Mountain View Crittenden Lane Trailhead Improvements Project

Initial Study

Appendices A-E

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Appendix A

Crittenden Lane Trailhead Improvements
Construction Air Quality Assessment

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CRITTENDEN LANE TRAILHEAD IMPROVEMENTS CONSTRUCTION AIR QUALITY ASSESSMENT

MOUNTAIN VIEW, CALIFORNIA

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Introduction

This report presents the results of the construction air quality assessment completed for the Crittenden Lane Trailhead Improvements Project in Mountain View, California. The construction air quality impacts from this project would be associated with the demolition of the existing trailhead and the construction of the new trailhead. Air pollutant emissions associated with the construction of the project were predicted using models. The report presents the evaluation of air quality impacts resulting from project construction activities. This analysis addresses those issues following the guidance provided by the Bay Area Air Quality Management District (BAAQMD).[1]

Project Description

The project proposes to improve 280 linear feet of trailhead that connects the eastern terminus of Crittenden Lane to the Stevens Creek Trail. The trailhead will comply with current ADA standards and will have a paved width of 12 feet with 2-foot-wide shoulders. Retaining walls and fill slopes will be used to support the trail on either side. Approximately 1,400 cubic yards (cy) of imported soil is required to construct the improvements.

Staging for construction equipment and materials would occur in the adjacent Ghilotti Brothers construction yard to the southeast. Project construction would occur in three phases and is anticipated to take approximately seven weeks. All construction is anticipated to take place on weekdays between 7:30 a.m. and 4:00 p.m. Construction phase durations and construction equipment are summarized below:

Phase 1	**Phase 2**	**Phase 3**
5 days	***35 days***	***7 days***
Skip Loader	Front End Loader	Skip Loader
Small Compactor	Large Compactor	Rock Roller
Water Truck	Small Track Dozer	AC Roller
Dump Trucks	Water Truck	Self-Propelled Paver
Self-Propelled Paver	Dump Trucks	Dump Trucks
AC Roller	Cement Trucks	Truck-Mounted Hydroseeder
	Track-Mounted Excavator	
	Electric Generators	
	Small Hand Tools	

The site is surrounded primarily by commercial, industrial, and recreation land uses. The nearest commercial office building is located about 250 feet southwest of the project site. The nearest sensitive receptors, which are residences, are located about ½ mile to the south, well over 1,000 feet from the project site.

Setting

The project is located in the northern portion of Santa Clara County, which is in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and

[1] Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017.

federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$).

Air Pollutants of Concern

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NO_x). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic Air Contaminants

Toxic air contaminants (TAC) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter (DPM) near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the state's Proposition 65 or under the Federal Hazardous Air Pollutants programs.

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, and elementary schools. For cancer risk assessments, children are the most sensitive receptors, since they are more susceptible to cancer causing TACs. Residential locations are assumed to include infants and small children. The closest sensitive receptors are mobile home residences located about ½ mile to the south of the project site.

Regulatory Agencies

The BAAQMD is the regional agency tasked with managing air quality in the region. At the State level, the CARB (a part of the California Environmental Protection Agency [EPA]) oversees regional air district activities and regulates air quality at the State level. The BAAQMD has recently published California Environmental Quality Act (CEQA) Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects.

Regulatory Setting

Federal Regulations

The United States Environmental Protection Agency (EPA) sets nationwide emission standards for mobile sources, which include on-road (highway) motor vehicles such trucks, buses, and automobiles, and non-road (off-road) vehicles and equipment used in construction, agricultural, industrial, and mining activities (such as bulldozers and loaders). The EPA also sets nationwide fuel standards. California also has the ability to set motor vehicle emission standards and standards for fuel used in California, as long as they are the same or more stringent than the federal standards.

In the past decade the EPA has established a number of emission standards for on- and non-road heavy-duty diesel engines used in trucks and other equipment. This was done in part because diesel engines are a significant source of NO_X and particulate matter (PM_{10} and $PM_{2.5}$) and because the EPA has identified DPM as a probable carcinogen. Implementation of the heavy-duty diesel on-road vehicle standards and the non-road diesel engine standards are estimated to reduce particulate matter and NO_X emissions from diesel engines up to 95 percent in 2030 when the heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with these emission standards.[2]

In concert with the diesel engine emission standards, the EPA has also substantially reduced the amount of sulfur allowed in diesel fuels. The sulfur contained in diesel fuel is a significant contributor to the formation of particulate matter in diesel-fueled engine exhaust. The new standards reduced the amount of sulfur allowed by 97 percent for highway diesel fuel (from 500 parts per million by weight [ppmw] to 15 ppmw), and by 99 percent for off-highway diesel fuel (from about 3,000 ppmw to 15 ppmw). The low sulfur highway fuel (15 ppmw sulfur), also called ultra-low sulfur diesel (ULSD), is currently required for use by all vehicles in the U.S. All of the above federal diesel engine and diesel fuel requirements have been adopted by California, in some cases with modifications making the requirements more stringent or the implementation dates sooner.

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[2] USEPA, 2000. *Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*. EPA420-F-00-057. December.

State Regulations

To address the issue of diesel emissions in the state, CARB developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.[3] In addition to requiring more stringent emission standards for new on-road and off-road mobile sources and stationary diesel-fueled engines to reduce particulate matter emissions by 90 percent, a significant component of the plan involves application of emission control strategies to existing diesel vehicles and equipment. Many of the measures of the Diesel Risk Reduction Plan have been approved and adopted, including the federal on-road and non-road diesel engine emission standards for new engines, as well as adoption of regulations for low sulfur fuel in California.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. CARB regulations require on-road diesel trucks to be retrofitted with particulate matter controls or replaced to meet 2010 or later engine standards that have much lower DPM and $PM_{2.5}$ emissions. This regulation will substantially reduce these emissions between 2013 and 2023. While new trucks and buses will meet strict federal standards, this measure is intended to accelerate the rate at which the fleet either turns over so there are more cleaner vehicles on the road or is retrofitted to meet similar standards. With this regulation, older, more polluting trucks would be removed from the roads sooner.

CARB has also adopted and implemented regulations to reduce DPM and NO_X emissions from in-use (existing) and new off-road heavy-duty diesel vehicles (e.g., loaders, tractors, bulldozers, backhoes, off-highway trucks, etc.). The regulations apply to diesel-powered off-road vehicles with engines 25 horsepower (hp) or greater. The regulations are intended to reduce particulate matter and NO_X exhaust emissions by requiring owners to turn over their fleet (replace older equipment with newer equipment) or retrofit existing equipment in order to achieve specified fleet-averaged emission rates. Implementation of this regulation, in conjunction with stringent federal off-road equipment engine emission limits for new vehicles, will significantly reduce emissions of DPM and NO_X.

Bay Area Air Quality Management District (BAAQMD)

BAAQMD has jurisdiction over an approximately 5,600-square mile area, commonly referred to as the San Francisco Bay Area (Bay Area). The District's boundary encompasses the nine San Francisco Bay Area counties, including Alameda County, Contra Costa County, Marin County, San Francisco County, San Mateo County, Santa Clara County, Napa County, southwestern Solano County, and southern Sonoma County.

BAAQMD is the lead agency in developing plans to address attainment and maintenance of the National Ambient Air Quality Standards and California Ambient Air Quality Standards. The District also has permit authority over most types of stationary equipment utilized for the proposed project. The BAAQMD is responsible for permitting and inspection of stationary sources;

[3] California Air Resources Board, 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October.

enforcement of regulations, including setting fees, levying fines, and enforcement actions; and ensuring that public nuisances are minimized.

The BAAQMD California Environmental Quality Act (*CEQA) Air Quality Guidelines*[4] were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process consistent with CEQA requirements including thresholds of significance, mitigation measures, and background air quality information. They also include assessment methodologies for air toxics, odors, and greenhouse gas emissions.

City of Mountain View 2030 General Plan

The Mountain View 2030 General Plan includes goals, policies, and actions to reduce exposure of the City's sensitive population to exposure of air pollution, toxic air contaminants, and GHG emissions. The following goals, policies, and actions are applicable to the proposed project:

Climate Change

INC 12.1: Emissions reduction target. Maintain a greenhouse gas emissions reduction target.

INC 12.2: Emissions reduction strategies. Develop cost-effective strategies for reducing greenhouse gas emissions.

INC 12.3: Adaptation strategies. Develop strategies for adapting to climate change in partnership with local and regional agencies.

Air Quality

INC 20.1: Pollution prevention. Discourage mobile and stationary sources of air pollution.

INC 20.2: Collaboration. Participate in state and regional planning efforts to improve air quality.

INC 20.6: Air quality standards. Protect the public and construction workers from construction exhaust and particulate emissions.

INC 20.7: Protect sensitive receptors. Protect the public from substantial pollutant concentrations.

INC 20.8: Offensive odors. Protect residents from offensive odors.

[4] Bay Area Air Quality Management District, 2017. *CEQA Air Quality Guidelines*. May.

City of Mountain View GHG Reduction Program

The City of Mountain View has adopted qualified GHG reduction program (GGRP).[5] This program meets the requirements of a GHG Reduction Strategy under State CEQA Guidelines Section 15183.5. The program includes a goal to improve communitywide emissions efficiency (per-service population – residents and full-time employees) by 15 to 20 percent over 2005 levels by 2020 and by 30 percent over 2005 levels by 2030. It also established a City-wide efficiency target of 4.5 MT of CO_2e per service population/year for 2030.[6] However, this is a threshold that applies to the combination of both existing and new growth. A different threshold is appropriate for only new growth/development. The City's GGRP does not identify such a threshold.

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA and these significance thresholds were contained in the District's 2011 *CEQA Air Quality Guidelines*. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. The thresholds were challenged through a series of court challenges and were mostly upheld. BAAQMD updated the *CEQA Air Quality Guidelines* in 2017 to include the latest significance thresholds that were used in this analysis are summarized in Table 1.

[5] AECOM. 2012. City of Mountain View Greenhouse Gas Reduction Program. August.
[6] The draft update to the California Scoping Plan includes information on projected statewide population, employment and GHG emissions that could be used to update the City's adopted service population 2030 target communitywide; however, given the recent release of this information, a new efficiency metric (i.e., an efficiency metric that would not conflict with the 40 percent below 1990 by 2030 target in SB 32) has not yet been developed, reviewed or adopted by Mountain View decision-makers. It likely would be lower than the City's current target of 4.5 MT of CO_2e per service population/year for 2030.

Table 1. Air Quality Significance Thresholds

Criteria Air Pollutant	**Construction Thresholds**	**Operational Thresholds**	
	Average Daily Emissions (lbs./day)	**Average Daily Emissions (lbs./day)**	**Annual Average Emissions (tons/year)**
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards	**Single Sources Within 1,000-foot Zone of Influence**	**Combined Sources (Cumulative from all sources within 1,000-foot zone of influence)**	
Excess Cancer Risk	>10.0 per one million	>100 per one million	
Hazard Index	>1.0	>10.0	
Incremental annual $PM_{2.5}$	>0.3 µg/m^3	>0.8 µg/m^3	
Odor			
5 confirmed complaints per year averaged over 3 years			
Greenhouse Gas Emissions			
Land Use Projects – direct and indirect emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons annually or 4.6 metric tons per capita (for 2020) 660 metric tons annually or 2.8 metric tons per capita (for 2030)*		

Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. GHG = greenhouse gases.

*BAAQMD does not have a recommended post-2020 GHG threshold.

Impacts and Mitigation Measures

Impact: Conflict with or obstruct implementation of the applicable air quality plan? *No Impact.*

The project is located in the San Francisco Bay Area Air Basin. The project is in an area currently designated nonattainment for the state 1-hour and 8-hour ozone standards, nonattainment for the state 24-hour and annual PM_{10} standards, and nonattainment for the state annual $PM_{2.5}$ standard. It is also designated as nonattainment for the national 8-hour ozone standard and nonattainment for the national 24-hour $PM_{2.5}$ standard. To meet planning requirements related to these standards, the BAAQMD has developed a regional air quality plan, the *Bay Area 2017 Clean Air Plan*.[7] The

[7] Bay Area Air Quality Management District (BAAQMD), 2017. *Final 2017 Clean Air Plan.*

project, which is would have temporary emissions during construction, would not interfere with any applicable air quality plan. A significant impact would occur if a project conflicted with the Plan by not being consistent with the population-growth and vehicle miles traveled assumptions of the Plan. Construction of the project would not be considered growth-inducing as it would not in and of itself increase the region's population. Since the construction project would be short term and temporary and the long-term operational component to the project would not generate a substantial amount of new vehicle trips in the Air Basin, the project would not conflict with or obstruct implementation of the Plan, and this impact would be *less-than-significant*.

Impact: **Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable State or federal ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?** *Less-than-significant with Mitigation Measure AQ-1.*

The Bay Area is considered a non-attainment area for ground-level ozone and $PM_{2.5}$ under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for PM_{10} under the California Clean Air Act, but not the federal act. The area has attained both State and federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NO_X), PM_{10}, and $PM_{2.5}$ and apply to both construction period and operational period impacts.

The proposed project would involve construction and associated activities that would result in temporary, incremental increases in air pollutant emissions. These emissions would be generated primarily from construction equipment exhaust, earth disturbance, and construction worker and other construction-related vehicle trips to and from the site.

The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate emissions from construction and operation of the site assuming full build-out of the project. The project land use types and size, and anticipated construction schedule were input to CalEEMod. The model output from CalEEMod is included as *Attachment 2*.

Construction Period Emissions

CalEEMod provided annual emissions for construction and estimates emissions for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. A construction build-out scenario, including equipment list and schedule, was based on information provided by the project applicant. The proposed project land uses were input into CalEEMod, which included: 0.25 acres entered as "City Park". In addition, 1,400-cy of soil import during the grading phase and 10 vendor water and cement truck tips were entered into the model.

Construction was assumed to begin January 2020 and last 3 months. There were an estimated 47 construction workdays. Average daily emissions were computed by dividing the total construction emissions by the number of construction days. Table 2 shows average daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust during construction of the project. As indicated in Table 2, predicted the construction period emissions would not exceed the BAAQMD significance thresholds. Since project emissions of ozone precursor pollutants and particulate matter (i.e., PM_{10} and $PM_{2.5}$) were found to be less than BAAQMD significance thresholds, they would be considered *less-than-significant.*

Table 2. Construction Period Emissions

Scenario	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Total construction emissions (tons)	0.04 tons	0.40 tons	0.02 tons	0.02 tons
Average daily emissions (pounds)[1]	1.7 lbs./day	17.2 lbs./day	0.8 lbs./day	0.8 lbs./day
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	**No**	**No**	**No**	**No**

Notes: [1]Assumes 47 workdays.

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less-than-significant if best management practices are implemented to reduce these emissions. *Mitigation Measure AQ-1 would implement BAAQMD-recommended best management practices*.

***Mitigation Measure AQ-1:* Include measures to control dust and exhaust during construction.**

During any construction period ground disturbance, the applicant shall ensure that the project contractor implement measures to control dust and exhaust. Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less-than-significant level. Additional measures are identified to reduce construction equipment exhaust emissions. The contractor shall implement the following best management practices that are required of all projects:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Effectiveness of Mitigation Measure

The measures above are consistent with BAAQMD-recommended basic control measures for reducing fugitive particulate matter that are contained in the BAAQMD CEQA Air Quality Guidelines.

Operational Emissions

The new trailhead would not generate any area, energy, waste, or water emissions to contribute to the operational criteria air pollutant emissions. Once operational, the new trailhead would not generate enough new vehicle trips or require a substantial number of new maintenance vehicle trips that would emit significant levels of criteria pollutant emissions. In addition, the BAAQMD CEQA Air Quality Guidelines describe project types and sizes that have potential to cause direct and indirect emissions that, combined, would exceed significance thresholds. The project, which would be considered a 0.25-acre city park, is well below the 2,613-acre operational criteria pollutant screening size of a similar land uses that the guidelines list as having potential emissions. As a result, *less-than-significant* emissions are anticipated from the project.

Impact: Would the project expose sensitive receptors to substantial pollutant concentrations? *Less-than-significant.*

The BAAQMD CEQA Air Quality Guidelines consider exposure of sensitive receptors to air pollutant levels that result in an unacceptable cancer risk or hazard to be significant. For cancer risk, BAAQMD considers an increased risk of contracting cancer that is 10 in one million chances or greater to be significant for a single source. For cumulative exposure to TACs from existing sources affecting a sensitive receptor, in addition to a proposed new source, the BAAQMD considers an increased risk of contracting cancer that is 100 in one million chances or greater to be significant. The BAAQMD CEQA Guidelines also consider exposure to annual $PM_{2.5}$

concentrations that exceed 0.3 micrograms per cubic meter ($\mu g/m^3$) from a single source to be significant and an annual $PM_{2.5}$ concentration that exceeds 0.8 $\mu g/m^3$ from cumulative sources to be significant. The BAAQMD CEQA Guidelines recommend analyzing sources that are within 1,000 feet of sensitive receptors.

The nearest sensitive receptors, which are residences, are located about ½ mile to the south, well over 1,000 feet from the project site. Due to the relatively short length of the construction period and the distance from the construction activities, construction community risk impacts are expected to be *less-than-significant*.

Impact: Would the project create objectionable odors affecting a substantial number of people? *Less-than-significant.*

The BAAQMD Air Quality Guidelines have not established a threshold of significance for construction-related activities in terms of odors. There may be odors from construction associated with diesel exhaust that could be noticeable at times to residences in close proximity, but these are not anticipated to result in odor complaints.

Impact 6: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? *Less than Significant.*

The BAAQMD CEQA Air Quality Guidelines contain methodology and thresholds of significance for evaluating greenhouse gas (GHG) emissions from land use type projects. The BAAQMD thresholds were developed specifically for the Bay Area after considering the latest Bay Area GHG inventory and the effects of AB 32 scoping plan measures that would reduce regional emissions. BAAQMD intends to achieve GHG reductions from new land use developments to close the gap between projected regional emissions with AB 32 scoping plan measures and the AB 32 targets. The BAAQMD applies GHG efficiency thresholds to projects with emissions of 1,100 metric tons (MT) of CO_2e (carbon dioxide equivalency) or greater. Projects that have emissions below 1,100 MT of CO_2e per year are considered to have less than significant GHG emissions. These thresholds are typically applied to long-term operational emissions, which the project would not have.

Total GHG emissions from the project were modeled at 51 MT of CO_2e during construction and 2 MT of CO_2e per year during operation, which would be well below the most stringent threshold of 1,100 MT per year that is used by the City to judge the significance of greenhouse gas emissions from projects. The project would, therefore, not generate greenhouse gas emissions that would have a significant impact on the environment, nor conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Supporting Documentation

Attachment 1 is the methodology used to compute community risk impacts, including the methods to compute lifetime cancer risk from exposure to project emissions.

Attachment 2 includes the CalEEMod output for project construction and operational criteria air pollutant and GHG emissions. Also included are any modeling assumptions.

Attachment 1: Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[8] These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.[9] This HRA used the 2015 OEHHA risk assessment guidelines and CARB guidance. The BAAQMD has adopted recommended procedures for applying the newest OEHHA guidelines as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.[10] Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

Potential increased cancer risk from inhalation of TACs are calculated based on the TAC concentration over the period of exposure, inhalation dose, the TAC cancer potency factor, and an age sensitivity factor to reflect the greater sensitivity of infants and children to cancer causing TACs. The inhalation dose depends on a person's breathing rate, exposure time and frequency and duration of exposure. These parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor location.

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) associated with the different types of exposure are an ASF of 10 for the third trimester and infant exposures, an ASF of 3 for a child exposure, and an ASF of 1 for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day). As recommended by the BAAQMD for residential exposures, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. For children at schools and daycare facilities, BAAQMD recommends using the 95th percentile breathing rates. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of

[8] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.
[9] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[10] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

30 years for sources with long-term emissions (e.g., roadways). For workers, assumed to be adults, a 25-year exposure period is recommended by the BAAQMD.

Under previous OEHHA and BAAQMD HRA guidance, residential receptors are assumed to be at their home 24 hours a day, or 100 percent of the time. In the 2015 Risk Assessment Guidance, OEHHA includes adjustments to exposure duration to account for the fraction of time at home (FAH), which can be less than 100 percent of the time, based on updated population and activity statistics. The FAH factors are age-specific and are: 0.85 for third trimester of pregnancy to less than 2 years old, 0.72 for ages 2 to less than 16 years, and 0.73 for ages 16 to 70 years. Use of the FAH factors is allowed by the BAAQMD if there are no schools in the project vicinity that would have a cancer risk of one in a million or greater assuming 100 percent exposure (FAH = 1.0).

Functionally, cancer risk is calculated using the following parameters and formulas:

Cancer Risk (per million) = $CPF \times Inhalation\ Dose \times ASF \times ED/AT \times FAH \times 10^6$

Where:

CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = $C_{air} \times DBR \times A \times (EF/365) \times 10^{-6}$

Where:

C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

The health risk parameters used in this evaluation are summarized as follows:

Parameter	*Exposure Type →*	Infant		Child		Adult
	Age Range →	3rd Trimester	0<2	2 < 9	2 < 16	16 - 30
DPM Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$		1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day) 80th Percentile Rate		273	758	631	572	261
Daily Breathing Rate (L/kg-day) 95th Percentile Rate		361	1,090	861	745	335
Inhalation Absorption Factor		1	1	1	1	1
Averaging Time (years)		70	70	70	70	70
Exposure Duration (years)		0.25	2	14	14	14
Exposure Frequency (days/year)		350	350	350	350	350
Age Sensitivity Factor		10	10	3	3	1
Fraction of Time at Home		0.85-1.0	0.85-1.0	0.72-1.0	0.72-1.0	0.73

Non-Cancer Hazards

Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals. The total HI is calculated as the sum of the HIs for each TAC evaluated and the total HI is compared to the BAAQMD significance thresholds to determine whether a significant non-cancer health impact from a project would occur.

Typically, for residential projects located near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is diesel particulate matter (DPM). For DPM, the chronic inhalation REL is 5 micrograms per cubic meter ($\mu g/m^3$).

Annual $PM_{2.5}$ Concentrations

While not a TAC, fine particulate matter ($PM_{2.5}$) has been identified by the BAAQMD as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under the California Environmental Quality Act (CEQA). The thresholds of significance for $PM_{2.5}$ (project level and cumulative) are in terms of an increase in the annual average concentration. When considering $PM_{2.5}$ impacts, the contribution from all sources of $PM_{2.5}$ emissions should be included. For projects with potential impacts from nearby local roadways, the $PM_{2.5}$ impacts should include those from vehicle exhaust emissions, $PM_{2.5}$ generated from vehicle tire and brake wear, and fugitive emissions from re-suspended dust on the roads.

Attachment 2: CalEEMod Modeling Output

Crittendan Lane Trailhead

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	0.25	Acre	0.25	10,890.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E 2020 rate = 290

Land Use - Assume 0.25 acre of actual disturbance

Construction Phase - Applicant provided constructoin schedule

Off-road Equipment -

Off-road Equipment - Applicant provided construction equipment and hours

Trips and VMT - water and cement truick trips added

Grading - assume 0.25 acre graded, 1,400ct import

Off-road Equipment - Applicant provided construction equipment and hours

Off-road Equipment - Applicant provided construction equipment and hours7

Water And Wastewater -

Construction Off-road Equipment Mitigation - Electric Generator

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	2.00	35.00
tblConstructionPhase	NumDays	5.00	7.00
tblConstructionPhase	PhaseEndDate	1/14/2020	1/7/2020
tblConstructionPhase	PhaseEndDate	1/16/2020	2/25/2020
tblConstructionPhase	PhaseEndDate	1/23/2020	3/5/2020
tblConstructionPhase	PhaseStartDate	1/15/2020	1/8/2020
tblConstructionPhase	PhaseStartDate	1/17/2020	2/26/2020
tblGrading	AcresOfGrading	0.00	0.25
tblGrading	MaterialImported	0.00	1,400.00
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	7.00	7.50
tblOffRoadEquipment	UsageHours	6.00	7.50
tblOffRoadEquipment	UsageHours	7.00	7.50
tblOffRoadEquipment	UsageHours	1.00	7.50
tblOffRoadEquipment	UsageHours	6.00	7.50
tblOffRoadEquipment	UsageHours	7.00	7.50
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00

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					
2020	0.0390	0.4042	0.2846	5.7000e-004	0.1034	0.0195	0.1228	0.0555	0.0182	0.0737	0.0000	50.9599	50.9599	0.0108	0.0000	51.2297
Maximum	**0.039**	**0.4042**	**0.2846**	**5.7000e-004**	**0.1034**	**0.0195**	**0.1228**	**0.0555**	**0.0182**	**0.0737**	**0.0000**	**50.9599**	**50.9599**	**0.0108**	**0.0000**	**51.2297**

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					
2020	0.0325	0.3472	0.2238	5.7000e-004	0.1034	0.0162	0.1196	0.0555	0.0150	0.0705	0.0000	41.6869	41.6869	0.0103	0.0000	41.9437
Maximum	**0.0325**	**0.3472**	**0.2238**	**5.7000e-004**	**0.1034**	**0.0162**	**0.1196**	**0.0555**	**0.0150**	**0.0705**	**0.0000**	**41.6869**	**41.6869**	**0.0103**	**0.0000**	**41.9437**

	ROG	NOx	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	**16.79**	**14.12**	**21.36**	**0.00**	**0.00**	**16.55**	**2.62**	**0.00**	**17.71**	**4.37**	**0.00**	**18.20**	**18.20**	**4.82**	**0.00**	**18.13**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2020**	**3-31-2020**	0.4407	0.3771
		Highest	0.4407	0.3771

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0000e-004	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	4.6000e-004	1.8900e-003	5.2500e-003	2.0000e-005	1.3900e-003	2.0000e-005	1.4000e-003	3.7000e-004	2.0000e-005	3.9000e-004	0.0000	1.4687	1.4687	5.0000e-005	0.0000	1.4701
Waste						0.0000	0.0000		0.0000	0.0000	4.0600e-003	0.0000	4.0600e-003	2.4000e-004	0.0000	0.0101
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.1371	0.1371	1.0000e-005	0.0000	0.1383

Total	5.6000e-004	1.8900e-003	5.2500e-003	2.0000e-005	1.3900e-003	2.0000e-005	1.4000e-003	3.7000e-004	2.0000e-005	3.9000e-004	4.0600e-003	1.6058	1.6099	3.0000e-004	0.0000	1.6184

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0000e-004	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	4.6000e-004	1.8900e-003	5.2500e-003	2.0000e-005	1.3900e-003	2.0000e-005	1.4000e-003	3.7000e-004	2.0000e-005	3.9000e-004	0.0000	1.4687	1.4687	5.0000e-005	0.0000	1.4701
Waste						0.0000	0.0000		0.0000	0.0000	4.0600e-003	0.0000	4.0600e-003	2.4000e-004	0.0000	0.0101
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.1371	0.1371	1.0000e-005	0.0000	0.1383
Total	**5.6000e-004**	**1.8900e-003**	**5.2500e-003**	**2.0000e-005**	**1.3900e-003**	**2.0000e-005**	**1.4000e-003**	**3.7000e-004**	**2.0000e-005**	**3.9000e-004**	**4.0600e-003**	**1.6058**	**1.6099**	**3.0000e-004**	**0.0000**	**1.6184**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2020	1/7/2020	5	5	
2	Grading	Grading	1/8/2020	2/25/2020	5	35	
3	Paving	Paving	2/26/2020	3/5/2020	5	7	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0.25

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
Demolition	Concrete/Industrial Saws	0	0.00	81	0.73
Paving	Cement and Mortar Mixers	0	0.00	9	0.56
Grading	Concrete/Industrial Saws	0	0.00	81	0.73
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Paving	Pavers	1	7.50	130	0.42
Demolition	Tractors/Loaders/Backhoes	1	7.50	97	0.37
Paving	Rollers	2	7.50	80	0.38
Grading	Rubber Tired Dozers	1	7.50	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.50	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.50	97	0.37
Demolition	Plate Compactors	1	7.50	8	0.43
Demolition	Pavers	1	7.50	130	0.42
Demolition	Rollers	1	7.50	80	0.38
Grading	Plate Compactors	1	7.50	8	0.43
Grading	Excavators	1	7.50	158	0.38
Grading	Generator Sets	1	7.50	84	0.74

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	5	13.00	4.00	175.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	4	10.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Alternative Fuel for Construction Equipment

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.6900e-003	0.0170	0.0171	3.0000e-005		9.7000e-004	9.7000e-004		8.9000e-004	8.9000e-004	0.0000	2.2210	2.2210	7.0000e-004	0.0000	2.2386
Total	**1.6900e-003**	**0.0170**	**0.0171**	**3.0000e-005**		**9.7000e-004**	**9.7000e-004**		**8.9000e-004**	**8.9000e-004**	**0.0000**	**2.2210**	**2.2210**	**7.0000e-004**	**0.0000**	**2.2386**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	5.7000e-004	1.5000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1307	0.1307	1.0000e-005	0.0000	0.1309
Worker	8.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1700	0.1700	0.0000	0.0000	0.1701
Total	**1.0000e-004**	**6.3000e-004**	**7.8000e-004**	**0.0000**	**2.3000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.3008**	**0.3008**	**1.0000e-005**	**0.0000**	**0.3010**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.6900e-003	0.0170	0.0171	3.0000e-005		9.7000e-004	9.7000e-004		8.9000e-004	8.9000e-004	0.0000	2.2210	2.2210	7.0000e-004	0.0000	2.2386
Total	**1.6900e-003**	**0.0170**	**0.0171**	**3.0000e-005**		**9.7000e-004**	**9.7000e-004**		**8.9000e-004**	**8.9000e-004**	**0.0000**	**2.2210**	**2.2210**	**7.0000e-004**	**0.0000**	**2.2386**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	5.7000e-004	1.5000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1307	0.1307	1.0000e-005	0.0000	0.1309
Worker	8.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1700	0.1700	0.0000	0.0000	0.1701
Total	**1.0000e-004**	**6.3000e-004**	**7.8000e-004**	**0.0000**	**2.3000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.3008**	**0.3008**	**1.0000e-005**	**0.0000**	**0.3010**

3.3 Grading - 2020

Unmitigated Construction On-Site

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

Category	tons/yr										MT/yr					
Fugitive Dust					0.0990	0.0000	0.0990	0.0543	0.0000	0.0543	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0324	0.3212	0.2231	3.9000e-004		0.0166	0.0166		0.0155	0.0155	0.0000	34.0199	34.0199	8.4100e-003	0.0000	34.2302
Total	**0.0324**	**0.3212**	**0.2231**	**3.9000e-004**	**0.0990**	**0.0166**	**0.1156**	**0.0543**	**0.0155**	**0.0699**	**0.0000**	**34.0199**	**34.0199**	**8.4100e-003**	**0.0000**	**34.2302**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.3000e-004	0.0254	5.2000e-003	7.0000e-005	1.4800e-003	8.0000e-005	1.5700e-003	4.1000e-004	8.0000e-005	4.9000e-004	0.0000	6.6737	6.6737	3.1000e-004	0.0000	6.6813
Vendor	2.8000e-004	7.9700e-003	2.1200e-003	2.0000e-005	4.6000e-004	4.0000e-005	5.0000e-004	1.3000e-004	4.0000e-005	1.7000e-004	0.0000	1.8301	1.8301	8.0000e-005	0.0000	1.8322
Worker	7.6000e-004	5.4000e-004	5.6900e-003	2.0000e-005	1.8000e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.5473	1.5473	4.0000e-005	0.0000	1.5483
Total	**1.7700e-003**	**0.0339**	**0.0130**	**1.1000e-004**	**3.7400e-003**	**1.3000e-004**	**3.8900e-003**	**1.0200e-003**	**1.3000e-004**	**1.1500e-003**	**0.0000**	**10.0511**	**10.0511**	**4.3000e-004**	**0.0000**	**10.0618**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0990	0.0000	0.0990	0.0543	0.0000	0.0543	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0258	0.2642	0.1623	3.9000e-004		0.0134	0.0134		0.0123	0.0123	0.0000	24.7469	24.7469	7.8900e-003	0.0000	24.9442

Total	**0.0258**	**0.2642**	**0.1623**	**3.9000e-004**	**0.0990**	**0.0134**	**0.1124**	**0.0543**	**0.0123**	**0.0666**	**0.0000**	**24.7469**	**24.7469**	**7.8900e-003**	**0.0000**	**24.9442**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.3000e-004	0.0254	5.2000e-003	7.0000e-005	1.4800e-003	8.0000e-005	1.5700e-003	4.1000e-004	8.0000e-005	4.9000e-004	0.0000	6.6737	6.6737	3.1000e-004	0.0000	6.6813
Vendor	2.8000e-004	7.9700e-003	2.1200e-003	2.0000e-005	4.6000e-004	4.0000e-005	5.0000e-004	1.3000e-004	4.0000e-005	1.7000e-004	0.0000	1.8301	1.8301	8.0000e-005	0.0000	1.8322
Worker	7.6000e-004	5.4000e-004	5.6900e-003	2.0000e-005	1.8000e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.5473	1.5473	4.0000e-005	0.0000	1.5483
Total	**1.7700e-003**	**0.0339**	**0.0130**	**1.1000e-004**	**3.7400e-003**	**1.3000e-004**	**3.8900e-003**	**1.0200e-003**	**1.3000e-004**	**1.1500e-003**	**0.0000**	**10.0511**	**10.0511**	**4.3000e-004**	**0.0000**	**10.0618**

3.4 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.9200e-003	0.0298	0.0294	4.0000e-005		1.7600e-003	1.7600e-003		1.6200e-003	1.6200e-003	0.0000	3.7631	3.7631	1.2200e-003	0.0000	3.7935
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.9200e-003**	**0.0298**	**0.0294**	**4.0000e-005**		**1.7600e-003**	**1.7600e-003**		**1.6200e-003**	**1.6200e-003**	**0.0000**	**3.7631**	**3.7631**	**1.2200e-003**	**0.0000**	**3.7935**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	1.5900e-003	4.2000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3660	0.3660	2.0000e-005	0.0000	0.3664
Worker	1.2000e-004	8.0000e-005	8.8000e-004	0.0000	2.8000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	8.0000e-005	0.0000	0.2381	0.2381	1.0000e-005	0.0000	0.2382
Total	**1.8000e-004**	**1.6700e-003**	**1.3000e-003**	**0.0000**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**	**1.0000e-004**	**1.0000e-005**	**1.1000e-004**	**0.0000**	**0.6041**	**0.6041**	**3.0000e-005**	**0.0000**	**0.6046**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.9200e-003	0.0298	0.0294	4.0000e-005		1.7600e-003	1.7600e-003		1.6200e-003	1.6200e-003	0.0000	3.7631	3.7631	1.2200e-003	0.0000	3.7935
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.9200e-003**	**0.0298**	**0.0294**	**4.0000e-005**		**1.7600e-003**	**1.7600e-003**		**1.6200e-003**	**1.6200e-003**	**0.0000**	**3.7631**	**3.7631**	**1.2200e-003**	**0.0000**	**3.7935**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	1.5900e-003	4.2000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3660	0.3660	2.0000e-005	0.0000	0.3664
Worker	1.2000e-004	8.0000e-005	8.8000e-004	0.0000	2.8000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	8.0000e-005	0.0000	0.2381	0.2381	1.0000e-005	0.0000	0.2382
Total	**1.8000e-004**	**1.6700e-003**	**1.3000e-003**	**0.0000**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**	**1.0000e-004**	**1.0000e-005**	**1.1000e-004**	**0.0000**	**0.6041**	**0.6041**	**3.0000e-005**	**0.0000**	**0.6046**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.6000e-004	1.8900e-003	5.2500e-003	2.0000e-005	1.3900e-003	2.0000e-005	1.4000e-003	3.7000e-004	2.0000e-005	3.9000e-004	0.0000	1.4687	1.4687	5.0000e-005	0.0000	1.4701
Unmitigated	4.6000e-004	1.8900e-003	5.2500e-003	2.0000e-005	1.3900e-003	2.0000e-005	1.4000e-003	3.7000e-004	2.0000e-005	3.9000e-004	0.0000	1.4687	1.4687	5.0000e-005	0.0000	1.4701

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.47	5.69	4.19	3,731	3,731
Total	0.47	5.69	4.19	3,731	3,731

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.604810	0.038204	0.185149	0.108513	0.015498	0.004981	0.012268	0.020156	0.002083	0.001571	0.005363	0.000620	0.000785

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0000e-004	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	1.0000e-004	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

Category	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.1371	1.0000e-005	0.0000	0.1383
Unmitigated	0.1371	1.0000e-005	0.0000	0.1383

7.2 Water by Land Use

Unmitigated

Land Use	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
	Mgal	MT/yr			
City Park	0 / 0.29787	0.1371	1.0000e-005	0.0000	0.1383
Total		**0.1371**	**1.0000e-005**	**0.0000**	**0.1383**

Mitigated

Land Use	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
	Mgal	MT/yr			
City Park	0 / 0.29787	0.1371	1.0000e-005	0.0000	0.1383
Total		**0.1371**	**1.0000e-005**	**0.0000**	**0.1383**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	4.0600e-003	2.4000e-004	0.0000	0.0101
Unmitigated	4.0600e-003	2.4000e-004	0.0000	0.0101

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.02	4.0600e-003	2.4000e-004	0.0000	0.0101
Total		**4.0600e-003**	**2.4000e-004**	**0.0000**	**0.0101**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.02	4.0600e-003	2.4000e-004	0.0000	0.0101
Total		**4.0600e-003**	**2.4000e-004**	**0.0000**	**0.0101**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B
Biological Resources Report and
Peer Review Memo

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April 23, 2019
Project No: 19-07194

Alex Casbara
Circlepoint
46 South First Street
San Jose, CA 95113
Via email: a.casbara@circlepoint.com

Subject: **Peer Review of an Existing Biological Technical Reports for the Crittenden Lane Trailhead Improvements Project, Mountain View, California**

Dear Mr. Casbara:

This technical memorandum presents the results of a technical document peer-review and impact analysis for the Crittenden Lane Trailhead Improvements Project, located in the City of Mountain View (City), California. A Biological Habitat Evaluation Report (BHER) was prepared (Pacific Biology 2016) for the Crittenden Lane Recycled Water Project. The recycled water project was proposed in roughly the same project footprint as the current Crittenden Lane Trailhead Improvements Project. Rincon understands that it is the intent of the City to use the existing biological report to inform the California Environmental Quality Act (CEQA) environmental review for the Crittenden Lane Trailhead Improvements Project.

The purpose of the review is to determine whether the biological resources analyses completed for the recycled water line project site are adequate and to supplement the analysis for the currently proposed trail improvements project for the purposes of preparing an Initial Study-Mitigated Negative Declaration (IS-MND). As such, the goals of this analysis are to: 1) review and ensure the previous biological technical report meets the standards required to evaluate potential impacts to biological resources under CEQA; 2) ensure the previous report is sufficient to analyze the project footprint of the Crittenden Lane Trailhead Improvements Project; 3) where necessary, provide an update to the previous study to fully assess potential impacts to biological resources; and 4) present appropriate mitigation measures to offset potential significant impacts to biological resources. A reconnaissance-level field survey was conducted to field-check site conditions for consistency with the previous biological report.

Peer Review

The BHER prepared by Pacific Biology in 2016 summarizes the existing biological conditions and potential impacts to sensitive species and habitats that could result from the Crittenden Lane Recycled Water Project. The recycled water line project would have involved construction of two bore pits within graveled areas on either side of Stevens Creek, and horizontal directional drilling (HDD) underneath Stevens Creek, for the installation of a recycled water line. The report documented a reconnaissance-level survey and a literature review that was conducted to determine the potential presence of sensitive vegetation types, and special status plant and wildlife species.

The results of the literature review, site visit, and subsequent species impacts determinations were presented in a formal report that documented existing conditions (i.e., vegetation communities and land-cover types on the project site), discussed the potential for special status species and sensitive communities to be present, and included an impact analysis, as well as proposed measures to avoid or mitigate impacts to biological resources. Rincon agrees with the description of existing conditions at the site, and considers the analysis and resulting report to be accurate and correct in the impact analysis based on the level of disturbance proposed by the recycled water line project.

The BHER sufficiently addresses impacts to special status salt marsh species such as salt marsh harvest mouse (*Reithrodontomys raviventris raviventris*), California black rail (*Laterallus jamaicensis coturniculus*), and Ridgway's rail (*Rallus obsoletus*), which are not expected to occur in the project area due to the disturbed nature of the site and lack of suitable salt marsh habitat. Of these, California black rail was determined to have the potential to nest within 700 feet of the project site, but would only be affected by noise disturbance if there were active nests in the vicinity during construction. This analysis is consistent with the trailhead improvements project and as such is directly applicable to the current environmental review.

The previous report included a discussion of impacts to wetlands and other waters of the U.S. and State, which does not apply to the current trailhead improvements project as no project activities are proposed within the jurisdictional limits of Stevens Creek or any other waters of the State or U.S. The project would occur primarily along the outside slope of the levee and the only project activities proposed at the top of the levee is restriping the existing trail. The project will also incorporate the Santa Clara County best management practices (BMPs) to prevent unintentional runoff or discharge from the construction site. BMPs include but are not limited to; construction fencing to prevent encroachment, silt fencing, fiber rolls, equipment maintenance, and spill prevention.

Because the two project sites differ slightly in location and composition, additional analysis was conducted to adequately document existing conditions, and address all potential impacts from the trailhead improvements project.

Trailhead Project-Specific Analysis

For the purpose of this analysis the project site and Biological Study Area (BSA) includes all areas of disturbance: the Crittenden Trailhead and the access road between the trail and the tree farm to the south.

The additional analysis includes a desktop review and field reconnaissance survey to document and confirm the biological conditions of the project site and to provide information on the potential presence of sensitive biological resources. Information on biological resources was compiled from a variety of publicly available sources including:

- Aerial maps,
- California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife [CDFW] 2019a),
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2019),
- Biogeographic Information and Observation System (BIOS) (CDFW 2019b),
- U.S. Fish and Wildlife Service (USFWS) Critical Habitat Portal (USFWS 2019a), and
- USFWS National Wetlands Inventory (NWI) (USFWS 2019b).

Finally, a review of the publicly available California Habitat Connectivity Project (CHCP) data, available as GIS layers in BIOS (CDFW 2019b), was conducted to determine if the study area overlays any potential wildlife movement corridors.

Rincon Biologist Samantha Kehr conducted a reconnaissance-level field survey on April 4, 2019, between the hours of 0900 and 0930. Average temperatures were approximately 60 degrees Fahrenheit (˚F), with 100 percent cloud cover and winds of three to five miles per hour. The purpose of the reconnaissance-level field survey was to document existing site conditions and to evaluate the potential for the presence of sensitive plant communities, special status plant species, special status wildlife species, habitat for nesting birds, jurisdictional wetlands or other waters, riparian habitat, and other biological conditions that may present a constraint on the project, and that may not have been fully addressed in the previous biological study. The field survey included visual inspection of the BSA, during which Ms. Kehr recorded general site conditions and biological resources encountered.

The potential presence of special status species is based on the literature review and field survey, which are intended to assess general habitat suitability within the project site only. Definitive surveys to confirm the presence or absence of special status species were not performed and are not included in this analysis. Definitive surveys for special status plant and wildlife species generally require specific survey protocols, extensive field survey time, and are required to be conducted at specific time periods. The findings and opinions included in this report are based exclusively on the above methodology.

Environmental Setting

Rincon identified one vegetation community and one land cover type in the BSA: coyote brush and developed, respectively.

The coyote brush community consists predominantly of coyote brush (*Baccharis pilularis*) mixed with non-native grasses and forbs with a few cultivated ornamental species. Other species observed include western redbud (*Cercis occidentalis*), coast live oak (*Quercus agrifolia*), toyon (*Heteromeles arbutifolia*), and blueblossom (*Ceanothus thyrsiflorus*) in the overstory; with an understory comprised of mostly ruderal species such as ripgut brome (*Bromus diandrus*), bull mallow (*Malva nicaeensis*), melilotus (*Melilotus indicus*), wild oat (*Avena* sp.), burclover (*Medicago polymorpha*), milk thistle (*Silybum marianum*), sow thistle (*Sonchus oleraceus*), cut leaved geranium (*Geranium dissectum*), fennel (*Foeniculum vulgare*), wall fumitory (*Fumaria muralis*), whitestem filaree (*Erodium moschatum*), and cheeseweed (*Malva parviflora*).

The developed land cover type consists of vegetation that is restricted to the slopes of the trail. The remainder of the BSA is disturbed, consisting of either paved or graveled areas.

The vegetation community and landcover type listed above were briefly discussed in the 2016 BHER and documented through representative photos.

Special Status Species

Resource agency databases report 12 special status plant species and 22 special status wildlife species within five miles of the project site (CDFW 2019a). Of these special status species, most have been sufficiently evaluated by the previous BHER. The previous analysis evaluated 13 special status wildlife species, six of which were determined to be potentially present but restricted to Stevens Creek. Since the trailhead project will not include HDD under Stevens Creek or any other project elements in the creek, these species are not expected to occur in the BSA. The additional 9 species in the updated agency database query were discounted based on the lack of suitable habitat, such as large trees or aquatic habitats. The previous analysis also discounted all special status plants from potentially occurring in the bore pit locations (areas of ground disturbance). The trailhead improvements project will include removal of vegetation along the slopes of the trailhead. However, Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*) is known to occur in the vicinity of the BSA, including several known occurrences within a mile of the site in similarly disturbed habitat, and has a low potential to occur in the vegetated areas of the project site. This species is not federal, or state listed, and has a California rare plank rank (CRPR) of 1B.1. Impacts to rare plants would be considered significant under CEQA if they would represent a regional or population level impact. Potential loss of a small number of individuals from project development, if present, would not result in a substantial effect to the regional or local population, and would be considered less than significant.

Sensitive Natural Communities

Baccharis pilularis – Ceanothus salviathus thyrsiflorus alliance is a CDFW sensitive natural community with a rank of G3 S3?; however, blueblossom ceanothus and western redbud are commonly available in cultivation, and the presence of other non-native cultivated species such as Mexican salvia (*Salvia leucantha*), lavender (*Lavandula* sp.), and rock rose (*Cistus* sp.) indicate that this is not a naturally occurring vegetative community. Therfore the vegetation communities onsite would not be considered a *Baccharis pilularis – Ceanothus salviathus thyrsiflorus* alliance and would not be considered a sensitive natural community.

There are no critical habitats within the BSA; however, Central California Coast steelhead critical habitat occurs in Stevens Creek to the east of the trailhead, outside of project impact areas.

Jurisdictional Waters and Wetlands

No jurisdictional waters of the U.S. or State, including wetlands, occur in the BSA. Stevens Creek occurs approximately 53 feet to the east; however, no project activities will occur in this area and no impacts to jurisdictional waters and wetlands are expected.

Wildlife Movement

The CHCP has not identified any wildlife movement corridors to occur on or in the vicinity of the BSA (CDFW 2019b). The minor level of disturbance associated with construction and the minimal change in site conditions on completion of the trail improvements would not result in a disturbance to any local or regional wildlife movement.

Local Policies and Ordinance

The City's Code of Ordinance requires a permit for the removal of heritage trees. The definition of a heritage tree includes "*any quercus (oak), sequoia (redwood), or cedrus (cedar) tree with a circumference of twelve (12) inches or more when measured at fifty-four (54) inches above natural grade*" (Ord. No. 10.96, 9/24/96; Ord. No. 1.03, 1/14/03.). The coast live oaks within the BSA are small and are not large enough to be considered heritage trees.

Habitat Conservation Plan

The BSA is not within any adopted habitat conservation plans, or natural community conservation plans. No conflicts with state, regional, or local habitat conservation plans are expected.

Conclusions

The existing BHER sufficiently addresses impacts to special status plant and wildlife species with the potential to occur in the vicinity of the BSA, and potential impacts to Congdon's tarplant would be less than significant if individuals were present in the BSA. The avoidance and minimization measures presented in the previous analysis are sufficient to address potential impacts to biological resources from the trailhead improvements project, and no additional avoidance and minimization measures are recommended. Specifically, measures BIO-1A, BIO-1C, and BIO-1-D from the previous BHER (see Attachment 2) are sufficient to reduce impacts from the trailhead improvements project to less than significant levels. No impacts to sensitive natural communities, wetlands or jurisdictional waters, wildlife movement, or conflicts with local policies or habitat conservation plans are expected.

Sincerely,
Rincon Consultants, Inc.

Samantha Kehr, B.S.
Associate Biologist

Dave Daitch, Ph.D.
Program Manager/Senior Biologist

Attachments

Attachment 1 - Figure 1

Attachment 2 - Applicable Mitigation Measures

References

California Department of Fish and Wildlife (CDFW). 2019a. California Natural Diversity Database (CNDDB) RareFind 5. https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data (Accessed April 2019)

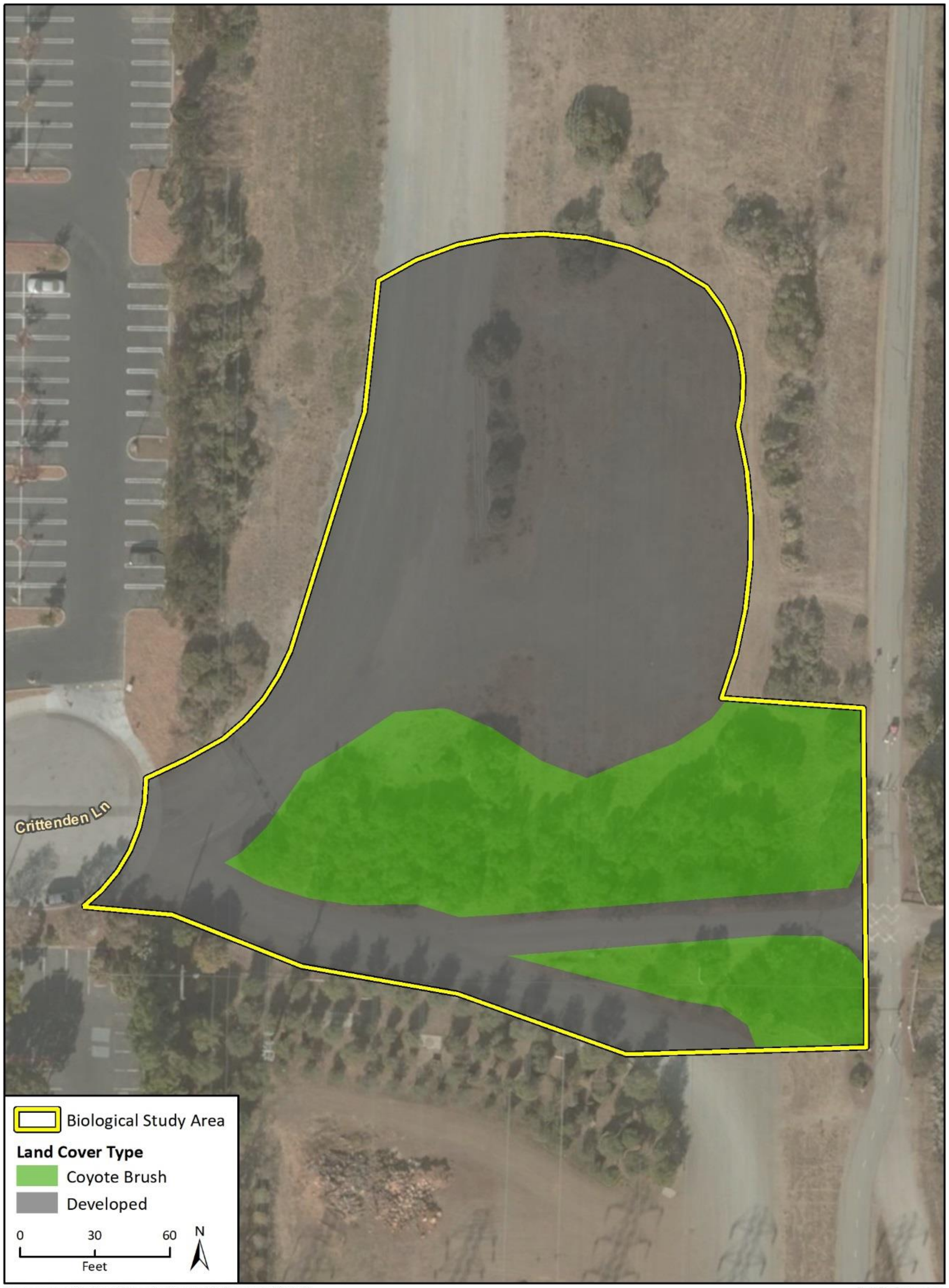
____. 2019b. Biogeographic Information and Observation System (BIOS). https://www.wildlife.ca.gov/Data/BIOS. (Accessed April 2019)

CNPS, Rare Plant Program. 2019. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society, Sacramento, CA. http://www.rareplants.cnps.org (Accessed April 2019)

U.S. Fish and Wildlife Service (USFWS). 2019a. Environmental Conservation Online System, Critical Habitat. http://ecos.fws.gov/ecp0/profile/speciesProfile.action?spcode=Q271#crithab (Accessed April 2019)

_____.2019b. National Wetlands Inventory (NWI). https://www.fws.gov/wetlands/data/mapper.html (Accessed April 2019)

Figure 1 Vegetation Communities and Land Cover Types.



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Avoidance and Minimization Measures

BIO-1A **Prior to commencement of construction activities, a qualified biologist will conduct a mandatory environmental education program for all construction personnel. The program will cover the biology, ecology, and habitat of the salt marsh harvest mouse, California black rail, Ridgway's rail, and other special-status species known from the project vicinity and the restrictions and guidelines that must be followed by all construction personnel to avoid or minimize project effects on these species. The environmental education program will include a description, representative photographs, and legal status of each species; the avoidance measures being implemented to protect the species; and the penalties for harming a state or federally listed species or an active bird nest.**

BIO-1C **Due to the proximity of the project site to suitable California black rail nesting habitat, all construction activities within 700 feet of suitable nesting habitat may be conducted during the period of September 1 to January 31, which is outside of the species' breeding season (i.e., February 1 through August 31), if this does not conflict with any permit requirements. Alternatively, protocol surveys for nesting California black rail may be conducted prior to construction, and if the species is not found to be nesting within 700 feet of construction, then construction may occur during the nesting season. If nesting California black rails are found within 700 feet of construction areas, then the CDFW will be consulted to determine if construction may occur when the nest is active and on the appropriate setback/buffer from the nest that is required. It should be noted that protocol surveys for California black rail generally require three survey rounds between March and the end of May.**

BIO-1D **If construction activities would commence anytime during the nesting/breeding season of native bird species potentially nesting near the site (typically February 20 through August in the project region), a pre-construction survey for nesting birds would be conducted by a qualified biologist within two weeks of the commencement of construction activities.**

If active nests are found in areas that could be directly affected or are within 300 feet of construction and would be subject to prolonged construction-related noise, a no-disturbance buffer zone should be created around active nests during the breeding season or until a qualified biologist determines that all young have fledged. The size of the buffer zones and types of construction activities restricted within them will be determined by taking into account factors such as the following:

- **Noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity;**
- **Distance and amount of vegetation or other screening between the construction site and the nest; and**
- **Sensitivity of individual nesting species and behaviors of the nesting birds.**

Appendix C

Cultural Resources Assessment Report

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Crittenden Lane Trailhead Improvements Project, City of Mountain View, California

Submitted to:

Circlepoint
1814 Franklin Street, Suite 1000
Oakland, CA 94612

Technical Report 19-166

May 31, 2019

CRITTENDEN LANE
TRAILHEAD IMPROVEMENTS PROJECT,
CITY OF MOUNTAIN VIEW, CALIFORNIA

Prepared by:
Jennifer Wildt, Ph.D., RPA, Ashley Schmutzler, M.A.

Prepared for:
Circlepoint

Technical Report No. 19-166

PaleoWest Archaeology
1870 Olympic Blvd., Suite 100
Walnut Creek, California 94596
925-253-9070

May 31, 2019

CONTENTS

MANAGEMENT SUMMARY

PaleoWest has been contracted by Circlepoint to perform a historical resources assessment of the proposed Crittenden Lane Trailhead Improvements Project (Project) in the City of Mountain View, California. The project consists of improvements to a proposed trailhead in order to bring it into compliance with the Americans with Disabilities Act. It falls within Township 6 South, Range 2 West, Section 10, as depicted on the 2015 Mountain View, CA 7.5 minute U.S. Geological Survey topographic quadrangle (Figures 1-3). This report builds on a previous cultural resources assessment conducted for the Crittenden Lane Recycled Water Line Extension project, which covers the current project area. This report includes all pertinent research and the results of all fieldwork needed to assess any cultural resources that may be affected by the current project.

In an effort to identify all potentially significant cultural resources that could be impacted by the construction in the project area, PaleoWest referred to the records research that encompassed the project area (File No. 15-0059) conducted on August 13, 2015 by the Northwest Information Center (NWIC) at Sonoma State University. The results of the records search indicate that one previously recorded archaeological site, CA-SCL-23, is located within ¼ mile of the study area. CA-SCL-23, known as the Crittenden Mound, is a prehistoric habitation mound that was leveled in the early 1900s and efforts to relocate it have been unsuccessful (Rappaport and Meredith 1978; PaleoWest 2016).

As part of a 2016 cultural resource assessment that included the Project area, PaleoWest contacted the Native American Heritage Commission to request information on known Native American traditional or cultural properties and to request a listing of individuals or groups with cultural affiliation to the project area (WSA 2016). Some respondents expressed concerns about disturbances near the recorded location of a Native American burial mound to the east of Stevens Creek. As the current project will take place entirely to the west of Stevens Creek, PaleoWest does not recommend that an archaeological or Native American monitor be present during work; however, if there are any unanticipated discoveries of cultural material, workers should cease work and immediately contact a professional archaeologist to examine and evaluate the materials.

On November 16, 2016, PaleoWest staff archaeologist Ashley Schmutzler conducted an intensive pedestrian archaeological survey of the study area. No new historic or prehistoric-period archaeological sites were identified as a result of the survey.

This Cultural Resources Assessment Report (CRAR) was prepared in compliance with the California Environmental Quality Act (CEQA) to evaluate the significance (California Register of Historical Resources [CRHR] eligibility) of cultural resources within the project area in accordance with the criteria in CEQA Section 15064.5, and as a means of evaluating the project's potential impacts to historical resources.

1.0 INTRODUCTION

The City of Mountain View Public Works Department proposes the construction of the Crittenden Lane Trailhead Improvements Project (Project) in the City of Mountain View, California. In 2016, PaleoWest Archaeology (PaleoWest) was contracted by Circlepoint to conduct a pedestrian cultural resource assessment of the Project area in compliance with the California Environmental Quality Act (CEQA). The City of Mountain View is the Lead Agency for the purposes of the CEQA.

1.1 PROJECT LOCATION AND DESCRIPTION

The Project is located in the City of Mountain View, California, just south of the Don Edwards San Francisco Bay National Wildlife Refuge at the southern end of the San Francisco Bay. It is east of a Google, Inc. business campus and west of the Nasa Ames Research Center. It lies about 1 mile north of US route 101, within Township 6 South, Range 2 West, Section 10, as depicted on the 2015 Mountain View, CA 7.5 minute U.S. Geological Survey topographic quadrangle (Figures 1-4).

The Project will consist of improvements to a proposed trailhead in order to bring it into compliance with the Americans with Disabilities Act. This trailhead will connect the terminus of Crittenden Lane to the Stevens Creek Trail, on the western side of Stevens Creek. The trailhead improvements will include 280 linear feet, replacing the current trail, with a paved width of 12 feet and 2-foot-wide shoulders on either side, as well as signage and striping. There will be fill slopes (Figure 5) and retaining walls on either side, with a maximum height of 9 feet for the walls. No grading will be done into native soil; new soil will be added to moderate the slope. About 1,400 cubic yards of soil will be imported for this project, which is expected to close the trailhead for 35 days. There will be a staging area for construction equipment to the south of the project area within the parking lot of the A to Z Tree Specimen Nursery (Figure 6).

1.2 REPORT ORGANIZATION

This report builds on the 2016 CRAR that PaleoWest produced for Circlepoint for the Crittenden Lane Recycled Water Line Extension, a project which encompasses the current Project area and extends to the east, across Stevens Creek. For the Crittenden Lane Recycled Water Line Extension CRAR, PaleoWest conducted background research and a field survey, the complete results of which are included in this report, so that it is a stand-alone document.

This CRAR documents the results of a cultural resource investigation conducted for the previous Recycled Water Line Extension project. Chapter 1 has introduced the project location and description. Chapter 2 states the regulatory context that should be considered for the Project. Chapter 3 synthesizes the natural and cultural setting of the Project area and surrounding region. The results of the cultural resource literature and records search conducted at the Northwest Information Center (NWIC) and a summary of the Native American communications is presented in Chapter 4. The field methods employed during this investigation and the survey findings are outlined in Chapter 5 with management recommendation provided in Chapter 6. This is followed by bibliographic references and an appendix.

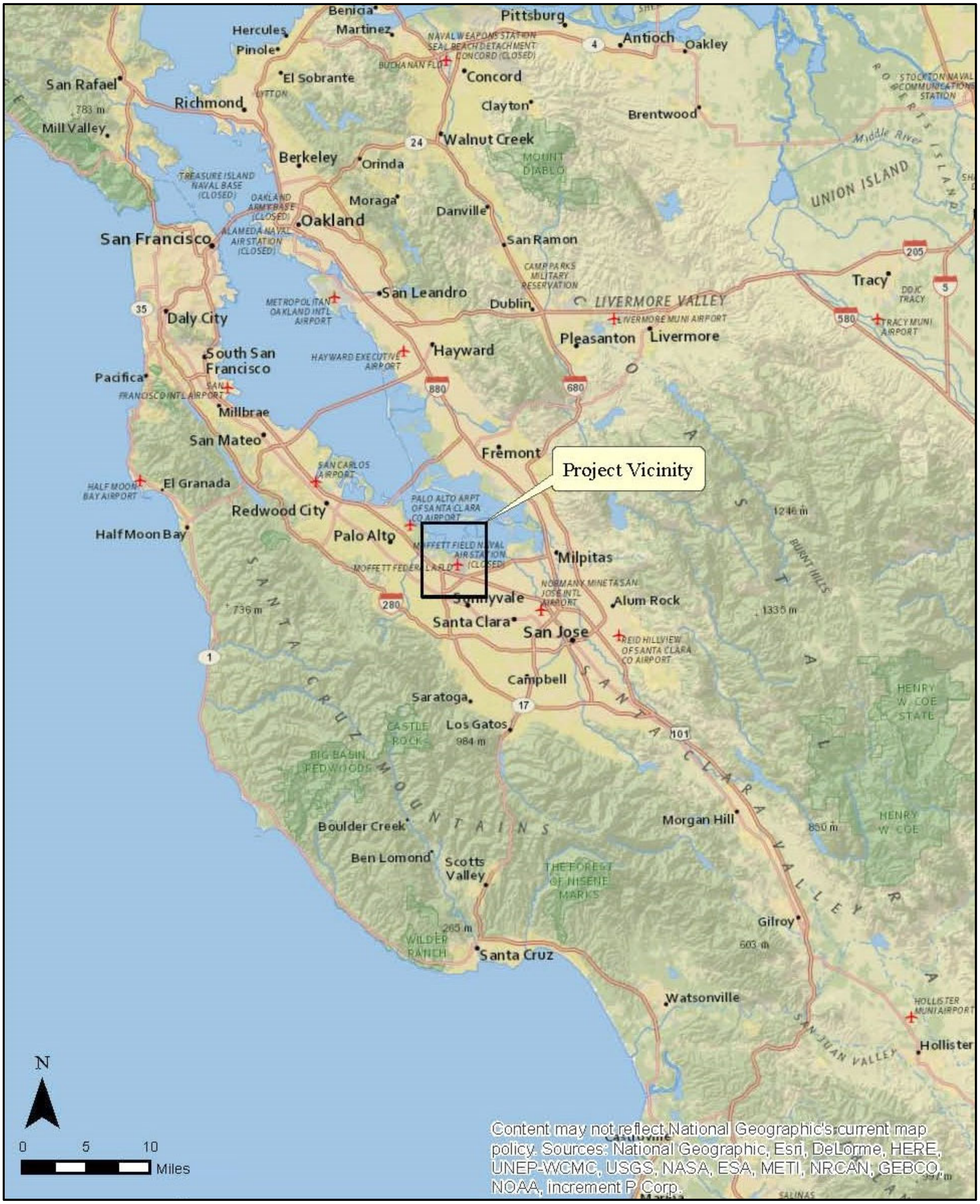

Figure 1. Project Vicinity Map

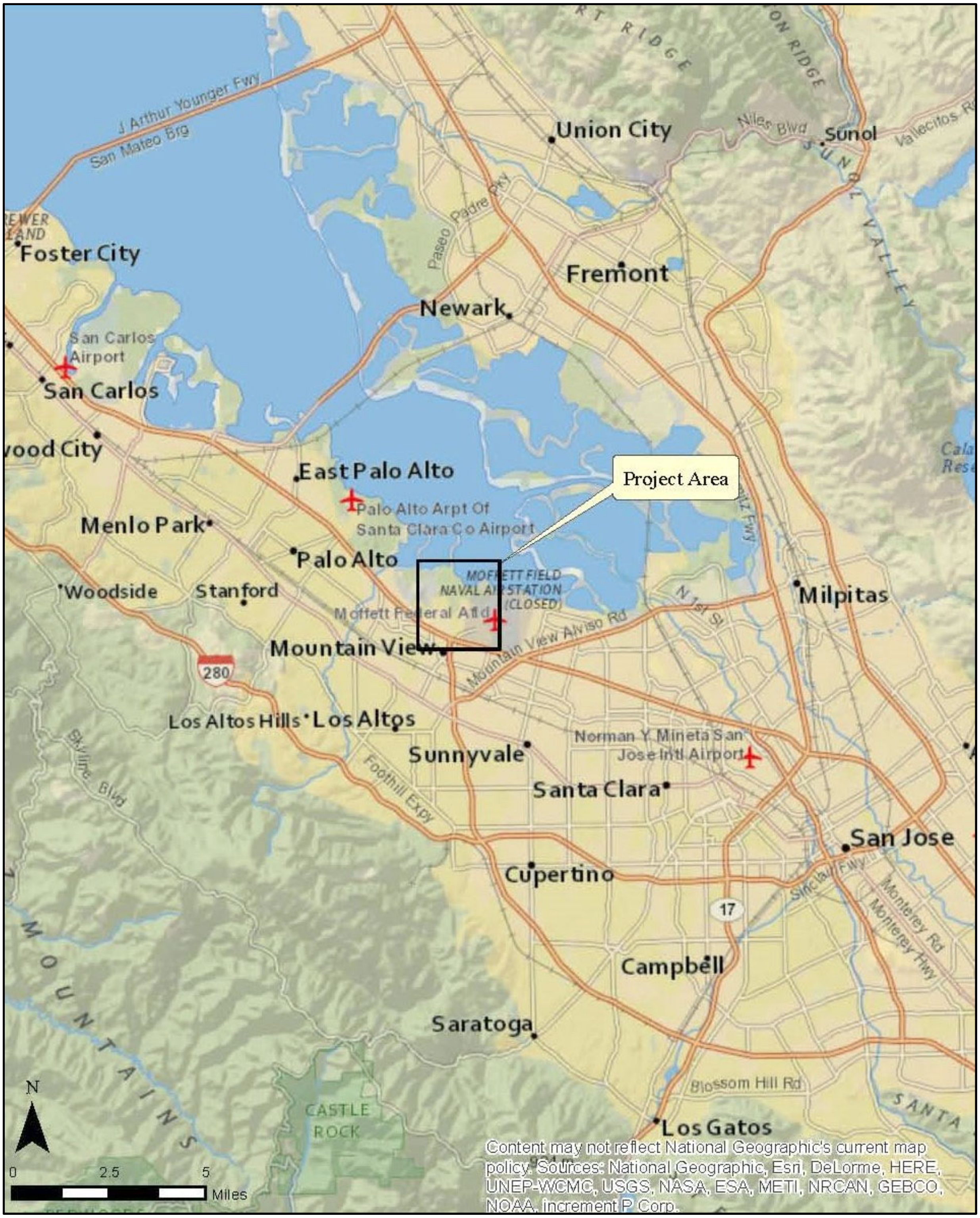

Figure 2. Project Area Map

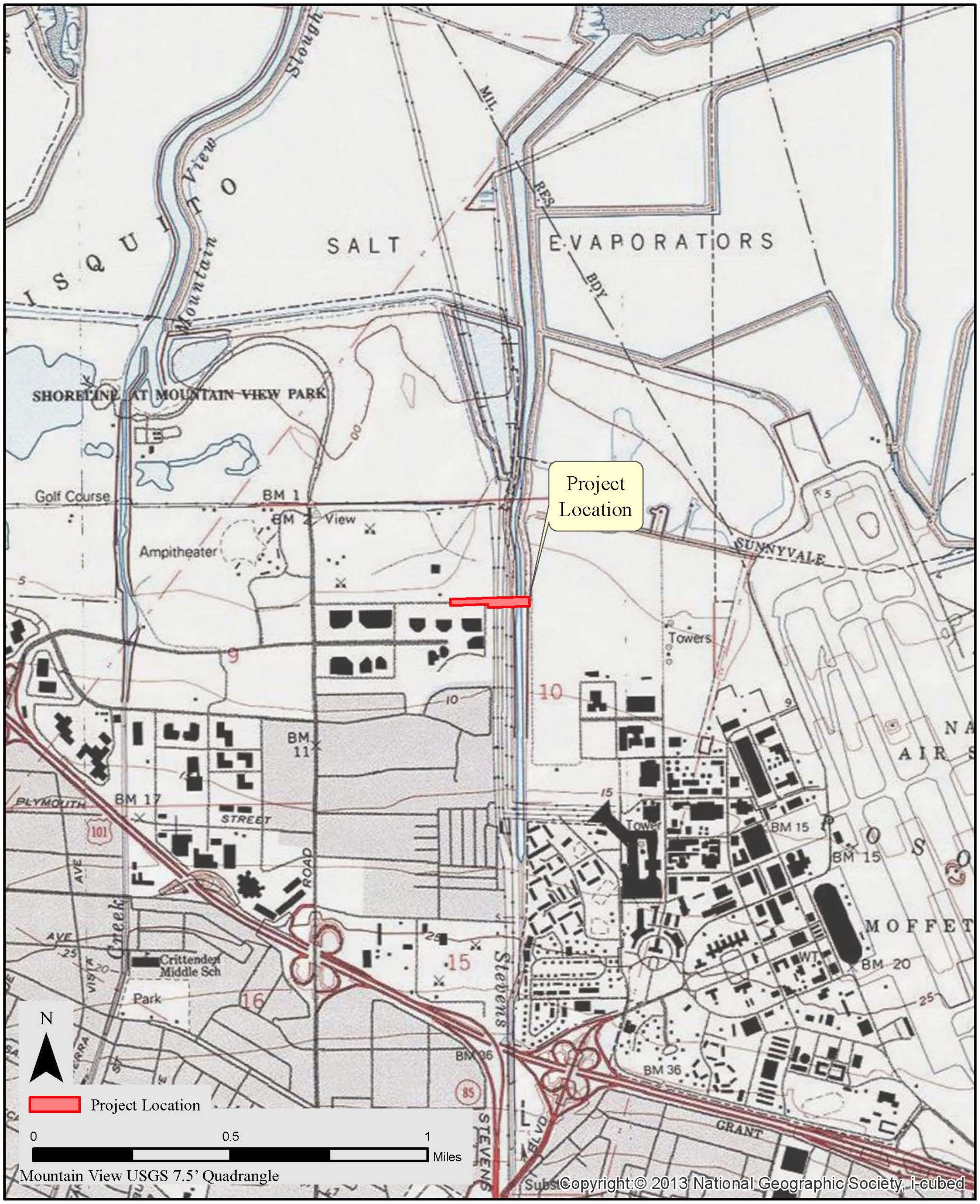

Figure 3. Crittenden Lane Recycled Water Line Extension Project Location

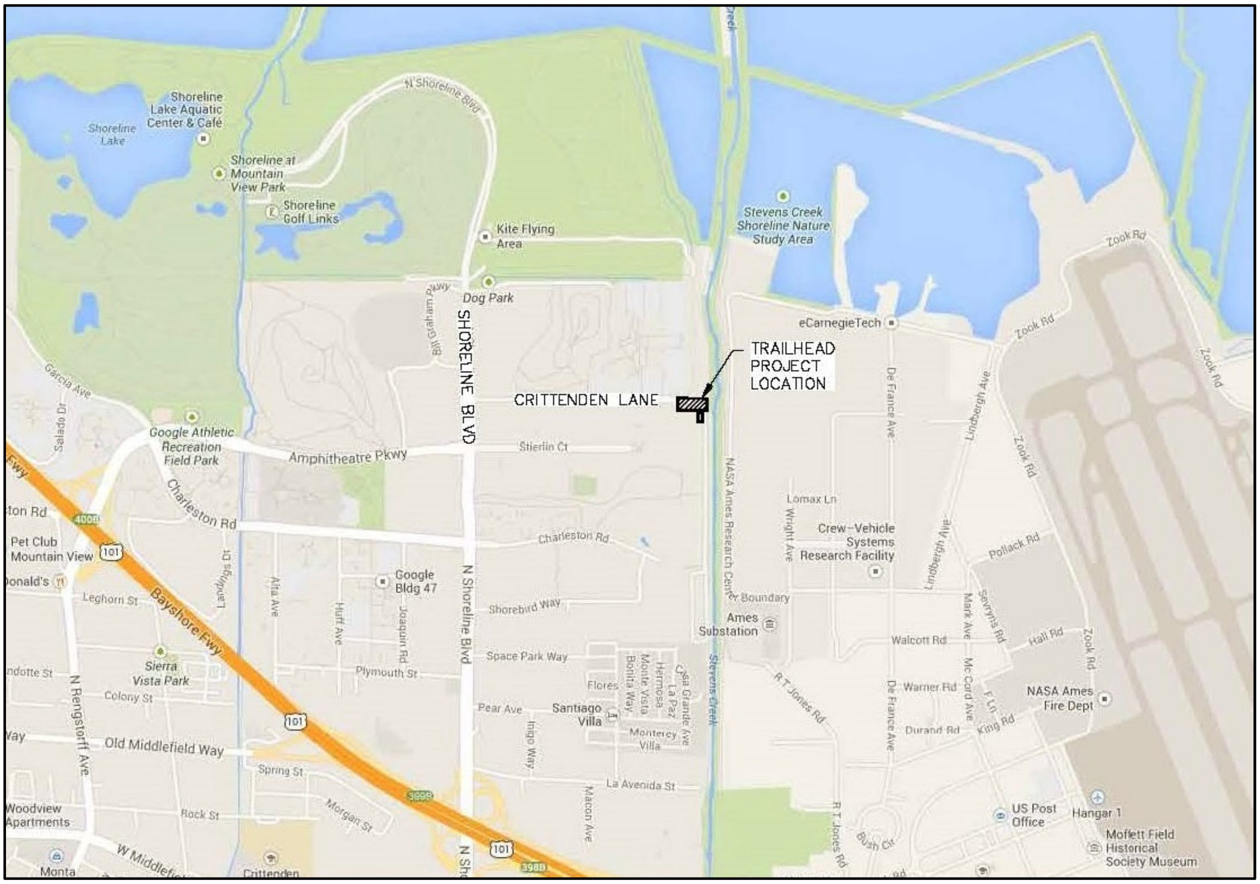

Figure 4. Crittenden Lane Trailhead Improvements Project Location

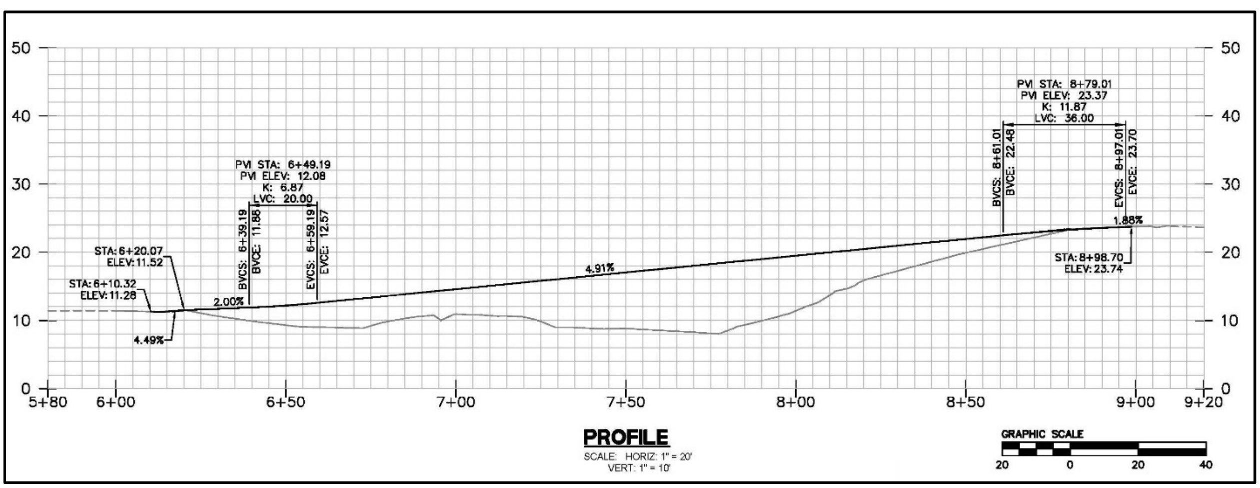

Figure 5. Profile of Trailhead Project showing fill to smooth grade

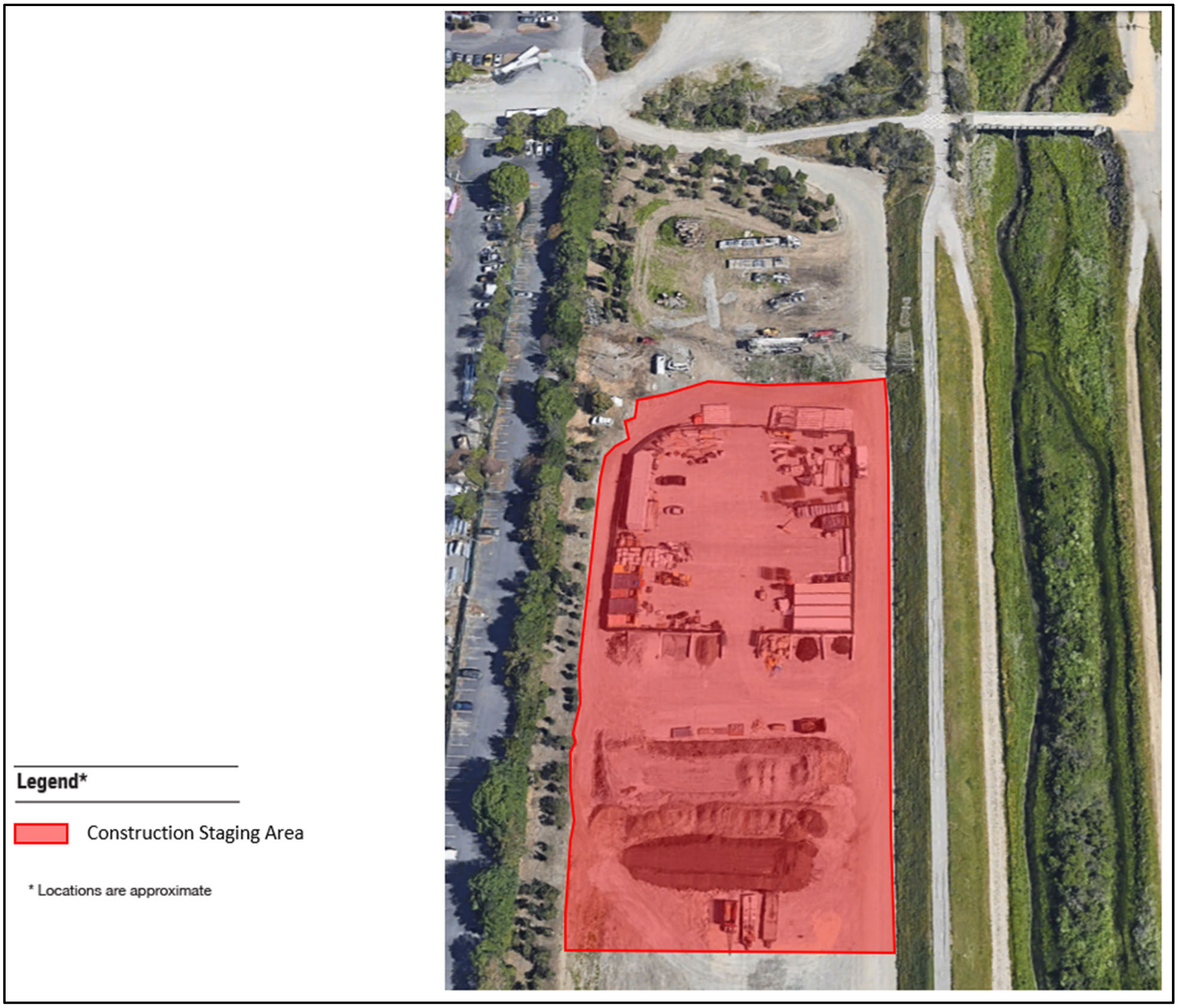

Figure 6. Construction Staging Area in A to Z Tree Specimen Nursery parking lot

2.0 REGULATORY CONTEXT

2.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA requires agencies to identify cultural resources that a project might impact by finding records of known resources and assessing the potential for previously unidentified resources. CEQA provides appropriate measures for the evaluation and protection of historical resources in §15064.5 of the *CEQA Guidelines*. For the purposes of CEQA, "historical resources" are those cultural resources that are: (1) listed in or eligible for listing in the CRHR; (2) listed in a local register of historical resources (as defined in PRC 5020.1(k)); (3) identified as significant in a historical resource survey meeting the requirements of §5024.1(g) of the Public Resources Code; or (4) determined to be a historical resource by a project's lead agency (§15064.5(a)). The subsection further states, "A project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment" (§15064.5(b)).

CEQA also applies to effects on archaeological sites (§15064.5(c)(1-3)). A lead agency, in this case the City of Mountain View, applies a two-step screening process to determine if an archaeological site meets the definition of a historical resource, a unique archaeological resource, or neither. Prior to considering potential impacts, the lead agency must determine whether an archaeological resource meets the definition of a historical resource in §15064.5(a). If the archaeological resource meets the definition of a historical resource, it is treated like any other type of historical resource in accordance with §15126.4. If the archaeological resource does not meet the definition of a historical resource, then the lead agency applies the second criterion to determine if the resource meets the definition of a unique archaeological resource as defined in §21083.2(g). Should an archaeological resource meet the definition of a unique archaeological resource, it must be treated in accordance with §21083.2. If the archaeological resource does not meet the definition of a historical resource or a unique archaeological resource, then effects to the resource are not considered significant effects on the environment (§15064.5(c)(4)). Public Resources Code (PRC) §5097.5 provides for the protection of historical resources. PRC §5097.5 prohibits the removal, destruction, injury, or defacement of cultural features on any lands under the jurisdiction of State or local authorities.

2.2 EVALUATION UNDER CEQA

The CRHR is the official list of properties, structures, districts, and objects significant at the local, state, or national level. CRHR properties must have significance under one of the four following criteria and must retain enough of their historic character or appearance to be recognizable as historical resources and convey the reasons for their significance (i.e. retain integrity). The CRHR uses the same seven aspects of integrity as the National Register of Historic Places (NRHP). Properties that are eligible for the NRHP are automatically eligible for the CRHR. Properties that do not meet the threshold for the NRHP may meet the CRHR criteria. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the following criteria for listing on the CRHR (PRC Section 5024.1, Section 4852):

(1) is associated with events that have made a significant contribution to the broad patterns of

California's history and cultural heritage;

(2) is associated with the lives of persons important in our past;

(3) embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

(4) has yielded, or may be likely to yield, information important in prehistory or history.

CRHR criteria are similar to NRHP criteria, and are tied to CEQA, so any resource that meets the above criteria, and retains a sufficient level of historic integrity, is considered an historical resource under CEQA.

3.0 SETTING

This section of the report summarizes information regarding the physical and cultural setting of the Project area, including the prehistoric, ethnographic, and historic contexts of the general area. Several factors, including topography, available water sources, and biological resources, affect the nature and distribution of prehistoric, ethnographic, and historic-period human activities in an area. This background provides a context for understanding the nature of the cultural resources that may be identified within the region.

3.1 ENVIRONMENTAL SETTING

The project area is located on the southern portion of the San Francisco Peninsula, which lies along the southwest boundary of the San Francisco Bay. The Project area ecology, though heavily impacted by dense urban development, is coastal littoral, consisting of land strips along the coast that are characterized by a series of microenvironments including estuaries, bays, marshes, and grassy terraces (Chartkoff and Chartkoff 1984). Stevens Creek, a small channelized waterway just east of the Project area, flows north to the Bay, providing an attractive environment for animals and humans.

The climate of the project area is Mediterranean: mild, rainy winters, and hot, dry summers. Annual precipitation in the area is 15 inches, with rainfall concentrated in the fall, winter, and spring. The San Francisco Peninsula's proximity to the Pacific Ocean provides for mild temperatures throughout the year. Winter temperatures vary from an average high of 57.2°F to an average low of 37.7°F; summer temperatures vary from an average high of 78.4°F to an average low of 54.4°F.

Common vegetation throughout the area includes Valley Oak (*Quercus lobata*), Live Oak (*Quercus agrifolia*), California Buckeye (*Aesculus californica*), California Bay Laurel (*Umbellularia californica*), Star Thistle (*Centaurea solstitialis*), Wild Oats (*Avena fatua*), Morning Glories (*Convolvulus*), Lupine (*Lupinus*), Poppies (*Papaver*), Wild Artichokes (*Cynara scolymus*), and various other native and imported grasses.

Animal life within the region is diverse. Unlike prehistoric times when animals such as pronghorn sheep, antelope, tule elk, mule deer, black-tail deer, and grizzly bear occupied the area, the region today favors small, herbivorous mammals, especially voles, pocket gophers, ground squirrels, and pocket mice (Brown 1985). The few larger, open areas in the region attract some larger animals including deer, rabbit, skunk, opossum, raccoon, and a number of birds including red-tailed hawks and turkey vultures.

3.2 PREHISTORIC SETTING

Research into local prehistoric cultures began in the early twentieth century with the work of N. C. Nelson of the University of California at Berkeley, who conducted the first intensive archaeological surveys of the San Francisco Bay region (Nelson 1909). The 425 shellmounds he documented along the bay shore showed that intensive use of shellfish -- a subsistence strategy reflected in both coastal and bay shore middens -- indicated a general economic unity in the region during prehistoric times (Moratto 1984). In the ensuing years, several of these shellmounds were excavated, documenting their depths and composition (Gifford 1916; Nelson 1910; Schenck 1926; Uhle 1907). One of the earliest was in San Mateo County, where R. J. Drake identified archaeological components of an Early period site (1050 B.C.

to A.D. 450) during excavations of CA-SMA-23 (Mills Estate) in San Bruno in 1941-1942 (Moratto 1984:233).

As researchers gathered more data, efforts turned to building a cultural sequence for the entire region that was based on changes in artifacts, mortuary practices, and shellfish remains (King 1970; Wallace and Lathrap 1975). Beardsley (1948) incorporated the Bay Area's cultural sequence into the Central California Taxonomic System, which included three primary temporal horizons—Early, Middle, and Late—defined largely on the basis of stylistic variation of artifacts through grave-goods analysis (Lillard et al. 1939). Revisions to this chronology have taken many forms over the years (see in particular Bennyhoff 1994a,b,c; Bennyhoff and Hughes 1987; Fredrickson 1973, 1994). Three periods are generally recognized today, with transitional periods between. This sequence has proven useful throughout the Bay Area and neighboring regions (Milliken et al. 2007).

Many researchers today follow Groza's (2002) dating Scheme D1, which is based on a series of radiocarbon dates used to refine the chronological scheme of Bennyhoff and Hughes (1987) built from temporal change in shell bead types. These periods are as follows:

- Early (3800-2450 cal BP)1
- Early/Middle Transition (2450-2150 cal BP)
- Middle (2150-950 cal BP)
- Middle/Late Transition (950-675 cal BP)
- Late (675-250 cal BP)

The above chronological scheme is limited to a late Holocene occupation sequence (post-4000 cal BP), although the Early period occupation may have had its origin near the end of the middle Holocene (Lightfoot and Luby 2002). This late Holocene sequence is used largely because earlier occupations from the terminal Pleistocene to middle Holocene have been very rarely encountered in the archaeological record of the San Francisco Bay Area. This dearth of early archaeological remains is likely the result of the loss of coastal and bay margin land surfaces dating from the terminal Pleistocene into the middle Holocene due to sea-level rise and sedimentation that has deeply buried any early archaeological sites. As a result, the San Francisco Bay Area prehistory prior to the late Holocene is not well documented. Two rare examples of early Holocene occupation in the general region are from deeply buried contexts: one from the uplands of Mt. Diablo (Meyer and Rosenthal 1997) and one from the Metcalf Creek area of the southern Santa Clara Valley (Hildebrandt 1983). These early Holocene deposits demonstrate that the general region was occupied prior to 4,500 years ago, but any characterization of these early occupations requires more data.

Early period assemblages are characterized by large projectile points, milling stones, and low-density shell deposits in comparison to later periods, suggesting a focus on hunted and gathered foods (Hylkema 2002; Lightfoot 1997; Moratto 1984:277). During the Middle period there appears to have been a shift in settlement and subsistence to a marine focus within bay shore and marsh habitats. An increase in acorn exploitation occurred at this time, as well. Lightfoot (1997) thinks that this period was the high point of mound building throughout San Francisco Bay. A marked cultural change has been documented for the

1 Before Present (present is defined as 1950)

Late period with a shift to bow and arrow and harpoon use, tubular tobacco pipe, clam disk beads, a greater emphasis on acorns, and extensive trade relations with neighboring groups (Lightfoot and Luby 2002; Moratto 1984:283).

3.3 ETHNOGRAHIC SETTING

At the time of historic contact with the Spanish missionaries and explorers, the Crittenden Lane project area was within the northwest portion of the Tamien linguistic territory. The Tamien were one of the Ohlone group of Native Americans.

The Ohlone, who lived throughout the Bay Area, subdivided themselves into smaller village complexes or tribal groups. These groups were independent political entities, each occupying specific territories defined by physiographic features. Each group controlled access to the natural resources of the territories. Although each tribal group had one or more permanent villages, their territory contained numerous smaller campsites used as needed during a seasonal round of resource exploitation.

Extended families lived in domed structures thatched with tule, grass, wild alfalfa, ferns or carrizo (Levy 1978). Semi-subterranean sweathouses were built into pits excavated in stream banks and covered with a structure against the bank. The tule raft, propelled by double-bladed paddles similar to those used in the Santa Barbara Island region, were used to navigate across San Francisco Bay (Kroeber 1970).

Warfare was quite common in Ohlone culture and usually centered around territorial disputes (Levy 1978). Music, ritual and myth were extensive in Ohlone life. Song was employed in the telling of myths, in hunting and courtship rituals, and in other ceremonial activities. Musical instruments were typically whistles made of bird bone, and flutes and rattles made of wood from the alder.

Mussels were an important staple in the Ohlone diet as were acorns of the coast live oak, valley oak, tanbark oak and California black oak. Seeds and berries, roots, grasses, and the meat of deer, elk, grizzly, sea lion, rabbit, and squirrel also contributed to the Ohlone diet. Careful management of the land through controlled burning served to insure a plentiful and reliable source of all these foods (Kroeber 1970; Levy 1978).

The arrival of the Spanish led to the rapid demise of native California populations. Diseases, declining birth rates, and the effects of the mission system served to eradicate the aboriginal life ways (which are currently experiencing resurgence among Ohlone descendants). Brought into the missions, the surviving Ohlone were transformed from hunters and gatherers into agricultural laborers (Cambra et al. 1996; Levy 1978; Shoup and Milliken 1999). With abandonment of the mission system and Mexican takeover in the 1840s, numerous ranchos were established. Generally, the few Ohlone who remained were then forced, by necessity, to work on the ranchos.

In the 1990s, some Ohlone groups (e.g., the Muwekma, Amah, and Esselen further south) submitted petitions for federal recognition (Esselen Nation 2013; Muwekma Ohlone Tribe 2013). Many Ohlone are active in preserving and reviving elements of their traditional culture and are active participants in the monitoring and excavation of archaeological sites.

3.4 HISTORICAL SETTING

The historical background of the region and study area was compiled from primary and secondary sources including Shoup et al.'s *Inigo of Rancho Posolmi* (1995), Hyding's *From Frontier to Suburb* (1984), and the *County of Santa Clara Historic Context Statement* prepared by Archives and Architecture, LLC in 2004 and updated in 2012.

The 1769 expedition led by Captain Gaspar de Portola initiated the period of contact between Spanish colonists and the native people of the Santa Clara Valley. A year later, Pedro Fages led an expedition that explored the eastern shore of San Francisco Bay, eventually reaching the location of modern-day Fremont, where they traded with the local native people. In 1772, a second Fages expedition traveled from Monterey passing through the Santa Clara Valley (Levy 1978:398).

In 1774, Captain Fernando Rivera y Moncada, scouting locations for a mission and military installment, encountered local Indian people in the Santa Clara Valley. In 1776, a mission scouting expedition under the leadership of Juan Bautista de Anza and Friar Pedro Font traveled through the same area and also traded with residents of native villages encountered along the way (Bolton 1930). Font recorded that the party had observed 100 native people while traveling through the Santa Clara Valley (Font 1930[1776]:324 in Shoup, Milliken and Brown 1995:25).

The first mission in the San Francisco Bay Area was established in San Francisco with the completion of Mission San Francisco de Asis (Mission Dolores) in 1776. Mission Santa Clara de Asis followed in 1777, and Mission San Jose in 1797. The missions relied on the Native American population both as their source of Christian converts and their primary source of labor. Diseases introduced by the early expeditions and missionaries, and the contagions associated with the forced communal life at the missions, resulted in the death of a large number of local peoples. Cook (1943) estimates that by 1832, the Ohlone population had been reduced from a high of over 10,000 in 1770 to less than 2,000.

Mission Santa Clara, founded in 1777, controlled much of the land of the Santa Clara Valley (approximately 80,000 acres) until the 1830s. Mission lands within the area of Mountain View were used by local Mission Indians primarily for the cultivation of wheat, corn, peas, beans, hemp, flax, and linseed, and for grazing cattle, horses, sheep, pigs, goats, and mules. In addition, mission lands were used for growing garden vegetables and orchard trees such as peaches, apricots, apples, pears, and figs.

Within a period of 25 years after the mission founding, most local native peoples had been affected by the presence of the missionaries. Though some Indians gave up their traditional way of life by choice, many were coerced, manipulated, and forced to the mission. By the mid-1790s, the traditional Ohlone economy had been significantly disrupted. Native populations outside the Mission had suffered losses to Spanish disease, a decline in food resources, a disrupted trade system, and a significant drought in 1794 (Shoup, Milliken and Brown 1995:44-45).

Mexico gained its independence from Spain in 1821 and began administering the twenty-one California missions. By the 1820s, when American trappers began exploring the region, Indians of the San Jose and

Santa Clara missions began to rebel (Shoup, Milliken and Brown 1995:83). The rebellion was led by Indian chieftain Estanislao and his companion Cipriano, and the confrontations that took place in the summer of 1829 resulted in casualties for both the Indian rebels and the soldiers serving the mission (Shoup, Milliken and Brown 1995:86). The fact that Indian people who had maintained long-term relationships with local missions were motivated to rebel against them reflected poorly on the institution's success and signaled the beginning of the final chapter in Mission Santa Clara's long existence (Shoup, Milliken and Brown 1995:87-89).

The Mexican government began the process of secularizing mission lands in the 1830s. The secularization of the mission lands was decreed in 1834, but the process did not get underway at Santa Clara until 1837. Within a few years, the lands of all 21 missions were expropriated in the form of land grants. Despite regulations that stipulated that the land grants were to be distributed fairly, recipients of the land grants were primarily *Californios*, who had allied themselves with Jose Ramon Estrada, Governor Juan Bautista Alvarado's brother-in-law, who oversaw the process (Shoup, Milliken and Brown 1995:98-99). By 1845, eight land grants of the former Mission Santa Clara lands were formally awarded to *Californios* and their Anglo allies (54,284 acres); four were awarded to Mission Indians (11,917 acres) (Shoup, Milliken and Brown 1995:104). The Polsomi rancho (3,042 acres), just east of the project area, was formally awarded to Lope Inigo in February of 1844. To the west of the project area was the Rincon de San Francisquito, and to the south, encompassing much of the current city of Mountain View, was the Rancho Pastoria de las Borregas (Ranch of the Sheep Pasture) (City of Mountain View 2016).

With their victory in the Mexican-American War (1846-1848), the United States took possession of California. The 1849 Gold Rush brought an unprecedented wave of Euro-American settlers to Santa Clara Valley, many of whom acquired land and turned their attention to agriculture. In November of 1849, San Jose became the first capital of the State of California. The following decades were marked by a transition from the ranching economy favored by Spanish and Mexican landholders to an economy based at first on grain agriculture, such as wheat, then increasingly on orchard and specialty vegetable agriculture.

Early travel corridors were firmly established when railroad lines were constructed throughout the region. Previously, Mountain View had been a stage coach stop on the route between San Francisco and San Jose and when this coach route was replaced with a railroad in the 1860s, Mountain View became a stop on the line. Not only were the transcontinental lines established by the Central Pacific and later the Western Pacific railroads important, but the interconnected network of local lines was significant as well. The location of stations along these lines largely determined the points of development that would soon form the downtown cores of the Bay Area's early cities and towns. Similarly, the lines formalized the corridors that would become home to the area's industries that were largely dependent on rail transportation. Future infrastructure, such as highways and public transportation, continued to follow the routes solidified by the railroads.

In the late 1800s, the favorable climate around Mountain View continued to attract settlers, who began planting wheat and hay, eventually converting their fields to vineyards and orchards (City of Mountain View 2016). By 1897, the small village of Mountain View, had become densely settled and the town was incorporated in 1902. Mountain View sustained significant damage in the 1906 earthquake but was largel rebuilt. In 1932, the Naval Air Station at Moffett Field was built, bringing further industrial as well as residential development.

The Defense Industry, Lockheed, and the Emergence of High Tech

While there had been a flood of immigrants into California during the Great Depression, the influx during World War II was substantially greater. The defense industry expanded and cities surrounding the San Francisco Bay developed rapidly (Kyle 1990: xvi). New shipyards came into existence, the number of factories in use increased by a third, and the population of industrial workers more than doubled (Cole 1988:129). The output of Bay Area shipbuilding facilities - 1,400 vessels during a war that lasted 1,365 days - remains staggering.

California also became an important location for installations of all branches of the United States military during the war. Largely because a portion of the war was fought in the Pacific theater, and the attack on Pearl Harbor made California a strategic location, the Army, Air Force, Navy, and Marines utilized the human and natural resources of the Bay Area for national defense (Beck and Haase 1988:86-88). As well as the industrial facilities along the bay shore, the Alameda Naval Air Station, the Oakland Army Base, Moffett Field, and local Army training camps drew civilian and military families to the communities surrounding the project area.

In addition to heavy industries, such as shipbuilding, high-tech industries such as electronics also expanded rapidly during the war. Later, these firms contributed to the emerging field of communications (Hynding 1984:270).

> The manufacture of electrical machinery, largely because of the boom in electronics, now [1957] hires in San Mateo County about as many workers as were employed by the industry in the entire Bay Area in 1949. Of the 125 new plants, one-fourth are in San Mateo County, and one-fifth each in Santa Clara and Alameda counties, in part because of research facilities at Stanford University and the University of California (Young and Griffin 1957:401).

In addition to drawing manpower, the facilities established for the war effort spurred industrial and high-tech research that laid the foundation for today's economy that is increasingly reliant on the innovation of highly skilled workers. Lockheed turned the engineering know-how of academic engineers into extremely profitable defense contracts. Like other large-scale players in the defense industry, Lockheed re-tooled at the end of the Cold War as budgets were cut and money was redirected.

Lockheed was a critical link between these early industries and modern Silicon Valley. As Baker (2006) recounted, Lockheed's Sunnyvale staff designed the first U.S. spy satellites, a project dubbed Corona, built missiles for the Cold War arsenal, developed the Trident missile program (submarine launched) as well as silo-based ICBMs, assembled the Hubble Space Telescope, worked to perfect a missile that could intercept nuclear warheads, as well as designed and built advanced laser systems.

Lockheed Corp. and Martin Marietta Corp. merged in 1995. Together they were the nation's largest defense contractor (Baker 2006). Large shed structures and high-bay engineering buildings dominate the landscape at the bayside plant. Lockheed also operates the Advanced Technology Center in Palo Alto, the principal R&D organization for the company.

4.0 CULTURAL RESOURCES INVENTORY

On behalf of PaleoWest, the staff at the NWIC conducted a records search on August 13, 2015 (File No. 15-0059) for the Moffett Towers II Final Subsequent Environmental Impact Report (Kimley Horn 2016) for the larger NASA Ames Research Facility. As this previous records search was conducted recently, and encompassed the Crittenden Lane Recycled Water Pipeline project footprint and a surrounding ¼-mile buffer, the results are still considered current and the results of that records search were referenced for the Crittenden Lane project. Information on previous archaeological surveys and recorded sites within a ¼-mi. radius of the project area was gathered to identify and evaluate the potential for the presence of cultural resources. The study included a review of archaeological and historical literature, as well as records and maps on file at the Northwest Information Center. The *California Inventory of Historic Resources* (1976) and the Office of Historic Preservation's Historic Property Data File (HPDF) for Santa Clara County were examined.

Record search results indicate that one previously recorded prehistoric site is located within ¼ mile of the project area (CA-SCL-23, Table 1). CA-SCL-23 is a prehistoric habitation mound (also known as the Crittenden Mound) and was first recorded in by Nelson in his 1909 survey of the Bay Area. L.L. Loud, returned to the site in 1912 and observed that the mound was 4 feet tall and noted that "that Crittenden intended to level and plow the area within the week. Presumably the mound was flattened in 1912" (Rappaport and Meredith 1978:2.

At least five archaeological surveys of the site area have been conducted and all of them failed to locate surface indications of the mound (Rappaport and Meredith 1978; Chavez 1981; Garaventa et al. 1993; Garaventa, Guedon, DiPasqua, et al. 1993; PaleoWest 2016). In April and November 1993, Basin Research Associates conducted a subsurface backhoe testing program to try to locate the site (Garaventa et al. 1993). A total of 58 backhoe test units were excavated at 200-foot grid intervals, with seven of those test units placed within the recorded archaeological site boundaries. No prehistoric or historic artifacts or ecofacts were observed in the subsurface deposits. The soils were consistent with typical Sunnyvale clay sediments with no evidence of midden sediments associated with human habitation. In 2016, PaleoWest conducted a surface survey of the area, but were also unable to find any indications of the presence of the mound (PaleoWest 2016).

Table 1. Sites within ¼ mile of the project area

Primary #	Trinomial	Archaeological site	Date	References
P-43-000043	CA-SCL-23	Crittendon Mound / Habitation debris	Prehistoric	L. Loud 1912; SAIC 1995

4.1 NATIVE AMERICAN COORDINATION

As part of a 2016 cultural resource assessment that included the current project area, PaleoWest contacted the Native American Heritage Commission by letter to request information on known Native American traditional or cultural properties and to request a listing of individuals or groups with cultural affiliation to the project area (WSA 2016). Two respondents requested that Native American monitors and archaeological monitors be present for all earth moving activities. One respondent asked that Native American and archaeological monitors be present if any burials are found and another stressed the sensitivity of the area (WSA 2016).

Based on these recommendations and the close proximity of the recorded location of the Crittenden Mound (CA-SCL-23), PaleoWest had recommended that for the Crittenden Lane Recycled Water Line Extension project an archaeological and Native American monitor be present during the excavation of the receiving pit on the eastern side of Stevens Creek. The current Crittenden Lane Trailhead Improvement project will take place entirely to the west of Stevens Creek and will not involve disturbing native soil; therefore, PaleoWest does not recommend any archaeological or Native American monitor be present for this project.

5.0 FIELD INVESTIGATION

5.1 FIELD METHODS

In accordance with CEQA Sections 15064.5 and 15126.4, to ensure that no potentially significant cultural resources are present in the project area, and as a means of evaluating potential impacts to such resources, PaleoWest archaeologist Ashley Schmutzler, M.A. conducted an intensive pedestrian survey of the project area on November 16, 2016 (Figure 4) (see Appendix for photos). The survey area was about 300 feet east-west by 10 feet north-south, beginning at the eastern end of Crittenden Lane, then crossing Stevens Creek Trail and Stevens Creek, and ending at the NASA Ames Research Center boundary road. It includes the area in which all trailhead improvements will take place.

The Project area was recorded with digital photographs for use in the report (Appendix A). Photographs included general views of the topography and vegetation density, and other relevant images. A photo log was maintained to include, at a minimum, photo number, date, orientation, photo description, and comments. The surveyor carefully inspected all areas likely to contain or exhibit sensitive cultural resources to ensure discovery and documentation of and visible, potentially significant cultural resources located within the Project area.

No historical or prehistoric site indicators were observed. When present, historical site indicators could include fence lines, ditches, standing buildings, objects or structures such as sheds, or concentrations of materials at least 45 years in age, such as domestic refuse (e.g., glass bottles, ceramics, toys, buttons or leather shoes), refuse from other pursuits such as agriculture (e.g., metal tanks, farm machinery parts, horse shoes) or structural materials (e.g., nails, glass window panes, corrugated metal, wood posts or planks, metal pipes and fittings, railroad spurs, etc.). Prehistoric site indicators when present typically include areas of darker soil with concentrations of ash, charcoal, animal bone (burned or unburned), shell, flaked stone, ground stone, pottery, or even human bone.

5.2 FIELD RESULTS

The terrain was mostly flat, except leading up to the paved bridge, which was artificially raised to cross the creek. Stevens Creek flows under the paved bridge, running south to north. Bordering the creek, there are large boulders sloping down to stabilize the hillsides and reduce erosion. Vegetation along the trail consisted mainly of short grass, with some taller grass and shrubs. Around the trail, surface visibility was 90-95 percent, while along the bridge it ranged from 50-60 percent.

No prehistoric cultural material was identified during the survey and no prehistoric artifacts were observed. No historic cultural material was identified during the survey and no historic artifacts were observed. The staging area in the parking lot of the A to Z Tree Specimen Nursery was observed and no historical structures were visible from within the lot. There were also no historical structures within view of the parking lot that might be adversely affected by its use as a staging area.

6.0 MANAGEMENT RECOMMENDATIONS

As part of a 2016 cultural resource assessment of a portion of the Bay View district, at the northwest portion of the NASA Ames Research Center campus, PaleoWest contacted local Native American groups regarding potential traditional or cultural properties in the area, including the recorded location of a Native American burial mound to the east of Stevens Creek. As the current project will take place entirely to the west of Stevens Creek, PaleoWest does not recommend that an archaeological or Native American monitor be present during work.

In case of unanticipated discoveries during construction, PaleoWest recommends the following actions:

> In the event cultural materials are discovered during ground disturbing activities, project-related construction would cease within a 15-meter (50 foot) radius of the discovery in order to proceed with the testing and mitigation measures required pursuant to Section 7050.5(b) of the California Health and Safety Code and Section 5097.94 of the Public Resources Code of the State of California. The State Historic Preservation Officer would be contacted as soon as possible. Construction in the affected area would not resume until the regulations of the Advisory Council on Historic Preservation (36 CFR Part 800) have been satisfied.

In the event that Native American human remains or funerary objects are discovered, the provisions of Section 7050.5(b) of the California Health and Safety Code should be followed.

> In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.94 of the Public Resources Code.

The County Coroner, upon recognizing the remains as being of Native American origin, is responsible to contact the Native American Heritage Commission within 24 hours. The Commission has various powers and duties to provide for the ultimate disposition of any Native American remains, as does the assigned Most Likely Descendant.

7.0 REFERENCES

Baker, David R.

2006 "Where science takes flight / Lockheed marks 50 years in Sunnyvale" accessed August 12, 2015 online at http://www.sfgate.com/bayarea/article/Where-science- takes-flight-Lockheed-marks-50-2469631.php

Beardsley, Richard K.

1948 Cultural Sequences in Central California Archaeology. *American Antiquity* 14(1):1–29.

1954 Temporal and Areal Relationships in Central California Archaeology. *University of California Archaeological Survey Reports* 24-25. University of California, Berkeley.

Beck, Warren A. and Ynez D. Haase

1988 *Historical Atlas of California*. University of Oklahoma Press, Norman.

Bennyhoff, James A.

1994a A Delta Intrusion to the Bay in the Late Middle Period in Central California. In *Toward a New Taxonomic Framework for Central California Archaeology: Essays by James A. Bennyhoff and David A. Fredrickson*, edited by Richard E. Hughes, pp.7-14. Contributions of the University of California Archaeological Research Facility 52.

1994b Central California Augustine: Implications for Northern California Archaeology. In *Toward a New Taxonomic Framework for Central California Archaeology: Essays by James A. Bennyhoff and David A. Fredrickson*, edited by Richard E. Hughes, pp.65-74. Contributions of the University of California Archaeological Research Facility 52.

1994c Variation within the Meganos Culture. In *Toward a New Taxonomic Framework for Central California Archaeology: Essays by James A. Bennyhoff and David A. Fredrickson*, edited by Richard E. Hughes, pp.81-92. Contributions of the University of California Archaeological Research Facility 52.

Bennyhoff, James A., and Richard E. Hughes

1987 Shell Bead Ornament Exchange Networks Between California and the Western Great Basin. *Anthropological Papers of the American Museum of Natural History* 64 (2):79–175. American Museum of Natural History, Washington, D.C.

Bolton, Herbert E. (editor)

1930 *Anza's California Expeditions*. 5 vols. University of California Press, Berkeley.

Brown, Lauren (editor)

1985 *The Audubon Society Nature Guides. Grasslands*. New York, Alfred A. Knopf, Inc.

Cambra, Rose Mary, Alan Leventhal, Laura Jones, Julia Hammett, Les Field, Norma Sanchez, and Robert Jurmain

1996 Archaeological Investigations at Kaphan Umux (Three Wolves) Site, CA-SCL-732: A Middle Period Prehistoric Cemetery on Coyote Creek in Southern San Jose, Santa Clara County, California. Report on file at Caltrans District 4 Offices, Oakland, CA.

Chartkoff, Joseph L. and Kerry Kona Chartkoff

1984 *The Archaeology of California*. Stanford University Press, Palo Alto, CA.

Chavez, David

1981 Archaeological sites Review for the Ames Research Center Environmental Resources Document, Santa Clara County, California

City of Mountain View

2016 Mountain View City History. Electronic document, http://www.mountainview.gov/about/history.asp, accessed November 29.

Cole, Tom

1988 *A Short History of San Francisco*. Lexikos Publishing, San Francisco, CA.

Cook, Sherburne F.

1943 The Conflict Between the California Mission Indians and White Civilization. *Ibero-Americana*, Vol. 22. Berkeley, CA.

Esselen Nation

2013 Ohlone/Costanoan-Esselen Indians of the Greater Monterey Bay Area. Electronic document, http://www.ohlonecostanoanesselennation.org, accessed May 29.

Font, Pedro

1930[1776] Font's Complete Diary of the Second Anza Expedition. *Anza's California Expeditions, Vol. IV.* Herbert E. Bolton, editor. University of California Press, Berkeley.

Fredrickson, David A.

1973 Early Cultures of the North Coast Ranges, California. Doctoral dissertation, Department of Anthropology, University of California, Davis.

1994 Archaeological Taxonomy in Central California Reconsidered. In Richard E. Hughes, editor, *Toward a New Taxonomic Framework for Central California Archaeology. Essays by James A. Bennyhoff and David A. Fredrickson*, pp.93-104. Contributions of the University of California Archaeology Research Facility 15. University of California, Berkeley

Garaventa, Donna M., Stuart A. Guedon, David G. Brittin, Ranbir S. Sidhu, and Deborah M. DiPasqua

1993 Archaeological Investigation, CA-SCL-23, for the Modification of the Outdoor

Aerodynamic Research Facility (OARF), NASA Ames Research Center, Moffett Field, Santa Clara County, California

Gifford, Edward W.
1916 Dichotomous Social Organization in South Central California. *University of California Publications in American Archaeology and Ethnology* 11(5):291-296.

Groza. Randy G.
2002 An AMS chronology for central California *Olivella* shell beads. Unpublished Master's thesis. San Francisco State University, San Francisco, CA.

Hildebrandt, William R.
1983 Archaeological Research of the Southern Santa Clara Valley Project: Based on a Data Recovery Program from Sites CA-SCl-54, CA-SCl-163, CA-SCl-178, CA-SCl-237, and CA-SCl-241 Located in the Route 101 Corridor, Santa Clara County, California. Daniel, Mann, Johnson, and Mendenhall and San Jose State University, Los Angeles and San Jose. Prepared for California Department of Transportation, District 4, San Francisco. Far Western Anthropological Research Group, Inc., Davis, California.

Hylkema, Mark
2002 Tidal Marsh, Oak Woodlands, and Cultural Florescence in the Southern San Francisco Bay Region. In Jon M. Erlandson and Terry L. Jones, editors, *Catalysts to Complexity: Late Holocene Societies of the California Coast*, pp. 233-262. Perspectives in California Archaeology, Volume 6. Cotsen Institute of Archaeology, University of California, Los Angeles.

Hynding, Alan
1984 *From Frontier to Suburb: The Story of the San Mateo Peninsula*. Star Publishing Company, Belmont, CA.

King, Thomas F.
1970 The Dead at Tiburon. Occasional Paper 2. Northwestern California Archaeological Society, Marin County.

Kroeber, A. L.
1970 *Handbook of the Indians of California.* California Book Company, Ltd., Berkeley, CA.

Kyle, Douglas E.
1990 *Historic Spots in California*. 4th edition. Stanford University Press, Stanford, CA.

Levy, Richard
1978 Costanoan. In *Handbook of North American Indians, Volume 8, California*, Robert F. Heizer, editor, pp. 485-495. Smithsonian Institution, Washington, D.C.

Lightfoot, Kent G.

1997 Cultural Construction of Coastal Landscapes: A Middle Holocene Perspective from San Francisco Bay. In Jon M. Erlandson and Michael A. Glassow, editors, *Archaeology of the California Coast during the Middle Holocene*, *Perspectives in California Archaeology*, Vol. 4, pp.129-141. Cotsen Institute of Archaeology, University of California, Los Angeles.

Lightfoot, Kent G., and Edward M. Luby

2002 Late Holocene in the San Francisco Bay Area: Temporal Trends in the Use and Abandonment of Shell Mounds in the East Bay. In Jon M. Erlandson and Terry L. Jones, editors, *Catalysts to Complexity: Late Holocene Societies of the California Coast*, pp. 263-281. Perspectives in California Archaeology, Volume 6. Cotsen Institute of Archaeology, University of California, Los Angeles.

Lillard, Jeremiah B., Robert F. Heizer and Franklin Fenenga

1939 An Introduction to the Archeology of Central California. *Sacramento Junior College Department of Anthropology Bulletin* 2. The Sacramento Unified School District, Sacramento, CA.

Meyer, Jack, and Jeffrey S. Rosenthal

1997 Archaeological and Geoarchaeological Investigations at Eight Prehistoric Sites in the Los Vaqueros Reservoir Area, Contra Costa County. Los Vaqueros Final Report #7. Prepared for the Contra Costa Water District, Concord, CA. Anthropological Studies Center, Sonoma State University, Rohnert Park, CA.

Milliken, Randall, Richard T. Fitzgerald, Mark G. Hylkema, Randy Groza, Tom Origer, David G. Bieling, Alan Leventhal, Randy S. Wiberg, Andrew Gottsfield, Donna Gillette, Viviana Bellifemine, Eric Strother, Robert Cartier and David A. Fredrickson

2007 Punctuated Culture Change in the San Francisco Bay Area. In Terry L. Jones and Kathryn A. Klar (eds) *California Prehistory: Colonization, Culture, and Complexity*, pp. 99-123. Altamira Press: Lanham.

Moratto, Michael J.

1984 *California Archaeology*. Academic Press, New York.

Muwekma Ohlone Tribe of the San Francisco Bay Area

2013 Tribal history: recognition process. Electronic document, http://www.muwekma.org/tribalhistory/recognitionprocess.html, accessed May 29, 2013.

Nelson, Nels C.

1909 *Shellmounds of the San Francisco Bay Region*. University of California Publications in American Archaeology and Ethnology 7(4):310-357. University of California, Berkeley.

1910 The Ellis Landing Shellmound. *University of California Publications in American Archaeology and Ethnology* 8. University of California Press, Berkeley.

PaleoWest, Inc.
2016 Cultural Resources Assessment Report, Moffett Federal Airfield - Bay View Campus Sunnyvale, Santa Clara County, California. Prepared for Page and Turnbull, San Francisco, CA.

Rappaport, James R. and Phillip C. A. Meredith
1978 Soil Core Grid Layout for Location of the Chittenden Mound. Stanford University.

Schenck, W. Egbert
1926 Historic Aboriginal Groups of the California Delta Region. *University of California Publications in American Archaeology and Ethnology* 23(2):123-146, Berkeley, California.

Shoup, Laurence and Randall T. Milliken
1999 *Inigo of Rancho Polsomi: The Life and Times of a Mission Indian and his Land*. Malki-Ballena Press, Banning, CA.

Shoup, Laurence, and Randall T. Milliken and Alan K. Brown
1995 Inigo of Rancho Posolmi: The Life and Times of a Mission Indian and His Land. On file at Woodward Clyde, 500 12th Street, Oakland, CA.

Uhle, Max
1907 The Emeryville Shellmound. *University of California Publications in American Archaeology and Ethnology* 7(1):1-106.

Wallace, W. J., and D. W. Lathrap
1975 West Berkeley (CA-ALA-307): A Culturally Stratified Shellmound on the East Shore of San Francisco Bay. *Contributions of the University of California Archaeological Research Facility* 29.

Wildt, Jennifer, Christina Alonso, Nazih Fino, and Thomas Young
2016 Cultural Resources Assessment Report, Crittenden Lane Recycled Water Line Extension, City of Mountain View, Santa Clara County, California. Prepared for Circlepoint.

Young, Robert N. and Paul F. Griffin
1957 Recent Land-Use Changes in the San Francisco Bay Area. *Geographical Review*, Vol. 47/3:396-405.

Appendix A
Survey Photos

Photo 1. Bridge over Stevens Creek, facing west.

Photo 2. Stevens Creek and bridge, facing southwest

Photo 3. Stevens Creek Trail, view west

Photo 4. Stevens Creek Trail, facing northeast

Photo 5. Train leading to the bridge over Stevens Creek, facing east

Photo 6. Side of Stevens Creek Trail, facing south

Photo 7. View of Crittenden Lane, facing east

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Appendix D

Crittenden Lane Trailhead Improvements Construction Noise Assessment

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CRITTENDEN LANE
TRAILHEAD IMPROVEMENTS
CONSTRUCTION NOISE ASSESSMENT

MOUNTAIN VIEW, CALIFORNIA

May 15, 2019

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INTRODUCTION

This report presents the results of the construction noise assessment for the Crittenden Lane Trailhead Improvement Project (project) in Mountain View, California. The project proposes to improve 280 linear feet of trailhead that connects the eastern terminus of Crittenden Lane to the Stevens Creek Trail. The trailhead will comply with current ADA standards and will have a paved width of 12 feet with 2-foot-wide shoulders. Retaining walls and fill slopes will be used to support the trail on either side. The site will go through a PG&E transmission line corridor and will be bordered by this corridor to the north and south. Additional land uses in the area include the Shoreline Technology Park to the northwest and southwest, a nursery to the south, and Stevens Creek to the east. The NASA Ames Research Center and Moffett Federal Airfield are located 250 feet and 3,200 feet to the east of Stevens Creek Trail, respectively.

Fundamentals of Environmental Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its pitch or its loudness. Pitch is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. Loudness is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A decibel (dB) is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the A-weighted sound level or dBA. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level* (*CNEL*) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day/Night Average Sound Level* (*DNL* or L_{dn}) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

TABLE 1 Definition of Acoustical Terms Used in this Report

Term	Definition
Decibel, dB	A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e. g. , 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, Harris, 1998.

TABLE 2 Typical Noise Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110 dBA	Rock band
Jet fly-over at 1,000 feet		
	100 dBA	
Gas lawn mower at 3 feet		
	90 dBA	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80 dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	70 dBA	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60 dBA	
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
Quiet urban nighttime	40 dBA	Theater, large conference room
Quiet suburban nighttime		
	30 dBA	Library
Quiet rural nighttime		Bedroom at night, concert hall
	20 dBA	
		Broadcast/recording studio
	10 dBA	
	0 dBA	

Source: Technical Noise Supplement (TeNS), Caltrans, September 2013.

Regulatory Background

Section 8.70 of the Mountain View Municipal Code identifies allowable hours of construction. Construction noise level limits are not specified in the Municipal Code.

SEC. 8.70. - Construction Noise

a) Hours of Construction – No construction activity shall commence prior to 7:00 a.m. nor continue later than 6:00 p.m., Monday through Friday, nor shall any work be permitted on Saturday or Sunday or holidays unless prior written approval is granted by the chief building official. The term "construction activity" shall include any physical activity on the construction site or in the staging area, including the delivery of materials. In approving modified hours, the chief building official may specifically designate and/or limit the activities permitted during the modified hours.
b) Modification – At any time before commencement of or during construction activity, the chief building official may modify the permitted hours of construction upon twenty-four (24) hours written notice to the contractor, applicant, developer or owner. The chief building official can reduce the hours of construction activity below the 7:00 a.m. to 6:00 p.m. time frame or increase the allowable hours.
c) Sign Required – If the hours of construction activity are modified then the general contractor, applicant, developer or owner shall erect a sign at a prominent location on the construction site to advise subcontractors and material suppliers of the working hours. The contractor, owner or applicant shall immediately produce upon request any written order or permit from the chief building official pursuant to this section upon the request of any member of the public, the police or city staff.
d) Violation – Violation of the allowed hours of construction activity, the chief building official's order, required signage or this section shall be a violation of this code.

Construction Noise Impacts

Noise impacts resulting from construction depend upon the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise sensitive areas. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (e.g., early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise sensitive land uses, or when construction lasts over extended periods of times.

Construction activities generate considerable amounts of noise, especially during earth moving activities when heavy equipment is used. Typical construction noise levels at a distance of 50 feet are shown in Tables 3 and 4. Table 3 shows the average noise level ranges, by construction phase, and Table 4 shows the maximum noise level ranges for different construction equipment. Most demolition and construction noise fall within the range of 80 to 90 dBA at a distance of 50 feet from the source.

TABLE 3 Typical Ranges of Construction Noise Levels at 50 Feet, L_{eq} (dBA)

	Domestic Housing		Office Building, Hotel, Hospital, School, Public Works		Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station		Public Works Roads & Highways, Sewers, and Trenches	
	I	**II**	**I**	**II**	**I**	**II**	**I**	**II**
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	75	89	74	84	84

I - All pertinent equipment present at site.
II - Minimum required equipment present at site.

Source: U.S.E.P.A., Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

TABLE 4 Construction Equipment 50-foot Noise Emission Limits

Equipment Category	L_{max} Level (dBA)[1,2]	Impact/Continuous
Arc Welder	73	Continuous
Auger Drill Rig	85	Continuous
Backhoe	80	Continuous
Bar Bender	80	Continuous
Boring Jack Power Unit	80	Continuous
Chain Saw	85	Continuous
Compressor[3]	70	Continuous
Compressor (other)	80	Continuous
Concrete Mixer	85	Continuous
Concrete Pump	82	Continuous
Concrete Saw	90	Continuous
Concrete Vibrator	80	Continuous
Crane	85	Continuous
Dozer	85	Continuous
Excavator	85	Continuous
Front End Loader	80	Continuous
Generator	82	Continuous
Generator (25 KVA or less)	70	Continuous
Gradall	85	Continuous
Grader	85	Continuous
Grinder Saw	85	Continuous
Horizontal Boring Hydro Jack	80	Continuous
Hydra Break Ram	90	Impact
Impact Pile Driver	105	Impact
Insitu Soil Sampling Rig	84	Continuous
Jackhammer	85	Impact
Mounted Impact Hammer (hoe ram)	90	Impact
Paver	85	Continuous

Equipment Category	L_{max} Level (dBA)[1,2]	Impact/Continuous
Pneumatic Tools	85	Continuous
Pumps	77	Continuous
Rock Drill	85	Continuous
Scraper	85	Continuous
Slurry Trenching Machine	82	Continuous
Soil Mix Drill Rig	80	Continuous
Street Sweeper	80	Continuous
Tractor	84	Continuous
Truck (dump, delivery)	84	Continuous
Vacuum Excavator Truck (vac-truck)	85	Continuous
Vibratory Compactor	80	Continuous
Vibratory Pile Driver	95	Continuous
All other equipment with engines larger than 5 HP	85	Continuous

Notes:

[1] Measured at 50 feet from the construction equipment, with a "slow" (1 sec.) time constant.

[2] Noise limits apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation.

[3] Portable Air Compressor rated at 75 cfm or greater and that operates at greater than 50 psi.

Source: Mitigation of Nighttime Construction Noise, Vibrations and Other Nuisances, National Cooperative Highway Research Program, 1999.

Project construction would occur in three phases and is anticipated to take approximately seven weeks. All construction is anticipated to take place on weekdays between 7:30 a.m. and 4:00 p.m. Construction phase durations and construction equipment are summarized below:

Phase 1
5 days
Skip Loader
Small Compactor
Water Truck
Dump Trucks
Self-Propelled Paver
AC Roller

Phase 2
35 days
Front End Loader
Large Compactor
Small Track Dozer
Water Truck
Dump Trucks
Cement Trucks
Track-Mounted Excavator
Electric Generators
Small Hand Tools

Phase 3
7 days
Skip Loader
Rock Roller
AC Roller
Self-Propelled Paver
Dump Trucks
Truck-Mounted Hydroseeder

At a distance of 50 feet from the noise source, maximum and hourly average noise levels generated by project construction equipment are calculated to reach about 83 dBA L_{max}/L_{eq}[1] during Phase 1, 87 dBA L_{max}/L_{eq} during Phase 2, and 82 dBA L_{max}/L_{eq} during Phase 3. Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of the distance between the source and receptor. Shielding by buildings or terrain can further reduce construction noise levels.

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[1] Construction noise levels were calculated using the Federal Highway Administration's Roadway Construction Noise Model (RCNM). This construction noise model includes representative sound levels for the most common types of construction equipment and the approximate usage factors of such equipment that were developed based on an extensive database of information gathered during the construction of the Central Artery/Tunnel Project in Boston, Massachusetts.

The City of Mountain View does not establish quantitative limits for construction-related noise. Based on criteria commonly used throughout the Bay Area, this analysis considers construction noise impacts to be significant where noise from construction activities exceeds 60 dBA L_{eq} and exceeds the ambient noise environment by at least 5 dBA L_{eq} at noise-sensitive uses (residential) in the project vicinity for a period exceeding one year. For commercial uses, a significant impact would be identified if construction noise were to exceed 70 dBA L_{eq} and exceeds the ambient noise environment by at least 5 dBA L_{eq} for a period exceeding one year.

The site is surrounded primarily by commercial uses with few outdoor use areas. The nearest commercial office building is located about 340 feet southwest of the center of the project site. Outside the façade of this building, construction noise levels are calculated to reach up to 70 dBA L_{max}/L_{eq}.

The nearest residences are located about ½ mile to the south and are well shielded by intervening buildings. At the nearest residences, construction noise levels are calculated to be less than 40 dBA L_{max}/L_{eq} and are not anticipated to be audible above ambient noise produced by traffic along US Highway 101.

Due to the short duration of construction, and the large distances between the project and noise sensitive uses, construction operations would not be anticipated to result in a substantial temporary increase in noise levels at adjacent noise-sensitive receptors. Assuming that construction activities are conducted in accordance with the provisions of the City of Mountain View Municipal Code Section 8.70, this would be considered a **less-than-significant** impact. No additional mitigation would be required.

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Appendix E

Native American Heritage Commission Sacred Lands File Search

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov

May 6, 2019

Nicole Cuevas
Circlepoint

VIA Email to: n.cuevas@circlepoint.com

RE: **Crittenden Lane Trailhead Improvements Project,** City of Mountain View; Mountain View USGS Quadrangle, Santa Clara County, California.

Dear Ms. Cuevas:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. The absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

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

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton

Gayle Totton, B.S., M.A., Ph.D.
Associate Governmental Program Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Santa Clara County
5/6/2019

Amah MutsunTribal Band Valentin Lopez, Chairperson P.O. Box 5272 Galt, CA, 95632 Phone: (916) 743 - 5833 vlopez@amahmutsun.org	Costanoan Northern Valley Yokut
Amah MutsunTribal Band of Mission San Juan Bautista Irenne Zwierlein, Chairperson 789 Canada Road Woodside, CA, 94062 Phone: (650) 851 - 7489 Fax: (650) 332-1526 amahmutsuntribal@gmail.com	Costanoan
Indian Canyon Mutsun Band of Costanoan Ann Marie Sayers, Chairperson P.O. Box 28 Hollister, CA, 95024 Phone: (831) 637 - 4238 ams@indiancanyon.org	Costanoan
Muwekma Ohlone Indian Tribe of the SF Bay Area Charlene Nijmeh, Chairperson 20885 Redwood Road, Suite 232 Castro Valley, CA, 94546 Phone: (408) 464 - 2892 cnijmeh@muwekma.org	Costanoan
North Valley Yokuts Tribe Katherine Erolinda Perez, Chairperson P.O. Box 717 Linden, CA, 95236 Phone: (209) 887 - 3415 canutes@verizon.net	Costanoan Northern Valley Yokut
The Ohlone Indian Tribe Andrew Galvan, P.O. Box 3388 Fremont, CA, 94539 Phone: (510) 882 - 0527 Fax: (510) 687-9393 chochenyo@AOL.com	Bay Miwok Ohlone Patwin Plains Miwok

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

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Crittenden Lane Trailhead Improvements Project, Santa Clara County.