaded Trucks	20	0.076	0.12	0.106	No

/a/ Most vibration intensive equipment for activity occurring near receptor.

SOURCE: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

Off-Site Trucks. In addition to on-site construction activities, construction trucks on the roadway network have the potential to expose vibration-sensitive land uses located near the proposed project access route. As shown in **Table 3-9**, above, loaded trucks generate vibration levels of 0.076 inches per second at a distance of 25 feet. Rubber-tired vehicles, including trucks, do not generate significant roadway vibrations that can cause building damage. It is possible that trucks would generate perceptible vibration at sensitive receptors adjacent to the roadway. However, these would be transient and instantaneous events typical to the roadway network. This level of activity is not considered substantial enough to generate a vibration annoyance. Therefore, the proposed project would result in a less-than-significant impact related to off-site vibration.

Operations

The primary sources of proposed project operational-related vibration would include vehicles traveling to the project site for routine inspection and maintenance activities. Vehicular movements would generate similar vibration levels as existing traffic conditions. The proposed project would not introduce any significant stationary sources of vibration, including mechanical equipment that would be perceptible at sensitive receptors. Therefore, the proposed project would result in a less-than-significant impact related to operational vibration.

Mitigation Measures

No significant impacts have been identified related to the generation of excessive vibration in the project vicinity above levels existing without the proposed project. Therefore, no mitigation measures are required.

3.5.3 Would the proposed project create a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? (*Less-than-Significant Impact*)

Impact Analysis

As discussed in Section 3.5.1, above, permanent operational noise levels were considered for each project component. Operational activity would not generate mechanical or mobile noise that would exceed the significance thresholds. Therefore, the proposed project would result in a less-than-significant impact related to operational noise.

Mitigation Measures

No significant impacts have been identified related to the proposed project creating a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the proposed project. Therefore, no mitigation measures are required.

3.5.4 Would the proposed project create a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? (*Less-Than-Significant Impact with Mitigation Incorporated*)

Impact Analysis

As described above, sensitive receptors adjacent to the construction work zones would experience increased noise levels associated with construction. Construction noise impacts would be temporary in nature, but equipment noise levels would exceed 75 dBA at the nearest sensitive receptors. Therefore, without mitigation, the proposed project would result in a significant related to temporary and periodic increases in ambient noise levels.

Mitigation Measures

Refer to Mitigation Measures **N1** through **N7**.

Significance After Mitigation

Based on compliance with the LAMC, construction equipment noise would be mitigated to the greatest extent feasible. The implementation of Mitigation Measures **N1** through **N7** would reduce noise impacts associated with the proposed project to the greatest extent feasible. Therefore, the proposed project would result in a less-than-significant impact related to temporary or periodic increases in ambient noise levels with mitigation incorporated.

3.5.5 For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the proposed project expose people residing or working in the project area to excessive noise levels? (No Impact)

Impact Analysis

The proposed project is a subterranean pipeline project and would not be sensitive to airport noise. Therefore, no impact would occur.

Mitigation Measures

No significant impacts have been identified related to airport noise. Therefore, no mitigation measures are required.

3.5.6 For a project within the vicinity of a private airstrip, would the proposed project expose people residing or working in the project area to excessive noise levels? (*No Impact*)

Impact Analysis

The proposed project is a subterranean pipeline project and would not be sensitive to airport noise. Therefore, no impact would occur.

Mitigation Measures

No significant impacts have been identified related to airport noise. Therefore, no mitigation measures are required.

4.0 REFERENCES

California Department of Transportation, *Technical Noise Supplement*, September 2013.

Federal Highway Administration, *Roadway Construction Noise Model*, *Software Version 1.1*, 2008.

Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

Los Angeles Municipal Code, *Section 112.05 (Maximum Noise Level of Powered Equipment or Powered Hand Tools*), adopted through June 30, 2018.

Los Angeles Municipal Code, *Section 41.40 (Noise Due to Construction, Excavation Work – When Prohibited*), adopted through June 30, 2018.

APPENDIX A

Noise Data and Calculations

Noise Formulas

Noise Distance Attenuation

Hard Site

Equation: Ni = No - 20(log Di/Do) **Di** = distance to receptor (Di>Do)

Ni = attenuated noise level of interest **Do** = reference distance
No = reference noise level

Source: (Bolt, Beranek, and Newman, 1971)

Summation of Noise Levels

Equation: Ns=10 x LOG10((10^(N1/10))+(10^(N2/10))+(10^(N3/10))+(10^(N4/10)))

Ns = Noise Level Sum
N1 = Noise Level 1
N2 = Noise Level 2
N3 = Noise Level 3
N4 = Noise Level 4

Source: California Department of Transportation,*Technical Noise Supplement* , 2009

Construction Noise Analysis

Outdoor Construction Noise Levels	
Construction Phase	Noise Level at 50 feet (dBA)
Open-Trench Construction	86.9
Slip-Lining	83.5
Jack and Bore	83.5

Source: FHWA, *Roadway Construction Noise Model, Version 1.1* , 2008.

UNIT 1 TYPICAL CONSTRUCTION NOISE LEVELS AT RECEPTORS - UNMITIGATED

Sensitive Receptor	Activity	Distance (feet) /a/	Adjustment /a/	Reference Noise Level	Maximum Noise Level (dBA)	Existing Ambient (dBA, Leq)	New Ambient at Receptor (dBA, Leq)	Increase (dBA)
Construction in Van Norman Complex								
Residences along Midwood Dr.	Open-Trench	50.0		86.9	86.9	55.8	86.9	31.1
	Slip-Lining	50.0		83.5	83.5	55.8	83.5	27.7
	Open-Trench	500.0		86.9	66.9	55.8	67.2	11.4
Construction along Stranwood St.								
Residence along Stranwood St.	Slip-Lining	50.0		83.5	83.5	57.0	83.5	26.5
		50.0		83.5	83.5	58.6	83.5	24.9
Construction along San Fernando Mission Blvd. and Brand Blvd.								
Residences along San Fernando Mission Blvd. and Brand Blvd.	Open-Trench	50.0		86.9	86.9	68.0	87.0	19.0
Bishop Alemany High School	Open-Trench	500.0	4.5	86.9	66.9	68.0	70.5	2.5
Construction along Arelta Ave.								
Residences Along Arleta Ave.	Open-Trench	50.0		86.9	86.9	57.3	86.9	29.6
		50.0		86.9	86.9	62.1	86.9	24.8
		50.0		86.9	86.9	63.6	86.9	23.3
Residences Along Arleta Ave.	Jack and Bore	50.0		83.5	83.5	57.3	83.5	26.2
		50.0		83.5	83.5	62.1	83.5	21.4
		50.0		83.5	83.5	63.6	83.5	19.9

/a/ Distance is the setback of the receptor from the roadway.

UNIT 2 TYPICAL CONSTRUCTION NOISE LEVELS AT RECEPTORS - UNMITIGATED

Sensitive Receptor	Activity	Distance (feet) /a/	Adjustment /b/	Reference Noise Level	Maximum Noise Level (dBA)	Existing Ambient (dBA, Leq)	New Ambient at Receptor (dBA, Leq)	Increase (dBA)
Construction along Arelta Ave.								
Residences Along Arleta Ave.	Open-Trench	50.0		86.9	86.9	65	86.9	21.9
		50.0		86.9	86.9	66	86.9	20.9
Vena Ave. Elementary School		480.0	6	86.9	61.3	56	62.4	6.4
Residences Along Arleta Ave.	Jack and Bore	50.0		83.5	83.5	65	83.6	18.6
		50.0		83.5	83.5	66	83.6	17.6
Vena Ave. Elementary School		1200.0	10.5	83.5	45.4	56	56.4	0.4
Construction along Branford St.								
Residences along Branford St.	Open-Trench	50.0		86.9	86.9	66	86.9	20.9
	Slip-Lining	50.0		83.5	83.5	66	83.6	17.6
Construction along Canterbury Ave.								
Residences along Canterbury Ave.	Open-Trench	50.0		83.5	83.5	61.4	83.5	22.1
	Jack and Bore	50.0		83.5	83.5	61.4	83.5	22.1

/a/ Distance is the setback of the receptor from the roadway.

/b/ Intervening building reduction of -4.5 dB for first row of buildings and -1.5 db for each subsequent rov

UNIT 1 TYPICAL CONSTRUCTION NOISE LEVELS AT RECEPTORS - MITIGATED

Sensitive Receptor	Activity	Distance (feet) /a/	Adjustment /a/	Mitigation	Reference Noise Level	Maximum Noise Level (dBA)	Existing Ambient (dBA, Leq)	New Ambient at Receptor (dBA, Leq)	Increase (dBA)
Construction in Van Norman Complex									
Residences along Midwood Dr.	Open-Trench	50.0		3.0	86.9	83.9	55.8	83.9	28.1
	Slip-Lining	50.0		13.0	83.5	70.5	55.8	70.6	14.8
	Open-Trench	500.0		3.0	86.9	63.9	55.8	64.5	8.7
Construction along Stranwood St.									
Residence along Stranwood St.	Slip-Lining	50.0		13.0	83.5	70.5	57.0	70.7	13.7
		50.0		13.0	83.5	70.5	58.6	70.8	12.2
Construction along San Fernando Mission Blvd. and Brand Blvd.									
Residences along San Fernando Mission Blvd. and Brand Blvd.	Open-Trench	50.0		3.0	86.9	83.9	68.0	84.0	16.0
Bishop Alemany High School	Open-Trench	500.0	4.5	3.0	86.9	59.4	68.0	68.6	0.6
Construction along Arelta Ave.									
Residences Along Arleta Ave.	Open-Trench	50.0		3.0	86.9	83.9	57.3	83.9	26.6
		50.0		3.0	86.9	83.9	62.1	83.9	21.8
		50.0		3.0	86.9	83.9	63.6	83.9	20.3
Residences Along Arleta Ave.	Jack and Bore	50.0		13.0	83.5	70.5	57.3	70.7	13.4
		50.0		13.0	83.5	70.5	62.1	71.1	9.0
		50.0		13.0	83.5	70.5	63.6	71.3	7.7

/a/ Distance is the setback of the receptor from the roadway.

/b/ A 3 dB reduction has been applied for mufflers

/c/ a 10 dB reduction has been applied for sound barrier

UNIT 2 TYPICAL CONSTRUCTION NOISE LEVELS AT RECEPTORS - MITIGATED

Sensitive Receptor	Activity	Distance (feet) /a/	Adjustment /b/	Mitigation /c/ /d/	Reference Noise Level	Maximum Noise Level (dBA)	Existing Ambient (dBA, Leq)	New Ambient at Receptor (dBA, Leq)	Increase (dBA)
Construction along Arelta Ave.									
Residences Along Arleta Ave.	Open-Trench	50.0		3.0	86.9	83.9	65	84.0	19.0
		50.0		3.0	86.9	83.9	66	84.0	18.0
Vena Ave. Elementary School		480.0	6	3	86.9	58.3	56	60.3	4.3
Residences Along Arleta Ave.	Jack and Bore	50.0		13	83.5	70.5	65	71.6	6.6
		50.0		13.0	83.5	70.5	66	71.8	5.8
Vena Ave. Elementary School		1200.0	10.5	13	83.5	32.4	56	56.0	0.0
Construction along Branford St.									
Residences along Branford St.	Open-Trench	50.0		3.0	86.9	83.9	66	84.0	18.0
	Slip-Lining	50.0		13.0	83.5	70.5	66	71.8	5.8
Construction along Canterbury Ave.									
Residences along Canterbury Ave.	Slip-Lining	50.0		13.0	83.5	70.5	61.4	71.0	9.6
	Jack and Bore	50.0		13.0	83.5	70.5	61.4	71.0	9.6

/a/ Distance is the setback of the receptor from the roadway.

/b/ Intervening building reduction of -4.5 dB for first row of buildings and -1.5 db for each subsequent rov

/c/ A 3 dB reduction has been applied for mufflers

/d/ a 10 dB reduction has been applied for sound barrier

Vibration PPV Attenuation

Equation: PPVequip = PPVref x (25/D)^1.5
PPV (equip) is the peak particle velocity in in/sec of the equipment adjusted for distance
PPV (ref) is the reference vibration level in in/sec at 25 feet from Table 12-2
D is the distance from the equipment to the receiver.

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

Vibration VdB Attenuation

Equation: Lv(D) = Lv(25 ft) - 30log(D/25)
D = Distance (feet)
Lv(D) = Vibration Level

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

ration Damage and Annoyance Analysis

Vibration Velocities for Construction Equipment	
Equipment	PPV at 25 Feet (Inches/Second)
Pile Driver (Upper Range)	1.518
Caisson Drill	0.089
Large Bulldozer	0.089
Loaded Trucks	0.076
Small Bulldozer	0.003

0.00106066

Vibration Damage Analysis

Receptor	Activity	Equipment /a/	Distance (ft)	Reference Vibration Level (Inches/Second)	Vibration Damage Threshold (Inches/Seconds)	Vibration Level at receptor (Inches/Second)	Impact?
Residences	Open-Trench	Loaded Trucks	50	0.076	0.3	0.027	No
	Slip-Lining	Caisson Drilling	50	0.089	0.3	0.031	No
	Jack and Bore	Caisson Drilling	50	0.089	0.3	0.031	No
Bishop Alemany High School	Open-Trench	Loaded Trucks	500	0.076	0.3	0.001	No
Mission San Fernando Rey de Espana Structure	Open-Trench	Loaded Trucks	20	0.076	0.12	0.106	No
Brand Park Community Garden Fountain	Open-Trench	Loaded Trucks	20	0.076	0.12	0.106	No

/a/ Most vibration intensive equipment for activity occurring near receptor.

SOURCE: Federal Transit Administration,*Transit Noise and Vibration Impact Assessment*, May 2006.

LADWP Trunk Line North - Site 1

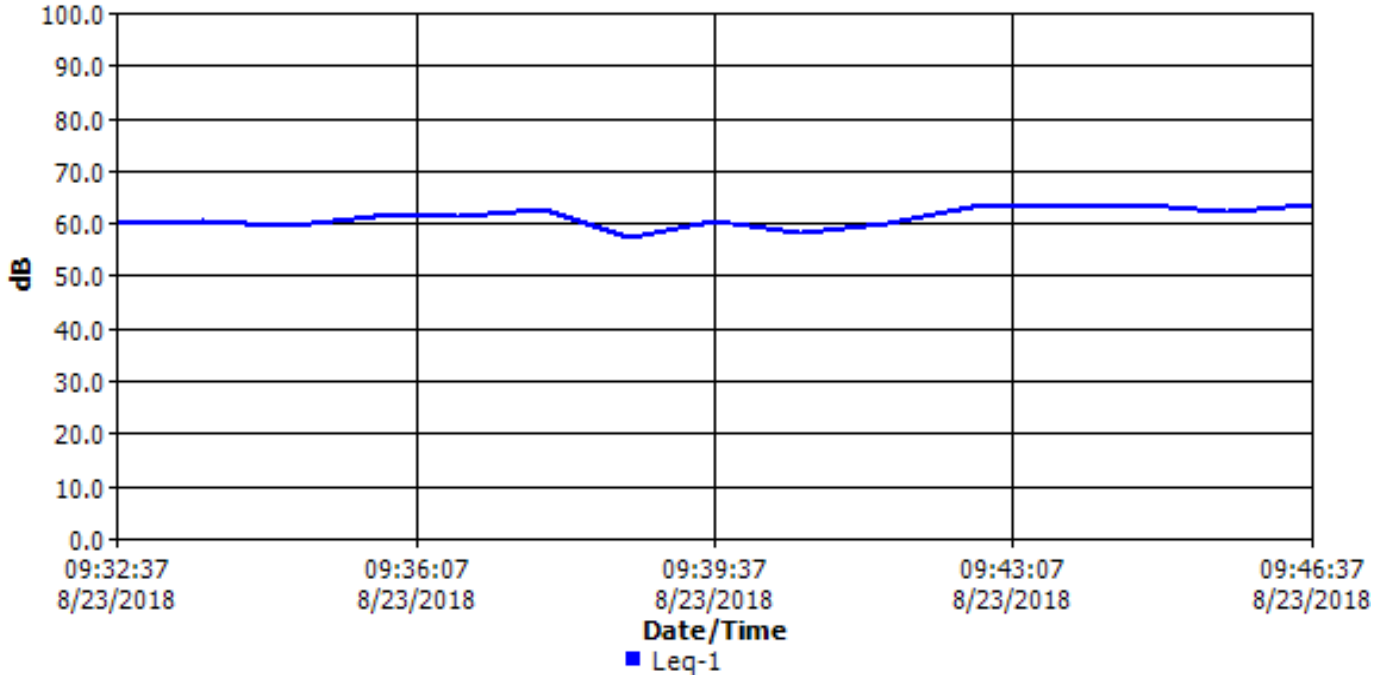
Information Panel

Name	LADWP Trunk - Site 1
Start Time	Thursday, August 23, 2018 09:31:37
Stop Time	Thursday, August 23, 2018 09:47:14
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	61.4 dB	Exchange Rate	1	3 dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	C	Response	2	SLOW

Logged Data Chart



Logged Data Table

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8/23/2018 9:34:37 AM	59.5
8/23/2018 9:35:37 AM	61.3
8/23/2018 9:36:37 AM	61.2
8/23/2018 9:37:37 AM	62.7
8/23/2018 9:38:37 AM	57.3
8/23/2018 9:39:37 AM	60.1
8/23/2018 9:40:37 AM	58.2
8/23/2018 9:41:37 AM	60.0
8/23/2018 9:42:37 AM	63.1
8/23/2018 9:43:37 AM	62.9
8/23/2018 9:44:37 AM	63.4
8/23/2018 9:45:37 AM	61.9
8/23/2018 9:46:37 AM	63.3

LADWP Trunk Line North - Site 2

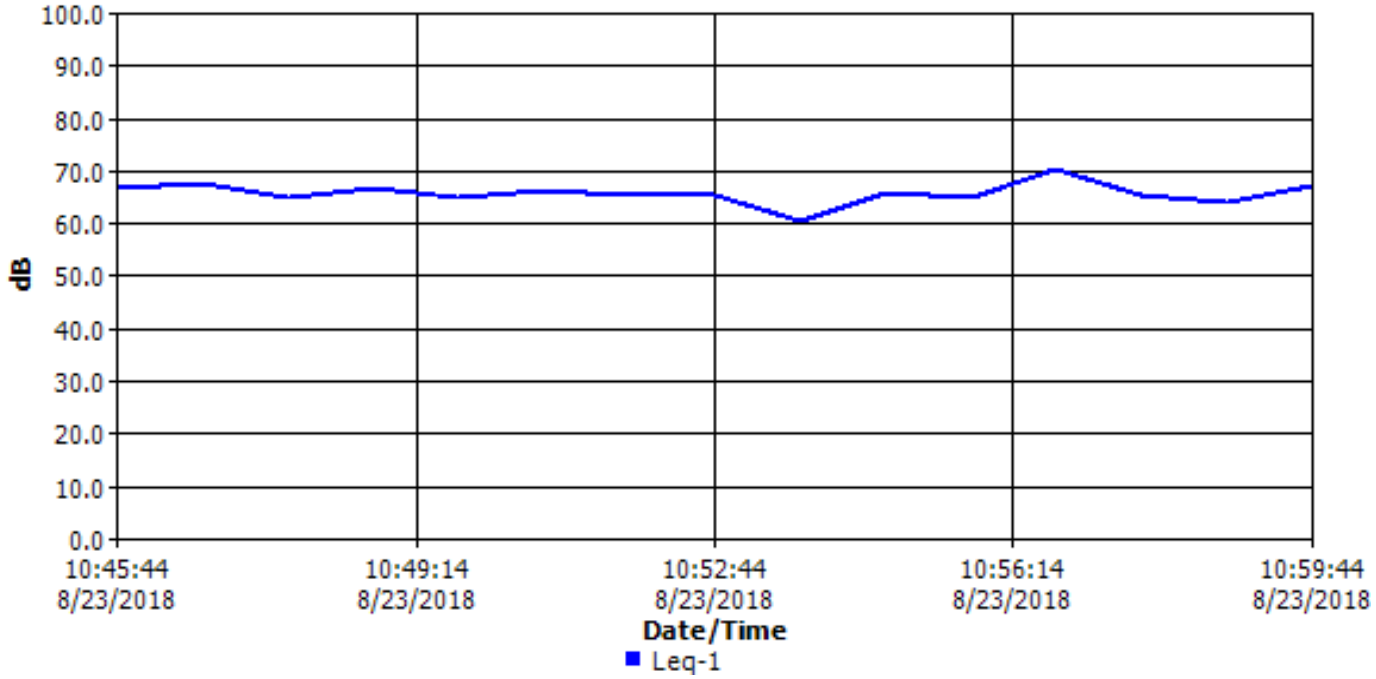
Information Panel

Name	LADWP Trunk - Site 3
Start Time	Thursday, August 23, 2018 10:44:44
Stop Time	Thursday, August 23, 2018 10:59:44
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	66 dB	Exchange Rate	1	3 dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	C	Response	2	SLOW

Logged Data Chart



Logged Data Table

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8/23/2018 10:47:44 AM	64.8
8/23/2018 10:48:44 AM	66.7
8/23/2018 10:49:44 AM	64.7
8/23/2018 10:50:44 AM	66.1
8/23/2018 10:51:44 AM	65.3
8/23/2018 10:52:44 AM	65.4
8/23/2018 10:53:44 AM	60.3
8/23/2018 10:54:44 AM	65.5
8/23/2018 10:55:44 AM	64.7
8/23/2018 10:56:44 AM	70.0
8/23/2018 10:57:44 AM	65.3
8/23/2018 10:58:44 AM	64.1
8/23/2018 10:59:44 AM	67.0

LADWP Trunk Line North - Site 3

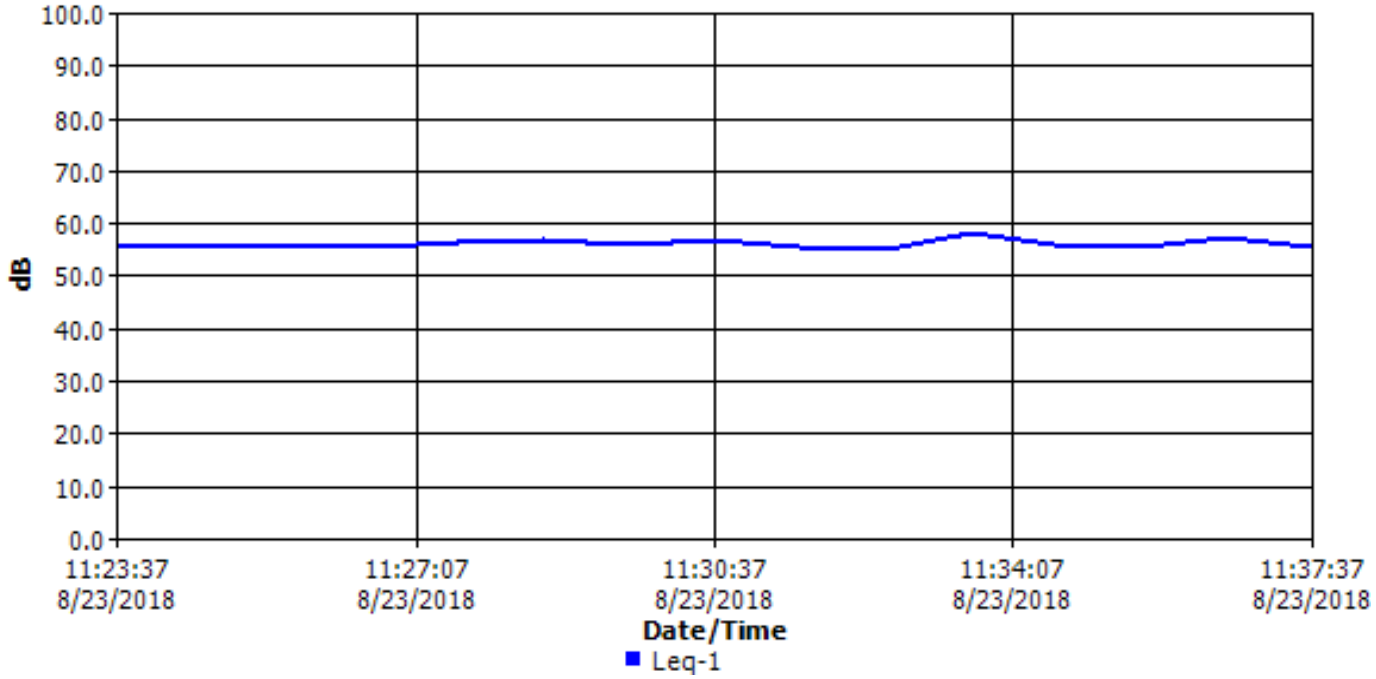
Information Panel

Name	LADWP Trunk - Site 4
Start Time	Thursday, August 23, 2018 11:22:37
Stop Time	Thursday, August 23, 2018 11:37:37
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	56 dB	Exchange Rate	1	3 dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	C	Response	2	SLOW

Logged Data Chart



Logged Data Table

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8/23/2018 11:25:37 AM	55.3
8/23/2018 11:26:37 AM	55.5
8/23/2018 11:27:37 AM	56.2
8/23/2018 11:28:37 AM	56.7
8/23/2018 11:29:37 AM	55.9
8/23/2018 11:30:37 AM	56.9
8/23/2018 11:31:37 AM	55.3
8/23/2018 11:32:37 AM	55.1
8/23/2018 11:33:37 AM	57.9
8/23/2018 11:34:37 AM	55.8
8/23/2018 11:35:37 AM	55.5
8/23/2018 11:36:37 AM	57.1
8/23/2018 11:37:37 AM	55.4

LADWP Trunk Line North - Site 4

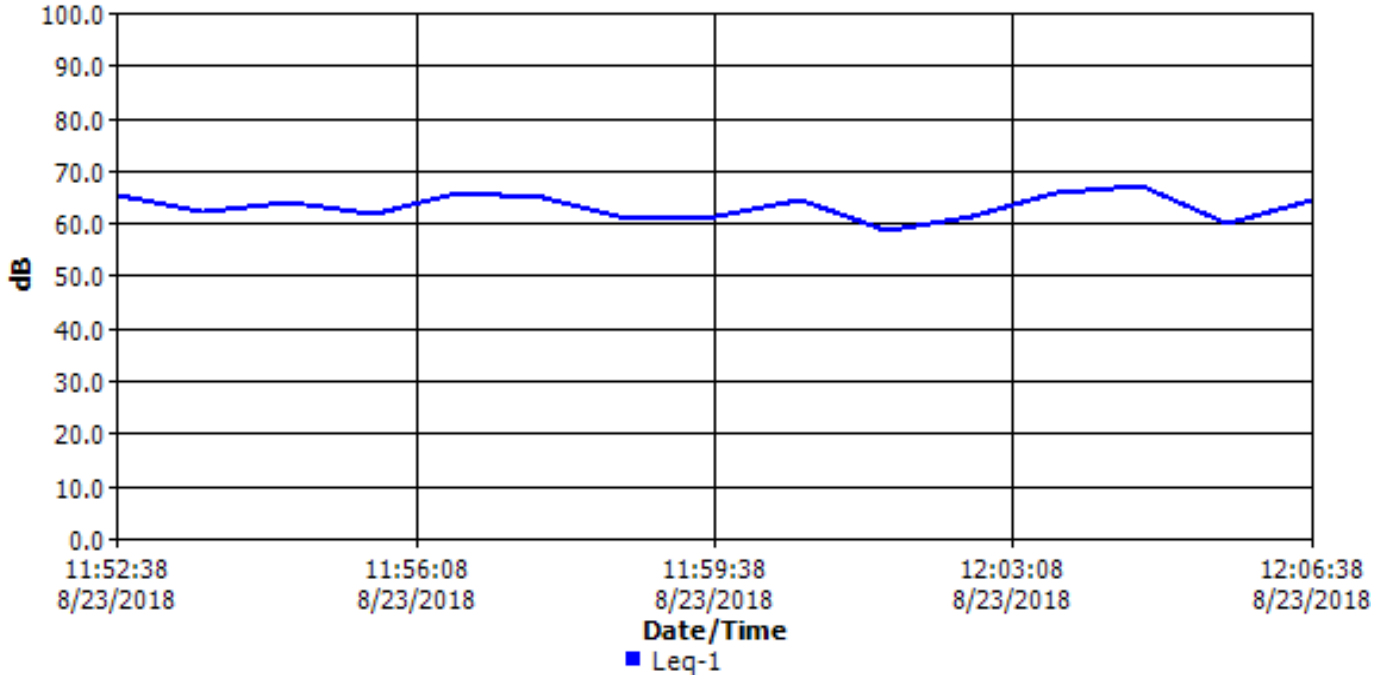
Information Panel

Name	LADWP Trunk - Site 5
Start Time	Thursday, August 23, 2018 11:51:38
Stop Time	Thursday, August 23, 2018 12:06:38
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	63.6 dB	Exchange Rate	1	3 dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	C	Response	2	SLOW

Logged Data Chart



Logged Data Table

Timestamp	Leq-1
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8/23/2018 11:53:38 AM	62.2
8/23/2018 11:54:38 AM	63.7
8/23/2018 11:55:38 AM	61.5
8/23/2018 11:56:38 AM	65.9
8/23/2018 11:57:38 AM	64.7
8/23/2018 11:58:38 AM	60.6
8/23/2018 11:59:38 AM	61.1
8/23/2018 12:00:38 PM	64.2
8/23/2018 12:01:38 PM	58.5
8/23/2018 12:02:38 PM	61.4
8/23/2018 12:03:38 PM	65.7
8/23/2018 12:04:38 PM	67.1
8/23/2018 12:05:38 PM	59.8
8/23/2018 12:06:38 PM	64.5

LADWP Trunk Line North - Site 5

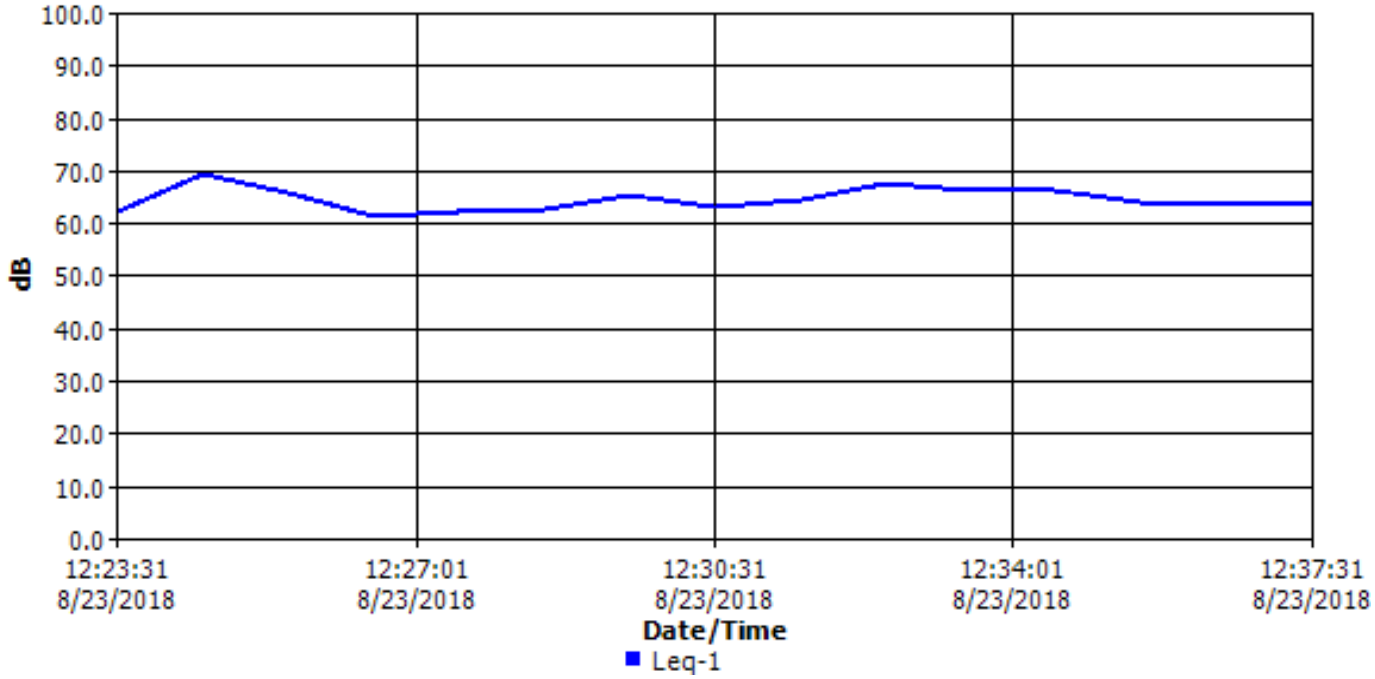
Information Panel

Name	LADWP Trunk - Site 6
Start Time	Thursday, August 23, 2018 12:22:31
Stop Time	Thursday, August 23, 2018 12:37:31
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	65 dB	Exchange Rate	1	3 dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	C	Response	2	SLOW

Logged Data Chart



Logged Data Table

Timestamp	Leq-1
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8/23/2018 12:25:31 PM	65.6
8/23/2018 12:26:31 PM	61.3
8/23/2018 12:27:31 PM	62.0
8/23/2018 12:28:31 PM	62.6
8/23/2018 12:29:31 PM	65.4
8/23/2018 12:30:31 PM	63.2
8/23/2018 12:31:31 PM	64.3
8/23/2018 12:32:31 PM	67.4
8/23/2018 12:33:31 PM	66.3
8/23/2018 12:34:31 PM	66.3
8/23/2018 12:35:31 PM	64.1
8/23/2018 12:36:31 PM	63.4
8/23/2018 12:37:31 PM	63.6

LADWP Trunk Line North - Site 6

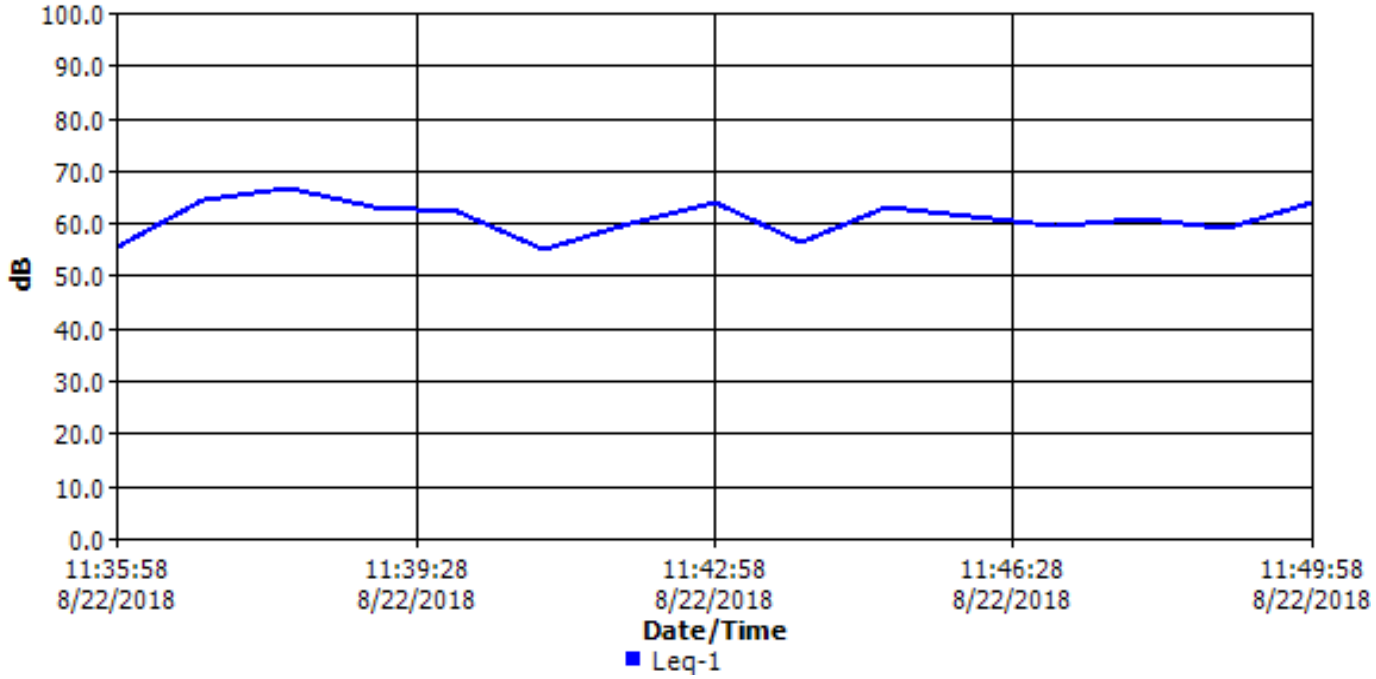
Information Panel

Name	LADWP Trunk - Site 7
Start Time	Wednesday, August 22, 2018 11:34:58
Stop Time	Wednesday, August 22, 2018 11:49:58
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	62.1 dB	Exchange Rate	1	3 dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	C	Response	2	SLOW

Logged Data Chart



Logged Data Table

Timestamp	Leq-1
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8/22/2018 11:37:58 AM	66.8
8/22/2018 11:38:58 AM	62.8
8/22/2018 11:39:58 AM	62.1
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LADWP Trunk Line North - Site 7

Information Panel

Name	LADWP Trunk - Site 8
Start Time	Wednesday, August 22, 2018 11:05:09
Stop Time	Wednesday, August 22, 2018 11:20:09
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
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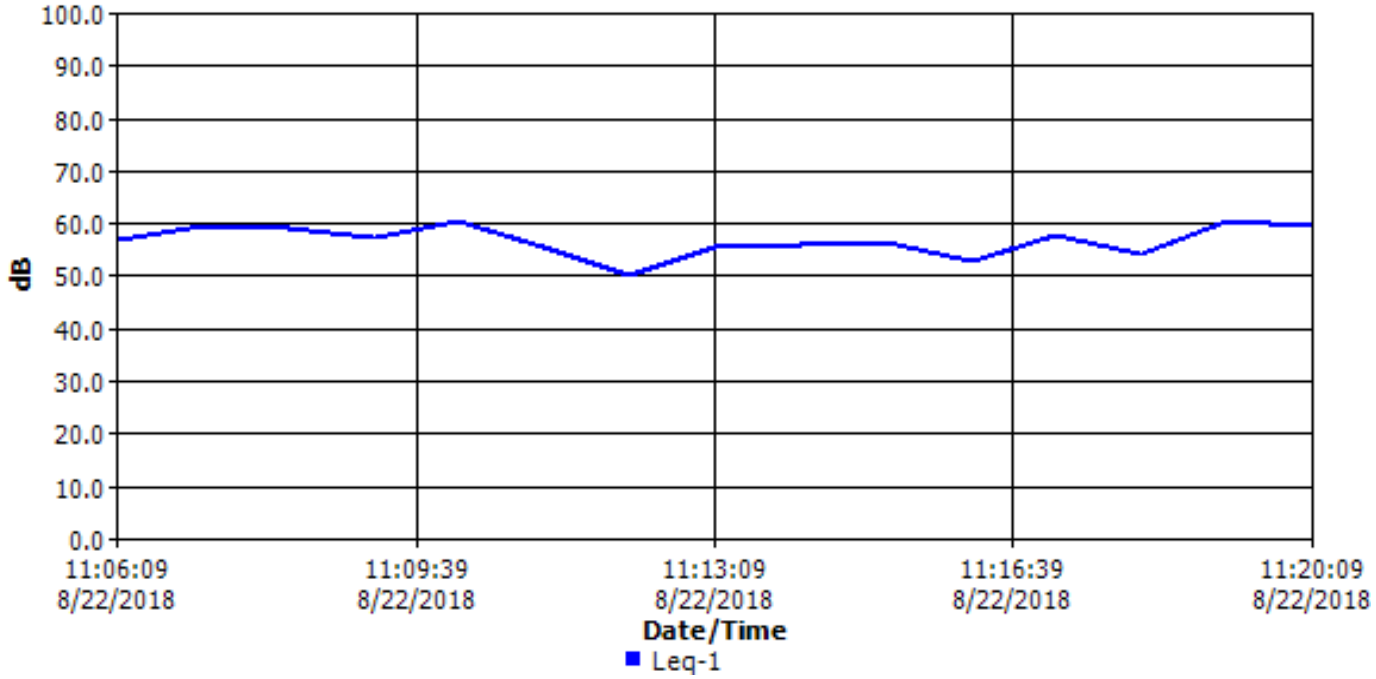
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	C	Response	2	SLOW

Logged Data Chart



Logged Data Table

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8/22/2018 11:11:09 AM	55.2
8/22/2018 11:12:09 AM	49.9
8/22/2018 11:13:09 AM	55.6
8/22/2018 11:14:09 AM	56.0
8/22/2018 11:15:09 AM	56.3
8/22/2018 11:16:09 AM	52.5
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8/22/2018 11:20:09 AM	59.3

LADWP Trunk Line North - Site 8

Information Panel

Name	LADWP Trunk - Site 9
Start Time	Wednesday, August 22, 2018 10:39:12
Stop Time	Wednesday, August 22, 2018 10:54:12
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
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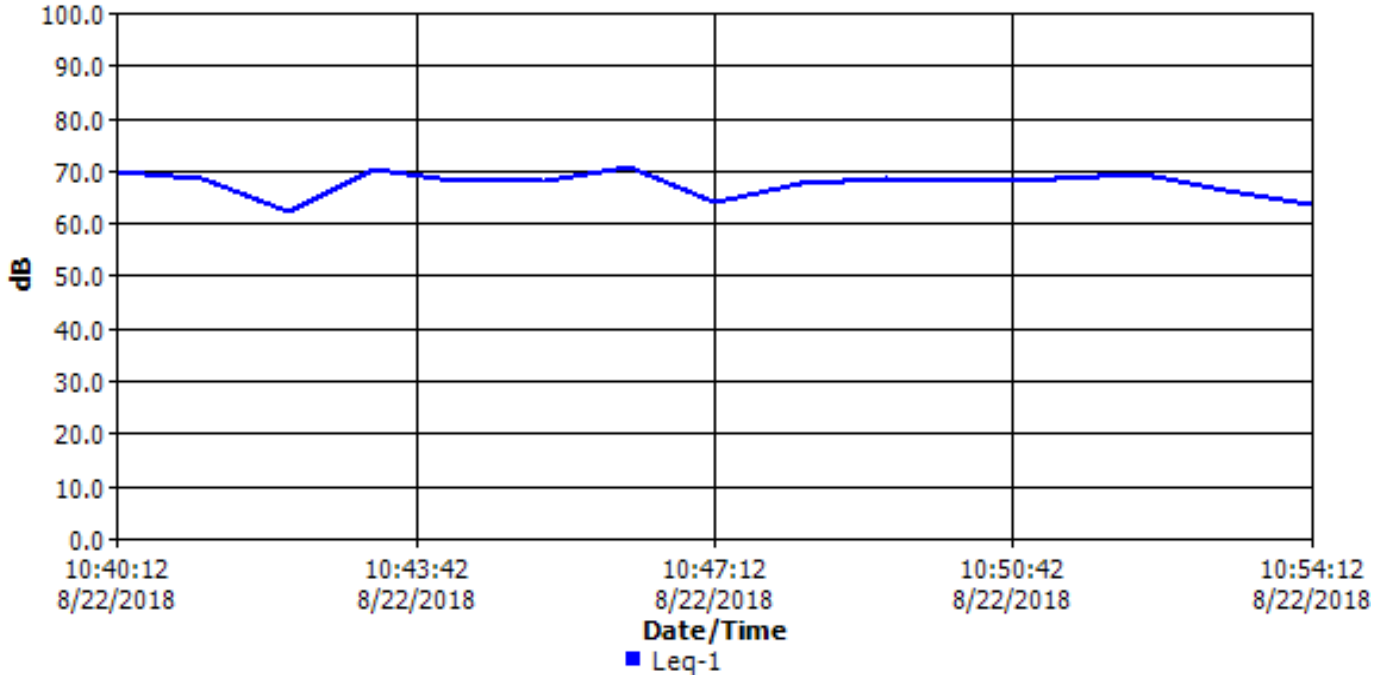
Logged Data Chart



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8/22/2018 10:45:12 AM	68.0
8/22/2018 10:46:12 AM	70.7
8/22/2018 10:47:12 AM	63.9
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LADWP Trunk Line North - Site 9

Information Panel

Name	LADWP Trunk - Site 10
Start Time	Wednesday, August 22, 2018 10:10:36
Stop Time	Wednesday, August 22, 2018 10:25:36
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
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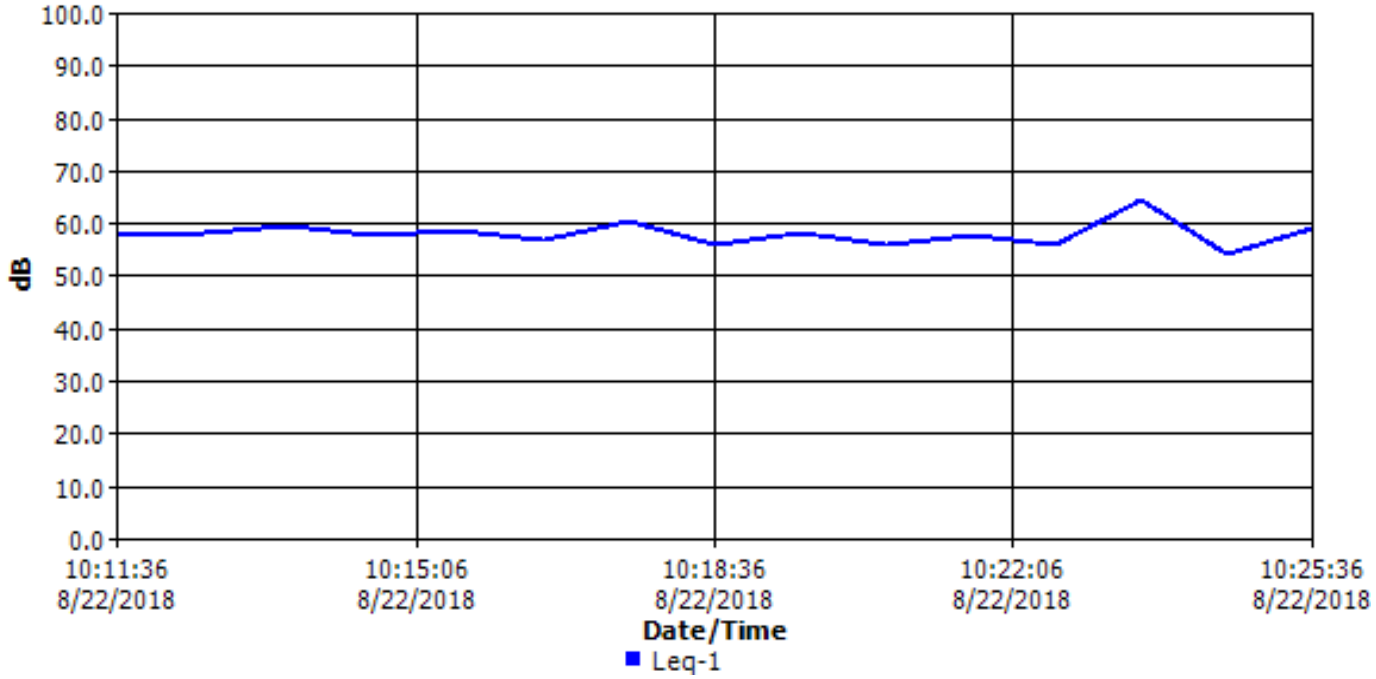
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	C	Response	2	SLOW

Logged Data Chart



Logged Data Table

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8/22/2018 10:17:36 AM	60.3
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8/22/2018 10:20:36 AM	56.0
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LADWP Trunk Line North - Site 10

Information Panel

Name	LADWP Trunk-Site 11
Start Time	Wednesday, August 22, 2018 09:46:20
Stop Time	Wednesday, August 22, 2018 10:01:20
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
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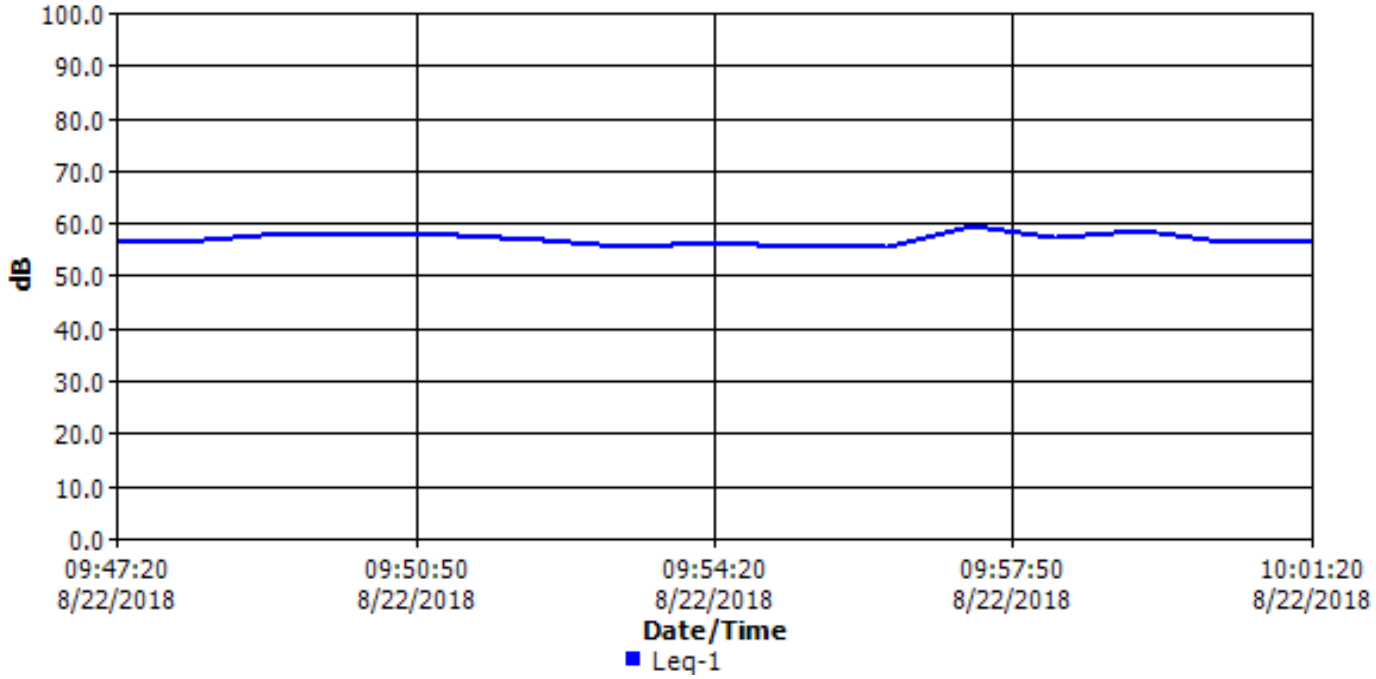
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	C	Response	2	SLOW

Logged Data Chart



Logged Data Table

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8/22/2018 9:53:20 AM	55.5
8/22/2018 9:54:20 AM	56.3
8/22/2018 9:55:20 AM	55.4
8/22/2018 9:56:20 AM	55.2
8/22/2018 9:57:20 AM	59.6
8/22/2018 9:58:20 AM	57.0
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8/22/2018 10:01:20 AM	56.2

LADWP Trunk Line North - Site 11

Information Panel

Name	LADWP Trunk - Site 12
Start Time	Wednesday, August 22, 2018 09:25:23
Stop Time	Wednesday, August 22, 2018 09:40:23
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
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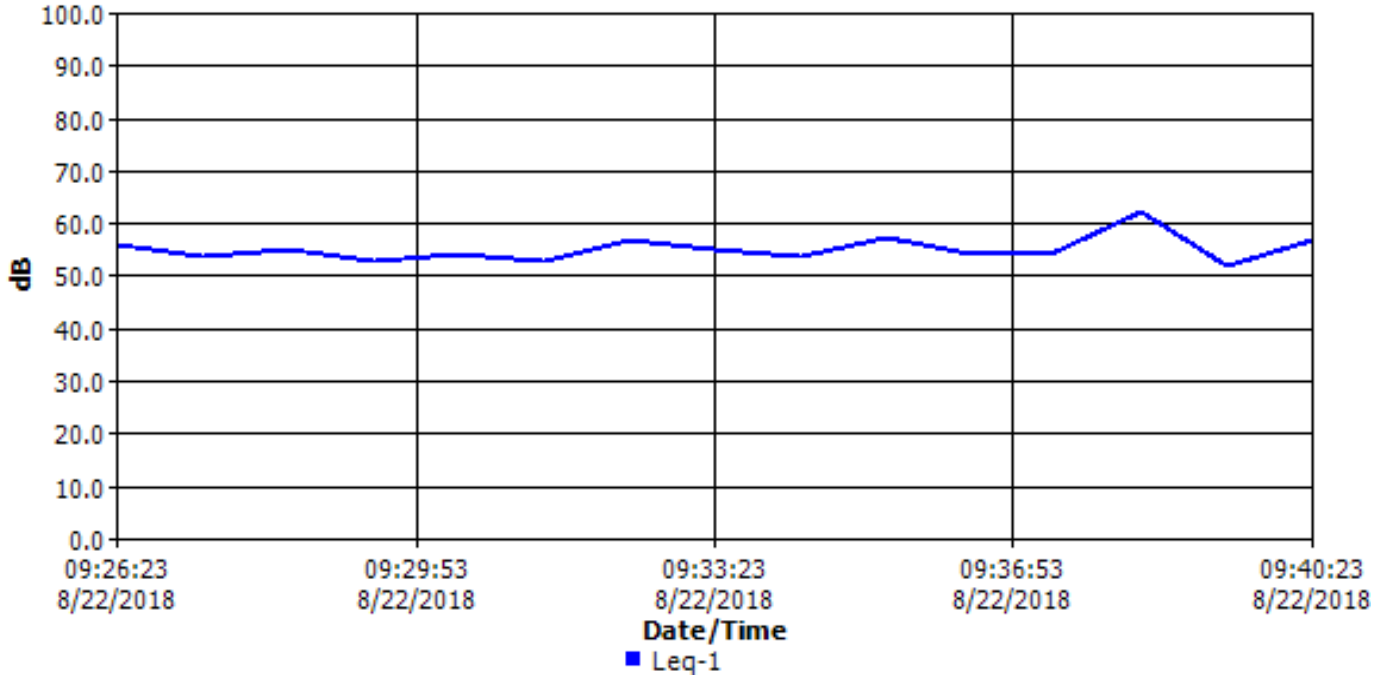
Weighting	2	C	Response	2	SLOW

Logged Data Chart



Logged Data Table

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8/22/2018 9:34:23 AM	53.4
8/22/2018 9:35:23 AM	57.0
8/22/2018 9:36:23 AM	54.1
8/22/2018 9:37:23 AM	54.3
8/22/2018 9:38:23 AM	61.9
8/22/2018 9:39:23 AM	51.6
8/22/2018 9:40:23 AM	56.7

APPENDIX E
Construction Traffic Impact Analysis

CITY TRUNK LINE NORTH

CONSTRUCTION TRAFFIC IMPACT ANALYSIS

DECEMBER 2018

PREPARED FOR:

Los Angeles Department of Water & Power
Environmental Affairs
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1.0 INTRODUCTION & PROJECT DESCRIPTION

This report presents the methodology, findings and conclusions of the Construction Traffic Impact Analysis prepared for the proposed City Trunk Line North (CTLN) Project (the project). The CTLN would originate at the Los Angeles Department of Water and Power (LADWP) Van Norman Complex in the Granada Hills community of Los Angeles and terminate adjacent to the LADWP Tujunga Spreading Grounds in Sun Valley community of Los Angeles, where it will connect to the existing City Trunk Line South (CTLS). This report also includes preliminary traffic detour recommendations to minimize motorist delays during construction. The purpose of this analysis is to disclose potential traffic impacts under the California Environmental Quality Act (CEQA) and to identify options to minimize those impacts during construction.

1.1 Project Description

The LADWP proposes to replace the northern extent of the existing Los Angeles City Trunk Line (LACTL) with approximately 33,000 linear feet of 54-inch-diameter trunk line (the CTLN). The CTLN will originate at the LADWP Van Norman Complex in the Granada Hills community of Los Angeles and terminate adjacent to the LADWP Tujunga Spreading Grounds in Sun Valley community of Los Angeles, where it will connect to the existing CTLS.

The portion of the LACTL that will be replaced by the CTLN is a 72-inch-diameter riveted steel pipeline, which, at over 100 years in age, has severely corroded. Since 2000, it has experienced numerous leaks and ruptures, including a major collapse of approximately 400 feet of the pipeline within the Van Norman Complex. With the completion in 2012 of the new Sepulveda Trunk Line and Parthenia Trunk Line, as well Units 1 and 2 of the CTLS, trunk line supply pathways were established to bypass the northern portion of the LACTL. However, to maintain supplies to the service areas adjacent to the northern portion of the LACTL, it was converted to function as a distribution mainline, fed with restricted supplies from the Van Norman Complex on the north and Tujunga Pump Station on the south. This has reduced the operating pressure on the line and, thus, minimized the potential for leaks and ruptures.

This northern portion of the LACTL is reaching the end of its service life. Therefore, to avoid further leaks and ruptures and the associated loss of service and potential damage created, it must be replaced. As mentioned above, the Sepulveda and Parthenia trunk lines now provide a connection from the Van Norman Complex to the CTLS to deliver water to areas of the City to the south, but the proposed CTLN is required to continue to reliably provide water to the communities currently served by the northern portion of the LACTL.

Seismic evaluations have indicated that the Sepulveda Trunk Line, which is located west of the LACTL, is crossed by several active earthquake faults that traverse the northeast San Fernando Valley. The relatively large surface displacements that could be created by these faults have the potential to cause severe damage or rupture to the Sepulveda Trunk Line, resulting in the possibly loss of service to areas of the City. Therefore, replacing the LACTL with the 54-inch-diameter CTLN (rather than a 36-inch-diameter mainline that would be required for local distribution purposes) will provide trunk line system redundancy and resilience to help maintain service resulting from potential damage to one or more trunk lines during seismic events.

1.2 Proposed Project Route

The proposed route for the CTLN will originate at the northern end within the Van Norman Complex, where it will follow the alignment of the existing LACTL. A portion of the CTLN installation in the Van Norman Complex, where the existing LACTL is located aboveground, will be achieved by traditional open trench construction methods. This will entail removing the aboveground segment of the LACTL, excavating a trench approximately 10 feet in width and

approximately 12 to 15 feet in depth, placing pipeline sections of nominally 40 feet in length in the trench, and backfilling the trench. In the balance of the alignment within the Van Norman Complex, where the existing LACTL is located underground, the CTLN will be installed via a "slip-lining" method involving the placement of the new 54-inch-diameter CTLN (the "carrier" pipe) within the larger 72-inch-diameter LACTL (the "host" pipe). This will entail the excavation of launching and receiving pits at generally widespread locations, depending on the straightness of the alignment, from which the CTLN pipe sections will be fed through the LACTL. The slip-lining method of pipeline installation reduces the extent of surface disruption when compared to open-trench construction.

After leaving the Van Norman Complex, the route of the CTLN will continue to follow the existing LACTL alignment southeast along Stranwood Avenue between Rinaldi Street and San Fernando Mission Boulevard. Because it will follow the LACTL, this segment of the CTLN will be also installed via the slip-lining method, including beneath the San Diego Freeway (I-405). This will require several launching/receiving pits excavated within the roadway but will not involve disturbance of most of the street surface in this segment.

Once reaching San Fernando Mission Boulevard, the CTLN route will diverge from the LACTL alignment, proceeding east along San Fernando Mission Boulevard and Brand Boulevard, southeast along Arleta Avenue, and southwest along Branford Street to Canterbury Avenue. Within this portion of the route, which will constitute the majority of the CTLN at about 27,000 feet, the pipeline will be installed entirely via open-trench construction because no host pipe (i.e., the existing LACTL) will be available to accommodate slip-lining. At major intersections, freeway underpasses, and flood-control channel crossings within this portion of the route, a jack and bore method will be employed, which involves installing the pipeline at greater depths from a launching pit and to a receiving pit, thus avoiding surface disruption between the pits.

Once reaching Canterbury Avenue at Branford Street, the CTLN route will again follow the alignment of the existing LACTL to the southeast, and, therefore, it will be installed via the slip-lining method until reaching the Tujunga Spreading Grounds, where it will connect to the existing CTLS. This will require several launching/receiving pits but will not require excavation along most of the roadway in this segment. Figure 1 shows the location of the proposed project as well as the proposed project route.

1.3 Project Construction

The CTLN will be constructed in two units based on the type of pipe material employed.

- Unit 1 is approximately 21,000 feet long, extending from the Van Norman Complex to the intersection of Arleta Avenue and Terra Bella Street. Approximately 2,700 feet of Unit 1 will be located within the Van Norman Complex and the remainder within rights of way of public streets. Based on preliminary estimates, approximately 14,000 feet of Unit 1 would be installed using traditional open-trench construction, approximately 5,000 feet by slip-lining the new pipe within the existing LACTL, and a total of approximately 2,000 feet using a jack and bore method at several sites along the alignment.
- Unit 2 is approximately 11,800 feet long, extending from the intersection of Arleta Avenue and Terra Bella Street to the CTLS in Canterbury Avenue, just west of Tujunga Spreading Grounds. All of Unit 2 would be located within public streets. Based on preliminary estimates, approximately 7,200 feet of Unit 2 would be installed using traditional open-trench construction, approximately 3,100 feet by slip-lining the new pipe within the existing LACTL, and a total of approximately 1,500 feet using a jack and bore method at several sites along the alignment. Construction on Unit 2 would be initiated before construction on Unit 1.

As discussed above, the CTLN will be constructed using a combination of open-trench construction, slip-lining, and jack and bore method.

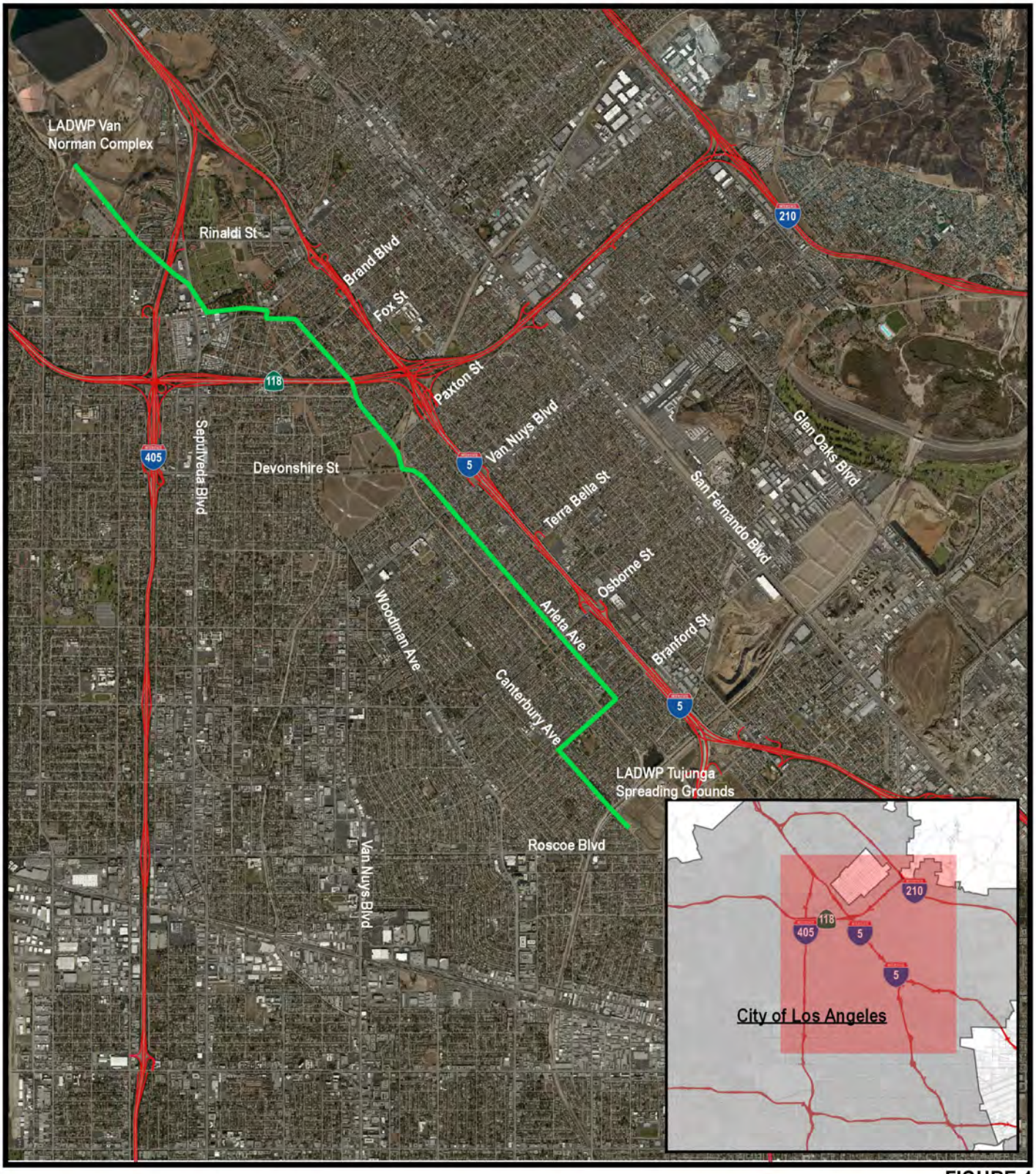

FIGURE 1

Legend

Proposed Project

City Trunk Line North Replacement Project
Regional Project Location

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1.3.1 Open-Trench Construction. Open trench construction is the traditional method for installing or replacing an existing pipeline. This method involves excavating the ground along the entire length of the pipeline, and when the proper depth is reached, bedding material is placed into the bottom of the trench. The new pipe is laid onto the bedding, and the open trench is backfilled. The surface and infrastructure around the pipeline area are then repaired as needed.

On wider streets involving open-trench construction, several lanes of traffic could be occupied. However, at least one travel lane in each direction will be maintained at all times in the portion of the roadway under construction, but on-street parking lanes may be temporarily eliminated during construction. Construction work zones may be 1,000 feet or more in length, often delimited by street intersections. In addition to the actual work zones, lane transition zones of several hundreds of feet would be required extending outward from the work zone to shift approaching traffic to the single travel lane that would be available in each direction adjacent to the work zone. The segment of Branford Street between Canterbury Avenue and Arleta Avenue and the segment of Arleta Avenue between Branford Street and Fox Street are approximately 60-foot wide, four-lane thoroughfares, usually with parking along both sides of the street and a center turning lane.

On narrower streets involving open trench construction, the width of the roadway could be too narrow to allow for the retention of traffic lanes during construction. Construction on narrower roadways would be completed in smaller segments of several hundred feet, rather than the 1,000-foot or greater work zones that would occur in wider roadways. This would help maintain access along the roads, at intersections, and to driveways as possible and allow for a shorter timeframe to complete construction in each work zone. While through traffic would be prohibited, local access to residences and businesses within the work zone would be maintained throughout construction. When practical, portions of the roadway under construction may also be reopened during non-work hours by removing barriers and placing steel plates over open trenches. Such areas would include Arleta Avenue north of Fox Street and portions of San Fernando Mission Boulevard between Noble Avenue and Stranwood Avenue. Because of the width of the trench and the required construction access and safety setbacks adjacent to the trench, the roadway would be entirely closed to through traffic in these locations during construction.

The general construction process for open-trench installation will include establishing a work zone; mobilization of equipment, materials, and support facilities; subsurface utility exploration; setting of shoring piles; excavation, shoring, pipe segment placement and joining; backfilling, and repaving; removal of work zone; and street restriping (if applicable). Approximately 20 personnel are expected during construction and during peak activity approximately 20 trucks are anticipated per day, which is anticipated to occur during excavation.

1.3.2 Slip-Lining Construction. When trenching is not an option, trenchless slip-lining method of construction can be used as a cost-effective solution. Slip-lining can eliminate the need to stop traffic and excavate/repair roads. The method involves inserting a smaller diameter pipe into the damaged, larger diameter pipe.

The general procedure for the slip-lining is to establish the work zone surrounding the launching pit by placing barriers and traffic signage, and mobilizing equipment, materials, and construction and personnel support facilities. The work zone surrounding the launching pit could be approximately 200 feet long to accommodate construction operations, equipment, deliveries, and pipe section and materials storage. The work zone surrounding the receiving pit would be smaller because little construction activity would occur at the receiving pit.

Slip-lining would occur where the proposed alignment for the CTLN coincides with the LACTL in Stranwood Avenue, at the north end of the proposed CTLN route, and in Canterbury Avenue, at the south end of the route. The slip-lining

method would entail the use of launching pits, where the CTLN (the carrier pipe) would be inserted into the LACTL (the host pipe), and receiving pits, where the carrier pipe string would emerge at the end of a slip-lining span. The distance between the launching and receiving pits would depend primarily on bends in the LACTL and the desire to limit construction impacts at road intersections. However, spans of between 1,000 and 1,500 feet are anticipated.

1.3.3 Jack and Bore Construction. Jack and bore method of construction is one of the most common methods of trenchless technology. Jack and bore is a process of simultaneously jacking casing while removing the spoil material by means of an auger. A rotating cutting head is attached to the leading edge of the auger string. The spoil is transported back by the rotation of auger flights within the steel pipe casing being placed. As with other trenchless methods, in jack and bore construction, traffic disruption is minimized.

The jack and bore method entails excavating a launching pit and a smaller receiving pit, spanning the area to be avoided (i.e., intersection, flood control channel, or freeway underpass). The pits would be deeper than the typical trench depth, at 25 feet or greater, depending on conditions. The pits would be accommodated within the trenching construction work zone limits and would not necessitate the closure of additional traffic lanes. Because of the depth of excavation, interlocking, corrugated steel sheet piles would likely be used as shoring material to stabilize the pit walls. After the road pavement has been stripped, the sheet piles would be installed prior to any excavation using a lattice boom crane and vibration-free hydraulic piling equipment. No impact piling-driving would be involved. After the piles have been installed, the pits would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the pit and hauled from the construction work zone to another construction site for reuse or to a local landfill.

The jack and bore method would be used to install the CTLN at several types of locations along the open-trench route. These would include crossing beneath large flood control channels, where an open trench would be precluded, and beneath major roadway intersections, where cross-traffic may be heavy and substructures, such as large pipes, may be more common. In addition, the Arleta Avenue underpass of the Ronald Reagan Freeway (SR-118) would not provide the necessary vertical clearance for the operation of an excavator or crane to excavate a trench and to lift and place pipe sections into the trench. Therefore, a jack and bore installation would also be used to pass beneath the freeway.

2.0 PURPOSE OF THE TRAFFIC STUDY AND STUDY OBJECTIVES

This report is intended to satisfy the requirements for disclosure of traffic impacts under the requirements for the disclosure of potential impacts per the California Environmental Quality Act (CEQA) and to inform the public about potential traffic delays and impacts during construction. A pipeline generally does not generate trips once it is in place, and therefore, there are no traffic impacts once construction and testing are complete.

2.1 Approach

As discussed, this traffic analysis focuses on the construction of the proposed project. On wider streets involving open-trench construction (i.e. Branford Street between Canterbury Avenue and Arleta Avenue and the segment of Arleta Avenue between Branford Street and Fox Street), construction work zones may be 1,000 feet or more in length, often delimited by street intersections. In addition to the actual work zones, lane transition zones of several hundreds of feet would be required extending outward from the work zone to shift approaching traffic to the single travel lane that would be available in each direction adjacent to the work zone. On narrower streets involving open trench construction (i.e. Arleta Avenue north of Fox Street and portions of San Fernando Mission Boulevard between Noble Avenue and Stranwood Avenue), construction would be completed in smaller segments of several hundred feet, rather than the 1,000-foot or greater work zones that would occur in wider roadways. This would help maintain

access along the roads, at intersections, and to driveways as possible and allow for a shorter timeframe to complete construction in each work zone. Therefore, only a limited portion of the entire pipeline route would be under construction at a given time, and construction would move along the pipeline route once construction in a given area is completed and the roadway is returned to normal operating conditions.

Due to the limited impacted area of the roadway, the purpose of this analysis is to determine whether sufficient options exist such that traffic can be diverted along several alternative routes to maintain adequate flow both along the pipeline route itself and along suggested detour routes during construction. If there are sufficient options for drivers in this area during construction of the proposed project, disruption to traffic flows can be minimized. Therefore, this report identifies effects of lane reductions during construction, and then reports residual capacities at adjacent alternative routes to identify if the circulation system as a whole would be sufficient to maintain acceptable operations.

This report evaluates existing operations at roadway segments along the proposed project route as well as potential detour routes. The report also identifies residual capacities at potential detour route and identifies the following:

1. Will reduction of lanes during construction result in unacceptable levels of service;
2. If it results in unacceptable levels of service, how much traffic is likely to detour on to adjacent roadways;
3. If traffic detours to other area roadways, will the adjacent roadways still operate at satisfactory conditions;
4. How the detours should be planned to not exceed capacity at adjacent roadways.

2.2 Study Area

As stated earlier, the CTLN would originate at the LADWP Van Norman Complex in the Granada Hills community of Los Angeles and terminate adjacent to the LADWP Tujunga Spreading Grounds in Sun Valley community of Los Angeles, where it will connect to the existing CTLS. For this traffic impact analysis, the CTLN route was divided into several construction areas. These construction areas are generally based on logical construction segments based on location and major intersections. The following eleven (11) construction segments were identified:

1. Canterbury Avenue between Tonopah & Branford Street
2. Branford Street between Canterbury Avenue & Arleta Avenue
3. Arleta Avenue between Branford Street & Osborne Street
4. Arleta Avenue between Osborne Street & Terra Bella Street
5. Arleta Avenue between Terra Bella Street & Van Nuys Boulevard
6. Arleta Avenue between Van Nuys Boulevard & Devonshire Street
7. Arleta Avenue between Devonshire Street & Chatsworth Street
8. Arleta Avenue between Chatsworth Street & Chatsworth Drive
9. Arleta Avenue between Chatsworth Drive & Brand Boulevard
10. Brand Boulevard between Arleta Avenue & Noble Avenue
11. Mission Boulevard between Noble Avenue & Stranwood Avenue

Figure 2 shows the locations of study area roadway segments. Based on these construction segments, the following thirteen (13) analysis segments were identified within the project route:

1. Canterbury Avenue between Tonopah Street & Branford Street
2. Branford Street between Canterbury Avenue & Arleta Avenue
3. Arleta Avenue between Branford Street & Osborne Street
4. Arleta Avenue between Osborne Street & Terra Bella Street
5. Arleta Avenue between Terra Bella Street & Van Nuys Boulevard
6. Arleta Avenue between Van Nuys Boulevard & Devonshire Street

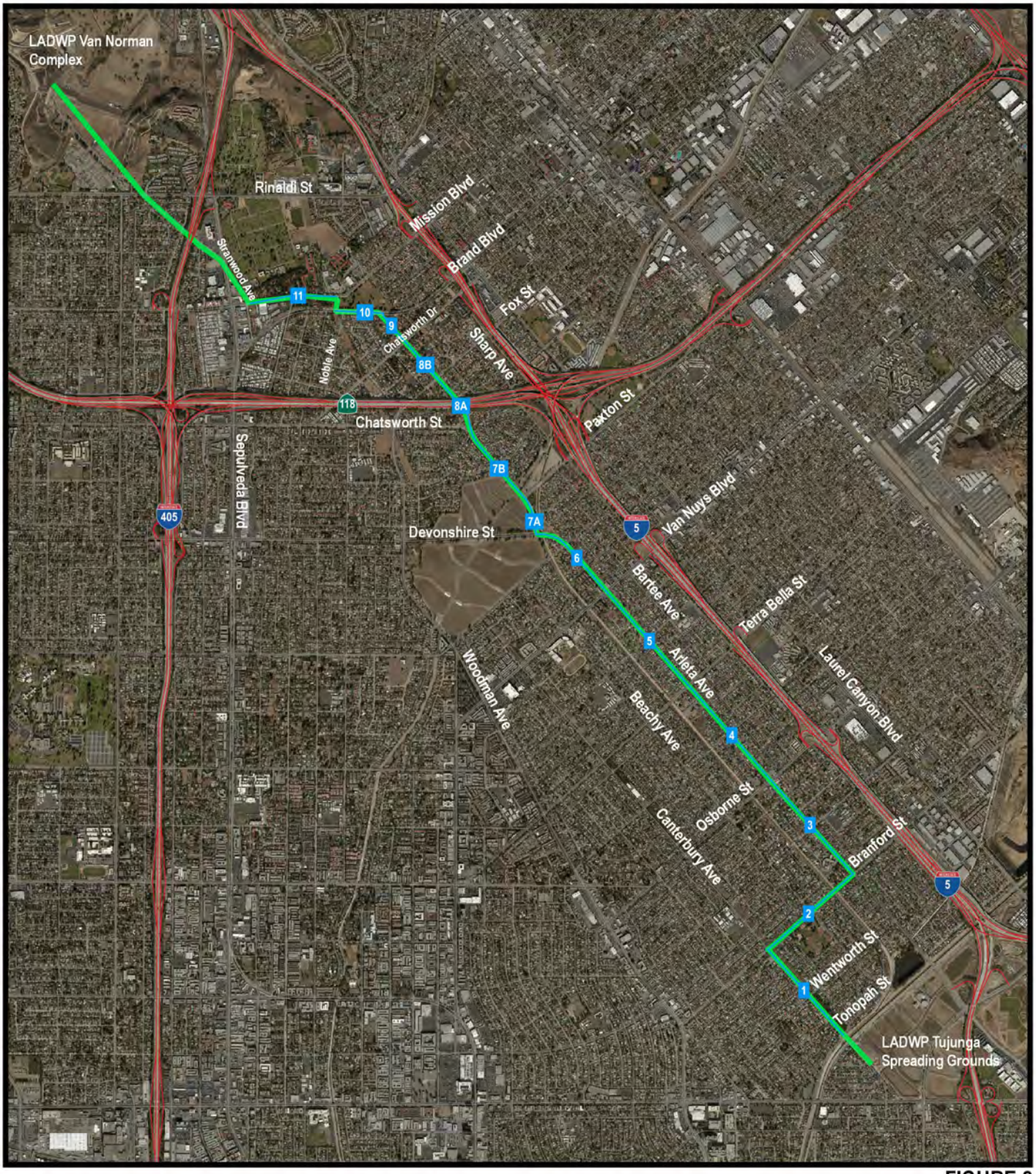

FIGURE 2

Legend

- Proposed Project
- Construction Area Roadway Segments

City Trunk Line North Replacement Project
Construction Area Roadway Segments

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7A. Arleta Avenue between Devonshire Street & Paxton Street
7B. Arleta Avenue between Paxton Street & Chatsworth Street
8A. Arleta Avenue between Chatsworth Street & Fox Street
8B. Arleta Avenue between Fox Street & Chatsworth Drive
9. Arleta Avenue between Chatsworth Dr & Brand Boulevard
10. Brand Boulevard between Arleta Avenue & Noble Avenue
11. Mission between Noble Avenue & Stranwood Avenue

To identify potential detour routes, in addition to the analysis segments above, the following locations were evaluated for residual capacity to accommodate traffic that may divert from the actual construction segments:

1. Canterbury Avenue South of Branford Street
2. Branford Street between Canterbury Avenue & Arleta Avenue
3. Wentworth West of Arleta Avenue
4. Osborne Street West of Arleta Avenue
5. Arleta Avenue South of Branford Street
6. Canterbury Avenue North of Branford Street
7. Branford Street West of Laurel Canyon Boulevard
8. Arleta Avenue South of Osborne Street
9. Beachy Avenue South of Osborne Street
10. Beachy Avenue South of Terra Bella Street
11. Laurel Canyon Boulevard South of Terra Bella Street
12. Beachy Avenue South of Van Nuys Boulevard
13. Laurel Canyon Boulevard South of Van Nuys Boulevard
14. Bartee Avenue South of Van Nuys Boulevard
15. Woodman Avenue Ave South of Devonshire Street
16. Laurel Canyon Boulevard South of Paxton Street
17. Devonshire Street East of Woodman Avenue
18. Woodman Avenue South of Chatsworth Street
19. Laurel Canyon Boulevard North of Paxton Street
20. Sharp Avenue South of Paxton Street
21. Filmore Street East of Arleta Avenue
22. Fox Street West of Arleta Avenue
23. Laurel Canyon Boulevard South of Chatsworth Drive
24. Sharp Avenue South of Chatsworth Drive
25. San Jose East of Arleta Avenue
26. Arleta Avenue South of Brand Boulevard
27. Laurel Canyon Boulevard South of Brand Boulevard
28. Chatsworth Street West of Arleta Avenue
29. Fox Street North of Arleta Avenue
30. Sepulveda Boulevard North of 118
31. Laurel Canyon Boulevard South of Mission Boulevard
32. Columbus Avenue South of Mission Boulevard
33. Mission Boulevard near Stranwood Avenue
34. Rinaldi Street near Sepulveda Boulevard

35. Brand Boulevard near Columbus Avenue
36. Canterbury Avenue between Branford Street & Osborne Street
37. Osborne Street east of Arleta Avenue
38. Terra Bella Street east of Arleta Avenue
39. Terra Bella Street west of Arleta Avenue
40. Van Nuys Boulevard east of Arleta Avenue
41. Van Nuys Boulevard west of Arleta Avenue
42. Paxton Street east of Arleta Avenue
43. Chatsworth Drive east of Arleta Avenue
44. Chatsworth Drive west of Arleta Avenue
45. Brand Boulevard east of Arleta Avenue
46. Brand Boulevard west of Arleta Avenue

Figure 3 shows the locations of roadway segments which are likely to serve as detour routes.

3.0 LOS DEFINITIONS, PROCEDURES, AND THRESHOLDS

Level of service (LOS) is a measure of the quality of operational conditions within a traffic stream and is generally expressed in terms of such measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Levels range from A to F, with LOS A representing excellent (free-flow) conditions and LOS F representing extreme congestion.

The analysis of traffic operations at roadway segments was conducted by using vehicle-to-capacity (V/C) ratios based on the capacity of each roadway.

Based on City of Los Angeles segment capacity guidelines, a capacity of 600 vehicles per hour per lane has been used for 2-lane collector roadways, and a capacity of 800 vehicles per hour per lane for higher classification streets. Table A presents a brief description of each level of service letter grade, as well as the range of delays associated with each grade.

Table A: Level of Service Criteria

LOS	Description of Drivers' Perception and Traffic Operation	Segment V/C Ratio
A	This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable, or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.	0 – 0.60
B	This level is assigned when the volume-to-capacity ratio is low and either progression is highly favorable, or the cycle length is short. More vehicles stop than with LOS A.	0.61 – 0.70
C	This level is typically assigned when progression is favorable, or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	0.71 – 0.80
D	This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective, or the cycle length is long. Many vehicles stop, and individual cycle failures are noticeable.	0.81 – 0.90
E	This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.	0.91 – 1.00
F	This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	> 1.00

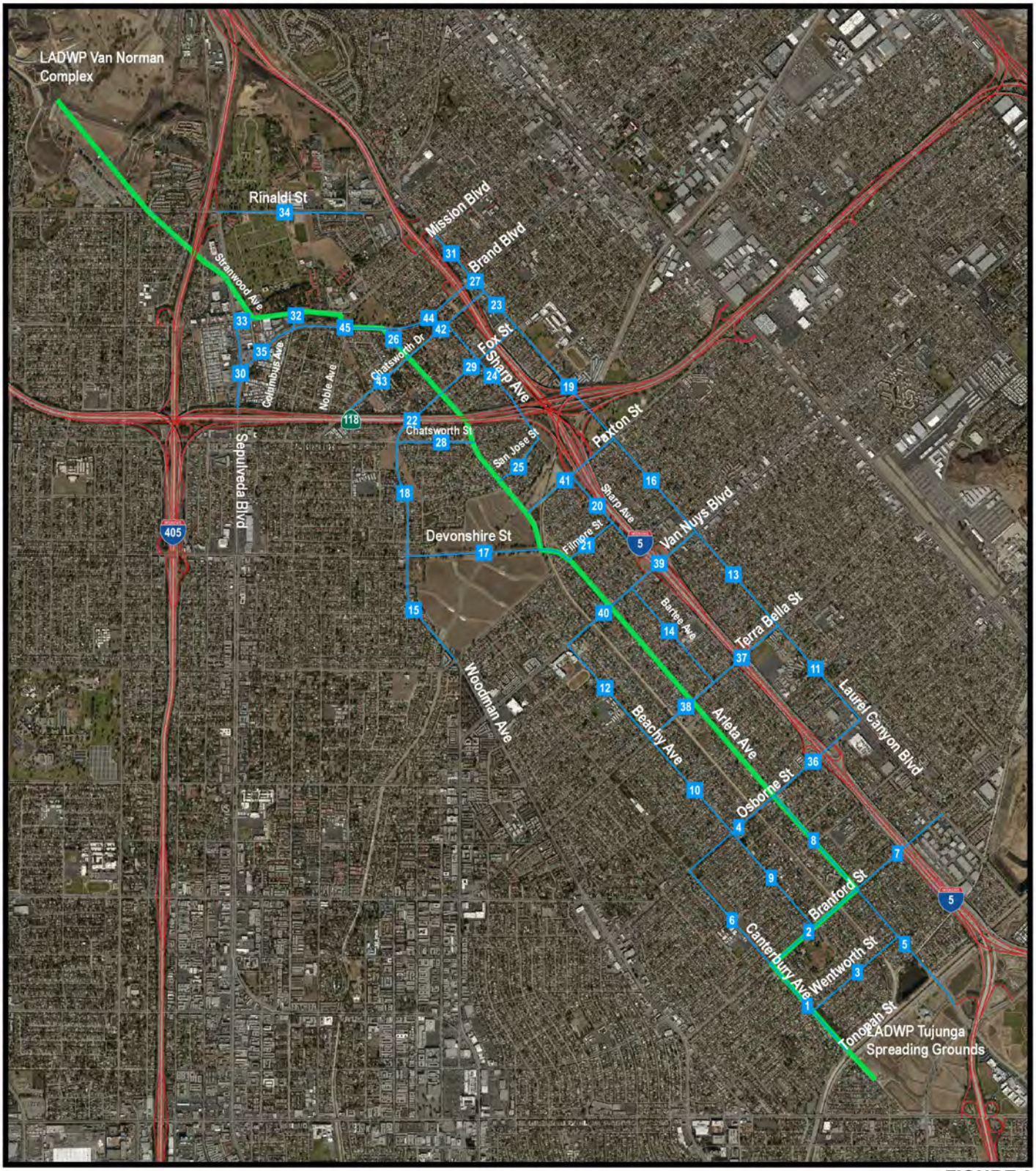

FIGURE 3

Legend

Proposed Project

Study Area Roadway Segments

City Trunk Line North Replacement Project
Potential Detour Roadways

translutions
the transportation solutions company...

D:\GIS\AECOM CTNL\reports\Potential Detour Roadways.qgs (09-18-2018)

3.1 Levels of Service Thresholds

The City of Los Angeles uses LOS D as the acceptable threshold for roadway segment and intersection operations. When the LOS of a facility is lower than LOS D, the City uses a sliding scale of impacts for development projects. Since construction impacts are temporary, this analysis identifies segments that will fall below LOS D during construction and identifies how traffic can be rerouted to adjacent roadways while maintaining LOS D or better at those roadways.

4.0 ANALYSIS

This section discusses the study area, the methodologies used in the analysis, and the analysis results.

4.1 Existing Traffic Conditions

Existing traffic volumes are based on peak hour intersection turn movement counts and daily roadway segment counts collected in May 2016. Count sheets are contained in Appendix A. Number of lanes, peak hour volumes, v/c ratios and LOS for roadway segments within the project area are shown on Table B. Detailed volume development worksheets are included in Appendix B. Volume worksheets roadway segments outside the project construction area are included in Appendix C. As seen on Table B, all roadway segments currently operate at satisfactory LOS except Mission Boulevard between Noble Avenue & Stranwood Avenue during the a.m. peak hour.

4.2 Construction Year Traffic Conditions

Construction is anticipated to occur beginning 2019 and end in 2028. To conduct a conservative analysis, this analysis is based on 2028 conditions, and includes potential growth in traffic volumes for 10 years. . Construction year traffic volumes were calculated by applying growth rates for the San Fernando, Granada Hills, Sylmar, and Tujunga area. Number of lanes, peak hour volumes, v/c ratios and LOS for roadway segments within the project area are shown on Table C. Detailed volume development worksheets are included in Appendix B. Volume worksheets roadway segments outside the project construction area are included in Appendix C. As seen on Table C, all roadway segments are forecast to operate at satisfactory LOS except Mission Boulevard between Noble Avenue & Stranwood Avenue during the a.m. and p.m. peak hours.

4.3 Construction Traffic Conditions

During the course of construction, especially where the open trench method is used, 4-lane roadways will be reduced to 2-lane roadways. On narrower streets, traffic will be restricted to local access only. Since the number of local trips are unknown, to present a worst-case analysis, the entire traffic volume on such streets have been assumed to be detoured over to other streets. Number of lanes, peak hour volumes, v/c ratios and LOS for roadway segments within the project area are shown on Table D. Table D also shows the volume of traffic that will require to detour to other roadways to maintain LOS D or better along the construction corridor. Detailed volume development worksheets are included in Appendix B. Volume worksheets roadway segments outside the project construction area are included in Appendix C. As seen on Table D, the following six (6) segments will operate at unsatisfactory conditions during construction:

- Branford Street between Canterbury Avenue & Arleta Avenue
- Arleta Avenue between Branford Street & Osborne Street
- Arleta Avenue between Osborne Street & Terra Bella Street
- Arleta Avenue between Terra Bella Street & Van Nuys Boulevard
- Arleta Avenue between Van Nuys Boulevard & Devonshire Street
- Arleta Avenue between Devonshire Street & Paxton Street

Table B: Existing LOS for Construction Area Segments

Construction Area Segment	Geometrics		AM Peak Hour			PM Peak Hour		
	Lanes	Capacity	Vol.	V/C	LOS	Vol.	V/C	LOS
Canterbury Avenue between Tonopah Street & Branford Street	2	1,200	271	0.226	A	282	0.235	A
Branford Street between Canterbury Avenue & Arleta Avenue	4	3,200	2,082	0.651	B	1,825	0.570	A
Arleta Avenue between Branford Street & Osborne Street	4	3,200	1,919	0.600	A	2,100	0.656	B
Arleta Avenue between Osborne Street & Terra Bella Street	4	3,200	1,675	0.523	A	1,701	0.532	A
Arleta Avenue between Terra Bella Street & Van Nuys Boulevard	4	3,200	1,523	0.476	A	1,432	0.448	A
Arleta Avenue between Van Nuys Boulevard & Devonshire Street	4	3,200	2,018	0.631	B	1,690	0.528	A
Arleta Avenue between Devonshire Street & Paxton Street	4	3,200	1,258	0.393	A	1,441	0.450	A
Arleta Avenue between Paxton Street & Chatsworth Street	4	3,200	580	0.181	A	637	0.199	A
Arleta Avenue between Chatsworth Street & Fox Street	4	3,200	218	0.068	A	257	0.080	A
Arleta Avenue between Fox Street & Chatsworth Drive	2	1,200	336	0.280	A	338	0.282	A
Arleta Avenue between Chatsworth Dr & Brand Boulevard	2	1,200	217	0.181	A	219	0.183	A
Brand Boulevard between Arleta Avenue & Noble Avenue	4	3,200	1,156	0.361	A	1,110	0.347	A
Mission Boulevard between Noble Avenue & Stranwood Avenue	2	1,200	1,621	***1.351***	F	1,076	0.897	D

Table C: Construction Year LOS for Construction Area Roadway Segments Without Construction

Construction Area Segment	Geometrics		AM Peak Hour			PM Peak Hour		
	Lanes	Capacity	Vol.	V/C	LOS	Vol.	V/C	LOS
Canterbury Avenue between Tonopah Street & Branford Street	2	1,200	278	0.232	A	289	0.241	A
Branford Street between Canterbury Avenue & Arleta Avenue	4	3,200	2,133	0.667	B	1,870	0.584	A
Arleta Avenue between Branford Street & Osborne Street	4	3,200	1,966	0.614	B	2,151	0.672	B
Arleta Avenue between Osborne Street & Terra Bella Street	4	3,200	1,716	0.536	A	1,743	0.545	A
Arleta Avenue between Terra Bella Street & Van Nuys Boulevard	4	3,200	1,560	0.488	A	1,467	0.458	A
Arleta Avenue between Van Nuys Boulevard & Devonshire Street	4	3,200	2,067	0.646	B	1,731	0.541	A
Arleta Avenue between Devonshire Street & Paxton Street	4	3,200	1,289	0.403	A	1,476	0.461	A
Arleta Avenue between Paxton Street & Chatsworth Street	4	3,200	594	0.186	A	653	0.204	A
Arleta Avenue between Chatsworth Street & Fox Street	4	3,200	223	0.070	A	263	0.082	A
Arleta Avenue between Fox Street & Chatsworth Drive	2	1,200	344	0.287	A	346	0.288	A
Arleta Avenue between Chatsworth Dr & Brand Boulevard	2	1,200	222	0.185	A	224	0.187	A
Brand Boulevard between Arleta Avenue & Noble Avenue	4	3,200	1,184	0.370	A	1,137	0.355	A
Mission Boulevard between Noble Avenue & Stranwood Avenue	2	1,200	1,661	***1.384***	F	1,102	***0.918***	E

Table D: Construction Year LOS for Construction Area Roadway Segments During Construction

Construction Area Segment	Geometrics		AM Peak Hour				PM Peak Hour			
	Lanes	Capacity	Vol.	V/C	LOS	Detour Vol	Vol.	V/C	LOS	Detour Vol
Canterbury Avenue between Tonopah Street & Branford Street	0	0	278	*Local Only*	-	278	289	*Local Only*	-	289
Branford Street between Canterbury Avenue & Arleta Avenue	2	1,600	2,133	*1.333*	F	693	1,870	*1.169*	F	430
Arleta Avenue between Branford Street & Osborne Street	2	1,600	1,966	*1.229*	F	526	2,151	*1.344*	F	711
Arleta Avenue between Osborne Street & Terra Bella Street	2	1,600	1,716	*1.073*	F	276	1,743	*1.089*	F	303
Arleta Avenue between Terra Bella Street & Van Nuys Boulevard	2	1,600	1,560	*0.975*	E	120	1,467	*0.917*	E	27
Arleta Avenue between Van Nuys Boulevard & Devonshire Street	2	1,600	2,067	*1.292*	F	627	1,731	*1.082*	F	291
Arleta Avenue between Devonshire Street & Paxton Street	2	1,600	1,289	0.806	D	0	1,476	*0.923*	E	36
Arleta Avenue between Paxton Street & Chatsworth Street	2	1,600	594	0.371	A	0	653	0.408	A	0
Arleta Avenue between Chatsworth Street & Fox Street	2	1,600	223	0.139	A	0	263	0.164	A	0
Arleta Avenue between Fox Street & Chatsworth Drive	0	0	344	*Local Only*	-	344	346	*Local Only*	-	346
Arleta Avenue between Chatsworth Dr & Brand Boulevard	0	0	222	*Local Only*	-	222	224	*Local Only*	-	224
Brand Boulevard between Arleta Avenue & Noble Avenue	2	1,600	1,184	0.740	C	0	1,137	0.711	C	0
Mission Boulevard between Noble Avenue & Stranwood Avenue	0	0	1,661	*Local Only*	-	1,661	1,102	*Local Only*	-	1,102

5.0 RECOMMENDED IMPROVEMENTS/DETOUR ANALYSIS

The construction impacts are temporary in nature and the reduction in capacity would be temporary. As such, this analysis includes an evaluation of alternative routes to reduce delays and improve LOS and traffic flow.

5.1 Detour Analysis

In this section, detour routes during construction will be identified for the segments identified above. In addition, routes to detour through traffic at roadways which will be restricted to local traffic only during construction are also discussed in this section. Traffic will be restricted to local only at the following segments:

- Canterbury Avenue between Tonopah Street & Branford Street
- Arleta Avenue between Chatsworth Dr & Brand Boulevard
- Brand Boulevard between Arleta Avenue & Noble Avenue
- Mission Boulevard between Noble Avenue & Stranwood Avenue

5.1.1 Canterbury Avenue between Tonopah & Branford Street. During construction, Canterbury Avenue between Tonopah & Branford Street will be restricted to local traffic only. Since Canterbury terminates approximately ½ mile south of Branford Street, most of the traffic on the segment is local traffic. The traffic volumes are very low along this segment and are anticipated to be less than 300 vehicles during the peak hours. It is not anticipated that this traffic will detour to other streets.

5.1.2 Branford Street between Canterbury Avenue & Arleta Avenue. Branford Street between Canterbury Avenue & Arleta Avenue is anticipated to operate at unsatisfactory LOS during construction. Approximately 693 vehicles during the a.m. peak hour and 430 vehicles during the p.m. peak hour will be required to be rerouted to maintain satisfactory LOS. Wentworth west of Arleta Avenue has a residual capacity of 714 vehicles during the a.m. peak hour and 749 vehicles during the p.m. peak hour. Arleta Avenue South of Branford Street has a residual capacity of 1086 vehicles during the a.m. peak hour and 985 vehicles during the p.m. peak hour. Canterbury Avenue between Tonopah Street & Branford Street has a residual capacity of 922 vehicles during the a.m. peak hour and 911 vehicles during the p.m. peak hour. These roadways can easily accommodate the detouring traffic for this segment.

5.1.3 Arleta Avenue between Branford Street & Osborne Street. Arleta Avenue between Branford Street & Osborne Street is anticipated to operate at unsatisfactory LOS during construction. Approximately 526 vehicles during the a.m. peak hour and 711 vehicles during the p.m. peak hour will be required to be rerouted to maintain satisfactory LOS. Canterbury Avenue between Branford Street & Osborne Street has a residual capacity of 2809 vehicles during the a.m. peak hour and 2806 vehicles during the p.m. peak hour. Beachy Avenue South of Osborne Street has a residual capacity of 719 vehicles during the a.m. peak hour and 606 vehicles during the p.m. peak hour. Osborne Street west of Arleta Avenue has a residual capacity of 407 vehicles during the a.m. peak hour and 440 vehicles during the p.m. peak hour. Terra Bella Street west of Arleta Avenue has a residual capacity of 972 vehicles during the a.m. peak hour and 1074 vehicles during the p.m. peak hour. These roadways can easily accommodate the detouring traffic for this segment.

5.1.4 Arleta Avenue between Osborne Street & Terra Bella Street. Arleta Avenue between Branford Street & Osborne Street is anticipated to operate at unsatisfactory LOS during construction. Approximately 276 vehicles during the a.m. peak hour and 303 vehicles during the p.m. peak hour will be required to be rerouted to maintain satisfactory LOS. Osborne Street east of Arleta Avenue has a residual capacity of 273 vehicles during the a.m. peak hour and 439 vehicles during the p.m. peak hour. Osborne Street west of Arleta

Avenue has a residual capacity of 407 vehicles during the a.m. peak hour and 440 vehicles during the p.m. peak hour. Terra Bella Street east of Arleta Avenue has a residual capacity of 1066 vehicles during the a.m. peak hour and 1185 vehicles during the p.m. peak hour. Terra Bella Street west of Arleta Avenue has a residual capacity of 972 vehicles during the a.m. peak hour and 1074 vehicles during the p.m. peak hour. Beachy Avenue South of Terra Bella Street has a residual capacity of 744 vehicles during the a.m. peak hour and 778 vehicles during the p.m. peak hour. Laurel Canyon Boulevard South of Terra Bella Street has a residual capacity of 808 vehicles during the a.m. peak hour and 886 vehicles during the p.m. peak hour. These roadways can easily accommodate the detouring traffic for this segment.

5.1.5 Arleta Avenue between Terra Bella Street & Van Nuys Boulevard. Arleta Avenue between Terra Bella Street & Van Nuys Boulevard is anticipated to operate at unsatisfactory LOS during construction. Approximately 120 vehicles during the a.m. peak hour and 27 vehicles during the p.m. peak hour will be required to be rerouted to maintain satisfactory LOS. Beachy Avenue South of Van Nuys Boulevard has a residual capacity of 638 vehicles during the a.m. peak hour and 688 vehicles during the p.m. peak hour. Laurel Canyon Boulevard South of Van Nuys Boulevard has a residual capacity of 751 vehicles during the a.m. peak hour and 789 vehicles during the p.m. peak hour. Bartee Avenue South of Van Nuys Boulevard has a residual capacity of 868 vehicles during the a.m. peak hour and 938 vehicles during the p.m. peak hour. Terra Bella Street east of Arleta Avenue has a residual capacity of 1066 vehicles during the a.m. peak hour and 1185 vehicles during the p.m. peak hour. Terra Bella Street west of Arleta Avenue has a residual capacity of 972 vehicles during the a.m. peak hour and 1074 vehicles during the p.m. peak hour. Van Nuys Boulevard east of Arleta Avenue has a residual capacity of 723 vehicles during the a.m. peak hour and 1009 vehicles during the p.m. peak hour. Van Nuys Boulevard west of Arleta Avenue has a residual capacity of 733 vehicles during the a.m. peak hour and 899 vehicles during the p.m. peak hour. These roadways can easily accommodate the detouring traffic for this segment.

5.1.6 Arleta Avenue between Van Nuys Boulevard & Devonshire Street. Arleta Avenue between Van Nuys Boulevard & Devonshire Street is anticipated to operate at unsatisfactory LOS during construction. Approximately 627 vehicles during the a.m. peak hour and 291 vehicles during the p.m. peak hour will be required to be rerouted to maintain satisfactory LOS. Devonshire Street East of Woodman Avenue has a residual capacity of 819 vehicles during the a.m. peak hour and 895 vehicles during the p.m. peak hour. Van Nuys Boulevard east of Arleta Avenue has a residual capacity of 723 vehicles during the a.m. peak hour and 1009 vehicles during the p.m. peak hour. Van Nuys Boulevard west of Arleta Avenue has a residual capacity of 733 vehicles during the a.m. peak hour and 899 vehicles during the p.m. peak hour. Paxton Street east of Arleta Avenue has a residual capacity of 1822 vehicles during the a.m. peak hour and 1726 vehicles during the p.m. peak hour. Woodman Avenue South of Chatsworth Street has a residual capacity of 1877 vehicles during the a.m. peak hour and 1952 vehicles during the p.m. peak hour. Laurel Canyon Boulevard South of Paxton Street has a residual capacity of 293 vehicles during the a.m. peak hour and 630 vehicles during the p.m. peak hour. These roadways can easily accommodate the detouring traffic for this segment.

5.1.7 Arleta Avenue between Devonshire Street & Paxton Street. Arleta Avenue between Devonshire Street & Paxton Street is anticipated to operate at unsatisfactory LOS during construction. The a.m. peak hour will operate acceptably while 36 vehicles during the p.m. peak hour will be required to be rerouted to maintain satisfactory LOS. Devonshire Street East of Woodman Avenue has a residual capacity of 819 vehicles during the a.m. peak hour and 895 vehicles during the p.m. peak hour. Chatsworth Street West of Arleta Avenue has a residual capacity of 2626 vehicles during the a.m. peak hour and 2611 vehicles during the p.m. peak hour. Filmore Street East of Arleta Avenue has a residual capacity of 966 vehicles during the a.m. peak hour and 941 vehicles

during the p.m. peak hour. Fox Street West of Arleta Avenue has a residual capacity of 393 vehicles during the a.m. peak hour and 353 vehicles during the p.m. peak hour. Woodman Avenue South of Chatsworth Street has a residual capacity of 1877 vehicles during the a.m. peak hour and 1952 vehicles during the p.m. peak hour. Laurel Canyon Boulevard North of Paxton Street has a residual capacity of 32 vehicles during the a.m. peak hour and 522 vehicles during the p.m. peak hour. Sharp Avenue South of Paxton Street has a residual capacity of 949 vehicles during the a.m. peak hour and 929 vehicles during the p.m. peak hour. These roadways can easily accommodate the detouring traffic for this segment.

5.1.8 Arleta Avenue between Fox Street & Chatsworth Drive. During construction, Arleta Avenue between Fox Street & Chatsworth Drive will be restricted to local traffic only. Approximately 344 vehicles during the a.m. peak hour and 346 vehicles during the p.m. peak hour will be required to be rerouted to other streets to/from their destinations. Chatsworth Drive east of Arleta Avenue has a residual capacity of 2043 vehicles during the a.m. peak hour and 1942 vehicles during the p.m. peak hour. Chatsworth Drive west of Arleta Avenue has a residual capacity of 2231 vehicles during the a.m. peak hour and 2099 vehicles during the p.m. peak hour. Chatsworth Street West of Arleta Avenue has a residual capacity of 2626 vehicles during the a.m. peak hour and 2611 vehicles during the p.m. peak hour. Sharp Avenue South of Chatsworth Drive has a residual capacity of 911 vehicles during the a.m. peak hour and 907 vehicles during the p.m. peak hour. These roadways can easily accommodate the detouring traffic for this segment.

5.1.9 Arleta Avenue between Chatsworth Drive & Brand Boulevard. During construction, Arleta Avenue between Chatsworth Drive & Brand Boulevard will be restricted to local traffic only. Approximately 222 vehicles during the a.m. peak hour and 224 vehicles during the p.m. peak hour will be required to be rerouted to other streets to/from their destinations. Most of this traffic is likely to be local traffic. Chatsworth Drive east of Arleta Avenue has a residual capacity of 2043 vehicles during the a.m. peak hour and 1942 vehicles during the p.m. peak hour. Chatsworth Drive west of Arleta Avenue has a residual capacity of 2231 vehicles during the a.m. peak hour and 2099 vehicles during the p.m. peak hour. Brand Boulevard east of Arleta Avenue has a residual capacity of 2065 vehicles during the a.m. peak hour and 2012 vehicles during the p.m. peak hour. Brand Boulevard west of Arleta Avenue has a residual capacity of 2016 vehicles during the a.m. peak hour and 2063 vehicles during the p.m. peak hour. Laurel Canyon Boulevard South of Brand Boulevard has a residual capacity of 1024 vehicles during the a.m. peak hour and 664 vehicles during the p.m. peak hour. Chatsworth Street West of Arleta Avenue has a residual capacity of 2626 vehicles during the a.m. peak hour and 2611 vehicles during the p.m. peak hour. Fox Street North of Arleta Avenue has a residual capacity of 477 vehicles during the a.m. peak hour and 426 vehicles during the p.m. peak hour. Sepulveda Boulevard North of 118 has a residual capacity of 2113 vehicles during the a.m. peak hour and 1419 vehicles during the p.m. peak hour. These roadways can easily accommodate the detouring traffic for this segment.

5.1.10 Mission Boulevard between Noble Avenue & Stranwood Avenue. During construction, Mission Boulevard between Noble Avenue & Stranwood Avenue will be restricted to local traffic only. Mission Boulevard currently operates at unsatisfactory LOS. Approximately 1,661 vehicles during the a.m. peak hour and 1,102 vehicles during the p.m. peak hour will require to be rerouted to other streets to/from their destinations. Rinaldi Street near Sepulveda Boulevard has a residual capacity of 592 vehicles during the a.m. peak hour and 32 vehicles during the p.m. peak hour. Brand Boulevard near Columbus Avenue has a residual capacity of 1771 vehicles during the a.m. peak hour and 1605 vehicles during the p.m. peak hour. Sepulveda Boulevard North of 118 has a residual capacity of 2113 vehicles during the a.m. peak hour and 1419 vehicles during the p.m. peak hour. These roadways can easily accommodate the detouring traffic for this segment.

5.2 Traffic Management Plan

To minimize the disruption to traffic during construction and guide vehicles to the detour routes, it is recommended that a traffic management plan (TMP) be prepared for the proposed project. The policy for creating the TMP, according to Deputy Directive-60 (DD-60), is to minimize travel delays when implementing projects or performing other activities on the State highway and freeway systems. This is accomplished without compromising public or worker safety, or the quality of the work being performed. Although the CTLN route is not a state highway, a TMP is recommended to outline strategies to minimize travel delay.

The TMP will address other requirements to complete the project with minimal impacts to traffic operations. The goals and objectives of this TMP are to:

- Minimize traffic delay or time spent in queue.
- Maintain traffic flow throughout the project corridor and the surrounding areas.
- Provide a safe environment for the work force and motoring public.

The TMP will remain active throughout construction of the project. The TMP must be updated if substantial change to the project scope occurs affecting the function or adequacy of the TMP, or if elements of the TMP need to be adjusted to adequately address congestion at the project site. The following TMP elements are considered the most important with respect to reducing traveler delay and enhancing traveler safety, and will be part of the TMP:

1. Public Awareness Campaign (PAC)
2. Motorist Information Strategies
3. Incident Management
4. Contingency Plans

6.0 SUMMARY & CONCLUSIONS

Based on the above analysis, while several segments are likely to operate at less than satisfactory operations during construction due to reduction in number of lanes, the surrounding roadways have sufficient capacity to allow for efficient detour plans which will result in acceptable traffic operations during construction. With an efficient detour plan and TMP, the impacts of the project during construction can be reduced to less than significant.

Appendix A: Traffic Counts

Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

City of Los Angeles
Canterbury Avenue
S/ Branford Street
24 Hour Directional Volume Count

LAC001
Site Code: 999-18423

Start Time	6/5/2018 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		1	36			3	13				
12:15		3	28			6	13				
12:30		6	37			2	24				
12:45		2	23	12	124	3	24	14	74	26	198
01:00		3	24			3	20				
01:15		2	44			0	20				
01:30		2	51			0	33				
01:45		4	24	11	143	4	22	7	95	18	238
02:00		2	23			2	19				
02:15		0	29			1	16				
02:30		0	22			2	18				
02:45		0	26	2	100	2	16	7	69	9	169
03:00		0	23			1	20				
03:15		0	38			1	15				
03:30		0	28			1	30				
03:45		0	27	0	116	0	22	3	87	3	203
04:00		0	36			0	25				
04:15		0	42			1	19				
04:30		3	42			1	18				
04:45		3	49	6	169	3	28	5	90	11	259
05:00		10	**46**			3	24				
05:15		11	**56**			6	37				
05:30		7	**53**			6	35				
05:45		8	**63**	36	218	8	45	23	141	59	359
06:00		19	45			17	36				
06:15		18	43			4	26				
06:30		24	44			11	34				
06:45		19	38	80	170	12	26	44	122	124	292
07:00		15	35			25	**37**				
07:15		**21**	29			23	**38**				
07:30		**35**	36			**29**	**38**				
07:45		**63**	29	134	129	**33**	**41**	110	154	244	283
08:00		**54**	24			**41**	33				
08:15		19	23			**30**	20				
08:30		34	23			21	31				
08:45		15	23	122	93	28	23	120	107	242	200
09:00		17	22			22	25				
09:15		28	9			18	29				
09:30		15	12			40	19				
09:45		19	11	79	54	19	14	99	87	178	141
10:00		15	18			26	18				
10:15		9	17			21	18				
10:30		20	7			18	11				
10:45		19	2	63	44	12	9	77	56	140	100
11:00		17	9			20	6				
11:15		16	4			10	16				
11:30		23	7			16	12				
11:45		21	8	77	28	14	5	60	39	137	67
Total		622	1388	622	1388	569	1121	569	1121	1191	2509
Combined Total		2010		2010		1690		1690		3700	
AM Peak	-	07:15	-	-	-	07:30	-	-	-	-	-
Vol.	-	173	-	-	-	133	-	-	-	-	-
P.H.F.		0.687				0.811					
PM Peak	-	-	05:00	-	-	-	07:00	-	-	-	-
Vol.	-	-	218	-	-	-	154	-	-	-	-
P.H.F.			0.865				0.856				
Percentage		30.9%	69.1%			33.7%	66.3%				
ADT/AADT		ADT 3,700		AADT 3,700							

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City of Los Angeles
Branford Steet
B/ Canterbury Avenue - Arleta Avenue
24 Hour Directional Volume Count

LAC002
Site Code: 999-18423

Start Time	6/5/2018 Tue	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		24	150			23	122				
12:15		16	167			12	153				
12:30		15	160			22	152				
12:45		14	160	69	637	18	145	75	572	144	1209
01:00		14	195			11	192				
01:15		14	189			14	130				
01:30		8	161			8	119				
01:45		14	165	50	710	12	142	45	583	95	1293
02:00		10	159			12	145				
02:15		6	155			4	177				
02:30		8	177			7	139				
02:45		10	156	34	647	12	174	35	635	69	1282
03:00		13	204			11	155				
03:15		29	193			17	190				
03:30		17	174			14	207				
03:45		14	193	73	764	13	201	55	753	128	1517
04:00		21	219			6	201				
04:15		33	210			11	**239**				
04:30		34	231			35	**239**				
04:45		47	198	135	858	31	**242**	83	921	218	1779
05:00		71	**260**			36	**216**				
05:15		109	**212**			61	227				
05:30		126	**221**			85	230				
05:45		130	**210**	436	903	85	218	267	891	703	1794
06:00		147	230			89	220				
06:15		188	197			129	201				
06:30		205	185			137	214				
06:45		226	207	766	819	167	176	522	811	1288	1630
07:00		**261**	174			**204**	163				
07:15		**255**	175			**212**	149				
07:30		**261**	151			**270**	135				
07:45		**235**	138	1012	638	**226**	130	912	577	1924	1215
08:00		165	115			191	126				
08:15		156	102			170	135				
08:30		171	121			155	125				
08:45		137	112	629	450	121	134	637	520	1266	970
09:00		138	100			148	98				
09:15		140	76			102	102				
09:30		116	84			110	92				
09:45		141	76	535	336	116	84	476	376	1011	712
10:00		91	83			115	78				
10:15		120	66			127	64				
10:30		138	47			98	72				
10:45		142	40	491	236	95	41	435	255	926	491
11:00		113	39			98	52				
11:15		114	39			120	48				
11:30		132	31			128	39				
11:45		122	29	481	138	119	23	465	162	946	300
Total		4711	7136	4711	7136	4007	7056	4007	7056	8718	14192
Combined Total		11847		11847		11063		11063		22910	
AM Peak	-	07:00	-	-	-	07:00	-	-	-	-	-
Vol.	-	1012	-	-	-	912	-	-	-	-	-
P.H.F.		0.969				0.844					
PM Peak	-	-	05:00	-	-	-	04:15	-	-	-	-
Vol.	-	-	903	-	-	-	936	-	-	-	-
P.H.F.			0.868				0.967				
Percentage		39.8%	60.2%			36.2%	63.8%				
ADT/AADT		ADT 22,910		AADT 22,910							

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City of Los Angeles
Wentworth Street
W/ Arleta Avenue
24 Hour Directional Volume Count

LAC003
Site Code: 999-18423

Start Time	6/5/2018 Tue	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		4	24			0	22				
12:15		4	34			3	18				
12:30		4	24			5	12				
12:45		8	26	20	108	2	28	10	80	30	188
01:00		2	36			8	29				
01:15		4	41			4	46				
01:30		1	19			3	34				
01:45		3	27	10	123	1	30	16	139	26	262
02:00		1	28			1	29				
02:15		4	27			1	29				
02:30		0	31			2	35				
02:45		4	22	9	108	4	44	8	137	17	245
03:00		2	19			2	25				
03:15		3	18			4	42				
03:30		2	21			4	41				
03:45		4	18	11	76	1	35	11	143	22	219
04:00		2	31			5	43				
04:15		3	25			1	44				
04:30		13	42			1	42				
04:45		12	36	30	134	2	39	9	168	39	302
05:00		15	36			2	42				
05:15		14	34			7	**47**				
05:30		22	31			7	**45**				
05:45		38	35	89	136	10	**48**	26	182	115	318
06:00		35	27			9	**44**				
06:15		28	**43**			12	43				
06:30		37	**50**			8	33				
06:45		38	**23**	138	143	18	39	47	159	185	302
07:00		**52**	**40**			27	31				
07:15		**60**	23			22	44				
07:30		**74**	41			**31**	35				
07:45		**40**	27	226	131	**51**	41	131	151	357	282
08:00		38	29			**37**	31				
08:15		23	25			**23**	28				
08:30		41	22			27	21				
08:45		29	18	131	94	10	32	97	112	228	206
09:00		22	30			24	18				
09:15		19	17			13	21				
09:30		22	14			11	26				
09:45		25	10	88	71	16	21	64	86	152	157
10:00		19	8			14	20				
10:15		26	8			18	31				
10:30		21	16			28	13				
10:45		16	7	82	39	11	12	71	76	153	115
11:00		33	5			20	10				
11:15		22	11			23	10				
11:30		18	4			21	6				
11:45		15	4	88	24	17	6	81	32	169	56
Total		922	1187	922	1187	571	1465	571	1465	1493	2652
Combined Total		2109		2109		2036		2036		4145	
AM Peak	-	07:00	-	-	-	07:30	-	-	-	-	-
Vol.	-	226	-	-	-	142	-	-	-	-	-
P.H.F.		0.764				0.696					
PM Peak	-	-	06:15	-	-	-	05:15	-	-	-	-
Vol.	-	-	156	-	-	-	184	-	-	-	-
P.H.F.			0.780				0.958				
Percentage		43.7%	56.3%			28.0%	72.0%				
ADT/AADT		ADT 4,145		AADT 4,145							

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City of Los Angeles
Osborn Street
W/ Arleta Avenue
24 Hour Directional Volume Count

LAC004
Site Code: 999-18423

Start Time	6/5/2018 Tue	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		30	233			43	205				
12:15		36	236			35	205				
12:30		23	231			41	222				
12:45		32	249	121	949	28	227	147	859	268	1808
01:00		27	228			31	208				
01:15		14	278			34	286				
01:30		10	235			22	290				
01:45		14	257	65	998	19	231	106	1015	171	2013
02:00		15	237			17	296				
02:15		12	234			24	256				
02:30		15	274			14	280				
02:45		21	266	63	1011	17	274	72	1106	135	2117
03:00		21	253			11	281				
03:15		31	283			16	262				
03:30		28	280			21	329				
03:45		35	271	115	1087	20	303	68	1175	183	2262
04:00		41	294			21	360				
04:15		60	302			39	302				
04:30		73	289			38	**347**				
04:45		85	**326**	259	1211	54	**340**	152	1349	411	2560
05:00		142	**322**			87	**347**				
05:15		188	**358**			71	**341**				
05:30		217	**303**			121	306				
05:45		204	312	751	1295	123	335	402	1329	1153	2624
06:00		234	292			154	342				
06:15		300	260			151	331				
06:30		321	275			179	322				
06:45		**346**	273	1201	1100	189	330	673	1325	1874	2425
07:00		**376**	251			238	304				
07:15		**401**	238			**292**	275				
07:30		**342**	201			**336**	257				
07:45		342	211	1461	901	**268**	256	1134	1092	2595	1993
08:00		275	199			**258**	216				
08:15		265	198			231	231				
08:30		271	187			189	248				
08:45		168	201	979	785	173	207	851	902	1830	1687
09:00		188	197			178	258				
09:15		210	198			198	195				
09:30		212	146			183	179				
09:45		178	152	788	693	202	141	761	773	1549	1466
10:00		192	135			200	138				
10:15		195	124			195	151				
10:30		184	87			181	116				
10:45		202	88	773	434	198	100	774	505	1547	939
11:00		193	68			176	73				
11:15		216	47			209	58				
11:30		207	46			210	66				
11:45		183	39	799	200	209	84	804	281	1603	481
Total		7375	10664	7375	10664	5944	11711	5944	11711	13319	22375
Combined Total		18039		18039		17655		17655		35694	
AM Peak	-	06:45	-	-	-	07:15	-	-	-	-	-
Vol.	-	1465	-	-	-	1154	-	-	-	-	-
P.H.F.		0.913				0.859					
PM Peak	-	-	04:45	-	-	-	04:30	-	-	-	-
Vol.	-	-	1309	-	-	-	1375	-	-	-	-
P.H.F.			0.914				0.991				
Percentage		40.9%	59.1%			33.7%	66.3%				
ADT/AADT		ADT 35,694		AADT 35,694							

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City of Los Angeles
Arleta Avenue
S/ Branford Street
24 Hour Directional Volume Count

LAC005
Site Code: 999-18423

Start Time	6/5/2018 Tue	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		12	92			8	92				
12:15		6	116			10	91				
12:30		9	110			12	79				
12:45		6	130	33	448	14	124	44	386	77	834
01:00		7	130			8	201				
01:15		4	136			10	127				
01:30		5	96			7	134				
01:45		5	115	21	477	1	105	26	567	47	1044
02:00		3	91			4	113				
02:15		9	103			3	130				
02:30		8	127			2	171				
02:45		5	96	25	417	3	189	12	603	37	1020
03:00		5	102			5	210				
03:15		9	114			3	251				
03:30		11	122			8	272				
03:45		7	119	32	457	6	311	22	1044	54	1501
04:00		12	129			4	262				
04:15		21	113			16	332				
04:30		26	118			9	**321**				
04:45		42	115	101	475	17	**339**	46	1254	147	1729
05:00		48	**152**			20	**324**				
05:15		92	**145**			35	**336**				
05:30		130	**120**			41	275				
05:45		131	**126**	401	543	28	271	124	1206	525	1749
06:00		190	130			53	287				
06:15		220	109			56	240				
06:30		256	108			61	199				
06:45		255	110	921	457	95	179	265	905	1186	1362
07:00		**343**	108			**143**	158				
07:15		**301**	111			**160**	127				
07:30		**276**	78			**150**	105				
07:45		**262**	95	1182	392	**116**	90	569	480	1751	872
08:00		224	74			65	101				
08:15		209	65			85	90				
08:30		164	74			91	77				
08:45		121	78	718	291	61	98	302	366	1020	657
09:00		124	73			67	72				
09:15		114	61			77	69				
09:30		96	51			70	45				
09:45		110	61	444	246	72	45	286	231	730	477
10:00		105	56			77	39				
10:15		81	35			72	30				
10:30		90	37			64	34				
10:45		84	32	360	160	68	35	281	138	641	298
11:00		80	28			70	25				
11:15		87	15			77	23				
11:30		81	24			73	18				
11:45		79	22	327	89	89	19	309	85	636	174
Total		4565	4452	4565	4452	2286	7265	2286	7265	6851	11717
Combined Total		9017		9017		9551		9551		18568	
AM Peak	-	07:00	-	-	-	07:00	-	-	-	-	-
Vol.	-	1182	-	-	-	569	-	-	-	-	-
P.H.F.		0.862				0.889					
PM Peak	-	-	05:00	-	-	-	04:30	-	-	-	-
Vol.	-	-	543	-	-	-	1320	-	-	-	-
P.H.F.			0.893				0.973				
Percentage		50.6%	49.4%			23.9%	76.1%				
ADT/AADT		ADT 18,568		AADT 18,568							

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City of Los Angeles
Canterbury Avenue
N/ Branford Street
24 Hour Directional Volume Count

LAC006
Site Code: 999-18423

Start Time	6/5/2018 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		4	17			2	25				
12:15		5	22			4	25				
12:30		1	23			2	35				
12:45		3	25	13	87	2	29	10	114	23	201
01:00		2	33			3	32				
01:15		2	62			0	32				
01:30		2	40			2	64				
01:45		1	27	7	162	2	28	7	156	14	318
02:00		0	32			1	28				
02:15		2	27			2	30				
02:30		1	23			1	25				
02:45		1	23	4	105	1	27	5	110	9	215
03:00		2	35			3	17				
03:15		0	35			3	20				
03:30		1	32			2	30				
03:45		0	30	3	132	1	32	9	99	12	231
04:00		0	51			1	36				
04:15		2	46			3	32				
04:30		0	44			3	41				
04:45		4	51	6	192	5	38	12	147	18	339
05:00		4	46			6	35				
05:15		5	**61**			10	**46**				
05:30		5	**57**			15	**41**				
05:45		4	**63**	18	227	17	**60**	48	182	66	409
06:00		8	**51**			18	**42**				
06:15		8	59			19	44				
06:30		24	51			26	34				
06:45		13	42	53	203	45	30	108	150	161	353
07:00		15	33			27	46				
07:15		**19**	32			**70**	35				
07:30		**41**	44			**47**	25				
07:45		**65**	40	140	149	**50**	24	194	130	334	279
08:00		**36**	20			**79**	15				
08:15		16	23			32	22				
08:30		23	26			38	18				
08:45		18	28	93	97	33	20	182	75	275	172
09:00		14	19			18	11				
09:15		18	11			21	20				
09:30		19	20			37	8				
09:45		13	16	64	66	24	13	100	52	164	118
10:00		11	15			22	11				
10:15		10	12			18	11				
10:30		19	10			23	11				
10:45		9	7	49	44	20	10	83	43	132	87
11:00		13	11			17	4				
11:15		11	8			14	17				
11:30		14	9			18	3				
11:45		17	11	55	39	12	7	61	31	116	70
Total		505	1503	505	1503	819	1289	819	1289	1324	2792
Combined Total		2008		2008		2108		2108		4116	
AM Peak	-	07:15	-	-	-	07:15	-	-	-	-	-
Vol.	-	161	-	-	-	246	-	-	-	-	-
P.H.F.		0.619				0.778					
PM Peak	-	-	05:15	-	-	-	05:15	-	-	-	-
Vol.	-	-	232	-	-	-	189	-	-	-	-
P.H.F.			0.921				0.788				
Percentage		25.1%	74.9%			38.9%	61.1%				
ADT/AADT		ADT 4,116		AADT 4,116							

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City of Los Angeles
Arleta Avenue
S/ Osborn Street
24 Hour Directional Volume Count

LAC008
Site Code: 999-18423

Start Time	6/5/2018 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		3	127			7	86				
12:15		10	122			10	101				
12:30		18	110			9	99				
12:45		8	120	39	479	11	113	37	399	76	878
01:00		9	130			7	139				
01:15		9	247			2	118				
01:30		8	164			5	114				
01:45		5	117	31	658	6	117	20	488	51	1146
02:00		5	141			4	98				
02:15		2	173			4	89				
02:30		3	186			2	118				
02:45		4	224	14	724	4	99	14	404	28	1128
03:00		7	246			2	101				
03:15		9	306			7	127				
03:30		11	312			4	121				
03:45		8	350	35	1214	7	122	20	471	55	1685
04:00		8	355			9	149				
04:15		24	379			18	139				
04:30		23	**377**			26	145				
04:45		33	**347**	88	1458	31	126	84	559	172	2017
05:00		57	**367**			49	**184**				
05:15		74	**383**			88	**164**				
05:30		64	344			115	**137**				
05:45		75	334	270	1428	127	**159**	379	644	649	2072
06:00		78	361			181	130				
06:15		95	330			182	121				
06:30		108	273			237	119				
06:45		138	244	419	1208	231	135	831	505	1250	1713
07:00		**168**	187			**311**	116				
07:15		**210**	143			**312**	117				
07:30		**191**	117			**313**	93				
07:45		**194**	104	763	551	**240**	108	1176	434	1939	985
08:00		99	126			243	91				
08:15		109	122			192	92				
08:30		98	84			144	96				
08:45		101	105	407	437	106	106	685	385	1092	822
09:00		100	74			104	83				
09:15		95	81			88	78				
09:30		98	66			96	65				
09:45		119	61	412	282	99	72	387	298	799	580
10:00		133	45			77	73				
10:15		113	48			68	53				
10:30		95	39			81	52				
10:45		101	31	442	163	71	41	297	219	739	382
11:00		90	24			64	32				
11:15		97	18			75	21				
11:30		22	15			95	29				
11:45		25	27	234	84	84	17	318	99	552	183
Total		3154	8686	3154	8686	4248	4905	4248	4905	7402	13591
Combined Total		11840		11840		9153		9153		20993	
AM Peak	-	07:00	-	-	-	07:00	-	-	-	-	-
Vol.	-	763	-	-	-	1176	-	-	-	-	-
P.H.F.		0.908				0.939					
PM Peak	-	-	04:30	-	-	-	05:00	-	-	-	-
Vol.	-	-	1474	-	-	-	644	-	-	-	-
P.H.F.			0.962				0.875				
Percentage		26.6%	73.4%			46.4%	53.6%				
ADT/AADT		ADT 20,993		AADT 20,993							

Counts Unlimited, Inc.

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City of Los Angeles
Beachy Avenue
S/ Osborne Street
24 Hour Directional Volume Count

LAC009
Site Code: 999-18423

Start Time	6/5/2018 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		6	28			6	15				
12:15		0	21			9	21				
12:30		7	33			5	27				
12:45		4	20	17	102	3	24	23	87	40	189
01:00		2	32			2	27				
01:15		2	21			3	27				
01:30		2	40			2	41				
01:45		2	29	8	122	2	29	9	124	17	246
02:00		1	29			3	24				
02:15		2	32			4	31				
02:30		0	30			1	34				
02:45		2	34	5	125	1	37	9	126	14	251
03:00		0	41			1	29				
03:15		4	36			1	27				
03:30		4	43			0	46				
03:45		1	49	9	169	1	50	3	152	12	321
04:00		4	43			4	39				
04:15		6	72			3	42				
04:30		9	46			3	43				
04:45		9	68	28	229	1	26	11	150	39	379
05:00		12	62			3	48				
05:15		23	**83**			4	34				
05:30		12	**63**			3	**48**				
05:45		18	**61**	65	269	4	**51**	14	181	79	450
06:00		13	**71**			12	**52**				
06:15		16	50			16	**39**				
06:30		36	51			21	35				
06:45		42	40	107	212	15	39	64	165	171	377
07:00		36	40			24	36				
07:15		**41**	39			23	41				
07:30		**46**	29			**55**	38				
07:45		**62**	33	185	141	**57**	25	159	140	344	281
08:00		**37**	32			**31**	29				
08:15		26	35			**27**	32				
08:30		30	28			17	29				
08:45		22	26	115	121	12	34	87	124	202	245
09:00		11	15			22	27				
09:15		19	24			15	33				
09:30		39	19			22	22				
09:45		35	15	104	73	26	26	85	108	189	181
10:00		20	17			16	16				
10:15		24	17			23	24				
10:30		35	24			17	15				
10:45		19	9	98	67	18	16	74	71	172	138
11:00		25	7			14	15				
11:15		24	12			20	9				
11:30		29	7			23	11				
11:45		27	8	105	34	22	6	79	41	184	75
Total		846	1664	846	1664	617	1469	617	1469	1463	3133
Combined Total		2510		2510		2086		2086		4596	
AM Peak	-	07:15	-	-	-	07:30	-	-	-	-	-
Vol.	-	186	-	-	-	170	-	-	-	-	-
P.H.F.		0.750				0.746					
PM Peak	-	-	05:15	-	-	-	05:30	-	-	-	-
Vol.	-	-	278	-	-	-	190	-	-	-	-
P.H.F.			0.837				0.913				
Percentage		33.7%	66.3%			29.6%	70.4%				
ADT/AADT		ADT 4,596		AADT 4,596							

Counts Unlimited, Inc.

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City of Los Angeles
Beachy Avenue
S/ Terra Bella Street
24 Hour Directional Volume Count

LAC010
Site Code: 999-18423

Start Time	6/5/2018 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		1	15			6	22				
12:15		2	24			3	16				
12:30		4	27			4	16				
12:45		1	26	8	92	1	20	14	74	22	166
01:00		5	21			2	21				
01:15		1	16			1	16				
01:30		1	34			0	20				
01:45		0	29	7	100	2	18	5	75	12	175
02:00		2	27			1	24				
02:15		1	39			0	28				
02:30		1	23			1	44				
02:45		0	33	4	122	0	23	2	119	6	241
03:00		1	22			1	21				
03:15		2	47			0	19				
03:30		1	47			0	**37**				
03:45		2	20	6	136	2	**35**	3	112	9	248
04:00		3	43			2	**32**				
04:15		5	35			0	**34**				
04:30		3	36			2	21				
04:45		4	31	15	145	4	26	8	113	23	258
05:00		5	28			1	37				
05:15		8	**47**			3	31				
05:30		16	**41**			3	30				
05:45		19	**41**	48	157	5	40	12	138	60	295
06:00		19	**32**			4	23				
06:15		12	36			5	32				
06:30		15	37			14	29				
06:45		20	39	66	144	10	26	33	110	99	254
07:00		26	29			12	19				
07:15		**36**	20			9	21				
07:30		**73**	17			**36**	13				
07:45		**69**	24	204	90	**41**	19	98	72	302	162
08:00		**33**	29			**31**	22				
08:15		17	27			**20**	14				
08:30		17	21			17	17				
08:45		20	17	87	94	11	19	79	72	166	166
09:00		13	17			11	14				
09:15		18	19			14	17				
09:30		32	13			22	21				
09:45		53	14	116	63	39	9	86	61	202	124
10:00		11	11			20	11				
10:15		12	21			4	8				
10:30		12	9			8	9				
10:45		19	6	54	47	11	5	43	33	97	80
11:00		11	9			10	5				
11:15		19	8			9	5				
11:30		12	3			15	2				
11:45		14	5	56	25	14	6	48	18	104	43
Total		671	1215	671	1215	431	997	431	997	1102	2212
Combined Total		1886		1886		1428		1428		3314	
AM Peak	-	07:15	-	-	-	07:30	-	-	-	-	-
Vol.	-	211	-	-	-	128	-	-	-	-	-
P.H.F.		0.723				0.780					
PM Peak	-	-	05:15	-	-	-	03:30	-	-	-	-
Vol.	-	-	161	-	-	-	138	-	-	-	-
P.H.F.			0.856				0.932				
Percentage		35.6%	64.4%			30.2%	69.8%				
ADT/AADT		ADT 3,314		AADT 3,314							

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City of Los Angeles
Laurel Canyon Boulevard
S/ Terra Bella Street
24 Hour Directional Volume Count

LAC011
Site Code: 999-18423

Start Time	6/5/2018 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		21	159			12	162				
12:15		15	195			23	150				
12:30		13	155			7	187				
12:45		13	148	62	657	12	180	54	679	116	1336
01:00		7	161			11	187				
01:15		6	218			6	228				
01:30		5	194			6	193				
01:45		8	195	26	768	10	172	33	780	59	1548
02:00		6	192			8	168				
02:15		3	163			5	174				
02:30		4	190			5	158				
02:45		5	189	18	734	4	171	22	671	40	1405
03:00		6	198			4	142				
03:15		7	216			5	174				
03:30		1	261			8	180				
03:45		5	256	19	931	13	172	30	668	49	1599
04:00		10	275			27	190				
04:15		9	267			13	173				
04:30		12	272			23	**216**				
04:45		26	270	57	1084	34	**199**	97	778	154	1862
05:00		42	**308**			30	**200**				
05:15		61	**283**			52	**198**				
05:30		39	**288**			98	186				
05:45		53	**279**	195	1158	90	175	270	759	465	1917
06:00		59	288			99	184				
06:15		76	280			153	173				
06:30		90	237			176	168				
06:45		106	230	331	1035	223	177	651	702	982	1737
07:00		**164**	195			**267**	169				
07:15		**246**	177			**345**	137				
07:30		**237**	160			**327**	136				
07:45		**177**	169	824	701	**260**	140	1199	582	2023	1283
08:00		117	159			237	141				
08:15		125	150			198	121				
08:30		87	123			173	153				
08:45		93	134	422	566	137	108	745	523	1167	1089
09:00		110	120			136	108				
09:15		90	112			117	114				
09:30		104	85			123	72				
09:45		123	88	427	405	118	69	494	363	921	768
10:00		103	65			134	65				
10:15		103	58			123	57				
10:30		122	56			112	45				
10:45		134	37	462	216	115	31	484	198	946	414
11:00		103	38			126	29				
11:15		124	30			126	19				
11:30		134	30			153	24				
11:45		131	20	492	118	154	17	559	89	1051	207
Total		3335	8373	3335	8373	4638	6792	4638	6792	7973	15165
Combined Total		11708		11708		11430		11430		23138	
AM Peak	-	07:00	-	-	-	07:00	-	-	-	-	-
Vol.	-	824	-	-	-	1199	-	-	-	-	-
P.H.F.		0.837				0.869					
PM Peak	-	-	05:00	-	-	-	04:30	-	-	-	-
Vol.	-	-	1158	-	-	-	813	-	-	-	-
P.H.F.			0.940				0.891				
Percentage		28.5%	71.5%			40.6%	59.4%				
ADT/AADT		ADT 23,138		AADT 23,138							

Counts Unlimited, Inc.

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City of Los Angeles
Beachy Avenue
S/ Van Nuys Boulevard
24 Hour Directional Volume Count

LAC012
Site Code: 999-18423

Start Time	6/5/2018 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		1	20			2	20				
12:15		5	21			4	23				
12:30		3	22			2	20				
12:45		2	26	11	89	1	20	9	83	20	172
01:00		1	25			4	23				
01:15		1	28			0	24				
01:30		1	18			0	20				
01:45		0	25	3	96	0	29	4	96	7	192
02:00		0	30			3	32				
02:15		3	59			2	51				
02:30		1	33			1	31				
02:45		3	48	7	170	0	28	6	142	13	312
03:00		2	33			0	25				
03:15		3	**35**			4	**37**				
03:30		3	**88**			0	**54**				
03:45		4	**52**	12	208	0	**37**	4	153	16	361
04:00		3	**41**			2	**39**				
04:15		5	27			3	35				
04:30		10	36			2	29				
04:45		8	35	26	139	3	36	10	139	36	278
05:00		4	27			1	40				
05:15		22	44			1	39				
05:30		23	37			6	47				
05:45		21	35	70	143	3	35	11	161	81	304
06:00		19	42			6	31				
06:15		24	28			16	28				
06:30		32	38			13	23				
06:45		37	35	112	143	24	24	59	106	171	249
07:00		56	28			18	25				
07:15		46	26			28	22				
07:30		53	21			43	22				
07:45		48	24	203	99	52	30	141	99	344	198
08:00		34	13			24	29				
08:15		33	12			12	27				
08:30		26	19			16	10				
08:45		23	7	116	51	11	24	63	90	179	141
09:00		16	11			12	28				
09:15		**40**	22			**35**	26				
09:30		**71**	21			**81**	20				
09:45		**91**	14	218	68	**75**	16	203	90	421	158
10:00		**20**	14			**18**	16				
10:15		22	9			9	12				
10:30		23	6			19	6				
10:45		17	11	82	40	16	9	62	43	144	83
11:00		19	5			15	6				
11:15		8	5			15	5				
11:30		28	5			24	5				
11:45		19	4	74	19	20	3	74	19	148	38
Total		934	1265	934	1265	646	1221	646	1221	1580	2486
Combined Total		2199		2199		1867		1867		4066	
AM Peak	-	09:15	-	-	-	09:15	-	-	-	-	-
Vol.	-	222	-	-	-	209	-	-	-	-	-
P.H.F.		0.610				0.645					
PM Peak	-	-	03:15	-	-	-	03:15	-	-	-	-
Vol.	-	-	216	-	-	-	167	-	-	-	-
P.H.F.			0.614				0.773				
Percentage		42.5%	57.5%			34.6%	65.4%				
ADT/AADT		ADT 4,066		AADT 4,066							

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City of Los Angeles
Laurel Canyon Boulevard
S/ Van Nuys Boulevard
24 Hour Directional Volume Count

LAC013
Site Code: 999-18423

Start Time	6/5/2018 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		21	180			16	150				
12:15		19	216			23	194				
12:30		13	193			10	197				
12:45		15	157	68	746	22	198	71	739	139	1485
01:00		8	182			16	196				
01:15		6	196			10	201				
01:30		8	211			13	197				
01:45		11	204	33	793	11	189	50	783	83	1576
02:00		4	210			16	187				
02:15		5	199			6	204				
02:30		9	222			4	195				
02:45		3	212	21	843	4	205	30	791	51	1634
03:00		12	208			8	191				
03:15		14	245			4	208				
03:30		5	253			15	192				
03:45		11	251	42	957	11	209	38	800	80	1757
04:00		26	286			28	220				
04:15		26	263			21	**230**				
04:30		40	292			18	**225**				
04:45		63	278	155	1119	36	**236**	103	911	258	2030
05:00		74	291			30	**226**				
05:15		122	276			46	206				
05:30		103	**287**			87	217				
05:45		109	**280**	408	1134	77	212	240	861	648	1995
06:00		105	**292**			102	183				
06:15		134	**282**			151	178				
06:30		138	260			173	187				
06:45		161	221	538	1055	210	190	636	738	1174	1793
07:00		**219**	214			241	169				
07:15		**264**	165			**282**	159				
07:30		**285**	152			**280**	152				
07:45		**227**	154	995	685	**280**	164	1083	644	2078	1329
08:00		166	174			**243**	160				
08:15		133	158			204	163				
08:30		138	142			175	180				
08:45		111	116	548	590	120	148	742	651	1290	1241
09:00		129	138			133	136				
09:15		135	99			125	122				
09:30		123	80			126	99				
09:45		133	89	520	406	130	84	514	441	1034	847
10:00		120	79			140	69				
10:15		135	58			129	79				
10:30		131	57			123	54				
10:45		154	48	540	242	128	50	520	252	1060	494
11:00		136	39			105	40				
11:15		148	34			102	34				
11:30		140	30			144	39				
11:45		145	20	569	123	173	36	524	149	1093	272
Total		4437	8693	4437	8693	4551	7760	4551	7760	8988	16453
Combined Total		13130		13130		12311		12311		25441	
AM Peak	-	07:00	-	-	-	07:15	-	-	-	-	-
Vol.	-	995	-	-	-	1085	-	-	-	-	-
P.H.F.		0.873				0.962					
PM Peak	-	-	05:30	-	-	-	04:15	-	-	-	-
Vol.	-	-	1141	-	-	-	917	-	-	-	-
P.H.F.			0.977				0.971				
Percentage		33.8%	66.2%			37.0%	63.0%				
ADT/AADT		ADT 25,441		AADT 25,441							

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City of Los Angeles
Bartee Avenue
S/ Van Nuys Boulevard
24 Hour Directional Volume Count

LAC014
Site Code: 999-18423

Start Time	6/5/2018 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		0	12			2	6				
12:15		1	9			1	11				
12:30		0	9			0	8				
12:45		1	11	2	41	2	11	5	36	7	77
01:00		0	10			0	15				
01:15		0	15			1	11				
01:30		0	14			0	12				
01:45		0	11	0	50	0	11	1	49	1	99
02:00		2	**27**			0	14				
02:15		0	**28**			0	12				
02:30		0	**15**			0	13				
02:45		1	**17**	3	87	0	13	0	52	3	139
03:00		0	11			1	15				
03:15		0	10			1	12				
03:30		2	15			0	10				
03:45		0	9	2	45	0	13	2	50	4	95
04:00		4	18			3	17				
04:15		2	20			1	15				
04:30		1	22			1	**22**				
04:45		2	11	9	71	1	**13**	6	67	15	138
05:00		5	13			0	**12**				
05:15		6	20			4	**26**				
05:30		4	16			0	15				
05:45		2	12	17	61	3	10	7	63	24	124
06:00		9	15			3	16				
06:15		8	12			5	17				
06:30		7	15			2	12				
06:45		9	7	33	49	3	8	13	53	46	102
07:00		8	3			16	11				
07:15		**19**	9			**33**	13				
07:30		**39**	10			**44**	9				
07:45		**25**	10	91	32	**18**	16	111	49	202	81
08:00		**12**	9			**17**	12				
08:15		6	13			7	8				
08:30		10	9			4	9				
08:45		8	12	36	43	10	12	38	41	74	84
09:00		16	7			9	7				
09:15		10	6			3	9				
09:30		17	7			6	4				
09:45		11	3	54	23	7	7	25	27	79	50
10:00		8	4			6	2				
10:15		12	4			5	7				
10:30		5	3			9	6				
10:45		2	0	27	11	9	3	29	18	56	29
11:00		9	2			8	2				
11:15		7	2			6	5				
11:30		9	0			5	3				
11:45		10	0	35	4	8	1	27	11	62	15
Total		309	517	309	517	264	516	264	516	573	1033
Combined Total		826		826		780		780		1606	
AM Peak	-	07:15	-	-	-	07:15	-	-	-	-	-
Vol.	-	95	-	-	-	112	-	-	-	-	-
P.H.F.		0.609				0.636					
PM Peak	-	-	02:00	-	-	-	04:30	-	-	-	-
Vol.	-	-	87	-	-	-	73	-	-	-	-
P.H.F.			0.777				0.702				
Percentage		37.4%	62.6%			33.8%	66.2%				
ADT/AADT		ADT 1,606		AADT 1,606							

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City of Los Angeles
Woodman Avenue
S/ Devonshire Street
24 Hour Directional Volume Count

LAC015
Site Code: 999-18423

Start Time	6/5/2018 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		21	150			22	124				
12:15		19	130			12	137				
12:30		10	151			12	130				
12:45		4	155	54	586	12	151	58	542	112	1128
01:00		2	162			10	137				
01:15		5	164			15	174				
01:30		8	157			10	169				
01:45		7	166	22	649	7	148	42	628	64	1277
02:00		9	134			12	149				
02:15		4	175			5	148				
02:30		8	177			6	161				
02:45		10	187	31	673	5	188	28	646	59	1319
03:00		6	184			3	195				
03:15		14	204			7	171				
03:30		20	201			5	175				
03:45		20	206	60	795	5	204	20	745	80	1540
04:00		16	222			15	204				
04:15		34	238			9	211				
04:30		32	243			11	187				
04:45		40	**254**	122	957	18	191	53	793	175	1750
05:00		44	**281**			25	**235**				
05:15		74	**273**			70	**209**				
05:30		85	**252**			82	**199**				
05:45		88	212	291	1018	77	**228**	254	871	545	1889
06:00		79	247			115	181				
06:15		118	227			140	203				
06:30		130	222			154	181				
06:45		138	218	465	914	173	157	582	722	1047	1636
07:00		**226**	174			235	158				
07:15		**270**	159			**242**	166				
07:30		**228**	158			**286**	156				
07:45		**148**	140	872	631	**278**	161	1041	641	1913	1272
08:00		139	140			**251**	160				
08:15		141	121			180	142				
08:30		130	122			138	132				
08:45		114	125	524	508	111	129	680	563	1204	1071
09:00		122	100			140	114				
09:15		110	86			128	118				
09:30		107	88			119	91				
09:45		120	64	459	338	112	79	499	402	958	740
10:00		105	57			118	76				
10:15		105	50			104	73				
10:30		113	67			106	58				
10:45		106	61	429	235	99	48	427	255	856	490
11:00		147	33			126	50				
11:15		130	35			126	24				
11:30		111	30			107	26				
11:45		146	20	534	118	130	28	489	128	1023	246
Total		3863	7422	3863	7422	4173	6936	4173	6936	8036	14358
Combined Total		11285		11285		11109		11109		22394	
AM Peak	-	07:00	-	-	-	07:15	-	-	-	-	-
Vol.	-	872	-	-	-	1057	-	-	-	-	-
P.H.F.		0.807				0.924					
PM Peak	-	-	04:45	-	-	-	05:00	-	-	-	-
Vol.	-	-	1060	-	-	-	871	-	-	-	-
P.H.F.			0.943				0.927				
Percentage		34.2%	65.8%			37.6%	62.4%				
ADT/AADT		ADT 22,394		AADT 22,394							

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City of Los Angeles
Laurel Canyon Boulevard
S/ Paxton Street
24 Hour Directional Volume Count

LAC016
Site Code: 999-18423

Start Time	6/5/2018 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		25	231			27	163				
12:15		22	251			27	240				
12:30		15	230			16	215				
12:45		9	203	71	915	26	196	96	814	167	1729
01:00		10	208			12	179				
01:15		10	220			10	206				
01:30		11	206			13	208				
01:45		9	219	40	853	12	190	47	783	87	1636
02:00		9	214			13	189				
02:15		11	238			7	211				
02:30		7	219			5	220				
02:45		5	249	32	920	6	226	31	846	63	1766
03:00		14	245			8	190				
03:15		23	270			11	219				
03:30		18	266			32	216				
03:45		19	259	74	1040	19	208	70	833	144	1873
04:00		39	271			49	217				
04:15		61	290			22	**228**				
04:30		69	**305**			19	**231**				
04:45		81	**314**	250	1180	37	**227**	127	903	377	2083
05:00		141	**345**			42	**240**				
05:15		197	**309**			57	225				
05:30		171	305			89	196				
05:45		151	299	660	1258	96	225	284	886	944	2144
06:00		158	294			129	213				
06:15		195	311			174	195				
06:30		195	269			211	183				
06:45		211	278	759	1152	265	194	779	785	1538	1937
07:00		**291**	236			**319**	164				
07:15		**317**	185			**352**	165				
07:30		**323**	167			**336**	153				
07:45		**238**	177	1169	765	**349**	191	1356	673	2525	1438
08:00		177	236			290	168				
08:15		187	191			233	161				
08:30		162	165			198	162				
08:45		139	129	665	721	147	165	868	656	1533	1377
09:00		170	153			149	146				
09:15		160	109			146	131				
09:30		147	86			170	97				
09:45		164	94	641	442	141	89	606	463	1247	905
10:00		155	90			167	90				
10:15		146	76			157	66				
10:30		143	65			140	50				
10:45		140	50	584	281	142	57	606	263	1190	544
11:00		171	46			131	71				
11:15		181	38			146	48				
11:30		156	31			166	39				
11:45		172	22	680	137	156	39	599	197	1279	334
Total		5625	9664	5625	9664	5469	8102	5469	8102	11094	17766
Combined Total		15289		15289		13571		13571		28860	
AM Peak	-	07:00	-	-	-	07:00	-	-	-	-	-
Vol.	-	1169	-	-	-	1356	-	-	-	-	-
P.H.F.		0.905				0.963					
PM Peak	-	-	04:30	-	-	-	04:15	-	-	-	-
Vol.	-	-	1273	-	-	-	926	-	-	-	-
P.H.F.			0.922				0.965				
Percentage		36.8%	63.2%			40.3%	59.7%				
ADT/AADT		ADT 28,860		AADT 28,860							

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City of Los Angeles
Devonshire Street
E/ Woodman Avenue
24 Hour Directional Volume Count

LAC017
Site Code: 999-18423

Start Time	6/5/2018 Tue	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		20	99			14	120				
12:15		11	128			9	107				
12:30		13	122			14	111				
12:45		14	117	58	466	8	144	45	482	103	948
01:00		10	133			7	139				
01:15		5	154			6	119				
01:30		9	143			7	136				
01:45		7	161	31	591	7	112	27	506	58	1097
02:00		7	154			6	144				
02:15		3	144			11	164				
02:30		4	151			9	155				
02:45		5	152	19	601	7	174	33	637	52	1238
03:00		7	197			4	209				
03:15		13	179			9	181				
03:30		10	194			16	186				
03:45		14	229	44	799	8	199	37	775	81	1574
04:00		11	215			16	193				
04:15		26	227			16	216				
04:30		25	223			29	219				
04:45		36	**249**	98	914	43	204	104	832	202	1746
05:00		51	**287**			43	210				
05:15		71	**271**			83	213				
05:30		98	**256**			104	**248**				
05:45		112	230	332	1044	98	**197**	328	868	660	1912
06:00		132	239			149	**240**				
06:15		168	208			147	**223**				
06:30		184	180			145	193				
06:45		203	172	687	799	**210**	177	651	833	1338	1632
07:00		**290**	150			**250**	160				
07:15		**292**	141			**243**	173				
07:30		**243**	139			**234**	135				
07:45		**257**	125	1082	555	203	137	930	605	2012	1160
08:00		246	116			193	174				
08:15		208	98			133	122				
08:30		146	103			119	120				
08:45		141	107	741	424	114	95	559	511	1300	935
09:00		112	88			112	84				
09:15		123	93			127	82				
09:30		122	81			102	69				
09:45		131	75	488	337	91	47	432	282	920	619
10:00		91	73			83	54				
10:15		100	61			85	57				
10:30		90	42			90	43				
10:45		91	49	372	225	101	42	359	196	731	421
11:00		95	37			110	28				
11:15		103	32			117	23				
11:30		102	33			116	17				
11:45		112	19	412	121	104	11	447	79	859	200
Total		4364	6876	4364	6876	3952	6606	3952	6606	8316	13482
Combined Total		11240		11240		10558		10558		21798	
AM Peak	-	07:00	-	-	-	06:45	-	-	-	-	-
Vol.	-	1082	-	-	-	937	-	-	-	-	-
P.H.F.		0.926				0.937					
PM Peak	-	-	04:45	-	-	-	05:30	-	-	-	-
Vol.	-	-	1063	-	-	-	908	-	-	-	-
P.H.F.			0.926				0.915				
Percentage		38.8%	61.2%			37.4%	62.6%				
ADT/AADT		ADT 21,798		AADT 21,798							

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City of Los Angeles
Woodman Avenue
S/ Chatsworth Street
24 Hour Directional Volume Count

LAC018
Site Code: 999-18423

Start Time	6/5/2018 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		6	89			6	55				
12:15		11	70			3	55				
12:30		2	67			6	76				
12:45		3	63	22	289	5	65	20	251	42	540
01:00		0	61			0	44				
01:15		2	88			5	74				
01:30		5	76			6	58				
01:45		1	74	8	299	5	65	16	241	24	540
02:00		6	88			3	67				
02:15		1	79			3	67				
02:30		1	87			2	69				
02:45		2	85	10	339	1	74	9	277	19	616
03:00		0	98			1	76				
03:15		2	101			0	68				
03:30		6	91			4	77				
03:45		8	113	16	403	3	71	8	292	24	695
04:00		4	119			1	82				
04:15		13	119			4	83				
04:30		12	**135**			3	84				
04:45		13	**137**	42	510	10	**83**	18	332	60	842
05:00		8	**124**			16	**98**				
05:15		27	**162**			26	**83**				
05:30		22	129			29	**86**				
05:45		34	105	91	520	40	72	111	339	202	859
06:00		35	126			44	66				
06:15		45	107			59	77				
06:30		49	97			72	72				
06:45		70	103	199	433	86	64	261	279	460	712
07:00		**94**	97			**106**	62				
07:15		**135**	57			**144**	59				
07:30		**129**	59			**136**	55				
07:45		**85**	68	443	281	**150**	59	536	235	979	516
08:00		42	65			96	52				
08:15		56	53			66	55				
08:30		61	43			63	52				
08:45		51	51	210	212	51	43	276	202	486	414
09:00		57	45			62	50				
09:15		52	37			58	40				
09:30		47	34			52	27				
09:45		52	31	208	147	55	36	227	153	435	300
10:00		43	29			52	23				
10:15		58	26			43	18				
10:30		40	28			50	20				
10:45		52	31	193	114	41	22	186	83	379	197
11:00		71	14			55	19				
11:15		50	20			53	3				
11:30		63	7			53	10				
11:45		64	13	248	54	55	6	216	38	464	92
Total		1690	3601	1690	3601	1884	2722	1884	2722	3574	6323
Combined Total		5291		5291		4606		4606		9897	
AM Peak	-	07:00	-	-	-	07:00	-	-	-	-	-
Vol.	-	443	-	-	-	536	-	-	-	-	-
P.H.F.		0.820				0.893					
PM Peak	-	-	04:30	-	-	-	04:45	-	-	-	-
Vol.	-	-	558	-	-	-	350	-	-	-	-
P.H.F.			0.861				0.893				
Percentage		31.9%	68.1%			40.9%	59.1%				
ADT/AADT		ADT 9,897		AADT 9,897							

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City of Los Angeles
Laurel Canyon Boulevard
N/ Paxton Street
24 Hour Directional Volume Count

LAC019
Site Code: 999-18423

Start Time	6/5/2018 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		20	225			30	182				
12:15		21	255			31	284				
12:30		13	218			17	258				
12:45		12	231	66	929	24	220	102	944	168	1873
01:00		9	217			12	214				
01:15		8	214			19	212				
01:30		6	212			16	219				
01:45		8	208	31	851	10	215	57	860	88	1711
02:00		12	197			10	220				
02:15		11	208			6	221				
02:30		7	211			11	247				
02:45		7	233	37	849	14	266	41	954	78	1803
03:00		11	216			10	225				
03:15		17	260			12	248				
03:30		23	235			7	296				
03:45		18	269	69	980	15	271	44	1040	113	2020
04:00		30	251			62	250				
04:15		46	266			26	286				
04:30		59	269			22	**286**				
04:45		64	**270**	199	1056	40	**305**	150	1127	349	2183
05:00		117	**310**			45	**310**				
05:15		162	**265**			66	**287**				
05:30		146	**275**			93	272				
05:45		151	267	576	1117	106	283	310	1152	886	2269
06:00		182	240			124	252				
06:15		226	249			189	230				
06:30		186	253			234	251				
06:45		215	238	809	980	343	196	890	929	1699	1909
07:00		**290**	202			**375**	185				
07:15		**342**	180			**437**	208				
07:30		**332**	181			**448**	178				
07:45		**242**	157	1206	720	**438**	179	1698	750	2904	1470
08:00		187	205			355	182				
08:15		182	168			298	166				
08:30		144	153			298	157				
08:45		137	120	650	646	170	169	1121	674	1771	1320
09:00		162	125			198	166				
09:15		137	102			159	149				
09:30		153	75			199	111				
09:45		170	84	622	386	146	113	702	539	1324	925
10:00		145	87			156	103				
10:15		154	69			159	81				
10:30		157	66			154	65				
10:45		138	45	594	267	145	72	614	321	1208	588
11:00		185	43			128	70				
11:15		167	35			161	55				
11:30		152	32			189	51				
11:45		189	25	693	135	176	50	654	226	1347	361
Total		5552	8916	5552	8916	6383	9516	6383	9516	11935	18432
Combined Total		14468		14468		15899		15899		30367	
AM Peak	-	07:00	-	-	-	07:00	-	-	-	-	-
Vol.	-	1206	-	-	-	1698	-	-	-	-	-
P.H.F.		0.882				0.948					
PM Peak	-	-	04:45	-	-	-	04:30	-	-	-	-
Vol.	-	-	1120	-	-	-	1188	-	-	-	-
P.H.F.			0.903				0.958				
Percentage		38.4%	61.6%			40.1%	59.9%				
ADT/AADT		ADT 30,367		AADT 30,367							

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City of Los Angeles
Sharp Avenue
S/ Paxton Street
24 Hour Directional Volume Count

LAC020
Site Code: 999-18423

Start Time	6/5/2018 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		0	10			4	6				
12:15		2	9			2	8				
12:30		0	8			0	11				
12:45		1	9	3	36	1	12	7	37	10	73
01:00		1	16			3	11				
01:15		0	9			1	10				
01:30		2	17			2	13				
01:45		0	9	3	51	0	11	6	45	9	96
02:00		0	13			2	10				
02:15		0	16			0	6				
02:30		0	12			0	13				
02:45		0	12	0	53	0	12	2	41	2	94
03:00		0	18			0	15				
03:15		1	12			0	18				
03:30		2	13			2	14				
03:45		2	13	5	56	2	11	4	58	9	114
04:00		4	21			0	13				
04:15		3	15			0	**16**				
04:30		4	**21**			0	**14**				
04:45		4	**18**	15	75	1	**15**	1	58	16	133
05:00		8	**22**			2	**26**				
05:15		8	**18**			2	13				
05:30		14	18			4	12				
05:45		10	19	40	77	3	12	11	63	51	140
06:00		12	20			4	11				
06:15		14	17			2	15				
06:30		14	22			6	9				
06:45		19	14	59	73	8	15	20	50	79	123
07:00		19	9			6	11				
07:15		**25**	14			8	10				
07:30		**28**	13			7	14				
07:45		**21**	6	93	42	**12**	13	33	48	126	90
08:00		**21**	14			**6**	8				
08:15		10	9			**18**	13				
08:30		6	12			**13**	7				
08:45		11	7	48	42	3	8	40	36	88	78
09:00		14	7			5	6				
09:15		8	9			3	8				
09:30		11	5			8	10				
09:45		9	5	42	26	8	8	24	32	66	58
10:00		11	3			10	7				
10:15		8	8			4	9				
10:30		7	4			3	5				
10:45		9	3	35	18	6	5	23	26	58	44
11:00		10	4			8	3				
11:15		5	0			7	4				
11:30		11	2			9	2				
11:45		9	1	35	7	7	3	31	12	66	19
Total		378	556	378	556	202	506	202	506	580	1062
Combined Total		934		934		708		708		1642	
AM Peak	-	07:15	-	-	-	07:45	-	-	-	-	-
Vol.	-	95	-	-	-	49	-	-	-	-	-
P.H.F.		0.848				0.681					
PM Peak	-	-	04:30	-	-	-	04:15	-	-	-	-
Vol.	-	-	79	-	-	-	71	-	-	-	-
P.H.F.			0.898				0.683				
Percentage		40.5%	59.5%			28.5%	71.5%				
ADT/AADT		ADT 1,642		AADT 1,642							

Counts Unlimited, Inc.
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email: counts@countsunlimited.com

City of Los Angeles
Filmore Street
E/ Arleta Avenue
24 Hour Directional Volume Count

LAC021
Site Code: 999-18423

Start Time	6/5/2018 Tue	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		3	10			0	6				
12:15		2	12			0	14				
12:30		0	4			0	8				
12:45		2	17	7	43	0	8	0	36	7	79
01:00		0	9			1	7				
01:15		0	7			0	12				
01:30		1	14			0	8				
01:45		0	7	1	37	0	6	1	33	2	70
02:00		2	11			1	9				
02:15		2	17			2	7				
02:30		0	10			0	8				
02:45		0	12	4	50	1	6	4	30	8	80
03:00		2	5			0	13				
03:15		0	8			2	10				
03:30		1	**26**			3	10				
03:45		1	**23**	4	62	3	9	8	42	12	104
04:00		0	**30**			2	9				
04:15		0	**22**			1	5				
04:30		1	20			2	7				
04:45		3	23	4	95	4	3	9	24	13	119
05:00		2	24			7	8				
05:15		3	31			4	7				
05:30		2	19			8	**14**				
05:45		0	23	7	97	10	**9**	29	38	36	135
06:00		1	21			11	**12**				
06:15		2	22			12	**11**				
06:30		3	21			12	10				
06:45		8	16	14	80	9	13	44	46	58	126
07:00		3	15			16	6				
07:15		7	10			**24**	11				
07:30		9	8			**20**	9				
07:45		11	13	30	46	**18**	7	78	33	108	79
08:00		2	12			**20**	9				
08:15		15	8			11	10				
08:30		4	10			4	10				
08:45		11	16	32	46	9	8	44	37	76	83
09:00		5	11			11	5				
09:15		**8**	10			6	5				
09:30		**10**	14			10	7				
09:45		**15**	7	38	42	14	1	41	18	79	60
10:00		**6**	6			5	4				
10:15		7	12			4	3				
10:30		6	10			8	1				
10:45		6	3	25	31	2	3	19	11	44	42
11:00		5	6			7	3				
11:15		8	2			4	2				
11:30		12	2			7	0				
11:45		5	1	30	11	14	0	32	5	62	16
Total		196	640	196	640	309	353	309	353	505	993
Combined Total		836		836		662		662		1498	
AM Peak	-	09:15	-	-	-	07:15	-	-	-	-	-
Vol.	-	39	-	-	-	82	-	-	-	-	-
P.H.F.		0.650				0.854					
PM Peak	-	-	03:30	-	-	-	05:30	-	-	-	-
Vol.	-	-	101	-	-	-	46	-	-	-	-
P.H.F.			0.842				0.821				
Percentage		23.4%	76.6%			46.7%	53.3%				
ADT/AADT		ADT 1,498		AADT 1,498							

Counts Unlimited, Inc.
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City of Los Angeles
San Jose Street
E/ Arleta Avenue
24 Hour Directional Volume Count

LAC025
Site Code: 999-18423

Start Time	6/5/2018 Tue	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		1	13			1	9				
12:15		3	11			4	5				
12:30		3	17			1	12				
12:45		0	10	7	51	1	11	7	37	14	88
01:00		1	11			0	15				
01:15		1	14			0	18				
01:30		1	18			1	16				
01:45		3	29	6	72	0	8	1	57	7	129
02:00		2	24			1	11				
02:15		1	14			3	17				
02:30		2	14			1	17				
02:45		0	14	5	66	1	11	6	56	11	122
03:00		1	18			0	8				
03:15		0	20			0	10				
03:30		0	25			1	10				
03:45		1	22	2	85	1	7	2	35	4	120
04:00		1	16			3	10				
04:15		0	16			6	**22**				
04:30		1	35			7	**18**				
04:45		2	15	4	82	9	**18**	25	68	29	150
05:00		2	14			6	**16**				
05:15		1	**33**			12	15				
05:30		1	**29**			12	21				
05:45		4	**25**	8	101	10	20	40	72	48	173
06:00		6	**28**			10	16				
06:15		6	33			28	17				
06:30		7	17			17	13				
06:45		5	30	24	108	16	17	71	63	95	171
07:00		3	16			**33**	17				
07:15		12	23			**31**	12				
07:30		12	14			**31**	13				
07:45		14	17	41	70	**33**	9	128	51	169	121
08:00		17	22			18	12				
08:15		5	17			15	10				
08:30		13	14			20	8				
08:45		8	13	43	66	10	13	63	43	106	109
09:00		8	20			10	9				
09:15		8	15			12	8				
09:30		4	18			12	3				
09:45		9	13	29	66	11	6	45	26	74	92
10:00		4	13			6	9				
10:15		10	11			7	9				
10:30		10	5			11	7				
10:45		**20**	9	44	38	13	5	37	30	81	68
11:00		**7**	8			14	9				
11:15		**10**	4			6	2				
11:30		**19**	2			13	2				
11:45		9	10	45	24	16	4	49	17	94	41
Total		258	829	258	829	474	555	474	555	732	1384
Combined Total		1087		1087		1029		1029		2116	
AM Peak	-	10:45	-	-	-	07:00	-	-	-	-	-
Vol.	-	56	-	-	-	128	-	-	-	-	-
P.H.F.		0.700				0.970					
PM Peak	-	-	05:15	-	-	-	04:15	-	-	-	-
Vol.	-	-	115	-	-	-	74	-	-	-	-
P.H.F.			0.871				0.841				
Percentage		23.7%	76.3%			46.1%	53.9%				
ADT/AADT		ADT 2,116		AADT 2,116							

Counts Unlimited, Inc.

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Phone: (951) 268-6268
email: counts@countsunlimited.com

City of Los Angeles
Chatsworth Street
W/ Arleta Avenue
24 Hour Directional Volume Count

LAC028
Site Code: 999-18423

Start Time	6/5/2018 Tue	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		2	**3**			0	6				
12:15		4	**11**			0	2				
12:30		2	**7**			1	13				
12:45		0	**6**	8	27	1	3	2	24	10	51
01:00		1	0			1	8				
01:15		0	0			0	9				
01:30		1	0			0	4				
01:45		2	0	4	0	0	8	1	29	5	29
02:00		2	0			0	12				
02:15		0	2			0	8				
02:30		1	2			0	8				
02:45		0	0	3	4	1	12	1	40	4	44
03:00		0	8			0	8				
03:15		0	2			0	5				
03:30		1	0			0	8				
03:45		0	0	1	10	1	10	1	31	2	41
04:00		0	0			1	5				
04:15		5	1			1	8				
04:30		5	0			3	**15**				
04:45		1	0	11	1	1	**7**	6	35	17	36
05:00		5	0			2	**14**				
05:15		8	0			4	**13**				
05:30		7	0			3	13				
05:45		14	0	34	0	6	5	15	45	49	45
06:00		8	0			15	11				
06:15		11	0			**17**	7				
06:30		18	0			**14**	10				
06:45		18	3	55	3	**19**	8	65	36	120	39
07:00		30	4			**26**	6				
07:15		**48**	0			12	10				
07:30		**55**	0			5	0				
07:45		**38**	0	171	4	7	8	50	24	221	28
08:00		**47**	0			3	6				
08:15		30	0			1	14				
08:30		19	0			7	5				
08:45		15	0	111	0	0	3	11	28	122	28
09:00		10	0			2	2				
09:15		10	0			2	5				
09:30		13	3			6	8				
09:45		8	0	41	3	5	1	15	16	56	19
10:00		7	0			1	2				
10:15		25	0			2	3				
10:30		5	0			5	2				
10:45		17	0	54	0	5	4	13	11	67	11
11:00		13	0			3	1				
11:15		23	0			3	2				
11:30		3	0			5	0				
11:45		2	0	41	0	4	0	15	3	56	3
Total		534	52	534	52	195	322	195	322	729	374
Combined Total		586		586		517		517		1103	
AM Peak	-	07:15	-	-	-	06:15	-	-	-	-	-
Vol.	-	188	-	-	-	76	-	-	-	-	-
P.H.F.		0.855				0.731					
PM Peak	-	-	12:00	-	-	-	04:30	-	-	-	-
Vol.	-	-	27	-	-	-	49	-	-	-	-
P.H.F.			0.614				0.817				
Percentage		91.1%	8.9%			37.7%	62.3%				
ADT/AADT		ADT 1,103		AADT 1,103							

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Los Angeles
N/S: Canterbury Avenue
E/W: Branford Street
Weather: Clear

File Name : 01_LAC_Canterbury_Branford AM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 1

Groups Printed- Total Volume

	Canterbury Avenue Southbound				Branford Street Westbound				Canterbury Avenue Northbound				Branford Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	33	13	17	63	4	210	11	225	2	9	18	29	3	204	2	209	526
07:15 AM	20	10	8	38	8	215	19	242	6	12	15	33	9	186	4	199	512
07:30 AM	31	13	11	55	9	238	23	270	6	28	23	57	15	239	4	258	640
07:45 AM	26	21	14	61	12	210	6	228	2	20	22	44	10	179	8	197	530
Total	110	57	50	217	33	873	59	965	16	69	78	163	37	808	18	863	2208
08:00 AM	22	12	12	46	6	197	5	208	5	11	10	26	4	167	7	178	458
08:15 AM	10	14	11	35	8	174	6	188	1	4	14	19	1	128	4	133	375
08:30 AM	11	8	6	25	3	134	2	139	7	8	8	23	1	125	1	127	314
08:45 AM	11	7	7	25	1	126	4	131	4	1	7	12	3	110	4	117	285
Total	54	41	36	131	18	631	17	666	17	24	39	80	9	530	16	555	1432
Grand Total	164	98	86	348	51	1504	76	1631	33	93	117	243	46	1338	34	1418	3640
Apprch %	47.1	28.2	24.7		3.1	92.2	4.7		13.6	38.3	48.1		3.2	94.4	2.4		
Total %	4.5	2.7	2.4	9.6	1.4	41.3	2.1	44.8	0.9	2.6	3.2	6.7	1.3	36.8	0.9	39	

	Canterbury Avenue Southbound				Branford Street Westbound				Canterbury Avenue Northbound				Branford Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**33**	13	**17**	**63**	4	210	11	225	2	9	18	29	3	204	2	209	526
07:15 AM	20	10	8	38	8	215	19	242	**6**	12	15	33	9	186	4	199	512
07:30 AM	31	13	11	55	9	**238**	**23**	**270**	6	**28**	**23**	**57**	**15**	**239**	4	**258**	**640**
07:45 AM	26	**21**	14	61	**12**	210	6	228	2	20	22	44	10	179	**8**	197	530
Total Volume	110	57	50	217	33	873	59	965	16	69	78	163	37	808	18	863	2208
% App. Total	50.7	26.3	23		3.4	90.5	6.1		9.8	42.3	47.9		4.3	93.6	2.1		
PHF	.833	.679	.735	.861	.688	.917	.641	.894	.667	.616	.848	.715	.617	.845	.563	.836	.863

Counts Unlimited
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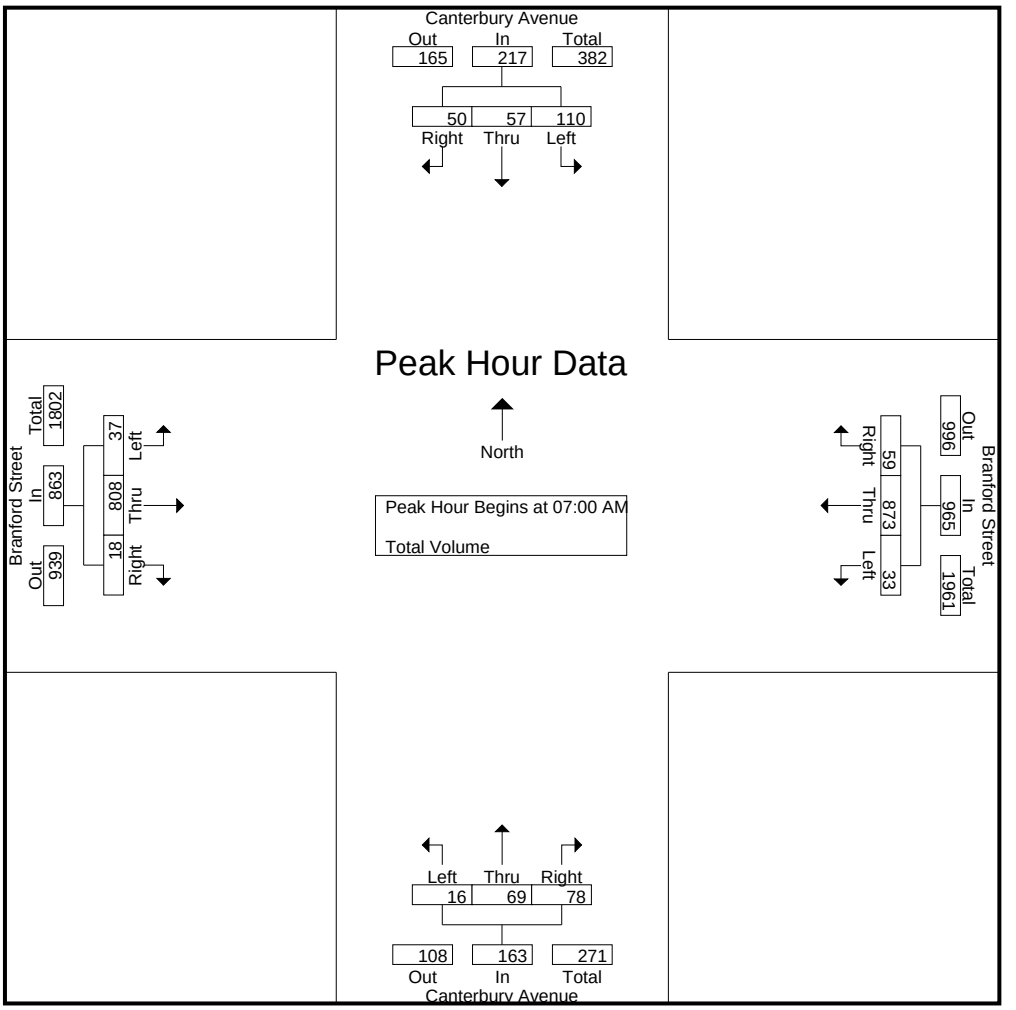
(951) 268-6268

City of Los Angeles
N/S: Canterbury Avenue
E/W: Branford Street
Weather: Clear

File Name : 01_LAC_Canterbury_Branford AM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	**33**	13	**17**	**63**	4	210	11	225	2	9	18	29	3	204	2	209
+15 mins.	20	10	8	38	8	215	19	242	**6**	12	15	33	9	186	4	199
+30 mins.	31	13	11	55	9	**238**	**23**	**270**	6	**28**	**23**	**57**	**15**	**239**	4	**258**
+45 mins.	26	**21**	14	61	**12**	210	6	228	2	20	22	44	10	179	**8**	197
Total Volume	110	57	50	217	33	873	59	965	16	69	78	163	37	808	18	863
% App. Total	50.7	26.3	23		3.4	90.5	6.1		9.8	42.3	47.9		4.3	93.6	2.1	
PHF	.833	.679	.735	.861	.688	.917	.641	.894	.667	.616	.848	.715	.617	.845	.563	.836

Counts Unlimited
PO Box 1178
Corona, CA 92878
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City of Los Angeles
N/S: Canterbury Avenue
E/W: Branford Street
Weather: Clear

File Name : 01_LAC_Canterbury_Branford PM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 1

Groups Printed- Total Volume

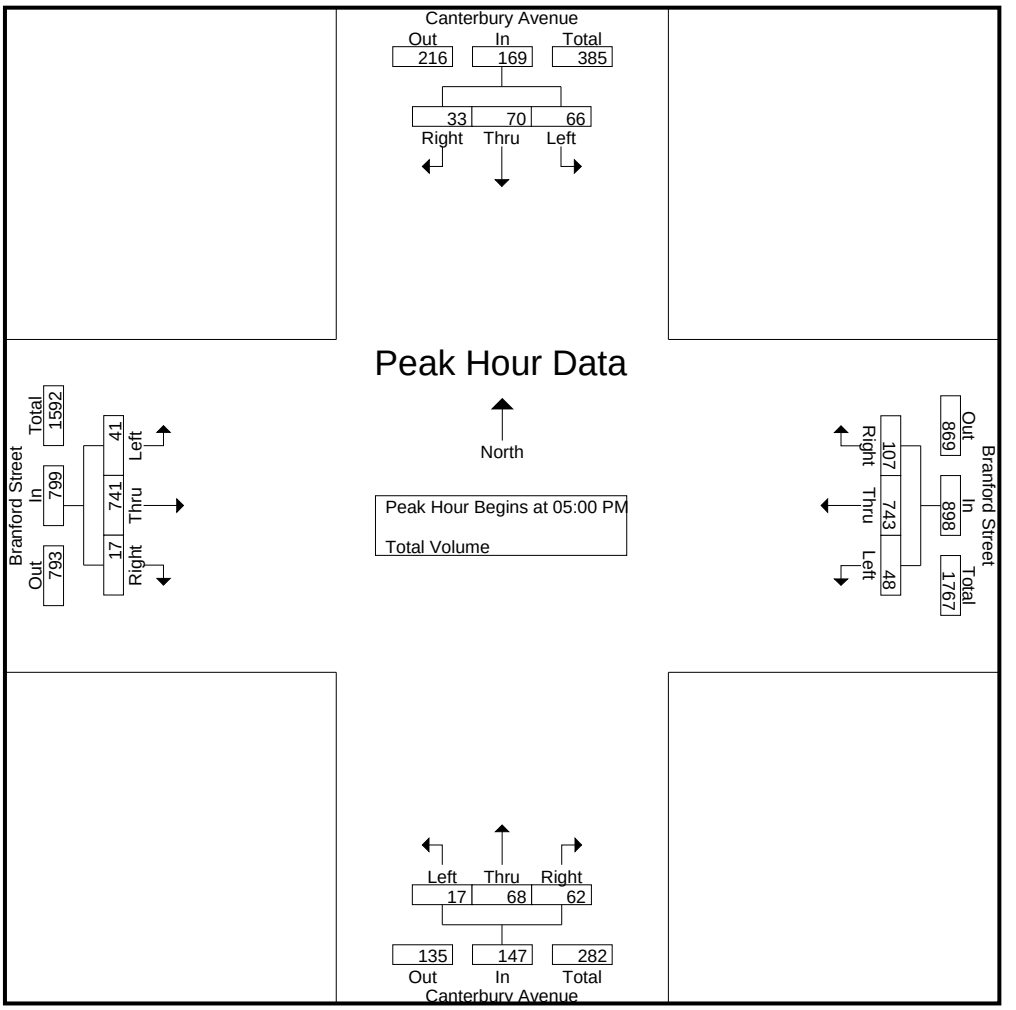
	Canterbury Avenue Southbound				Branford Street Westbound				Canterbury Avenue Northbound				Branford Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	14	10	2	26	9	179	18	206	1	9	9	19	5	161	3	169	420
04:15 PM	19	8	8	35	13	211	24	248	1	15	14	30	11	170	3	184	497
04:30 PM	19	5	8	32	9	150	26	185	6	17	10	33	11	153	5	169	419
04:45 PM	20	3	6	29	6	169	25	200	1	12	9	22	6	191	2	199	450
Total	72	26	24	122	37	709	93	839	9	53	42	104	33	675	13	721	1786
05:00 PM	21	16	11	48	12	196	30	238	2	13	18	33	15	197	5	217	536
05:15 PM	15	23	9	47	17	168	24	209	3	17	19	39	10	179	8	197	492
05:30 PM	12	19	6	37	10	193	28	231	8	20	19	47	6	184	2	192	507
05:45 PM	18	12	7	37	9	186	25	220	4	18	6	28	10	181	2	193	478
Total	66	70	33	169	48	743	107	898	17	68	62	147	41	741	17	799	2013
Grand Total	138	96	57	291	85	1452	200	1737	26	121	104	251	74	1416	30	1520	3799
Apprch %	47.4	33	19.6		4.9	83.6	11.5		10.4	48.2	41.4		4.9	93.2	2		
Total %	3.6	2.5	1.5	7.7	2.2	38.2	5.3	45.7	0.7	3.2	2.7	6.6	1.9	37.3	0.8	40	

	Canterbury Avenue Southbound				Branford Street Westbound				Canterbury Avenue Northbound				Branford Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**21**	16	**11**	**48**	12	**196**	**30**	**238**	2	13	18	33	**15**	**197**	5	**217**	**536**
05:15 PM	15	**23**	9	47	**17**	168	24	209	3	17	**19**	39	10	179	**8**	197	492
05:30 PM	12	19	6	37	10	193	28	231	**8**	**20**	19	**47**	6	184	2	192	507
05:45 PM	18	12	7	37	9	186	25	220	4	18	6	28	10	181	2	193	478
Total Volume	66	70	33	169	48	743	107	898	17	68	62	147	41	741	17	799	2013
% App. Total	39.1	41.4	19.5		5.3	82.7	11.9		11.6	46.3	42.2		5.1	92.7	2.1		
PHF	.786	.761	.750	.880	.706	.948	.892	.943	.531	.850	.816	.782	.683	.940	.531	.921	.939

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Los Angeles
N/S: Canterbury Avenue
E/W: Branford Street
Weather: Clear

File Name : 01_LAC_Canterbury_Branford PM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				04:45 PM			
+0 mins.	**21**	16	**11**	**48**	12	**196**	**30**	**238**	2	13	18	33	6	191	2	199
+15 mins.	15	**23**	9	47	**17**	168	24	209	3	17	**19**	39	**15**	**197**	5	**217**
+30 mins.	12	19	6	37	10	193	28	231	**8**	**20**	19	**47**	10	179	**8**	197
+45 mins.	18	12	7	37	9	186	25	220	4	18	6	28	6	184	2	192
Total Volume	66	70	33	169	48	743	107	898	17	68	62	147	37	751	17	805
% App. Total	39.1	41.4	19.5		5.3	82.7	11.9		11.6	46.3	42.2		4.6	93.3	2.1	
PHF	.786	.761	.750	.880	.706	.948	.892	.943	.531	.850	.816	.782	.617	.953	.531	.927

Counts Unlimited
PO Box 1178
Corona, CA 92878
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City of Los Angeles
N/S: Arleta Avenue
E/W: Branford Street
Weather: Clear

File Name : 02_LAC_Arleta_Branford AM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 1

Groups Printed- Total Volume

	Arleta Avenue Southbound				Branford Street Westbound				Arleta Avenue Northbound				Branford Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	47	172	22	241	33	131	14	178	20	69	12	101	22	140	46	208	728
07:15 AM	46	182	24	252	29	189	25	243	22	111	27	160	27	184	72	283	938
07:30 AM	44	225	14	283	28	177	22	227	32	164	33	229	20	175	60	255	994
07:45 AM	53	179	33	265	28	217	18	263	29	134	29	192	28	240	43	311	1031
Total	190	758	93	1041	118	714	79	911	103	478	101	682	97	739	221	1057	3691
08:00 AM	44	167	27	238	32	188	24	244	24	87	16	127	32	167	58	257	866
08:15 AM	39	144	25	208	31	164	10	205	17	71	17	105	19	150	41	210	728
08:30 AM	25	119	22	166	24	127	9	160	14	70	9	93	21	127	27	175	594
08:45 AM	23	78	25	126	32	119	10	161	16	64	10	90	18	111	35	164	541
Total	131	508	99	738	119	598	53	770	71	292	52	415	90	555	161	806	2729
Grand Total	321	1266	192	1779	237	1312	132	1681	174	770	153	1097	187	1294	382	1863	6420
Apprch %	18	71.2	10.8		14.1	78	7.9		15.9	70.2	13.9		10	69.5	20.5		
Total %	5	19.7	3	27.7	3.7	20.4	2.1	26.2	2.7	12	2.4	17.1	2.9	20.2	6	29	

	Arleta Avenue Southbound				Branford Street Westbound				Arleta Avenue Northbound				Branford Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	46	182	24	252	29	189	**25**	243	22	111	27	160	27	184	**72**	283	938
07:30 AM	44	**225**	14	**283**	28	177	22	227	**32**	**164**	**33**	**229**	20	175	60	255	994
07:45 AM	**53**	179	**33**	265	28	**217**	18	**263**	29	134	29	192	28	**240**	43	**311**	**1031**
08:00 AM	44	167	27	238	**32**	188	24	244	24	87	16	127	**32**	167	58	257	866
Total Volume	187	753	98	1038	117	771	89	977	107	496	105	708	107	766	233	1106	3829
% App. Total	18	72.5	9.4		12	78.9	9.1		15.1	70.1	14.8		9.7	69.3	21.1		
PHF	.882	.837	.742	.917	.914	.888	.890	.929	.836	.756	.795	.773	.836	.798	.809	.889	.928

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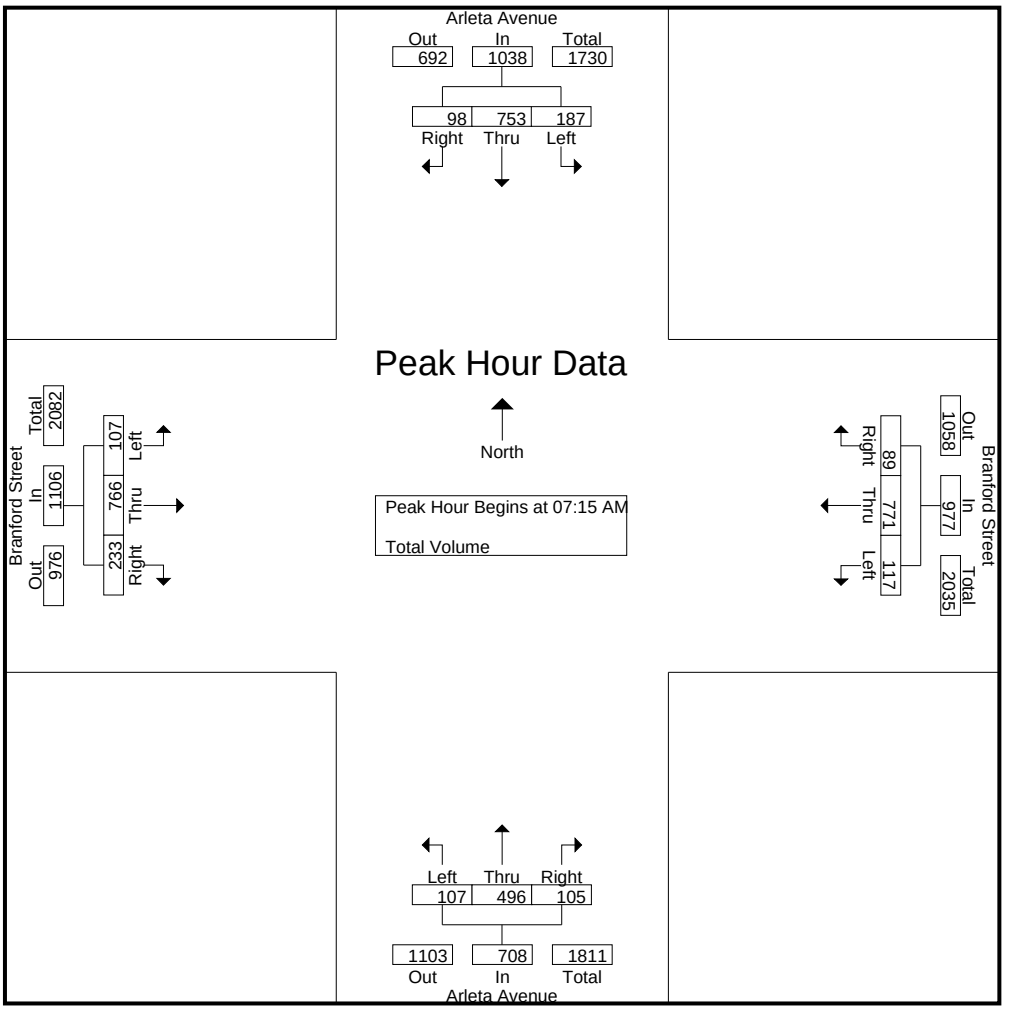
E/W: Branford Street
Weather: Clear

File Name : 02_LAC_Arleta_Branford AM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	47	172	22	241	29	189	**25**	243	22	111	27	160	27	184	**72**	283
+15 mins.	46	182	24	252	28	177	22	227	**32**	**164**	**33**	**229**	20	175	60	255
+30 mins.	44	**225**	14	**283**	28	**217**	18	**263**	29	134	29	192	28	**240**	43	**311**
+45 mins.	**53**	179	**33**	265	**32**	188	24	244	24	87	16	127	**32**	167	58	257
Total Volume	190	758	93	1041	117	771	89	977	107	496	105	708	107	766	233	1106
% App. Total	18.3	72.8	8.9		12	78.9	9.1		15.1	70.1	14.8		9.7	69.3	21.1	
PHF	.896	.842	.705	.920	.914	.888	.890	.929	.836	.756	.795	.773	.836	.798	.809	.889

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City of Los Angeles
N/S: Arleta Avenue
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Weather: Clear

File Name : 02_LAC_Arleta_Branford PM
Site Code : 99918423
Start Date : 6/6/2018
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Groups Printed- Total Volume

	Arleta Avenue Southbound				Branford Street Westbound				Arleta Avenue Northbound				Branford Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	11	74	32	117	37	191	71	299	39	199	22	260	38	131	12	181	857
04:15 PM	16	73	17	106	20	172	70	262	43	222	23	288	22	151	24	197	853
04:30 PM	21	89	23	133	19	164	60	243	32	229	37	298	28	129	26	183	857
04:45 PM	15	79	17	111	18	180	84	282	45	233	33	311	30	144	24	198	902
Total	63	315	89	467	94	707	285	1086	159	883	115	1157	118	555	86	759	3469
05:00 PM	17	93	22	132	20	197	72	289	49	247	23	319	27	134	34	195	935
05:15 PM	20	112	30	162	26	210	57	293	57	291	36	384	28	169	26	223	1062
05:30 PM	18	83	24	125	15	157	55	227	49	254	15	318	12	126	16	154	824
05:45 PM	22	91	20	133	20	205	60	285	37	260	29	326	19	134	28	181	925
Total	77	379	96	552	81	769	244	1094	192	1052	103	1347	86	563	104	753	3746
Grand Total	140	694	185	1019	175	1476	529	2180	351	1935	218	2504	204	1118	190	1512	7215
Apprch %	13.7	68.1	18.2		8	67.7	24.3		14	77.3	8.7		13.5	73.9	12.6		
Total %	1.9	9.6	2.6	14.1	2.4	20.5	7.3	30.2	4.9	26.8	3	34.7	2.8	15.5	2.6	21	

	Arleta Avenue Southbound				Branford Street Westbound				Arleta Avenue Northbound				Branford Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**21**	89	23	133	19	164	60	243	32	229	**37**	298	28	129	26	183	857
04:45 PM	15	79	17	111	18	180	**84**	282	45	233	33	311	**30**	144	24	198	902
05:00 PM	17	93	22	132	20	197	72	289	49	247	23	319	27	134	**34**	195	935
05:15 PM	20	**112**	**30**	**162**	**26**	**210**	57	**293**	**57**	**291**	36	**384**	28	**169**	26	**223**	**1062**
Total Volume	73	373	92	538	83	751	273	1107	183	1000	129	1312	113	576	110	799	3756
% App. Total	13.6	69.3	17.1		7.5	67.8	24.7		13.9	76.2	9.8		14.1	72.1	13.8		
PHF	.869	.833	.767	.830	.798	.894	.813	.945	.803	.859	.872	.854	.942	.852	.809	.896	.884

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Weather: Clear

File Name : 02_LAC_Arleta_Branford PM
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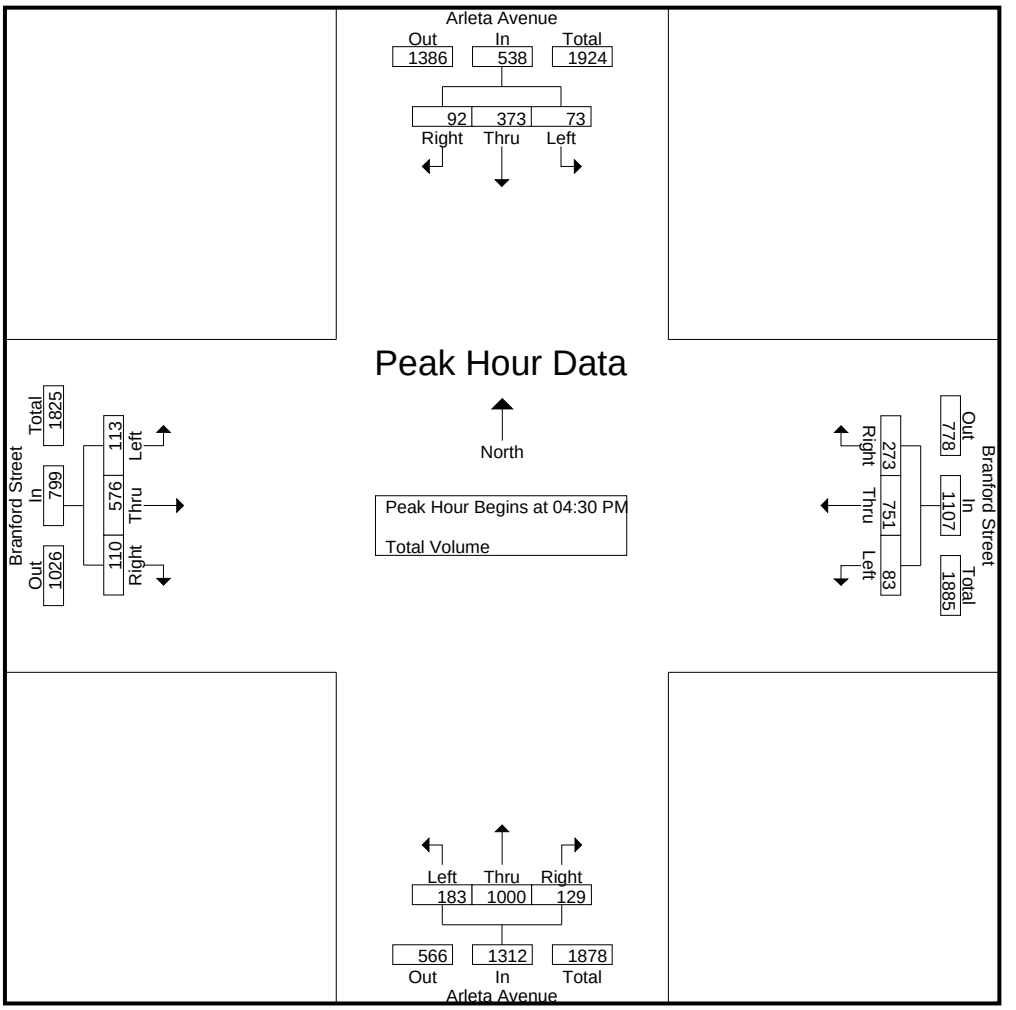

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:30 PM				05:00 PM				04:30 PM			
+0 mins.	17	93	22	132	19	164	60	243	49	247	23	319	28	129	26	183
+15 mins.	20	**112**	**30**	**162**	18	180	**84**	282	**57**	**291**	**36**	**384**	**30**	144	24	198
+30 mins.	18	83	24	125	20	197	72	289	49	254	15	318	27	134	**34**	195
+45 mins.	**22**	91	20	133	**26**	**210**	57	**293**	37	260	29	326	28	**169**	26	**223**
Total Volume	77	379	96	552	83	751	273	1107	192	1052	103	1347	113	576	110	799
% App. Total	13.9	68.7	17.4		7.5	67.8	24.7		14.3	78.1	7.6		14.1	72.1	13.8	
PHF	.875	.846	.800	.852	.798	.894	.813	.945	.842	.904	.715	.877	.942	.852	.809	.896

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City of Los Angeles
N/S: Arleta Avenue
E/W: Osborne Street
Weather: Clear

File Name : 03_LAC_Arleta_Osborne AM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 1

Groups Printed- Total Volume

	Arleta Avenue Southbound				Osborne Street Westbound				Arleta Avenue Northbound				Osborne Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	27	173	16	216	32	186	17	235	17	67	43	127	14	281	38	333	911
07:15 AM	28	179	13	220	30	222	19	271	23	101	42	166	14	362	54	430	1087
07:30 AM	29	244	20	293	25	254	32	311	26	137	65	228	17	304	55	376	1208
07:45 AM	38	212	18	268	30	317	24	371	25	118	53	196	19	310	53	382	1217
Total	122	808	67	997	117	979	92	1188	91	423	203	717	64	1257	200	1521	4423
08:00 AM	31	181	22	234	32	254	27	313	30	113	60	203	14	269	31	314	1064
08:15 AM	24	144	26	194	33	211	17	261	18	78	39	135	13	268	36	317	907
08:30 AM	34	124	19	177	21	189	11	221	24	51	33	108	11	182	37	230	736
08:45 AM	18	73	14	105	24	182	11	217	21	49	34	104	11	210	29	250	676
Total	107	522	81	710	110	836	66	1012	93	291	166	550	49	929	133	1111	3383
Grand Total	229	1330	148	1707	227	1815	158	2200	184	714	369	1267	113	2186	333	2632	7806
Apprch %	13.4	77.9	8.7		10.3	82.5	7.2		14.5	56.4	29.1		4.3	83.1	12.7		
Total %	2.9	17	1.9	21.9	2.9	23.3	2	28.2	2.4	9.1	4.7	16.2	1.4	28	4.3	33.7	

	Arleta Avenue Southbound				Osborne Street Westbound				Arleta Avenue Northbound				Osborne Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	28	179	13	220	30	222	19	271	23	101	42	166	14	**362**	54	**430**	1087
07:30 AM	29	**244**	20	**293**	25	254	**32**	311	26	**137**	**65**	**228**	17	304	**55**	376	1208
07:45 AM	**38**	212	18	268	30	**317**	24	**371**	25	118	53	196	**19**	310	53	382	**1217**
08:00 AM	31	181	**22**	234	**32**	254	27	313	**30**	113	60	203	14	269	31	314	1064
Total Volume	126	816	73	1015	117	1047	102	1266	104	469	220	793	64	1245	193	1502	4576
% App. Total	12.4	80.4	7.2		9.2	82.7	8.1		13.1	59.1	27.7		4.3	82.9	12.8		
PHF	.829	.836	.830	.866	.914	.826	.797	.853	.867	.856	.846	.870	.842	.860	.877	.873	.940

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Site Code : 99918423
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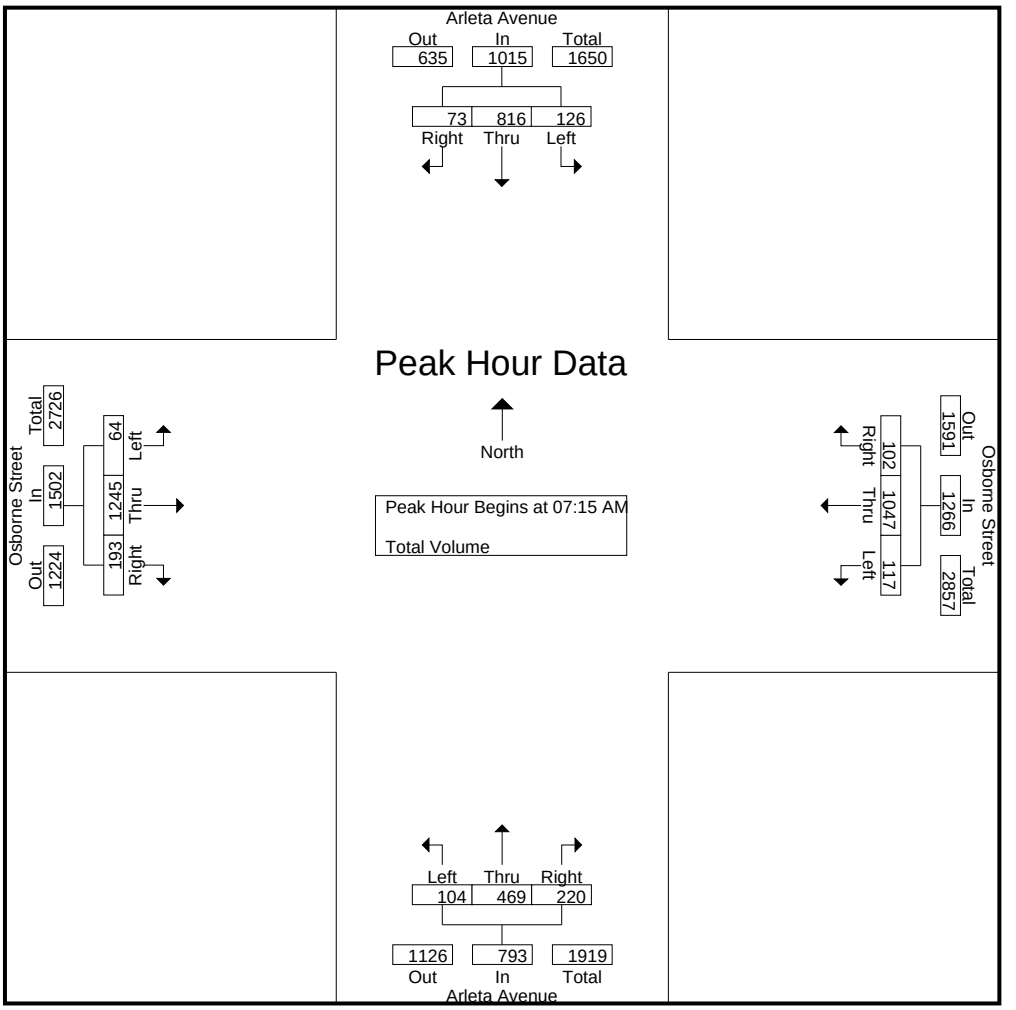

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:00 AM			
+0 mins.	28	179	13	220	30	222	19	271	23	101	42	166	14	281	38	333
+15 mins.	29	**244**	20	**293**	25	254	**32**	311	26	**137**	**65**	**228**	14	**362**	54	**430**
+30 mins.	**38**	212	18	268	30	**317**	24	**371**	25	118	53	196	17	304	**55**	376
+45 mins.	31	181	**22**	234	**32**	254	27	313	**30**	113	60	203	**19**	310	53	382
Total Volume	126	816	73	1015	117	1047	102	1266	104	469	220	793	64	1257	200	1521
% App. Total	12.4	80.4	7.2		9.2	82.7	8.1		13.1	59.1	27.7		4.2	82.6	13.1	
PHF	.829	.836	.830	.866	.914	.826	.797	.853	.867	.856	.846	.870	.842	.868	.909	.884

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File Name : 03_LAC_Arleta_Osborne PM
Site Code : 99918423
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Groups Printed- Total Volume

	Arleta Avenue Southbound				Osborne Street Westbound				Arleta Avenue Northbound				Osborne Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	22	88	26	136	26	270	34	330	58	202	64	324	16	224	20	260	1050
04:15 PM	21	83	24	128	23	256	25	304	58	211	71	340	14	272	21	307	1079
04:30 PM	27	85	14	126	26	248	32	306	58	211	64	333	16	233	41	290	1055
04:45 PM	19	79	18	116	29	285	42	356	61	237	55	353	15	256	31	302	1127
Total	89	335	82	506	104	1059	133	1296	235	861	254	1350	61	985	113	1159	4311
05:00 PM	20	106	18	144	30	292	30	352	51	233	55	339	18	273	32	323	1158
05:15 PM	17	94	13	124	26	252	29	307	77	240	58	375	18	255	42	315	1121
05:30 PM	12	94	9	115	23	285	40	348	60	232	49	341	20	293	32	345	1149
05:45 PM	16	99	17	132	27	275	33	335	59	274	64	397	19	241	43	303	1167
Total	65	393	57	515	106	1104	132	1342	247	979	226	1452	75	1062	149	1286	4595
Grand Total	154	728	139	1021	210	2163	265	2638	482	1840	480	2802	136	2047	262	2445	8906
Apprch %	15.1	71.3	13.6		8	82	10		17.2	65.7	17.1		5.6	83.7	10.7		
Total %	1.7	8.2	1.6	11.5	2.4	24.3	3	29.6	5.4	20.7	5.4	31.5	1.5	23	2.9	27.5	

	Arleta Avenue Southbound				Osborne Street Westbound				Arleta Avenue Northbound				Osborne Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**20**	**106**	**18**	**144**	**30**	**292**	30	**352**	51	233	55	339	18	273	32	323	1158
05:15 PM	17	94	13	124	26	252	29	307	**77**	240	58	375	18	255	42	315	1121
05:30 PM	12	94	9	115	23	285	**40**	348	60	232	49	341	**20**	**293**	32	**345**	1149
05:45 PM	16	99	17	132	27	275	33	335	59	**274**	**64**	**397**	19	241	**43**	303	**1167**
Total Volume	65	393	57	515	106	1104	132	1342	247	979	226	1452	75	1062	149	1286	4595
% App. Total	12.6	76.3	11.1		7.9	82.3	9.8		17	67.4	15.6		5.8	82.6	11.6		
PHF	.813	.927	.792	.894	.883	.945	.825	.953	.802	.893	.883	.914	.938	.906	.866	.932	.984

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File Name : 03_LAC_Arleta_Osborne PM
Site Code : 99918423
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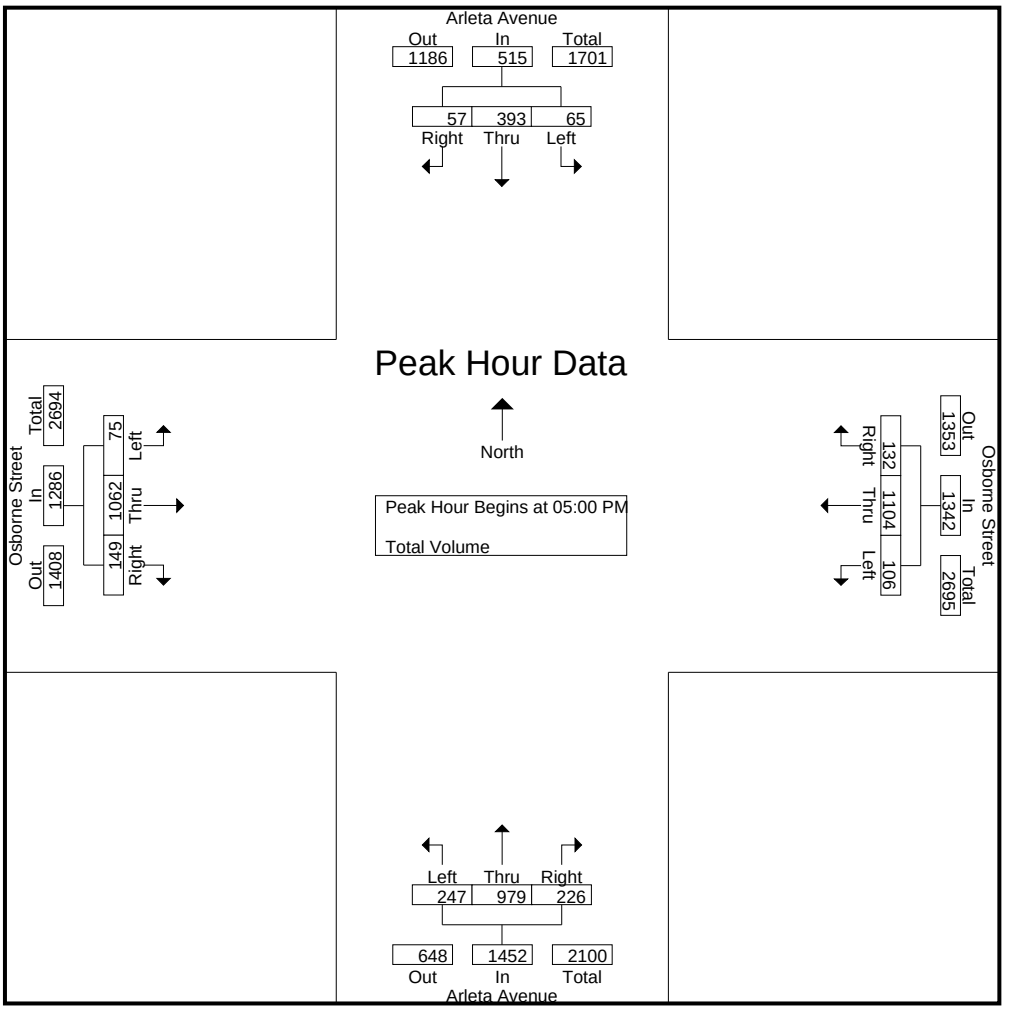

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:45 PM				05:00 PM				05:00 PM			
+0 mins.	**20**	**106**	**18**	**144**	29	285	**42**	**356**	51	233	55	339	18	273	32	323
+15 mins.	17	94	13	124	**30**	**292**	30	352	**77**	240	58	375	18	255	42	315
+30 mins.	12	94	9	115	26	252	29	307	60	232	49	341	**20**	**293**	32	**345**
+45 mins.	16	99	17	132	23	285	40	348	59	**274**	**64**	**397**	19	241	**43**	303
Total Volume	65	393	57	515	108	1114	141	1363	247	979	226	1452	75	1062	149	1286
% App. Total	12.6	76.3	11.1		7.9	81.7	10.3		17	67.4	15.6		5.8	82.6	11.6	
PHF	.813	.927	.792	.894	.900	.954	.839	.957	.802	.893	.883	.914	.938	.906	.866	.932

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City of Los Angeles
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E/W: Terra Bella Street
Weather: Clear

File Name : 04_LAC_Arleta_Terra Bella AM
Site Code : 99918423
Start Date : 6/6/2018
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Groups Printed- Total Volume

	Arleta Avenue Southbound				Terra Bella Street Westbound				Arleta Avenue Northbound				Terra Bella Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	12	119	8	139	27	139	18	184	19	86	16	121	18	206	54	278	722
07:15 AM	27	154	4	185	24	149	27	200	23	128	11	162	20	225	51	296	843
07:30 AM	30	199	16	245	21	159	34	214	29	164	16	209	33	267	53	353	1021
07:45 AM	30	160	18	208	25	226	27	278	44	115	20	179	19	243	50	312	977
Total	99	632	46	777	97	673	106	876	115	493	63	671	90	941	208	1239	3563
08:00 AM	30	142	18	190	30	191	15	236	39	102	22	163	11	234	53	298	887
08:15 AM	38	132	15	185	21	159	17	197	38	78	9	125	10	183	45	238	745
08:30 AM	15	99	8	122	12	108	13	133	21	44	16	81	4	168	35	207	543
08:45 AM	14	61	4	79	9	98	5	112	14	53	9	76	11	132	27	170	437
Total	97	434	45	576	72	556	50	678	112	277	56	445	36	717	160	913	2612
Grand Total	196	1066	91	1353	169	1229	156	1554	227	770	119	1116	126	1658	368	2152	6175
Apprch %	14.5	78.8	6.7		10.9	79.1	10		20.3	69	10.7		5.9	77	17.1		
Total %	3.2	17.3	1.5	21.9	2.7	19.9	2.5	25.2	3.7	12.5	1.9	18.1	2	26.9	6	34.9	

	Arleta Avenue Southbound				Terra Bella Street Westbound				Arleta Avenue Northbound				Terra Bella Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	27	154	4	185	24	149	27	200	23	128	11	162	20	225	51	296	843
07:30 AM	**30**	**199**	16	**245**	21	159	**34**	214	29	**164**	16	**209**	**33**	**267**	**53**	**353**	**1021**
07:45 AM	30	160	**18**	208	25	**226**	27	**278**	**44**	115	20	179	19	243	50	312	977
08:00 AM	30	142	18	190	**30**	191	15	236	39	102	**22**	163	11	234	53	298	887
Total Volume	117	655	56	828	100	725	103	928	135	509	69	713	83	969	207	1259	3728
% App. Total	14.1	79.1	6.8		10.8	78.1	11.1		18.9	71.4	9.7		6.6	77	16.4		
PHF	.975	.823	.778	.845	.833	.802	.757	.835	.767	.776	.784	.853	.629	.907	.976	.892	.913

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City of Los Angeles
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E/W: Terra Bella Street
Weather: Clear

File Name : 04_LAC_Arleta_Terra Bella AM
Site Code : 99918423
Start Date : 6/6/2018
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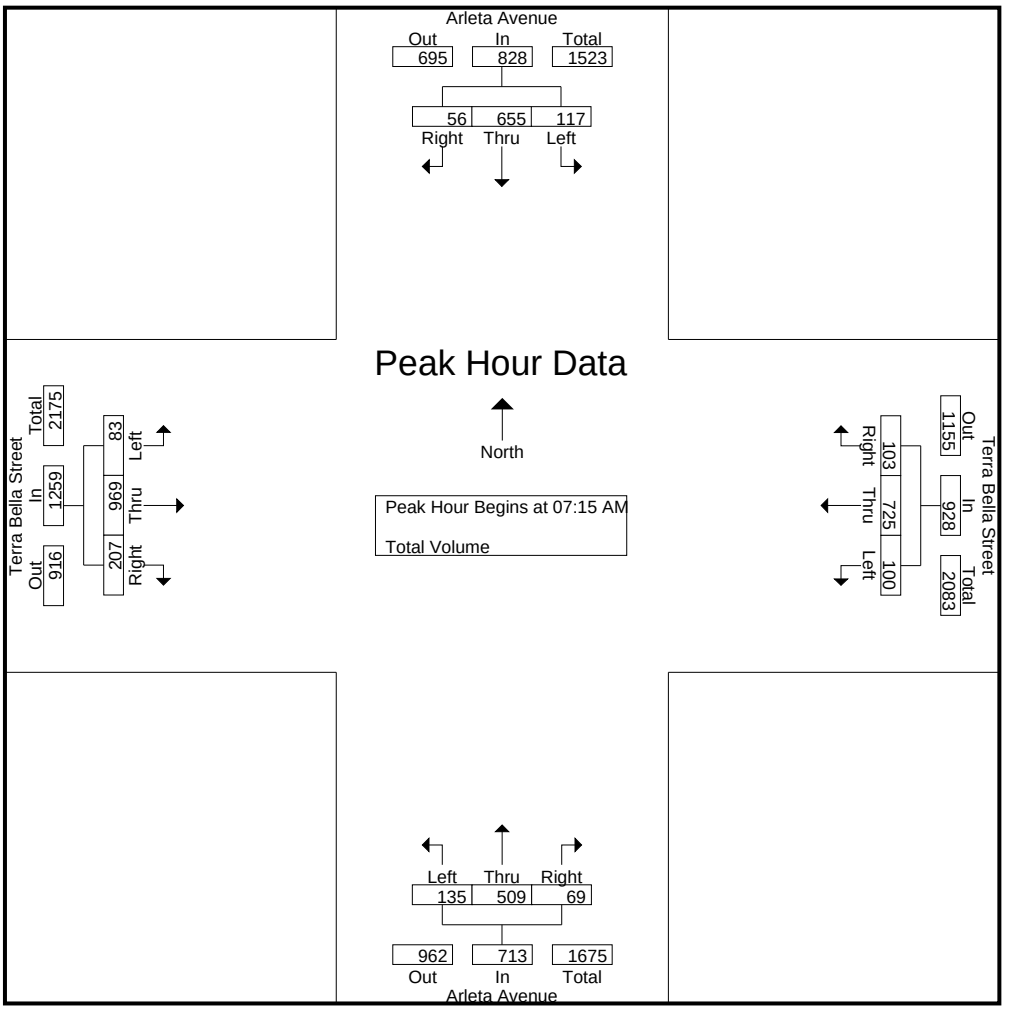

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	27	154	4	185	24	149	27	200	23	128	11	162	20	225	51	296
+15 mins.	**30**	**199**	16	**245**	21	159	**34**	214	29	**164**	16	**209**	**33**	**267**	**53**	**353**
+30 mins.	30	160	**18**	208	25	**226**	27	**278**	**44**	115	20	179	19	243	50	312
+45 mins.	30	142	18	190	**30**	191	15	236	39	102	**22**	163	11	234	53	298
Total Volume	117	655	56	828	100	725	103	928	135	509	69	713	83	969	207	1259
% App. Total	14.1	79.1	6.8		10.8	78.1	11.1		18.9	71.4	9.7		6.6	77	16.4	
PHF	.975	.823	.778	.845	.833	.802	.757	.835	.767	.776	.784	.853	.629	.907	.976	.892

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City of Los Angeles
N/S: Arleta Avenue
E/W: Terra Bella Street
Weather: Clear

File Name : 04_LAC_Arleta_Terra Bella PM
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Groups Printed- Total Volume

	Arleta Avenue Southbound				Terra Bella Street Westbound				Arleta Avenue Northbound				Terra Bella Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	15	82	8	105	15	151	25	191	61	149	26	236	9	197	34	240	772
04:15 PM	21	82	11	114	11	150	22	183	47	173	23	243	11	177	27	215	755
04:30 PM	28	73	10	111	14	131	18	163	51	177	25	253	21	199	25	245	772
04:45 PM	31	84	12	127	10	130	15	155	59	189	35	283	26	207	24	257	822
Total	95	321	41	457	50	562	80	692	218	688	109	1015	67	780	110	957	3121
05:00 PM	28	97	8	133	10	141	21	172	64	178	30	272	14	245	28	287	864
05:15 PM	28	81	10	119	13	145	22	180	65	194	26	285	16	277	22	315	899
05:30 PM	22	89	12	123	13	130	14	157	61	211	33	305	19	284	37	340	925
05:45 PM	43	77	8	128	13	153	20	186	65	201	31	297	19	225	27	271	882
Total	121	344	38	503	49	569	77	695	255	784	120	1159	68	1031	114	1213	3570
Grand Total	216	665	79	960	99	1131	157	1387	473	1472	229	2174	135	1811	224	2170	6691
Apprch %	22.5	69.3	8.2		7.1	81.5	11.3		21.8	67.7	10.5		6.2	83.5	10.3		
Total %	3.2	9.9	1.2	14.3	1.5	16.9	2.3	20.7	7.1	22	3.4	32.5	2	27.1	3.3	32.4	

	Arleta Avenue Southbound				Terra Bella Street Westbound				Arleta Avenue Northbound				Terra Bella Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	28	**97**	8	**133**	10	141	21	172	64	178	30	272	14	245	28	287	864
05:15 PM	28	81	10	119	**13**	145	**22**	180	**65**	194	26	285	16	277	22	315	899
05:30 PM	22	89	**12**	123	13	130	14	157	61	**211**	**33**	**305**	**19**	**284**	**37**	**340**	**925**
05:45 PM	**43**	77	8	128	13	**153**	20	**186**	65	201	31	297	19	225	27	271	882
Total Volume	121	344	38	503	49	569	77	695	255	784	120	1159	68	1031	114	1213	3570
% App. Total	24.1	68.4	7.6		7.1	81.9	11.1		22	67.6	10.4		5.6	85	9.4		
PHF	.703	.887	.792	.945	.942	.930	.875	.934	.981	.929	.909	.950	.895	.908	.770	.892	.965

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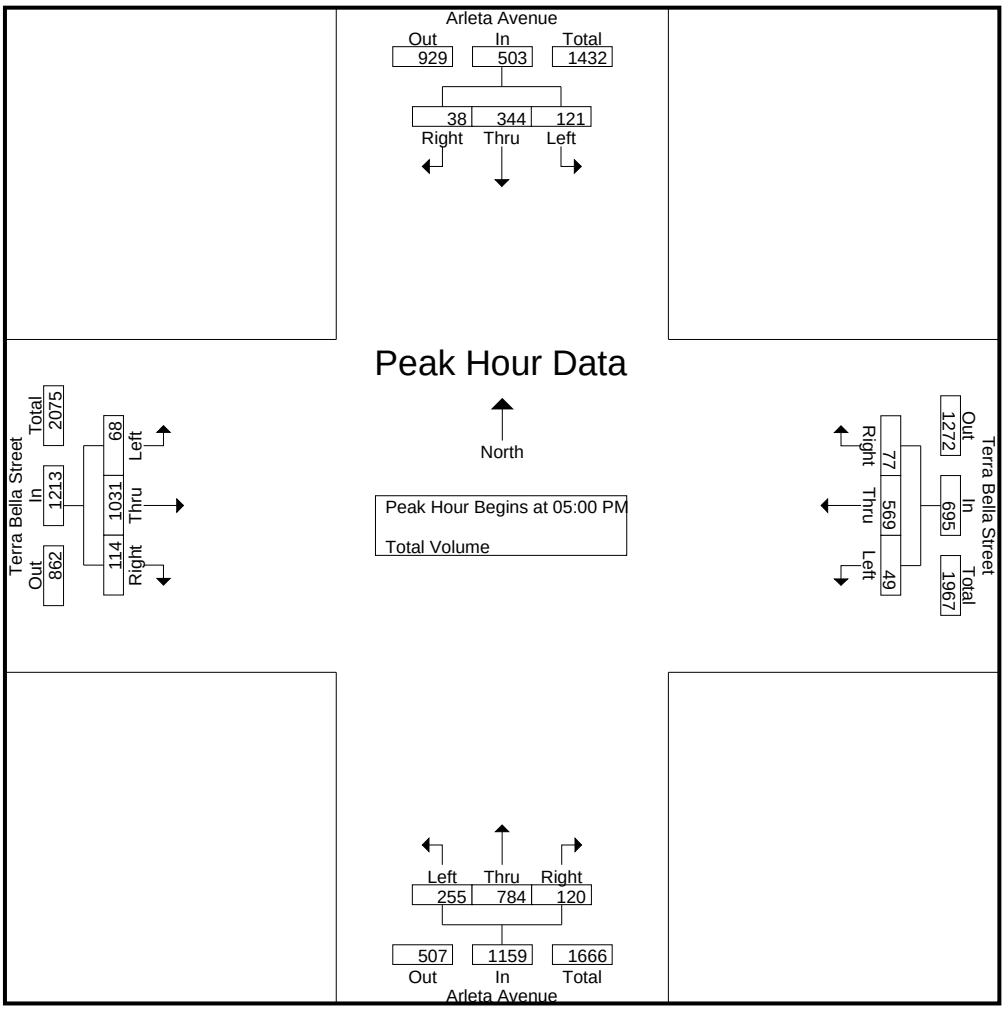

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	28	**97**	8	**133**	10	141	21	172	64	178	30	272	14	245	28	287
+15 mins.	28	81	10	119	**13**	145	**22**	180	**65**	194	26	285	16	277	22	315
+30 mins.	22	89	**12**	123	13	130	14	157	61	**211**	**33**	**305**	**19**	**284**	**37**	**340**
+45 mins.	**43**	77	8	128	13	**153**	20	**186**	65	201	31	297	19	225	27	271
Total Volume	121	344	38	503	49	569	77	695	255	784	120	1159	68	1031	114	1213
% App. Total	24.1	68.4	7.6		7.1	81.9	11.1		22	67.6	10.4		5.6	85	9.4	
PHF	.703	.887	.792	.945	.942	.930	.875	.934	.981	.929	.909	.950	.895	.908	.770	.892

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Groups Printed- Total Volume

	Arleta Avenue Southbound				Van Nuys Boulevard Westbound				Arleta Avenue Northbound				Van Nuys Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	65	111	20	196	11	163	31	205	23	87	16	126	33	184	10	227	754
07:15 AM	90	150	30	270	8	187	33	228	35	127	11	173	25	181	24	230	901
07:30 AM	97	191	37	325	20	230	25	275	41	193	16	250	34	251	19	304	1154
07:45 AM	78	162	51	291	10	233	35	278	39	119	17	175	40	243	21	304	1048
Total	330	614	138	1082	49	813	124	986	138	526	60	724	132	859	74	1065	3857
08:00 AM	93	147	43	283	13	223	30	266	43	107	8	158	34	208	19	261	968
08:15 AM	97	130	33	260	13	236	18	267	49	61	10	120	39	214	28	281	928
08:30 AM	94	80	16	190	11	178	28	217	17	55	7	79	24	190	18	232	718
08:45 AM	63	54	23	140	9	160	23	192	19	44	5	68	17	158	6	181	581
Total	347	411	115	873	46	797	99	942	128	267	30	425	114	770	71	955	3195
Grand Total	677	1025	253	1955	95	1610	223	1928	266	793	90	1149	246	1629	145	2020	7052
Apprch %	34.6	52.4	12.9		4.9	83.5	11.6		23.2	69	7.8		12.2	80.6	7.2		
Total %	9.6	14.5	3.6	27.7	1.3	22.8	3.2	27.3	3.8	11.2	1.3	16.3	3.5	23.1	2.1	28.6	

	Arleta Avenue Southbound				Van Nuys Boulevard Westbound				Arleta Avenue Northbound				Van Nuys Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**97**	**191**	37	**325**	**20**	230	25	275	41	**193**	16	**250**	34	**251**	19	**304**	**1154**
07:45 AM	78	162	**51**	291	10	233	**35**	**278**	39	119	**17**	175	**40**	243	21	304	1048
08:00 AM	93	147	43	283	13	223	30	266	43	107	8	158	34	208	19	261	968
08:15 AM	97	130	33	260	13	**236**	18	267	**49**	61	10	120	39	214	**28**	281	928
Total Volume	365	630	164	1159	56	922	108	1086	172	480	51	703	147	916	87	1150	4098
% App. Total	31.5	54.4	14.2		5.2	84.9	9.9		24.5	68.3	7.3		12.8	79.7	7.6		
PHF	.941	.825	.804	.892	.700	.977	.771	.977	.878	.622	.750	.703	.919	.912	.777	.946	.888

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Site Code : 99918423
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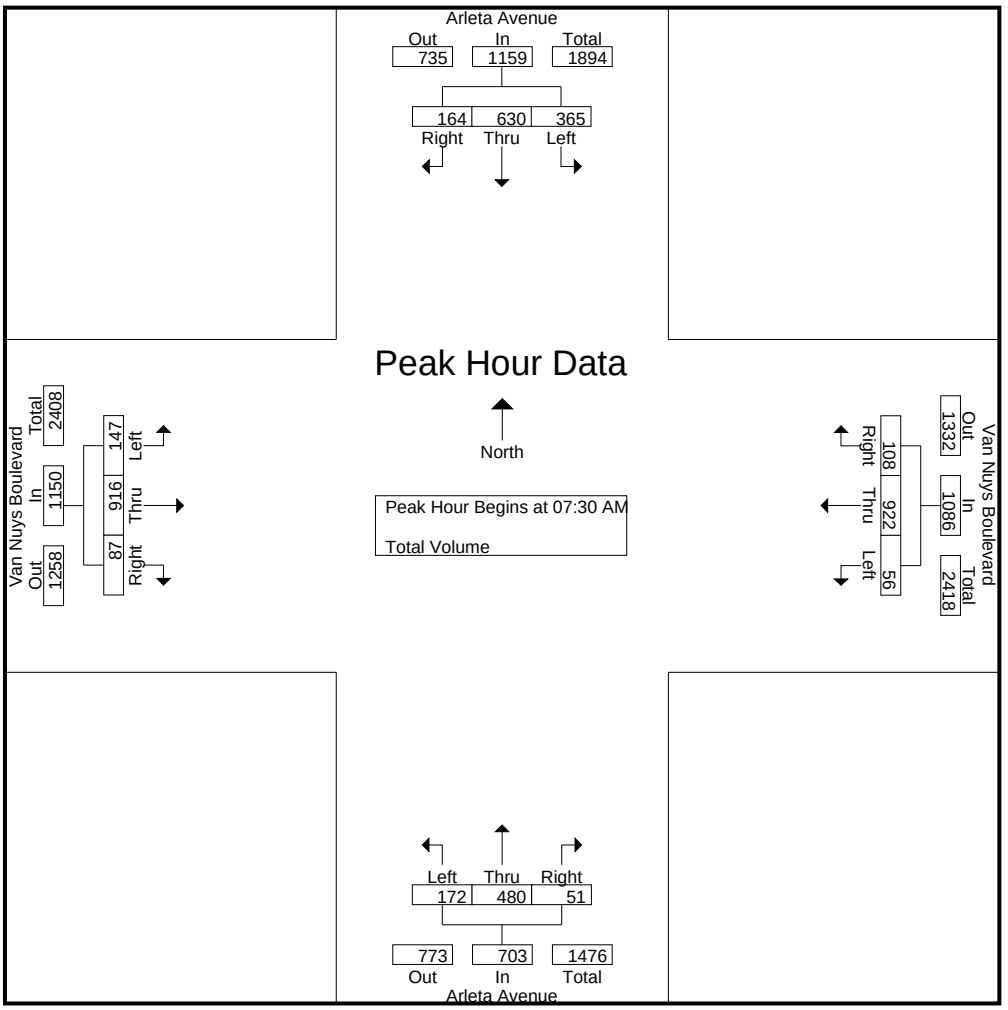

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:30 AM				07:15 AM				07:30 AM			
+0 mins.	90	150	30	270	**20**	230	25	275	35	127	11	173	34	**251**	19	**304**
+15 mins.	**97**	**191**	37	**325**	10	233	**35**	**278**	41	**193**	16	**250**	**40**	243	21	304
+30 mins.	78	162	**51**	291	13	223	30	266	39	119	**17**	175	34	208	19	261
+45 mins.	93	147	43	283	13	**236**	18	267	**43**	107	8	158	39	214	**28**	281
Total Volume	358	650	161	1169	56	922	108	1086	158	546	52	756	147	916	87	1150
% App. Total	30.6	55.6	13.8		5.2	84.9	9.9		20.9	72.2	6.9		12.8	79.7	7.6	
PHF	.923	.851	.789	.899	.700	.977	.771	.977	.919	.707	.765	.756	.919	.912	.777	.946

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Groups Printed- Total Volume

	Arleta Avenue Southbound				Van Nuys Boulevard Westbound				Arleta Avenue Northbound				Van Nuys Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	21	58	25	104	9	207	26	242	33	110	11	154	46	213	13	272	772
04:15 PM	25	58	30	113	10	225	31	266	34	140	13	187	38	210	11	259	825
04:30 PM	35	55	32	122	15	226	22	263	31	113	14	158	44	236	29	309	852
04:45 PM	29	82	20	131	15	235	22	272	32	135	23	190	36	218	16	270	863
Total	110	253	107	470	49	893	101	1043	130	498	61	689	164	877	69	1110	3312
05:00 PM	37	89	25	151	7	183	37	227	39	133	19	191	48	213	15	276	845
05:15 PM	32	82	31	145	11	220	39	270	27	158	17	202	36	257	11	304	921
05:30 PM	36	90	32	158	12	209	36	257	27	159	19	205	38	245	17	300	920
05:45 PM	26	104	29	159	4	196	19	219	32	167	23	222	54	242	20	316	916
Total	131	365	117	613	34	808	131	973	125	617	78	820	176	957	63	1196	3602
Grand Total	241	618	224	1083	83	1701	232	2016	255	1115	139	1509	340	1834	132	2306	6914
Apprch %	22.3	57.1	20.7		4.1	84.4	11.5		16.9	73.9	9.2		14.7	79.5	5.7		
Total %	3.5	8.9	3.2	15.7	1.2	24.6	3.4	29.2	3.7	16.1	2	21.8	4.9	26.5	1.9	33.4	

	Arleta Avenue Southbound				Van Nuys Boulevard Westbound				Arleta Avenue Northbound				Van Nuys Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**37**	89	25	151	7	183	37	227	**39**	133	19	191	48	213	15	276	845
05:15 PM	32	82	31	145	11	**220**	**39**	**270**	27	158	17	202	36	**257**	11	304	**921**
05:30 PM	36	90	**32**	158	**12**	209	36	257	27	159	19	205	38	245	17	300	920
05:45 PM	26	**104**	29	**159**	4	196	19	219	32	**167**	**23**	**222**	**54**	242	**20**	**316**	916
Total Volume	131	365	117	613	34	808	131	973	125	617	78	820	176	957	63	1196	3602
% App. Total	21.4	59.5	19.1		3.5	83	13.5		15.2	75.2	9.5		14.7	80	5.3		
PHF	.885	.877	.914	.964	.708	.918	.840	.901	.801	.924	.848	.923	.815	.931	.788	.946	.978

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Site Code : 99918423
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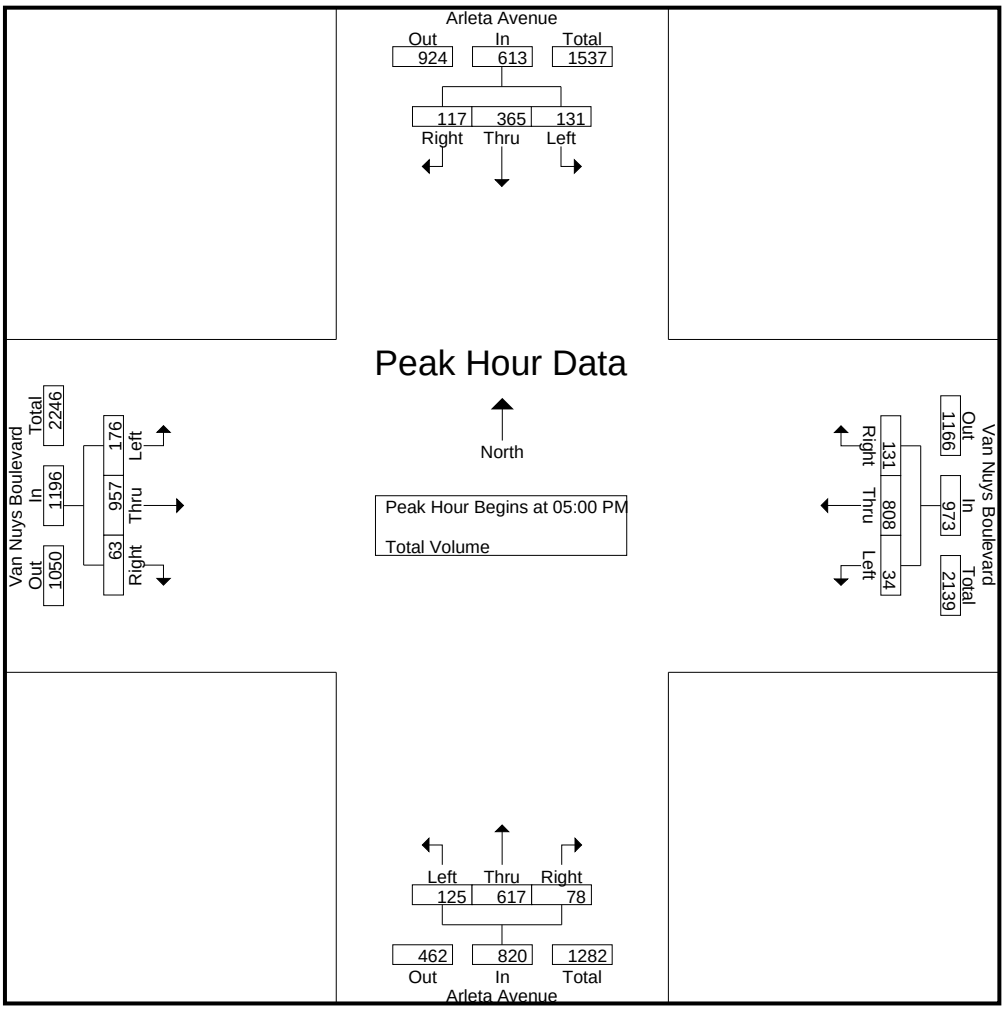

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				05:00 PM				05:00 PM			
+0 mins.	**37**	89	25	151	9	207	26	242	**39**	133	19	191	48	213	15	276
+15 mins.	32	82	31	145	10	225	**31**	266	27	158	17	202	36	**257**	11	304
+30 mins.	36	90	**32**	158	**15**	226	22	263	27	159	19	205	38	245	17	300
+45 mins.	26	**104**	29	**159**	15	**235**	22	**272**	32	**167**	**23**	**222**	**54**	242	**20**	**316**
Total Volume	131	365	117	613	49	893	101	1043	125	617	78	820	176	957	63	1196
% App. Total	21.4	59.5	19.1		4.7	85.6	9.7		15.2	75.2	9.5		14.7	80	5.3	
PHF	.885	.877	.914	.964	.817	.950	.815	.959	.801	.924	.848	.923	.815	.931	.788	.946

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City of Los Angeles
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Weather: Clear

File Name : 06_LAC_Arleta_Devonshire AM
Site Code : 99918423
Start Date : 6/6/2018
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Groups Printed- Total Volume

	Arleta Avenue Southbound			Devonshire Street Westbound			Devonshire Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	40	92	132	118	52	170	50	162	212	514
07:15 AM	75	101	176	166	54	220	73	215	288	684
07:30 AM	95	114	209	175	83	258	56	223	279	746
07:45 AM	93	93	186	162	64	226	73	169	242	654
Total	303	400	703	621	253	874	252	769	1021	2598
08:00 AM	69	83	152	112	58	170	74	205	279	601
08:15 AM	53	97	150	73	43	116	56	178	234	500
08:30 AM	32	75	107	68	46	114	54	146	200	421
08:45 AM	26	48	74	64	29	93	40	113	153	320
Total	180	303	483	317	176	493	224	642	866	1842
Grand Total	483	703	1186	938	429	1367	476	1411	1887	4440
Apprch %	40.7	59.3		68.6	31.4		25.2	74.8		
Total %	10.9	15.8	26.7	21.1	9.7	30.8	10.7	31.8	42.5	

	Arleta Avenue Southbound			Devonshire Street Westbound			Devonshire Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	75	101	176	166	54	220	73	215	**288**	684
07:30 AM	**95**	**114**	**209**	**175**	**83**	**258**	56	**223**	279	**746**
07:45 AM	93	93	186	162	64	226	73	169	242	654
08:00 AM	69	83	152	112	58	170	**74**	205	279	601
Total Volume	332	391	723	615	259	874	276	812	1088	2685
% App. Total	45.9	54.1		70.4	29.6		25.4	74.6		
PHF	.874	.857	.865	.879	.780	.847	.932	.910	.944	.900

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City of Los Angeles
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E/W: Devonshire Street
Weather: Clear

File Name : 06_LAC_Arleta_Devonshire AM
Site Code : 99918423
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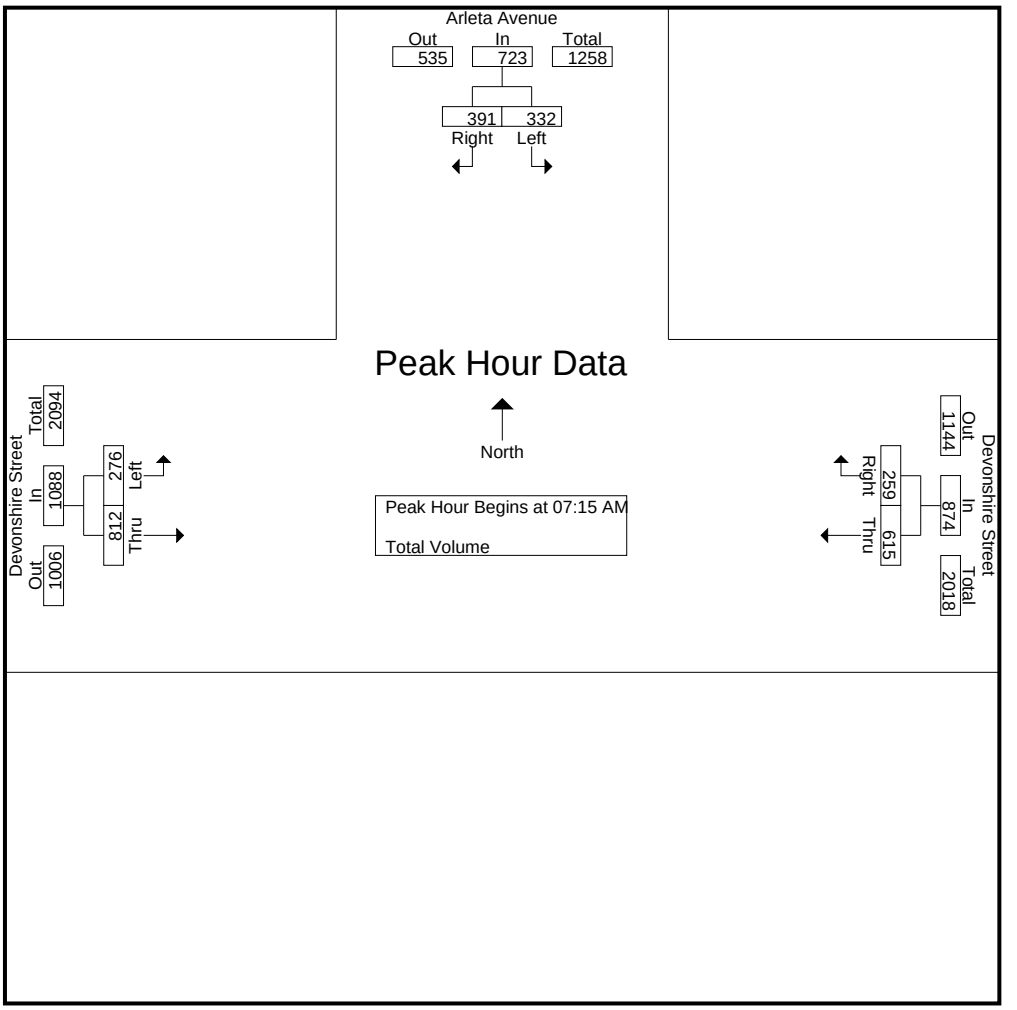

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:00 AM			07:15 AM		
+0 mins.	75	101	176	118	52	170	73	215	**288**
+15 mins.	**95**	**114**	**209**	166	54	220	56	**223**	279
+30 mins.	93	93	186	**175**	**83**	**258**	73	169	242
+45 mins.	69	83	152	162	64	226	**74**	205	279
Total Volume	332	391	723	621	253	874	276	812	1088
% App. Total	45.9	54.1		71.1	28.9		25.4	74.6	
PHF	.874	.857	.865	.887	.762	.847	.932	.910	.944

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City of Los Angeles
N/S: Arleta Avenue
E/W: Devonshire Street
Weather: Clear

File Name : 06_LAC_Arleta_Devonshire PM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 1

Groups Printed- Total Volume

	Arleta Avenue Southbound			Devonshire Street Westbound			Devonshire Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	54	87	141	102	92	194	90	117	207	542
04:15 PM	42	87	129	135	88	223	127	104	231	583
04:30 PM	57	99	156	132	108	240	103	100	203	599
04:45 PM	52	85	137	118	87	205	108	134	242	584
Total	205	358	563	487	375	862	428	455	883	2308
05:00 PM	46	93	139	141	94	235	128	139	267	641
05:15 PM	54	86	140	143	92	235	133	120	253	628
05:30 PM	50	79	129	136	88	224	131	137	268	621
05:45 PM	46	93	139	156	108	264	120	140	260	663
Total	196	351	547	576	382	958	512	536	1048	2553
Grand Total	401	709	1110	1063	757	1820	940	991	1931	4861
Apprch %	36.1	63.9		58.4	41.6		48.7	51.3		
Total %	8.2	14.6	22.8	21.9	15.6	37.4	19.3	20.4	39.7	

	Arleta Avenue Southbound			Devonshire Street Westbound			Devonshire Street Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	46	**93**	139	141	94	235	128	139	267	641
05:15 PM	**54**	86	**140**	143	92	235	**133**	120	253	628
05:30 PM	50	79	129	136	88	224	131	137	**268**	621
05:45 PM	46	93	139	**156**	**108**	**264**	120	**140**	260	**663**
Total Volume	196	351	547	576	382	958	512	536	1048	2553
% App. Total	35.8	64.2		60.1	39.9		48.9	51.1		
PHF	.907	.944	.977	.923	.884	.907	.962	.957	.978	.963

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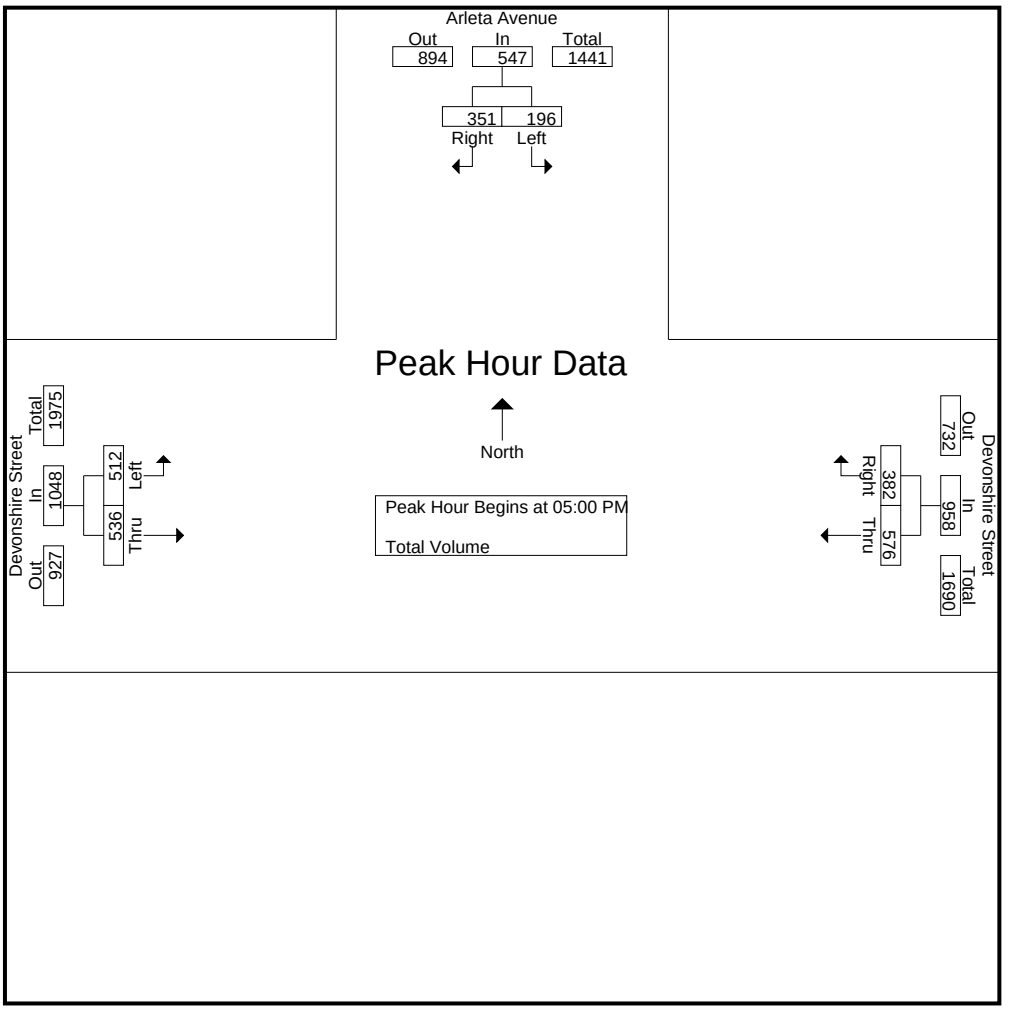
City of Los Angeles
N/S: Arleta Avenue
E/W: Devonshire Street
Weather: Clear

File Name : 06_LAC_Arleta_Devonshire PM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			05:00 PM			05:00 PM		
+0 mins.	**57**	**99**	**156**	141	94	235	128	139	267
+15 mins.	52	85	137	143	92	235	**133**	120	253
+30 mins.	46	93	139	136	88	224	131	137	**268**
+45 mins.	54	86	140	**156**	**108**	**264**	120	**140**	260
Total Volume	209	363	572	576	382	958	512	536	1048
% App. Total	36.5	63.5		60.1	39.9		48.9	51.1	
PHF	.917	.917	.917	.923	.884	.907	.962	.957	.978

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City of Los Angeles
N/S: Arleta Avenue
E/W: Paxton Street
Weather: Clear

File Name : 07_LAC_Arleta_Paxton AM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 1

Groups Printed- Total Volume

	Arleta Avenue Southbound			Paxton Street Westbound			Arleta Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	33	25	58	110	14	124	16	91	107	289
07:15 AM	37	40	77	149	28	177	20	110	130	384
07:30 AM	61	48	109	183	43	226	30	116	146	481
07:45 AM	46	43	89	123	31	154	28	101	129	372
Total	177	156	333	565	116	681	94	418	512	1526
08:00 AM	55	28	83	134	22	156	20	106	126	365
08:15 AM	40	30	70	116	27	143	12	93	105	318
08:30 AM	33	19	52	88	13	101	19	86	105	258
08:45 AM	28	21	49	56	22	78	9	61	70	197
Total	156	98	254	394	84	478	60	346	406	1138
Grand Total	333	254	587	959	200	1159	154	764	918	2664
Apprch %	56.7	43.3		82.7	17.3		16.8	83.2		
Total %	12.5	9.5	22	36	7.5	43.5	5.8	28.7	34.5	

	Arleta Avenue Southbound			Paxton Street Westbound			Arleta Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	37	40	77	149	28	177	20	110	130	384
07:30 AM	**61**	**48**	**109**	**183**	**43**	**226**	**30**	**116**	**146**	**481**
07:45 AM	46	43	89	123	31	154	28	101	129	372
08:00 AM	55	28	83	134	22	156	20	106	126	365
Total Volume	199	159	358	589	124	713	98	433	531	1602
% App. Total	55.6	44.4		82.6	17.4		18.5	81.5		
PHF	.816	.828	.821	.805	.721	.789	.817	.933	.909	.833

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City of Los Angeles
N/S: Arleta Avenue
E/W: Paxton Street
Weather: Clear

File Name : 07_LAC_Arleta_Paxton AM
Site Code : 99918423
Start Date : 6/6/2018
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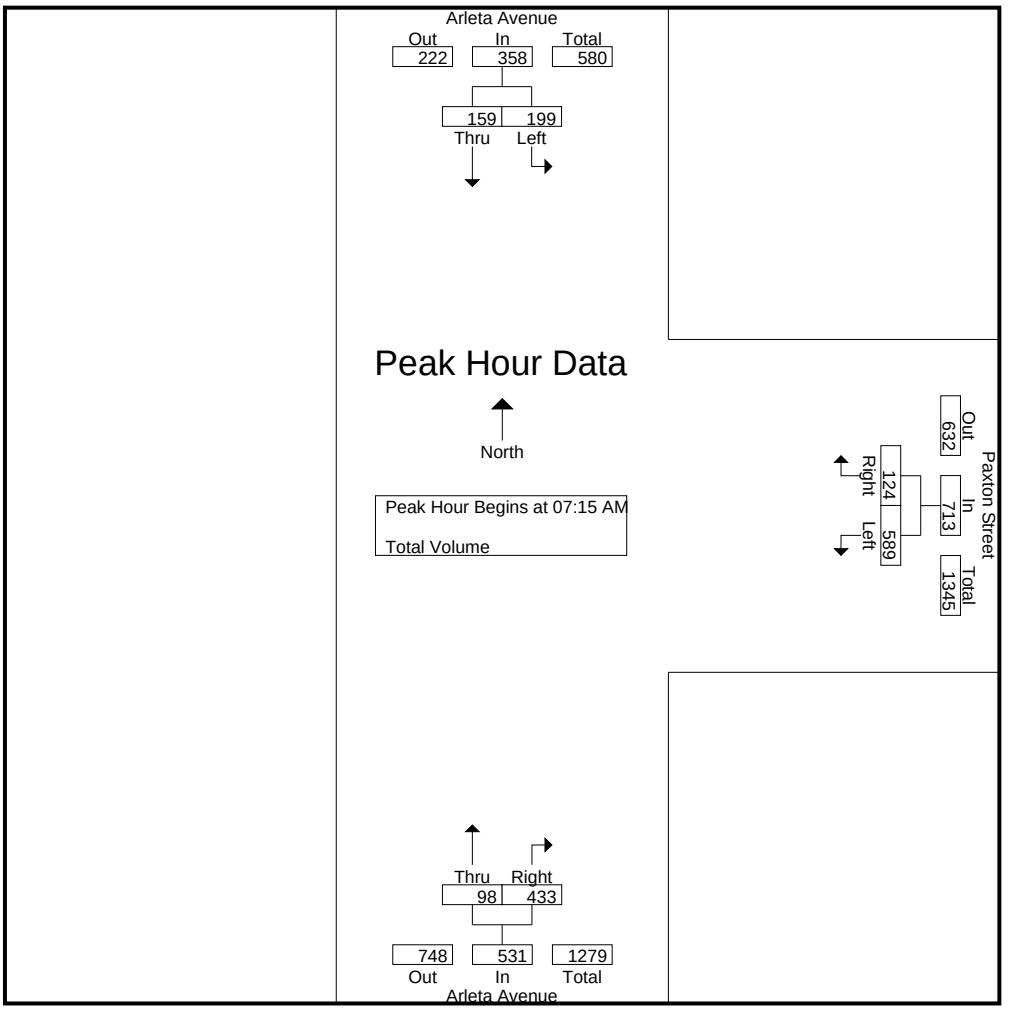

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	37	40	77	149	28	177	20	110	130
+15 mins.	**61**	**48**	**109**	**183**	**43**	**226**	**30**	**116**	**146**
+30 mins.	46	43	89	123	31	154	28	101	129
+45 mins.	55	28	83	134	22	156	20	106	126
Total Volume	199	159	358	589	124	713	98	433	531
% App. Total	55.6	44.4		82.6	17.4		18.5	81.5	
PHF	.816	.828	.821	.805	.721	.789	.817	.933	.909

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City of Los Angeles
N/S: Arleta Avenue
E/W: Paxton Street
Weather: Clear

File Name : 07_LAC_Arleta_Paxton PM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 1

Groups Printed- Total Volume

	Arleta Avenue Southbound			Paxton Street Westbound			Arleta Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	33	20	53	127	36	163	41	141	182	398
04:15 PM	25	19	44	112	28	140	32	162	194	378
04:30 PM	55	15	70	141	39	180	54	161	215	465
04:45 PM	42	24	66	112	39	151	31	149	180	397
Total	155	78	233	492	142	634	158	613	771	1638
05:00 PM	37	28	65	117	39	156	49	148	197	418
05:15 PM	38	23	61	116	40	156	49	180	229	446
05:30 PM	51	28	79	99	41	140	46	160	206	425
05:45 PM	47	26	73	122	36	158	59	167	226	457
Total	173	105	278	454	156	610	203	655	858	1746
Grand Total	328	183	511	946	298	1244	361	1268	1629	3384
Apprch %	64.2	35.8		76	24		22.2	77.8		
Total %	9.7	5.4	15.1	28	8.8	36.8	10.7	37.5	48.1	

	Arleta Avenue Southbound			Paxton Street Westbound			Arleta Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	37	**28**	65	117	39	156	49	148	197	418
05:15 PM	38	23	61	116	40	156	49	**180**	**229**	446
05:30 PM	**51**	28	**79**	99	**41**	140	46	160	206	425
05:45 PM	47	26	73	**122**	36	**158**	**59**	167	226	**457**
Total Volume	173	105	278	454	156	610	203	655	858	1746
% App. Total	62.2	37.8		74.4	25.6		23.7	76.3		
PHF	.848	.938	.880	.930	.951	.965	.860	.910	.937	.955

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City of Los Angeles
N/S: Arleta Avenue
E/W: Paxton Street
Weather: Clear

File Name : 07_LAC_Arleta_Paxton PM
Site Code : 99918423
Start Date : 6/6/2018
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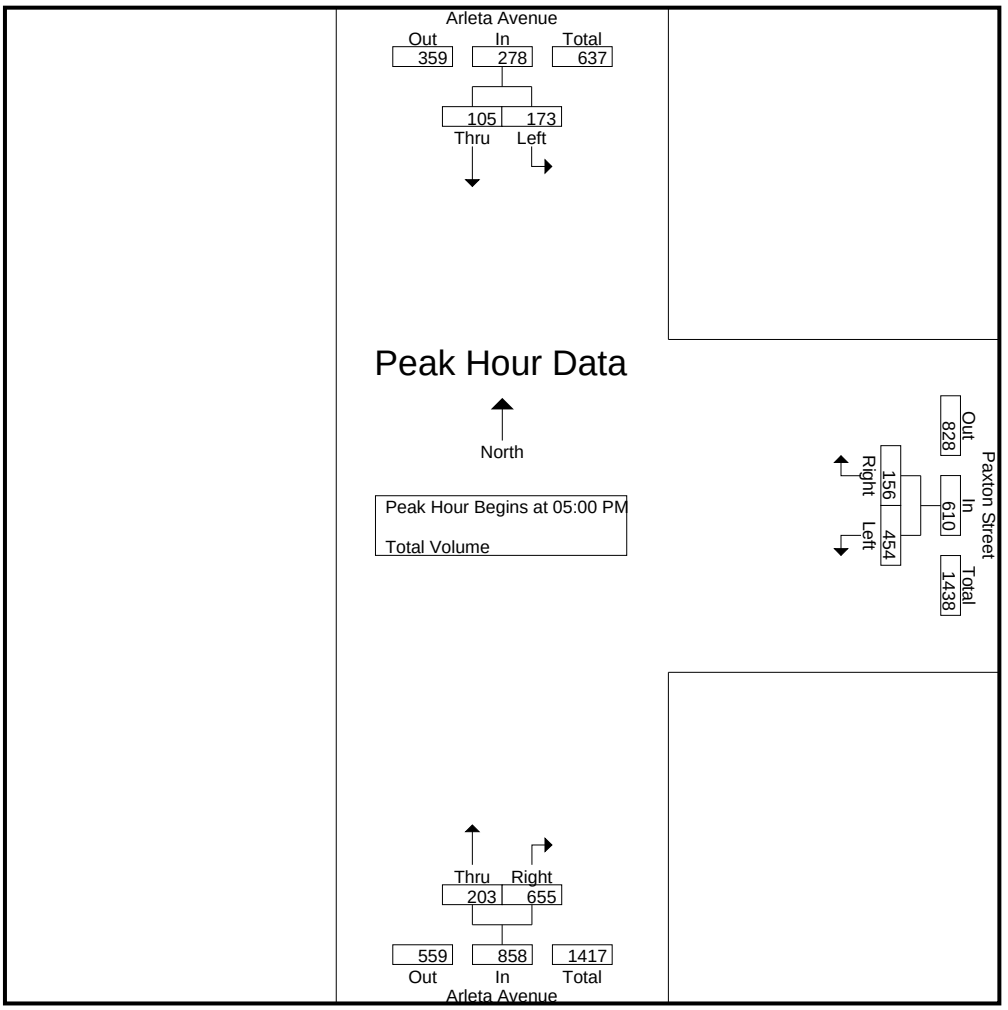

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			04:30 PM			05:00 PM		
+0 mins.	37	**28**	65	**141**	39	**180**	49	148	197
+15 mins.	38	23	61	112	39	151	49	**180**	**229**
+30 mins.	**51**	28	**79**	117	39	156	46	160	206
+45 mins.	47	26	73	116	**40**	156	**59**	167	226
Total Volume	173	105	278	486	157	643	203	655	858
% App. Total	62.2	37.8		75.6	24.4		23.7	76.3	
PHF	.848	.938	.880	.862	.981	.893	.860	.910	.937

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City of Los Angeles
N/S: Arleta Avenue
E/W: Chatsworth Street
Weather: Clear

File Name : 08_LAC_Arleta_Chatsworth Street AM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 1

Groups Printed- Total Volume

	Arleta Avenue Southbound			Arleta Avenue Northbound			Chatsworth Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	21	3	24	11	17	28	1	0	1	53
07:15 AM	20	1	21	26	20	46	1	1	2	69
07:30 AM	31	0	31	30	33	63	3	2	5	99
07:45 AM	30	1	31	22	30	52	7	5	12	95
Total	102	5	107	89	100	189	12	8	20	316
08:00 AM	21	4	25	19	13	32	2	2	4	61
08:15 AM	19	1	20	15	21	36	1	0	1	57
08:30 AM	14	1	15	9	15	24	2	0	2	41
08:45 AM	7	0	7	9	13	22	0	0	0	29
Total	61	6	67	52	62	114	5	2	7	188
Grand Total	163	11	174	141	162	303	17	10	27	504
Apprch %	93.7	6.3		46.5	53.5		63	37		
Total %	32.3	2.2	34.5	28	32.1	60.1	3.4	2	5.4	

	Arleta Avenue Southbound			Arleta Avenue Northbound			Chatsworth Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	20	1	21	26	20	46	1	1	2	69
07:30 AM	**31**	0	**31**	**30**	**33**	**63**	3	2	5	**99**
07:45 AM	30	1	31	22	30	52	**7**	**5**	**12**	95
08:00 AM	21	**4**	25	19	13	32	2	2	4	61
Total Volume	102	6	108	97	96	193	13	10	23	324
% App. Total	94.4	5.6		50.3	49.7		56.5	43.5		
PHF	.823	.375	.871	.808	.727	.766	.464	.500	.479	.818

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City of Los Angeles
N/S: Arleta Avenue
E/W: Chatsworth Street
Weather: Clear

File Name : 08_LAC_Arleta_Chatsworth Street AM
Site Code : 99918423
Start Date : 6/6/2018
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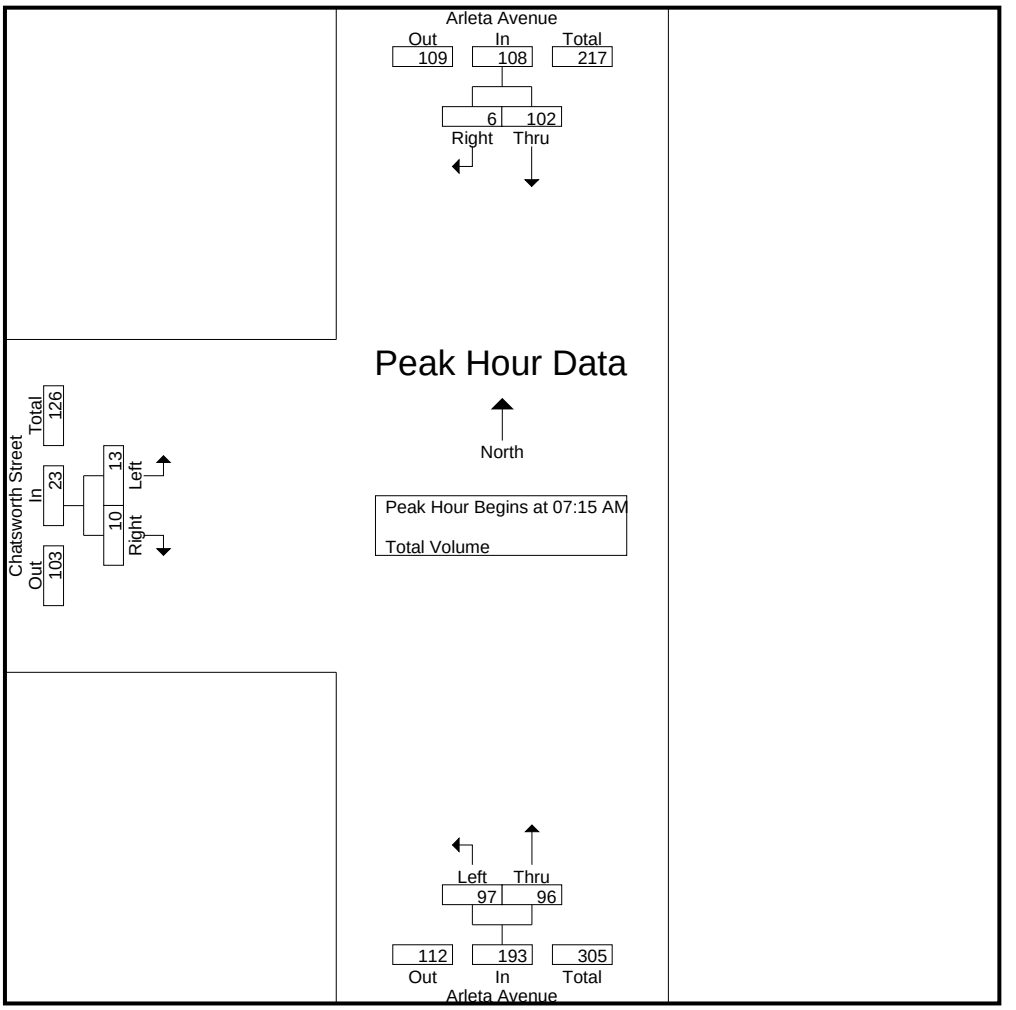

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	20	1	21	26	20	46	1	1	2
+15 mins.	**31**	0	**31**	**30**	**33**	**63**	3	2	5
+30 mins.	30	1	31	22	30	52	**7**	**5**	**12**
+45 mins.	21	**4**	25	19	13	32	2	2	4
Total Volume	102	6	108	97	96	193	13	10	23
% App. Total	94.4	5.6		50.3	49.7		56.5	43.5	
PHF	.823	.375	.871	.808	.727	.766	.464	.500	.479

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City of Los Angeles
N/S: Arleta Avenue
E/W: Chatsworth Street
Weather: Clear

File Name : 08_LAC_Arleta_Chatsworth Street PM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 1

Groups Printed- Total Volume

	Arleta Avenue Southbound			Arleta Avenue Northbound			Chatsworth Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	9	4	13	19	39	58	3	1	4	75
04:15 PM	12	5	17	15	24	39	4	0	4	60
04:30 PM	21	2	23	13	50	63	2	2	4	90
04:45 PM	19	2	21	23	30	53	2	2	4	78
Total	61	13	74	70	143	213	11	5	16	303
05:00 PM	22	7	29	17	38	55	2	1	3	87
05:15 PM	15	6	21	20	36	56	4	0	4	81
05:30 PM	16	2	18	20	38	58	3	1	4	80
05:45 PM	16	2	18	21	47	68	3	1	4	90
Total	69	17	86	78	159	237	12	3	15	338
Grand Total	130	30	160	148	302	450	23	8	31	641
Apprch %	81.2	18.8		32.9	67.1		74.2	25.8		
Total %	20.3	4.7	25	23.1	47.1	70.2	3.6	1.2	4.8	

	Arleta Avenue Southbound			Arleta Avenue Northbound			Chatsworth Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	**22**	**7**	**29**	17	38	55	2	**1**	3	87
05:15 PM	15	6	21	20	36	56	**4**	0	**4**	81
05:30 PM	16	2	18	20	38	58	3	1	4	80
05:45 PM	16	2	18	**21**	**47**	**68**	3	1	4	**90**
Total Volume	69	17	86	78	159	237	12	3	15	338
% App. Total	80.2	19.8		32.9	67.1		80	20		
PHF	.784	.607	.741	.929	.846	.871	.750	.750	.938	.939

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City of Los Angeles
N/S: Arleta Avenue
E/W: Chatsworth Street
Weather: Clear

File Name : 08_LAC_Arleta_Chatsworth Street PM
Site Code : 99918423
Start Date : 6/6/2018
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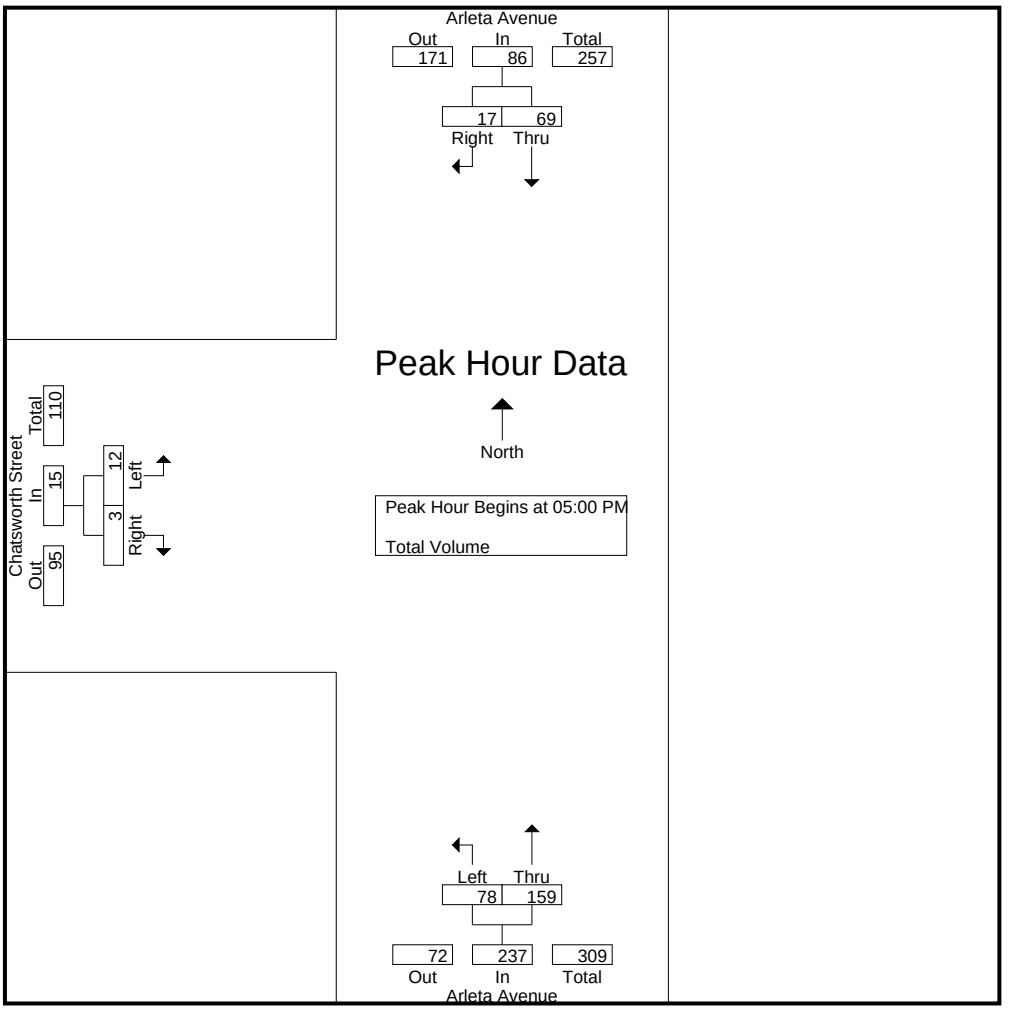

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			05:00 PM			04:00 PM		
+0 mins.	21	2	23	17	38	55	3	1	**4**
+15 mins.	19	2	21	20	36	56	**4**	0	4
+30 mins.	**22**	**7**	**29**	20	38	58	2	**2**	4
+45 mins.	15	6	21	**21**	**47**	**68**	2	2	4
Total Volume	77	17	94	78	159	237	11	5	16
% App. Total	81.9	18.1		32.9	67.1		68.8	31.2	
PHF	.875	.607	.810	.929	.846	.871	.688	.625	1.000

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City of Los Angeles
N/S: Arleta Avenue
E/W: Chatsworth Drive
Weather: Clear

File Name : 09_LAC_Arleta_Chatsworth Drive AM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 1

Groups Printed- Total Volume

	Arleta Avenue Southbound				Chatsworth Drive Westbound				Arleta Avenue Northbound				Chatsworth Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	8	2	3	13	13	63	4	80	1	2	12	15	1	79	2	82	190
07:15 AM	3	7	4	14	22	82	2	106	3	12	25	40	2	114	1	117	277
07:30 AM	12	13	7	32	23	112	7	142	7	25	24	56	7	121	4	132	362
07:45 AM	8	13	4	25	26	101	13	140	2	24	31	57	6	147	3	156	378
Total	31	35	18	84	84	358	26	468	13	63	92	168	16	461	10	487	1207
08:00 AM	13	15	2	30	16	86	3	105	8	12	19	39	3	119	1	123	297
08:15 AM	6	10	2	18	13	61	4	78	2	9	21	32	1	99	2	102	230
08:30 AM	9	8	1	18	15	50	4	69	0	10	14	24	2	84	2	88	199
08:45 AM	5	3	5	13	4	36	1	41	1	8	11	20	2	55	1	58	132
Total	33	36	10	79	48	233	12	293	11	39	65	115	8	357	6	371	858
Grand Total	64	71	28	163	132	591	38	761	24	102	157	283	24	818	16	858	2065
Apprch %	39.3	43.6	17.2		17.3	77.7	5		8.5	36	55.5		2.8	95.3	1.9		
Total %	3.1	3.4	1.4	7.9	6.4	28.6	1.8	36.9	1.2	4.9	7.6	13.7	1.2	39.6	0.8	41.5	

	Arleta Avenue Southbound				Chatsworth Drive Westbound				Arleta Avenue Northbound				Chatsworth Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	3	7	4	14	22	82	2	106	3	12	25	40	2	114	1	117	277
07:30 AM	12	13	**7**	**32**	23	**112**	7	**142**	7	**25**	24	56	**7**	121	**4**	132	362
07:45 AM	8	13	4	25	**26**	101	**13**	140	2	24	**31**	**57**	6	**147**	3	**156**	**378**
08:00 AM	**13**	**15**	2	30	16	86	3	105	**8**	12	19	39	3	119	1	123	297
Total Volume	36	48	17	101	87	381	25	493	20	73	99	192	18	501	9	528	1314
% App. Total	35.6	47.5	16.8		17.6	77.3	5.1		10.4	38	51.6		3.4	94.9	1.7		
PHF	.692	.800	.607	.789	.837	.850	.481	.868	.625	.730	.798	.842	.643	.852	.563	.846	.869

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City of Los Angeles
N/S: Arleta Avenue
E/W: Chatsworth Drive
Weather: Clear

File Name : 09_LAC_Arleta_Chatsworth Drive AM
Site Code : 99918423
Start Date : 6/6/2018
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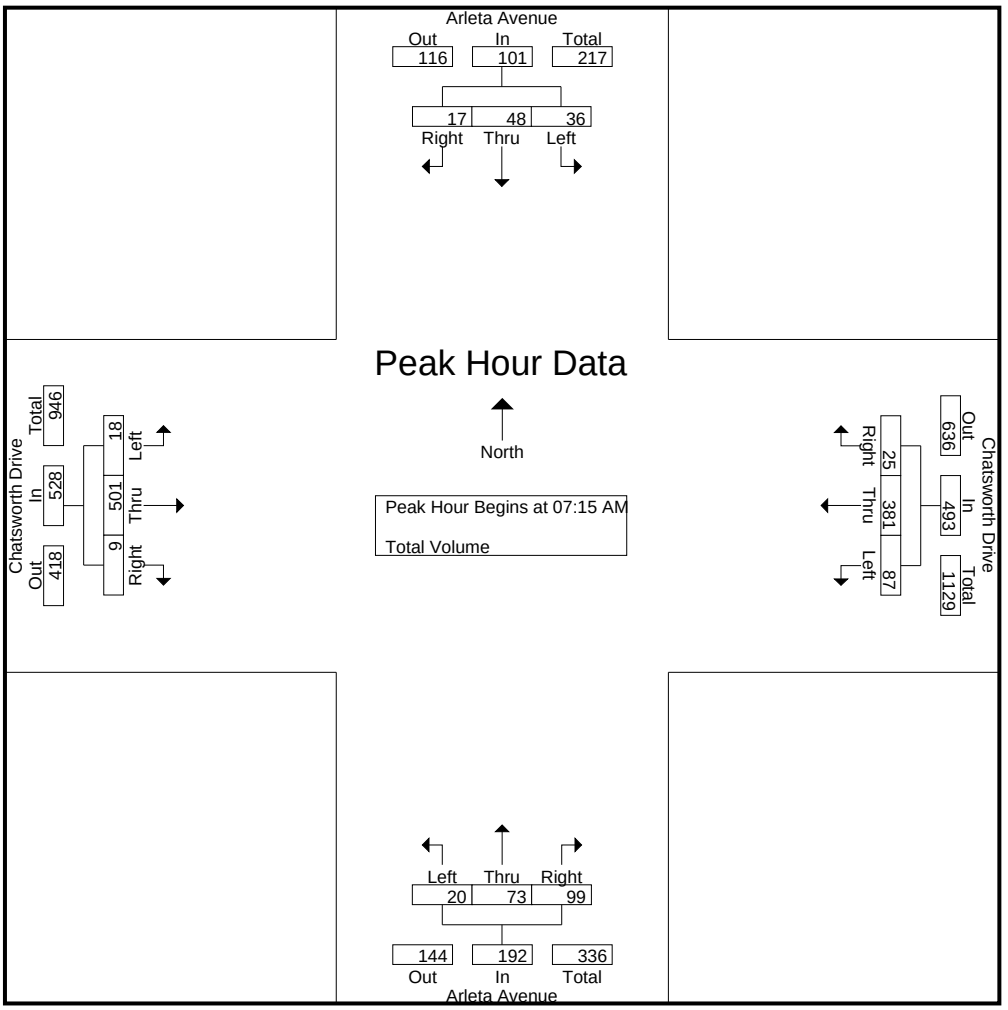

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	12	13	**7**	**32**	22	82	2	106	3	12	25	40	2	114	1	117
+15 mins.	8	13	4	25	23	**112**	7	**142**	7	**25**	24	56	**7**	121	**4**	132
+30 mins.	**13**	**15**	2	30	**26**	101	**13**	140	2	24	**31**	**57**	6	**147**	3	**156**
+45 mins.	6	10	2	18	16	86	3	105	**8**	12	19	39	3	119	1	123
Total Volume	39	51	15	105	87	381	25	493	20	73	99	192	18	501	9	528
% App. Total	37.1	48.6	14.3		17.6	77.3	5.1		10.4	38	51.6		3.4	94.9	1.7	
PHF	.750	.850	.536	.820	.837	.850	.481	.868	.625	.730	.798	.842	.643	.852	.563	.846

Counts Unlimited
PO Box 1178
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City of Los Angeles
N/S: Arleta Avenue
E/W: Chatsworth Drive
Weather: Clear

File Name : 09_LAC_Arleta_Chatsworth Drive PM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 1

Groups Printed- Total Volume

	Arleta Avenue Southbound				Chatsworth Drive Westbound				Arleta Avenue Northbound				Chatsworth Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	4	9	2	15	12	73	8	93	4	18	25	47	4	100	5	109	264
04:15 PM	10	14	4	28	13	49	3	65	1	24	25	50	4	81	0	85	228
04:30 PM	6	13	8	27	4	60	3	67	2	16	33	51	4	114	3	121	266
04:45 PM	3	11	9	23	11	60	4	75	3	17	28	48	9	172	2	183	329
Total	23	47	23	93	40	242	18	300	10	75	111	196	21	467	10	498	1087
05:00 PM	7	12	6	25	15	68	5	88	0	17	36	53	7	138	9	154	320
05:15 PM	10	12	1	23	18	75	3	96	3	24	25	52	5	213	11	229	400
05:30 PM	9	9	5	23	13	69	6	88	2	28	27	57	4	200	4	208	376
05:45 PM	7	8	7	22	11	60	7	78	2	18	28	48	2	178	6	186	334
Total	33	41	19	93	57	272	21	350	7	87	116	210	18	729	30	777	1430
Grand Total	56	88	42	186	97	514	39	650	17	162	227	406	39	1196	40	1275	2517
Apprch %	30.1	47.3	22.6		14.9	79.1	6		4.2	39.9	55.9		3.1	93.8	3.1		
Total %	2.2	3.5	1.7	7.4	3.9	20.4	1.5	25.8	0.7	6.4	9	16.1	1.5	47.5	1.6	50.7	

	Arleta Avenue Southbound				Chatsworth Drive Westbound				Arleta Avenue Northbound				Chatsworth Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	7	**12**	6	**25**	15	68	5	88	0	17	**36**	53	**7**	138	9	154	320
05:15 PM	**10**	12	1	23	**18**	**75**	3	**96**	**3**	24	25	52	5	**213**	**11**	**229**	**400**
05:30 PM	9	9	5	23	13	69	6	88	2	**28**	27	**57**	4	200	4	208	376
05:45 PM	7	8	**7**	22	11	60	**7**	78	2	18	28	48	2	178	6	186	334
Total Volume	33	41	19	93	57	272	21	350	7	87	116	210	18	729	30	777	1430
% App. Total	35.5	44.1	20.4		16.3	77.7	6		3.3	41.4	55.2		2.3	93.8	3.9		
PHF	.825	.854	.679	.930	.792	.907	.750	.911	.583	.777	.806	.921	.643	.856	.682	.848	.894

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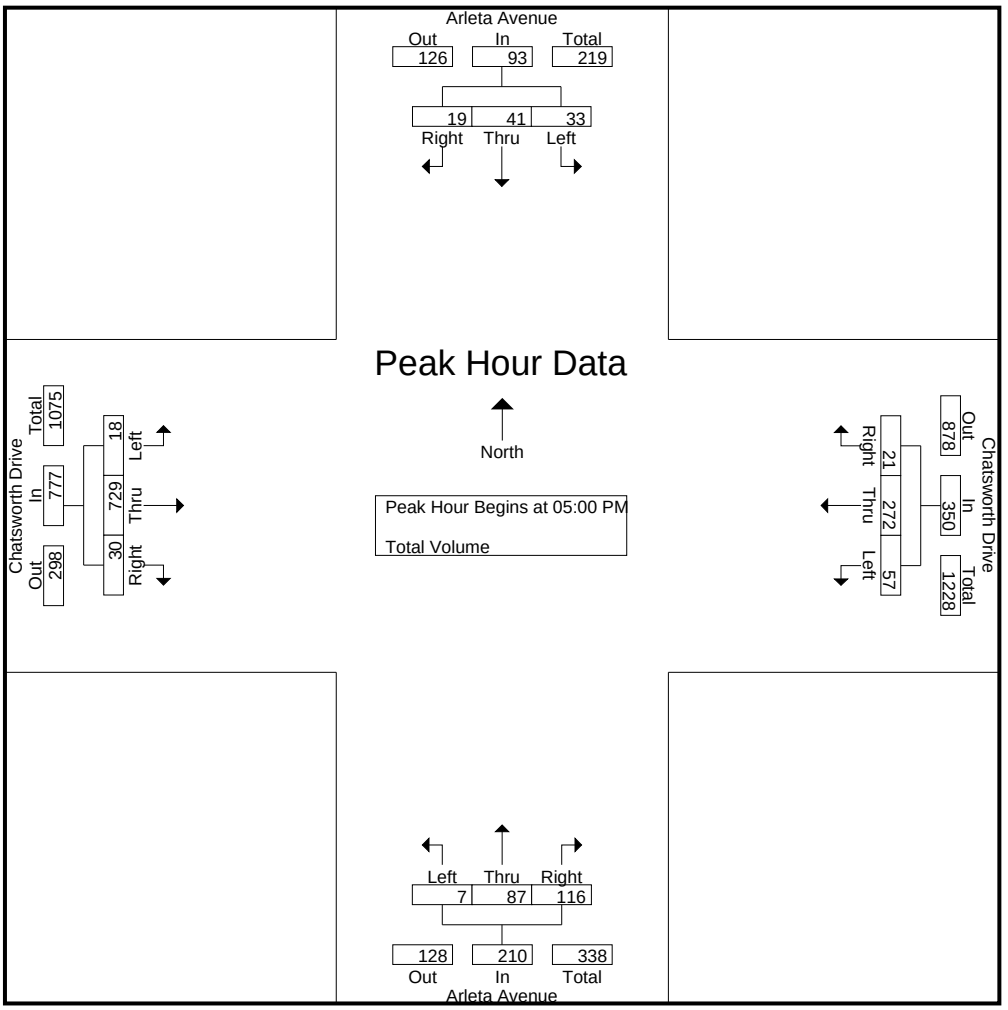
City of Los Angeles
N/S: Arleta Avenue
E/W: Chatsworth Drive
Weather: Clear

File Name : 09_LAC_Arleta_Chatsworth Drive PM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				05:00 PM				04:45 PM				05:00 PM			
+0 mins.	**10**	**14**	4	**28**	15	68	5	88	**3**	17	28	48	**7**	138	9	154
+15 mins.	6	13	8	27	**18**	**75**	3	**96**	0	17	**36**	53	5	**213**	**11**	**229**
+30 mins.	3	11	**9**	23	13	69	6	88	3	24	25	52	4	200	4	208
+45 mins.	7	12	6	25	11	60	**7**	78	2	**28**	27	**57**	2	178	6	186
Total Volume	26	50	27	103	57	272	21	350	8	86	116	210	18	729	30	777
% App. Total	25.2	48.5	26.2		16.3	77.7	6		3.8	41	55.2		2.3	93.8	3.9	
PHF	.650	.893	.750	.920	.792	.907	.750	.911	.667	.768	.806	.921	.643	.856	.682	.848

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City of Los Angeles
N/S: Arleta Avenue
E/W: Brand Boulevard
Weather: Clear

File Name : 10_LAC_Arleta_Brand AM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 1

Groups Printed- Total Volume

	Brand Boulevard Westbound			Arleta Avenue Northbound			Brand Boulevard Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	1	80	81	3	2	5	54	9	63	149
07:15 AM	9	126	135	3	9	12	93	6	99	246
07:30 AM	7	198	205	22	13	35	95	18	113	353
07:45 AM	8	162	170	32	20	52	116	13	129	351
Total	25	566	591	60	44	104	358	46	404	1099
08:00 AM	5	120	125	10	11	21	116	26	142	288
08:15 AM	8	66	74	9	6	15	100	10	110	199
08:30 AM	5	68	73	12	6	18	75	15	90	181
08:45 AM	4	45	49	10	2	12	66	8	74	135
Total	22	299	321	41	25	66	357	59	416	803
Grand Total	47	865	912	101	69	170	715	105	820	1902
Apprch %	5.2	94.8		59.4	40.6		87.2	12.8		
Total %	2.5	45.5	47.9	5.3	3.6	8.9	37.6	5.5	43.1	

	Brand Boulevard Westbound			Arleta Avenue Northbound			Brand Boulevard Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	**9**	126	135	3	9	12	93	6	99	246
07:30 AM	7	**198**	**205**	22	13	35	95	18	113	**353**
07:45 AM	8	162	170	**32**	**20**	**52**	**116**	13	129	351
08:00 AM	5	120	125	10	11	21	116	**26**	**142**	288
Total Volume	29	606	635	67	53	120	420	63	483	1238
% App. Total	4.6	95.4		55.8	44.2		87	13		
PHF	.806	.765	.774	.523	.663	.577	.905	.606	.850	.877

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City of Los Angeles
N/S: Arleta Avenue
E/W: Brand Boulevard
Weather: Clear

File Name : 10_LAC_Arleta_Brand AM
Site Code : 99918423
Start Date : 6/6/2018
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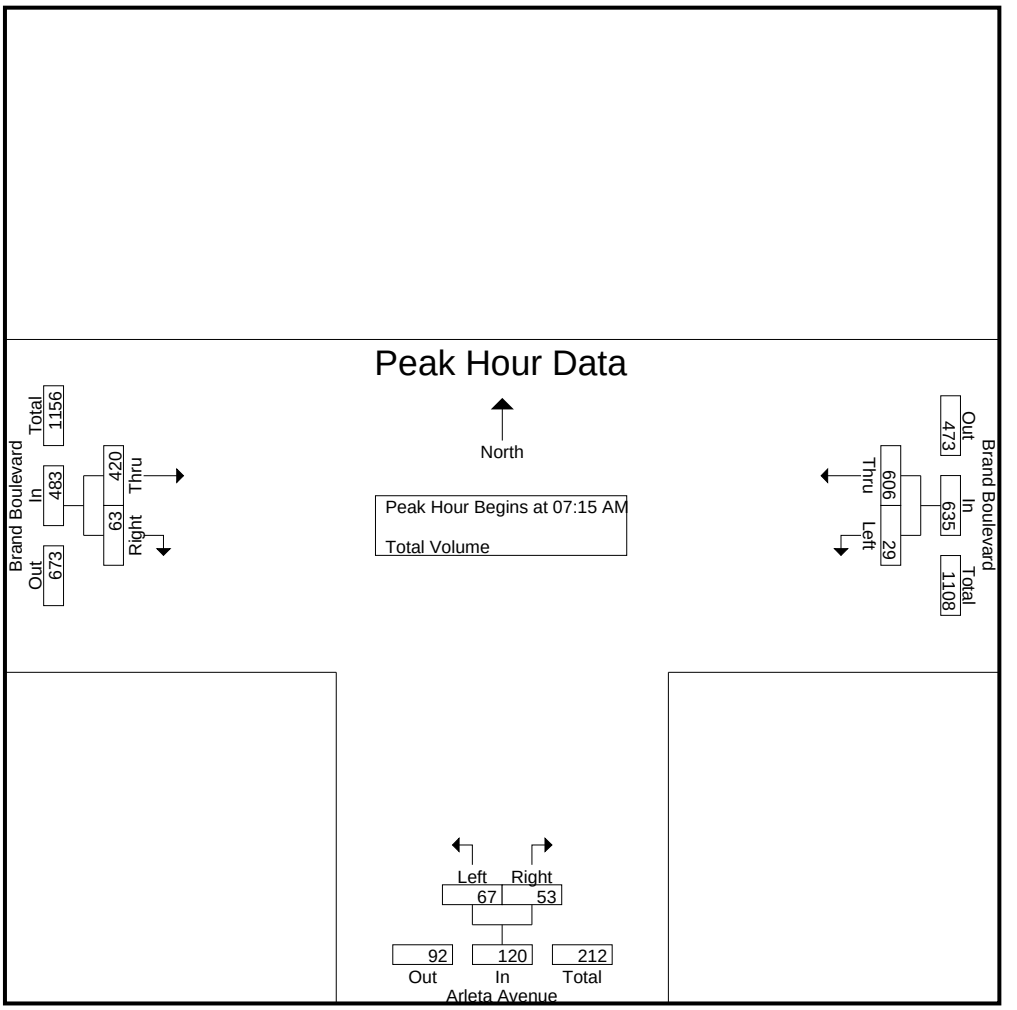

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:30 AM			07:30 AM		
+0 mins.	**9**	126	135	22	13	35	95	18	113
+15 mins.	7	**198**	**205**	**32**	**20**	**52**	**116**	13	129
+30 mins.	8	162	170	10	11	21	116	**26**	**142**
+45 mins.	5	120	125	9	6	15	100	10	110
Total Volume	29	606	635	73	50	123	427	67	494
% App. Total	4.6	95.4		59.3	40.7		86.4	13.6	
PHF	.806	.765	.774	.570	.625	.591	.920	.644	.870

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City of Los Angeles
N/S: Arleta Avenue
E/W: Brand Boulevard
Weather: Clear

File Name : 10_LAC_Arleta_Brand PM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 1

Groups Printed- Total Volume

	Brand Boulevard Westbound			Arleta Avenue Northbound			Brand Boulevard Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	5	77	82	5	17	22	109	9	118	222
04:15 PM	14	72	86	17	16	33	139	16	155	274
04:30 PM	8	71	79	6	14	20	132	15	147	246
04:45 PM	9	59	68	9	19	28	149	13	162	258
Total	36	279	315	37	66	103	529	53	582	1000
05:00 PM	8	100	108	7	22	29	205	14	219	356
05:15 PM	12	74	86	6	24	30	169	14	183	299
05:30 PM	6	72	78	6	30	36	185	17	202	316
05:45 PM	9	58	67	4	18	22	168	9	177	266
Total	35	304	339	23	94	117	727	54	781	1237
Grand Total	71	583	654	60	160	220	1256	107	1363	2237
Apprch %	10.9	89.1		27.3	72.7		92.1	7.9		
Total %	3.2	26.1	29.2	2.7	7.2	9.8	56.1	4.8	60.9	

	Brand Boulevard Westbound			Arleta Avenue Northbound			Brand Boulevard Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	8	**100**	**108**	**7**	22	29	**205**	14	**219**	**356**
05:15 PM	**12**	74	86	6	24	30	169	14	183	299
05:30 PM	6	72	78	6	**30**	**36**	185	**17**	202	316
05:45 PM	9	58	67	4	18	22	168	9	177	266
Total Volume	35	304	339	23	94	117	727	54	781	1237
% App. Total	10.3	89.7		19.7	80.3		93.1	6.9		
PHF	.729	.760	.785	.821	.783	.813	.887	.794	.892	.869

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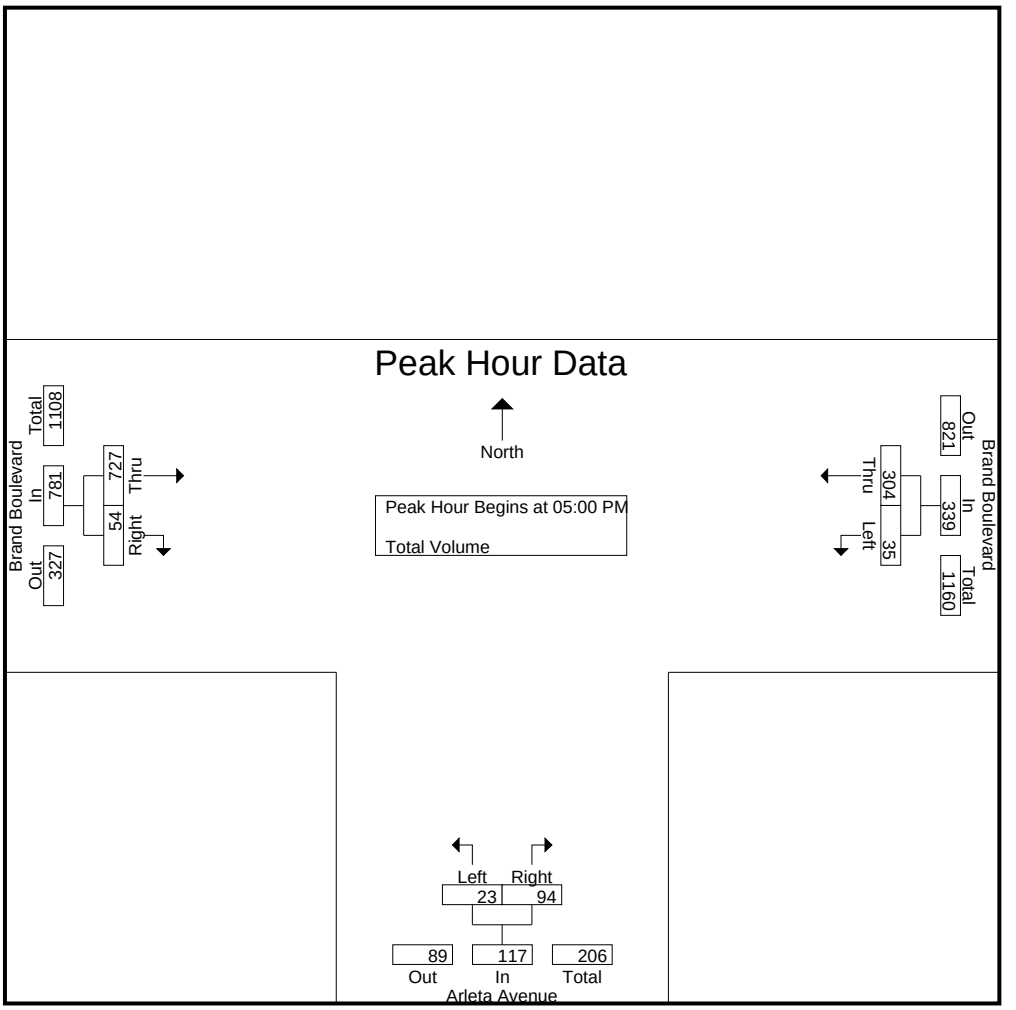
City of Los Angeles
N/S: Arleta Avenue
E/W: Brand Boulevard
Weather: Clear

File Name : 10_LAC_Arleta_Brand PM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:45 PM			05:00 PM		
+0 mins.	**14**	72	86	**9**	19	28	**205**	14	**219**
+15 mins.	8	71	79	7	22	29	169	14	183
+30 mins.	9	59	68	6	24	30	185	**17**	202
+45 mins.	8	**100**	**108**	6	**30**	**36**	168	9	177
Total Volume	39	302	341	28	95	123	727	54	781
% App. Total	11.4	88.6		22.8	77.2		93.1	6.9	
PHF	.696	.755	.789	.778	.792	.854	.887	.794	.892

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City of Los Angeles
N/S: Sepulveda Boulevard
E/W: San Fernando Mission Boulevard
Weather: Clear

File Name : 11_LAC_Sepulvea_SF Mission AM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 1

Groups Printed- Total Volume

	Sepulveda Boulevard Southbound				San Fernando Mission Boulevard Westbound				Sepulveda Boulevard Northbound				San Fernando Mission Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	15	91	11	117	17	58	11	86	35	81	11	127	16	64	48	128	458
07:15 AM	19	84	15	118	19	141	14	174	68	114	15	197	25	98	51	174	663
07:30 AM	21	67	17	105	15	228	18	261	55	135	25	215	34	142	63	239	820
07:45 AM	16	84	38	138	31	216	19	266	64	209	27	300	52	197	98	347	1051
Total	71	326	81	478	82	643	62	787	222	539	78	839	127	501	260	888	2992
08:00 AM	13	95	25	133	28	121	15	164	51	151	23	225	34	145	84	263	785
08:15 AM	17	87	19	123	34	95	18	147	42	124	19	185	31	138	57	226	681
08:30 AM	15	84	18	117	27	68	13	108	54	111	16	181	25	104	43	172	578
08:45 AM	11	73	20	104	19	44	15	78	42	103	22	167	21	83	42	146	495
Total	56	339	82	477	108	328	61	497	189	489	80	758	111	470	226	807	2539
Grand Total	127	665	163	955	190	971	123	1284	411	1028	158	1597	238	971	486	1695	5531
Apprch %	13.3	69.6	17.1		14.8	75.6	9.6		25.7	64.4	9.9		14	57.3	28.7		
Total %	2.3	12	2.9	17.3	3.4	17.6	2.2	23.2	7.4	18.6	2.9	28.9	4.3	17.6	8.8	30.6	

	Sepulveda Boulevard Southbound				San Fernando Mission Boulevard Westbound				Sepulveda Boulevard Northbound				San Fernando Mission Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**21**	67	17	105	15	**228**	18	261	55	135	25	215	34	142	63	239	820
07:45 AM	16	84	**38**	**138**	31	216	**19**	**266**	**64**	**209**	**27**	**300**	**52**	**197**	**98**	**347**	**1051**
08:00 AM	13	**95**	25	133	28	121	15	164	51	151	23	225	34	145	84	263	785
08:15 AM	17	87	19	123	**34**	95	18	147	42	124	19	185	31	138	57	226	681
Total Volume	67	333	99	499	108	660	70	838	212	619	94	925	151	622	302	1075	3337
% App. Total	13.4	66.7	19.8		12.9	78.8	8.4		22.9	66.9	10.2		14	57.9	28.1		
PHF	.798	.876	.651	.904	.794	.724	.921	.788	.828	.740	.870	.771	.726	.789	.770	.774	.794

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City of Los Angeles
N/S: Sepulveda Boulevard
E/W: San Fernando Mission Boulevard
Weather: Clear

File Name : 11_LAC_Sepulvea_SF Mission AM
Site Code : 99918423
Start Date : 6/6/2018
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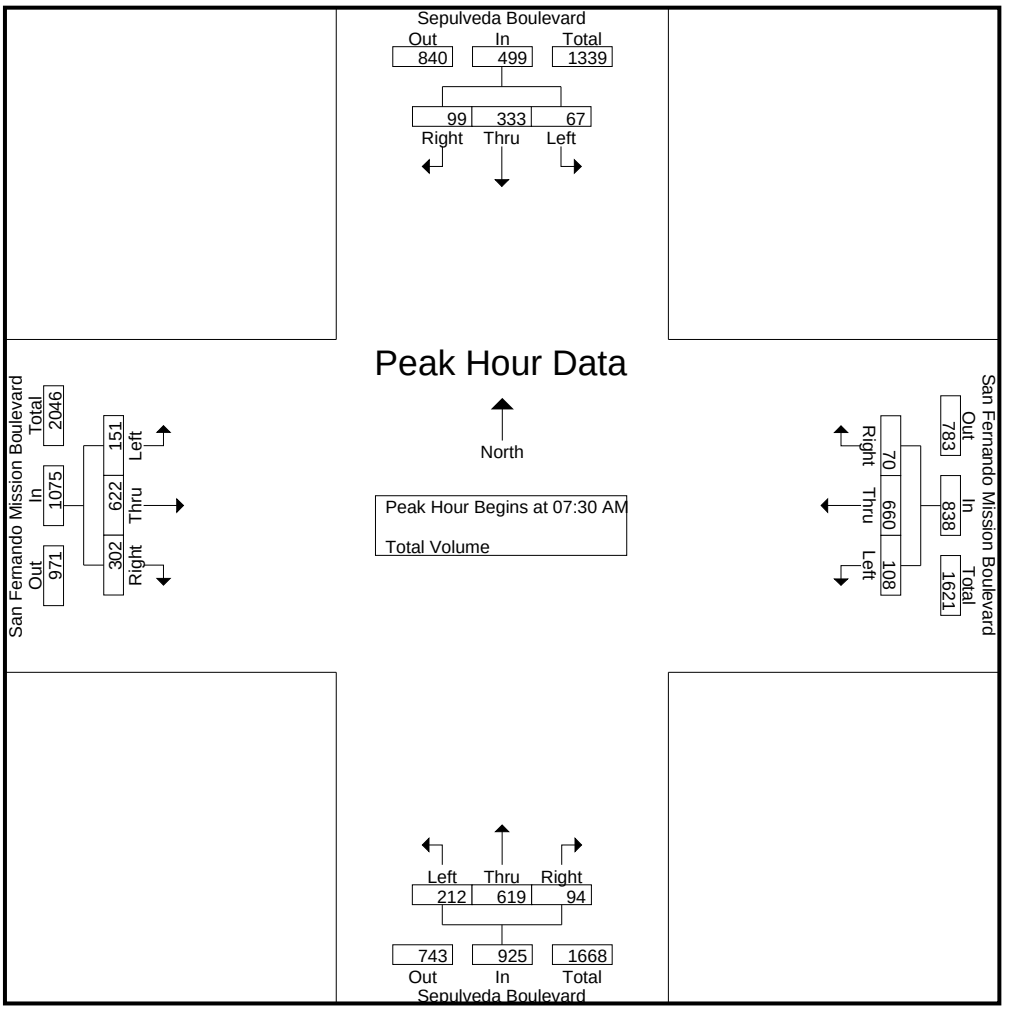

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:15 AM				07:15 AM				07:30 AM			
+0 mins.	16	84	**38**	**138**	19	141	14	174	**68**	114	15	197	34	142	63	239
+15 mins.	13	**95**	25	133	15	**228**	18	261	55	135	25	215	**52**	**197**	**98**	**347**
+30 mins.	**17**	87	19	123	**31**	216	**19**	**266**	64	**209**	**27**	**300**	34	145	84	263
+45 mins.	15	84	18	117	28	121	15	164	51	151	23	225	31	138	57	226
Total Volume	61	350	100	511	93	706	66	865	238	609	90	937	151	622	302	1075
% App. Total	11.9	68.5	19.6		10.8	81.6	7.6		25.4	65	9.6		14	57.9	28.1	
PHF	.897	.921	.658	.926	.750	.774	.868	.813	.875	.728	.833	.781	.726	.789	.770	.774

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City of Los Angeles
N/S: Sepulveda Boulevard
E/W: San Fernando Mission Boulevard
Weather: Clear

File Name : 11_LAC_Sepulvea_SF Mission PM
Site Code : 99918423
Start Date : 6/6/2018
Page No : 1

Groups Printed- Total Volume

	Sepulveda Boulevard Southbound				San Fernando Mission Boulevard Westbound				Sepulveda Boulevard Northbound				San Fernando Mission Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	26	97	22	145	16	65	22	103	39	140	20	199	28	103	76	207	654
04:15 PM	15	110	19	144	13	59	11	83	48	165	17	230	27	90	66	183	640
04:30 PM	22	112	24	158	15	81	14	110	52	156	20	228	35	93	73	201	697
04:45 PM	18	120	18	156	20	51	7	78	61	181	24	266	31	106	83	220	720
Total	81	439	83	603	64	256	54	374	200	642	81	923	121	392	298	811	2711
05:00 PM	37	120	34	191	21	85	14	120	51	157	12	220	43	128	96	267	798
05:15 PM	20	111	23	154	26	68	6	100	62	168	19	249	35	119	73	227	730
05:30 PM	22	104	15	141	33	78	7	118	35	146	12	193	40	143	98	281	733
05:45 PM	17	87	12	116	17	61	8	86	54	156	22	232	45	120	74	239	673
Total	96	422	84	602	97	292	35	424	202	627	65	894	163	510	341	1014	2934
Grand Total	177	861	167	1205	161	548	89	798	402	1269	146	1817	284	902	639	1825	5645
Apprch %	14.7	71.5	13.9		20.2	68.7	11.2		22.1	69.8	8		15.6	49.4	35		
Total %	3.1	15.3	3	21.3	2.9	9.7	1.6	14.1	7.1	22.5	2.6	32.2	5	16	11.3	32.3	

	Sepulveda Boulevard Southbound				San Fernando Mission Boulevard Westbound				Sepulveda Boulevard Northbound				San Fernando Mission Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	18	**120**	18	156	20	51	7	78	61	**181**	**24**	**266**	31	106	83	220	720
05:00 PM	**37**	120	**34**	**191**	21	**85**	**14**	**120**	51	157	12	220	**43**	128	96	267	**798**
05:15 PM	20	111	23	154	26	68	6	100	**62**	168	19	249	35	119	73	227	730
05:30 PM	22	104	15	141	**33**	78	7	118	35	146	12	193	40	**143**	**98**	**281**	733
Total Volume	97	455	90	642	100	282	34	416	209	652	67	928	149	496	350	995	2981
% App. Total	15.1	70.9	14		24	67.8	8.2		22.5	70.3	7.2		15	49.8	35.2		
PHF	.655	.948	.662	.840	.758	.829	.607	.867	.843	.901	.698	.872	.866	.867	.893	.885	.934

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City of Los Angeles
N/S: Sepulveda Boulevard
E/W: San Fernando Mission Boulevard
Weather: Clear

File Name : 11_LAC_Sepulvea_SF Mission PM
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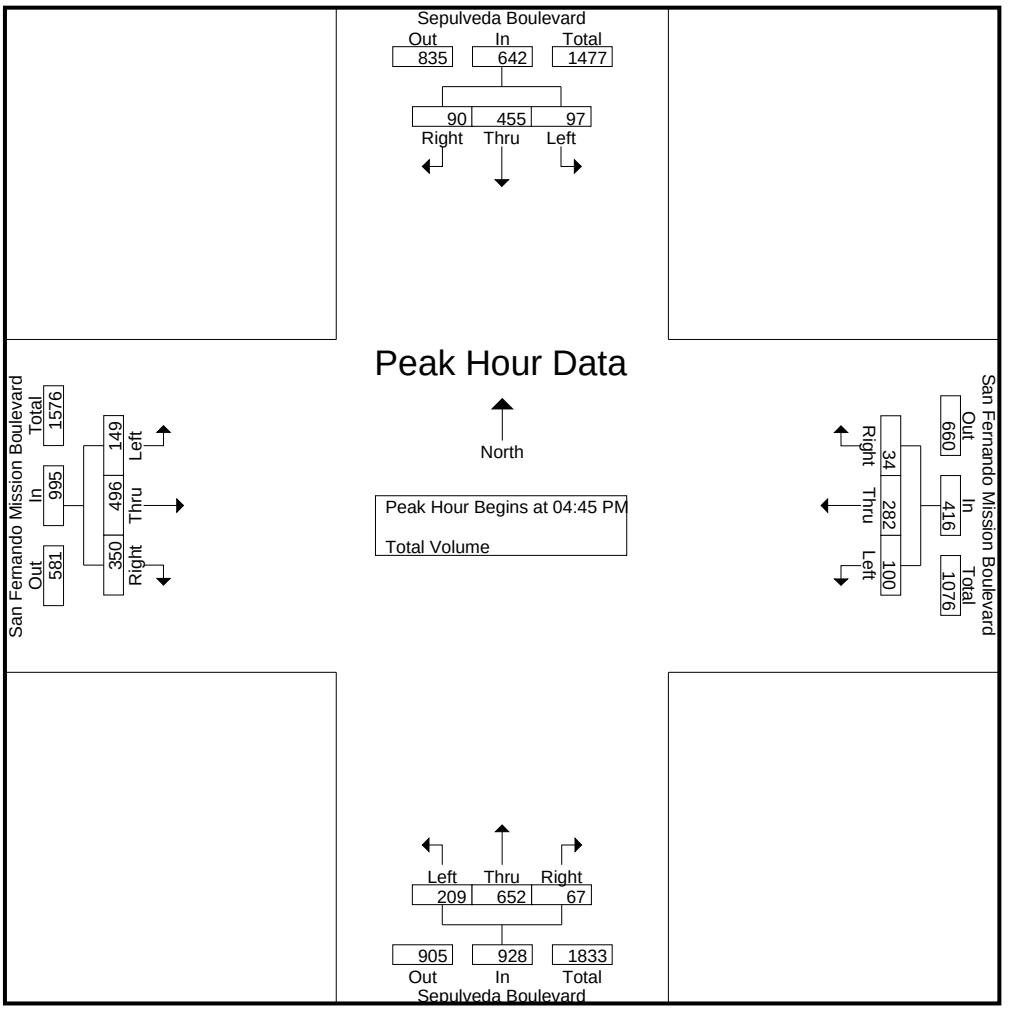
Start Date : 6/6/2018
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				05:00 PM				04:30 PM				05:00 PM			
+0 mins.	22	112	24	158	21	**85**	**14**	**120**	52	156	20	228	43	128	96	267
+15 mins.	18	**120**	18	156	26	68	6	100	61	**181**	**24**	**266**	35	119	73	227
+30 mins.	**37**	120	**34**	**191**	**33**	78	7	118	51	157	12	220	40	**143**	**98**	**281**
+45 mins.	20	111	23	154	17	61	8	86	**62**	168	19	249	**45**	120	74	239
Total Volume	97	463	99	659	97	292	35	424	226	662	75	963	163	510	341	1014
% App. Total	14.7	70.3	15		22.9	68.9	8.3		23.5	68.7	7.8		16.1	50.3	33.6	
PHF	.655	.965	.728	.863	.735	.859	.625	.883	.911	.914	.781	.905	.906	.892	.870	.902

Appendix B: Detailed Volume Development Worksheets

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Table B-1 - Existing Peak Hour Volumes

		AM Total Veh.	PM Total Veh.
1 .	Branford Street/Canterbury		
NBL		16	17
NBT		69	68
NBR		78	62
SBL		110	66
SBT		57	70
SBR		50	33
EBL		37	41
EBT		808	741
EBR		18	17
WBL		33	48
WBT		873	743
WBR		59	107
North Leg			
	Approach	217	169
	Departure	165	216
	Total	382	385
South Leg			
	Approach	163	147
	Departure	108	135
	Total	271	282
East Leg			
	Approach	965	898
	Departure	996	869
	Total	1,961	1,767
West Leg			
	Approach	863	799
	Departure	939	793
	Total	1,802	1,592
Total Approaches			
	Approach	2,208	2,013
	Departure	2,208	2,013
	Total	4,416	4,026

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Table B-1 - Existing Peak Hour Volumes

		AM Total Veh.	PM Total Veh.
2 .	Branford Street/Arleta Avenue		
NBL		107	183
NBT		496	1,000
NBR		105	129
SBL		187	73
SBT		753	373
SBR		98	92
EBL		107	113
EBT		766	576
EBR		233	110
WBL		117	83
WBT		771	751
WBR		89	273
North Leg			
	Approach	1,038	538
	Departure	692	1,386
	Total	1,730	1,924
South Leg			
	Approach	708	1,312
	Departure	1,103	566
	Total	1,811	1,878
East Leg			
	Approach	977	1,107
	Departure	1,058	778
	Total	2,035	1,885
West Leg			
	Approach	1,106	799
	Departure	976	1,026
	Total	2,082	1,825
Total Approaches			
	Approach	3,829	3,756
	Departure	3,829	3,756
	Total	7,658	7,512

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Table B-1 - Existing Peak Hour Volumes

		AM Total Veh.	PM Total Veh.
3 .	Osborne Street/Arleta Avenue		
NBL		104	247
NBT		469	979
NBR		220	226
SBL		126	65
SBT		816	393
SBR		73	57
EBL		64	75
EBT		1,245	1,062
EBR		193	149
WBL		117	106
WBT		1,047	1,104
WBR		102	132
North Leg			
	Approach	1,015	515
	Departure	635	1,186
	Total	1,650	1,701
South Leg			
	Approach	793	1,452
	Departure	1,126	648
	Total	1,919	2,100
East Leg			
	Approach	1,266	1,342
	Departure	1,591	1,353
	Total	2,857	2,695
West Leg			
	Approach	1,502	1,286
	Departure	1,224	1,408
	Total	2,726	2,694
Total Approaches			
	Approach	4,576	4,595
	Departure	4,576	4,595
	Total	9,152	9,190

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Table B-1 - Existing Peak Hour Volumes

		AM Total Veh.	PM Total Veh.
4 .	Arleta Avenue/Terra Bella Avenue		
NBL		135	255
NBT		509	784
NBR		69	120
SBL		117	121
SBT		655	344
SBR		56	38
EBL		83	68
EBT		969	1,031
EBR		207	114
WBL		100	49
WBT		725	569
WBR		103	77
North Leg			
	Approach	828	503
	Departure	695	929
	Total	1,523	1,432
South Leg			
	Approach	713	1,159
	Departure	962	507
	Total	1,675	1,666
East Leg			
	Approach	928	695
	Departure	1,155	1,272
	Total	2,083	1,967
West Leg			
	Approach	1,259	1,213
	Departure	916	862
	Total	2,175	2,075
Total Approaches			
	Approach	3,728	3,570
	Departure	3,728	3,570
	Total	7,456	7,140

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Table B-1 - Existing Peak Hour Volumes

		AM Total Veh.	PM Total Veh.
5 .	Arleta Avenue/Van Nuys Boulevard		
NBL		172	125
NBT		480	617
NBR		51	78
SBL		365	131
SBT		630	365
SBR		164	117
EBL		147	176
EBT		916	957
EBR		87	63
WBL		56	34
WBT		922	808
WBR		108	131
North Leg			
	Approach	1,159	613
	Departure	735	924
	Total	1,894	1,537
South Leg			
	Approach	703	820
	Departure	773	462
	Total	1,476	1,282
East Leg			
	Approach	1,086	973
	Departure	1,332	1,166
	Total	2,418	2,139
West Leg			
	Approach	1,150	1,196
	Departure	1,258	1,050
	Total	2,408	2,246
Total Approaches			
	Approach	4,098	3,602
	Departure	4,098	3,602
	Total	8,196	7,204

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Table B-1 - Existing Peak Hour Volumes

		AM Total Veh.	PM Total Veh.
6 .	Arleta Avenue/Devonshire Street		
NBL		0	0
NBT		0	0
NBR		0	0
SBL		332	196
SBT		0	0
SBR		391	351
EBL		276	512
EBT		812	536
EBR		0	0
WBL		0	0
WBT		615	576
WBR		259	382
North Leg			
	Approach	723	547
	Departure	535	894
	Total	1,258	1,441
South Leg			
	Approach	0	0
	Departure	0	0
	Total	0	0
East Leg			
	Approach	874	958
	Departure	1,144	732
	Total	2,018	1,690
West Leg			
	Approach	1,088	1,048
	Departure	1,006	927
	Total	2,094	1,975
Total Approaches			
	Approach	2,685	2,553
	Departure	2,685	2,553
	Total	5,370	5,106

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Table B-1 - Existing Peak Hour Volumes

		AM Total Veh.	PM Total Veh.
7 .	Arleta Avenue/Paxton Street		
NBL		0	0
NBT		98	203
NBR		433	655
SBL		199	173
SBT		159	105
SBR		0	0
EBL		0	0
EBT		0	0
EBR		0	0
WBL		589	454
WBT		0	1
WBR		124	156
North Leg			
	Approach	358	278
	Departure	222	359
	Total	580	637
South Leg			
	Approach	531	858
	Departure	748	559
	Total	1,279	1,417
East Leg			
	Approach	713	611
	Departure	632	828
	Total	1,345	1,439
West Leg			
	Approach	0	0
	Departure	0	1
	Total	0	1
Total Approaches			
	Approach	1,602	1,747
	Departure	1,602	1,747
	Total	3,204	3,494

Table B-1 - Existing Peak Hour Volumes

		AM Total Veh.	PM Total Veh.
8 .	Arleta Avenue/Chatsworth Street		
NBL		97	78
NBT		96	159
NBR		0	0
SBL		1	0
SBT		102	69
SBR		6	17
EBL		13	12
EBT		0	0
EBR		10	3
WBL		0	0
WBT		0	0
WBR		0	0
North Leg			
	Approach	109	86
	Departure	109	171
	Total	218	257
South Leg			
	Approach	193	237
	Departure	112	72
	Total	305	309
East Leg			
	Approach	0	0
	Departure	1	0
	Total	1	0
West Leg			
	Approach	23	15
	Departure	103	95
	Total	126	110
Total Approaches			
	Approach	325	338
	Departure	325	338
	Total	650	676

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Table B-1 - Existing Peak Hour Volumes

		AM Total Veh.	PM Total Veh.
9 .	Arleta Avenue/Chatsworth Drive		
NBL		20	7
NBT		73	87
NBR		99	116
SBL		36	33
SBT		48	41
SBR		17	19
EBL		18	18
EBT		501	729
EBR		9	30
WBL		87	57
WBT		381	272
WBR		25	21
North Leg			
	Approach	101	93
	Departure	116	126
	Total	217	219
South Leg			
	Approach	192	210
	Departure	144	128
	Total	336	338
East Leg			
	Approach	493	350
	Departure	636	878
	Total	1,129	1,228
West Leg			
	Approach	528	777
	Departure	418	298
	Total	946	1,075
Total Approaches			
	Approach	1,314	1,430
	Departure	1,314	1,430
	Total	2,628	2,860

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Table B-1 - Existing Peak Hour Volumes

			AM Total Veh.	PM Total Veh.
10 .	Arleta Avenue/Brand Boulevard			
	NBL		67	23
	NBT		0	0
	NBR		53	94
	SBL		0	0
	SBT		0	0
	SBR		0	0
	EBL		0	2
	EBT		420	727
	EBR		63	54
	WBL		29	35
	WBT		606	304
	WBR		0	0
	North Leg			
		Approach	0	0
		Departure	0	2
		Total	0	2
	South Leg			
		Approach	120	117
		Departure	92	89
		Total	212	206
	East Leg			
		Approach	635	339
		Departure	473	821
		Total	1,108	1,160
	West Leg			
		Approach	483	783
		Departure	673	327
		Total	1,156	1,110
	Total Approaches			
		Approach	1,238	1,239
		Departure	1,238	1,239
		Total	2,476	2,478

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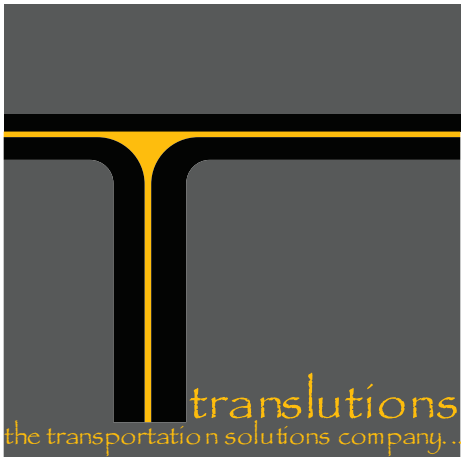
Table B-1 - Existing Peak Hour Volumes

		AM Total Veh.	PM Total Veh.
11 .	Sepulveda Boulevard/Mission Boulevard		
NBL		212	209
NBT		619	652
NBR		94	67
SBL		67	97
SBT		333	455
SBR		99	90
EBL		151	149
EBT		622	496
EBR		302	350
WBL		108	100
WBT		660	282
WBR		70	34
North Leg			
	Approach	499	642
	Departure	840	835
	Total	1,339	1,477
South Leg			
	Approach	925	928
	Departure	743	905
	Total	1,668	1,833
East Leg			
	Approach	838	416
	Departure	783	660
	Total	1,621	1,076
West Leg			
	Approach	1,075	995
	Departure	971	581
	Total	2,046	1,576
Total Approaches			
	Approach	3,337	2,981
	Departure	3,337	2,981
	Total	6,674	5,962

Appendix C: Level of Service Worksheets & Residual Capacity Calculations



Appendix C-1 - LOS & Residual Capacity of Area Roadways (Existing Conditions)

No.	Construction Area Segment	Geometrics		AM Peak Hour				PM Peak Hour			
		Lanes	Capacity	Vol.	V/C	LOS	Cap.	Vol.	V/C	LOS	Cap.
1	Canterbury Avenue between Tonopah Street & Branford Street	2	1200	271	0.226	A	929	282	0.235	A	918
2	Branford Street between Canterbury Avenue & Arleta Avenue	4	3200	2,082	0.651	B	1,118	1,825	0.570	A	1,375
3	Wentworth West of Arleta Avenue	2	1200	357	0.298	A	723	323	0.269	A	757
4	Osborne Street west of Arleta Avenue	4	3200	2,726	0.852	D	474	2,694	0.842	D	506
5	Arleta Avenue South of Branford Street	4	3200	1,751	0.547	A	1,129	1,850	0.578	A	1,030
6	Canterbury Avenue between Branford Street & Osborne Street	4	3200	382	0.119	A	2,818	385	0.120	A	2,815
7	Branford Street east of Arleta Avenue	4	3200	2,035	0.636	B	1,165	1,885	0.589	A	1,315
8	Arleta Avenue between Branford Street & Osborne Street	4	3200	1,919	0.600	A	1,281	2,100	0.656	B	1,100
9	Beachy Avenue South of Osborne Street	2	1200	352	0.293	A	728	463	0.386	A	617
10	Beachy Avenue South of Terra Bella Street	2	1200	328	0.273	A	752	295	0.246	A	785
11	Laurel Canyon Boulevard South of Terra Bella Street	4	3200	2,023	0.632	B	857	1,946	0.608	B	934
12	Beachy Avenue South of Van Nuys Boulevard	2	1200	431	0.359	A	649	383	0.319	A	697
13	Laurel Canyon Boulevard South of Van Nuys Boulevard	4	3200	2,078	0.649	B	802	2,041	0.638	B	839
14	Bartee Avenue South of Van Nuys Boulevard	2	1200	207	0.173	A	873	139	0.116	A	941
15	Woodman Avenue Ave South of Devonshire Street	4	3200	1,913	0.598	A	967	1,894	0.592	A	986
16	Laurel Canyon Boulevard South of Paxton Street	4	3200	2,525	0.789	C	355	2,196	0.686	B	684
17	Devonshire Street East of Woodman Avenue	4	3200	2,012	0.629	B	868	1,938	0.606	B	942
18	Woodman Avenue South of Chatsworth Street	4	3200	979	0.306	A	1,901	906	0.283	A	1,974
19	Laurel Canyon Boulevard North of Paxton Street	4	3200	2,904	0.908	E	32	2,302	0.719	C	578
20	Sharp Avenue South of Paxton Street	2	1200	128	0.107	A	952	147	0.123	A	933
21	Fillmore Street East of Arleta Avenue	2	1200	111	0.093	A	969	136	0.113	A	944
22	Fox Street West of Arleta Avenue	2	1200	671	0.559	A	409	710	0.592	A	370
23	Laurel Canyon Boulevard South of Chatsworth Drive	4	3200	1,812	0.566	A	1,068	2,163	0.676	B	717
24	Sharp Avenue South of Chatsworth Drive	2	1200	165	0.138	A	915	169	0.141	A	911
25	San Jose East of Arleta Avenue	2	1200	169	0.141	A	911	189	0.158	A	891

Appendix C-1 - LOS & Residual Capacity of Area Roadways (Existing Conditions)

No.	Construction Area Segment	Geometrics		AM Peak Hour				PM Peak Hour			
		Lanes	Capacity	Vol.	V/C	LOS	Cap.	Vol.	V/C	LOS	Cap.
26	Arleta Avenue between Chatsworth Dr & Brand Boulevard	2	1200	217	0.181	A	983	219	0.183	A	981
27	Laurel Canyon Boulevard South of Brand Boulevard	4	3200	1,757	0.549	A	1,123	2,238	0.699	B	642
28	Chatsworth Street West of Arleta Avenue	4	3200	248	0.078	A	2,632	263	0.082	A	2,617
29	Fox Street North of Arleta Avenue	2	1200	589	0.491	A	491	638	0.532	A	442
30	Sepulveda Boulevard North of 118	6	4800	2,154	0.449	A	2,166	2,832	0.590	A	1,488
31	Laurel Canyon Boulevard South of Mission Boulevard	4	3200	1,605	0.502	A	1,275	1,964	0.614	B	916
32	Columbus Avenue South of Mission Boulevard	2	1200	147	0.123	A	933	203	0.169	A	877
33	Mission Boulevard between Noble Avenue & Stranwood Avenue	2	1200	1,621	1.351	F	-421	1,076	0.897	D	124
34	Rinaldi Street near Sepulveda Boulevard	4	3200	2,233	0.698	B	647	2,887	0.902	E	32
35	Brand Boulevard near Columbus Avenue	4	3200	1,083	0.338	A	1,797	1,245	0.389	A	1,635
36	Osborne Street east of Arleta Avenue	4	3200	2,857	0.893	D	343	2,695	0.842	D	505
37	Terra Bella Street east of Arleta Avenue	4	3200	2,083	0.651	B	1,117	1,967	0.615	B	1,233
38	Terra Bella Street west of Arleta Avenue	4	3200	2,175	0.680	B	1,025	2,075	0.648	B	1,125
39	Van Nuys Boulevard east of Arleta Avenue	4	3200	2,418	0.756	C	782	2,139	0.668	B	1,061
40	Van Nuys Boulevard west of Arleta Avenue	4	3200	2,408	0.753	C	792	2,246	0.702	C	954
41	Paxton Street east of Arleta Avenue	4	3200	1,345	0.420	A	1,855	1,439	0.450	A	1,761
42	Chatsworth Drive east of Arleta Avenue	4	3200	1,129	0.353	A	2,071	1,228	0.384	A	1,972
43	Chatsworth Drive west of Arleta Avenue	4	3200	946	0.296	A	2,254	1,075	0.336	A	2,125
44	Brand Boulevard east of Arleta Avenue	4	3200	1,108	0.346	A	2,092	1,160	0.363	A	2,040
45	Brand Boulevard west of Arleta Avenue	4	3200	1,156	0.361	A	2,044	1,110	0.347	A	2,090

Appendix C-2 - LOS & Residual Capacity of Area Roadways (2028 Conditions)

No.	Construction Area Segment	Geometrics		AM Peak Hour				PM Peak Hour			
		Lanes	Capacity	Vol.	V/C	LOS	Cap.	Vol.	V/C	LOS	Cap.
1	Canterbury Avenue between Tonopah Street & Branford Street	2	1200	278	0.232	A	922	289	0.241	A	911
2	Branford Street between Canterbury Avenue & Arleta Avenue	4	3200	2,133	0.667	B	1,067	1,870	0.584	A	1,330
3	Wentworth West of Arleta Avenue	2	1200	366	0.305	A	714	331	0.276	A	749
4	Osborne Street west of Arleta Avenue	4	3200	2,793	0.873	D	407	2,760	0.863	D	440
5	Arleta Avenue South of Branford Street	4	3200	1,794	0.561	A	1,086	1,895	0.592	A	985
6	Canterbury Avenue between Branford Street & Osborne Street	4	3200	391	0.122	A	2,809	394	0.123	A	2,806
7	Branford Street east of Arleta Avenue	4	3200	2,085	0.652	B	1,115	1,931	0.603	B	1,269
8	Arleta Avenue between Branford Street & Osborne Street	4	3200	1,966	0.614	B	1,234	2,151	0.672	B	1,049
9	Beachy Avenue South of Osborne Street	2	1200	361	0.301	A	719	474	0.395	A	606
10	Beachy Avenue South of Terra Bella Street	2	1200	336	0.280	A	744	302	0.252	A	778
11	Laurel Canyon Boulevard South of Terra Bella Street	4	3200	2,072	0.648	B	808	1,994	0.623	B	886
12	Beachy Avenue South of Van Nuys Boulevard	2	1200	442	0.368	A	638	392	0.327	A	688
13	Laurel Canyon Boulevard South of Van Nuys Boulevard	4	3200	2,129	0.665	B	751	2,091	0.653	B	789
14	Bartee Avenue South of Van Nuys Boulevard	2	1200	212	0.177	A	868	142	0.118	A	938
15	Woodman Avenue Ave South of Devonshire Street	4	3200	1,960	0.613	B	920	1,940	0.606	B	940
16	Laurel Canyon Boulevard South of Paxton Street	4	3200	2,587	0.808	D	293	2,250	0.703	C	630
17	Devonshire Street East of Woodman Avenue	4	3200	2,061	0.644	B	819	1,985	0.620	B	895
18	Woodman Avenue South of Chatsworth Street	4	3200	1,003	0.313	A	1,877	928	0.290	A	1,952
19	Laurel Canyon Boulevard North of Paxton Street	4	3200	2,975	0.930	E	32	2,358	0.737	C	522
20	Sharp Avenue South of Paxton Street	2	1200	131	0.109	A	949	151	0.126	A	929
21	Fillmore Street East of Arleta Avenue	2	1200	114	0.095	A	966	139	0.116	A	941
22	Fox Street West of Arleta Avenue	2	1200	687	0.573	A	393	727	0.606	B	353
23	Laurel Canyon Boulevard South of Chatsworth Drive	4	3200	1,856	0.580	A	1,024	2,216	0.693	B	664
24	Sharp Avenue South of Chatsworth Drive	2	1200	169	0.141	A	911	173	0.144	A	907
25	San Jose East of Arleta Avenue	2	1200	173	0.144	A	907	194	0.162	A	886

Appendix C-2 - LOS & Residual Capacity of Area Roadways (2028 Conditions)

No.	Construction Area Segment	Geometrics		AM Peak Hour				PM Peak Hour			
		Lanes	Capacity	Vol.	V/C	LOS	Cap.	Vol.	V/C	LOS	Cap.
26	Arleta Avenue between Chatsworth Dr & Brand Boulevard	2	1200	222	0.185	A	978	224	0.187	A	976
27	Laurel Canyon Boulevard South of Brand Boulevard	4	3200	1,800	0.563	A	1,080	2,293	0.717	C	587
28	Chatsworth Street West of Arleta Avenue	4	3200	254	0.079	A	2,626	269	0.084	A	2,611
29	Fox Street North of Arleta Avenue	2	1200	603	0.503	A	477	654	0.545	A	426
30	Sepulveda Boulevard North of 118	6	4800	2,207	0.460	A	2,113	2,901	0.604	B	1,419
31	Laurel Canyon Boulevard South of Mission Boulevard	4	3200	1,644	0.514	A	1,236	2,012	0.629	B	868
32	Columbus Avenue South of Mission Boulevard	2	1200	151	0.126	A	929	208	0.173	A	872
33	Mission Boulevard between Noble Avenue & Stranwood Avenue	2	1200	1,661	1.384	F	-461	1,102	0.918	E	98
34	Rinaldi Street near Sepulveda Boulevard	4	3200	2,288	0.715	C	592	2,957	0.924	E	32
35	Brand Boulevard near Columbus Avenue	4	3200	1,109	0.347	A	1,771	1,275	0.398	A	1,605
36	Osborne Street east of Arleta Avenue	4	3200	2,927	0.915	E	273	2,761	0.863	D	439
37	Terra Bella Street east of Arleta Avenue	4	3200	2,134	0.667	B	1,066	2,015	0.630	B	1,185
38	Terra Bella Street west of Arleta Avenue	4	3200	2,228	0.696	B	972	2,126	0.664	B	1,074
39	Van Nuys Boulevard east of Arleta Avenue	4	3200	2,477	0.774	C	723	2,191	0.685	B	1,009
40	Van Nuys Boulevard west of Arleta Avenue	4	3200	2,467	0.771	C	733	2,301	0.719	C	899
41	Paxton Street east of Arleta Avenue	4	3200	1,378	0.431	A	1,822	1,474	0.461	A	1,726
42	Chatsworth Drive east of Arleta Avenue	4	3200	1,157	0.362	A	2,043	1,258	0.393	A	1,942
43	Chatsworth Drive west of Arleta Avenue	4	3200	969	0.303	A	2,231	1,101	0.344	A	2,099
44	Brand Boulevard east of Arleta Avenue	4	3200	1,135	0.355	A	2,065	1,188	0.371	A	2,012
45	Brand Boulevard west of Arleta Avenue	4	3200	1,184	0.370	A	2,016	1,137	0.355	A	2,063